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A Mixed Methods Study Investigating Intangibles in the Banking Sector

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Abstract

Despite increasing attention paid to intangibles research since the end of the 20th century, there is a dearth of empirical evidence on the interactions among different intangible elements and their performance implications due to the lack of appropriate intangible measurements and the low level of intangible disclosure in the public domain.

From a resource-based view (RBV), this thesis seeks to investigate the role of intangibles in the European banking sector using mixed methods. A quantitative approach is adopted to test the relationships among different intangible elements and between them and bank performance for a sample of 63 banks from 2005 to 2007. The empirical results show that top management human capital (HC) has a positive impact on either customer relationships or bank financial performance, and the combination of different intangible elements tends to better explain the variation in banks' return on assets than they do individually. Meanwhile, a qualitative approach is employed to assess intangible measurement, disclosure, and modelling by conducting semi-structured interviews with 11 bank managers and 12 bank analysts. A grounded theory model of intangibles is developed, which reveals how intangibles and tangible/financial resources interact in the bank value creation process. In addition, it explores the communication gaps between bank managers and bank analysts regarding the concept of intangibles, intangible measurement and intangible disclosure. More importantly, the adoption of mixed methods research allows this thesis to achieve evidence triangulation and complementarity. Both approaches produce evidence in support of the resource integration of the RBV theory and the importance of top management HC. Besides, the qualitative study provides the means to explore the way of improving the specified models and intangible proxies used in the quantitative study.

This thesis makes a contribution to the development of mixed methods research in the fields of finance, accounting and management by providing an example of how quantitative and qualitative approaches can be integrated to investigate a research question. It also contributes to the intangible literature and banking literature in terms of improving our understanding of the role of intangibles in the bank business model.

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Author's Declaration

I declare that, except where explicit reference is made to the contribution of others, that this thesis is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

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Chapter One: Introduction

1.1   Introduction

The objective of this thesis is to investigate the role of intangibles in the European banking sector using mixed methods. Since the end of the 20th century, a huge amount of empirical studies have been conducted in the field of intangibles research. However, to date, there are no widely accepted models that can serve the purpose of measuring intangibles and comparing intangibles among firms. Moreover, there is a lack of empirical evidence on the interaction between different components of intangibles.

From a resource-based view, this thesis seeks to build a measurement model of the interaction between the most important intangibles and firm performance in a specific sector using both qualitative and quantitative methods. A quantitative approach is adopted to test the relationships among different intangible elements and between them and bank performance, and meanwhile, a qualitative approach is employed to explore the role of intangibles in the bank value creation process by interviewing both bank analysts and bank managers. By using mixed methods, this thesis has the potential to achieve triangulation in empirical evidence, and to overcome some of the limitations within singular methods. It provides a comprehensive picture of the bank value creation model, and improves our understanding of intangibles.

This chapter offers a brief introduction of this thesis. The rest of this chapter is structured as follows. Section 1.2 describes the research background of this thesis, and then the motivations of conducting this study are discussed in section 1.3. Section 1.4 outlines the research questions and the methodological choice. Section 1.5 highlights the potential contributions that the thesis makes to the extant literature and knowledge. Finally, section 1.6 introduces the overall structure of this thesis.

1.2   Background of this study

The past several decades witnessed the increasing importance of intangibles. The world economy has moved from an industrial economy to a knowledge-driven economy (Goh, 2007; Meritum, 2002), and wealth and growth are now "driven primarily by intangible (intellectual) assets" (Lev, 2001:1). Bontis et al. (1999) argue that in such an information

age, "products and companies live and die on information and the most successful companies are the ones who use their intangible assets better and faster" (Bontis et al., 1999:392).

Lev (2001) states that intensified business competition across the world and the advent of information technology have dramatically changed the value creation process of business, and intangibles played an increasingly important role in developed economies. He demonstrates that the average market-to-book ratio of the Standard and Poor (S&P) 500 companies has continuously increased since 1980s, from just over one to the value of 6.0 in 2001 (Lev, 2001). The growing gap between book value and market value indicates that the invisible assets have become the principal source of value instead of physical assets[1] (Abhayawansa and Guthrie, 2010; Lev, 2001; Fincham and Roslender, 2003). As a result, the topic of intangibles[2] has attracted increasing interest in various fields of academic research, such as management strategy, organizational and accounting research. One school of the literature looks at intangibles through a resource-based view (RBV).

The basic point of the RBV is that a firm's competitive advantage derives from its special resources that are valuable, rare, imperfectly imitable, and non-substitutable (Barney, 1991). These resources can be either tangible (e.g., plant, equipment, and land) or intangible (e.g., patents, copyright, databases, human capital, customer relations and reputation). Although tangible assets can be valuable for a firm, they are transparent and relatively easily duplicated (Clulow et al., 2003; Fahy, 2000). On the other hand, many researchers argue that a firm's sustainable competitive advantage mainly results from its intangible resources (e.g., Barney and Wright, 1998; Clulow et al., 2003; Fahy, 2000; Hall, 1992, 1993). In an empirical case study, Hall (1993) finds that intangible resources like reputation, employee know-how, culture, networks, and databases drive capability differentials, and are most important resources of sustainable competitive advantage for the case companies.

Stewart (1991:44) states that, "intellectual capital is becoming corporate America's most

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[1] It should be noted that some scholars argue that, apart from intangibles, the difference between market value and book value may attribute to some other factors (García-Ayuso, 2003b; Kristandl and Bontis, 2007).
[2] As will be discussed further in section 2.4 of chapter two, although the importance of intangibles has been well addressed in the literature, there is no widespread acceptance on the definition of intangibles (Kristandl and Bontis, 2007), and further, different terms have been used in reference to intangible assets, such as intangibles, intellectual capital, or knowledge assets (Beattie and Thomson, 2007; Lev, 2001). In this thesis, following Lev's (2001) and Meritum's (2002) argument, the terms *intangibles* and *intellectual capital* are used interchangeably, referring to the same concept.

valuable assets and can be its sharpest competitive weapons". He stresses that "every company depends increasingly on knowledge -- patents, processes, management skills, technologies, information about customers and suppliers, and old-fashioned experience. Added together, this knowledge is intellectual capital" (Stewart, 1991:44). Although Stewart (1991) used the words "every company", in sectors like the agricultural and industrial sectors where companies traditionally rely heavily on inputs of land and labour, physical capital still plays an important role in the process of wealth creation (El-Bannany, 2008). However, for organizations in the service industries, such as consultants, banks, and IT services, intangibles rather than tangible assets are extremely important in competitive differentiation (Curado, 2008; Gratton and Ghoshal, 2003). It should be noted that this does not mean tangible assets are not important in these industries. For example, Holland (2009) argues that tangibles such as payment systems and branches are very important in banking and interacted with intangibles to create value. This joint intangible and tangible combination may be at the heart of competitive advantage.

As will be further explained in chapter two, the banking sector is of importance in the world financial system. Apart from the traditional intermediation service through which savings are channelled into productive activities, banks also provide other services that other financial intermediaries cannot do, such as risk sharing service and delegated monitoring service that helps to solve information problems (Allen and Carletti, 2010). Those unique roles that banks play make them increasingly important to the economy. It is undoubtedly the case that the banking sector stability can directly or indirectly impact many other industries. When there was crisis occurring in the banking sector, its effects would spread rapidly to the whole economy. The 2007-2009 financial crisis underlines how important banks are to the global economy (Allen and Carletti, 2010).

Over the past several decades, the banking sector experienced major changes, such as deregulation, technological development, and globalisation, which dramatically altered banks' competitive environment (Gardener and Molyneux, 1993; Goddard et al., 2007; Matthews and Thompson, 2008). Deregulation removed barriers to competition in geographical limitation and competition in traditional and non-banking products areas (Wilson et al., 2010). Technological development facilitated the development of new products and delivery channels of services, shaped ways of bank operations and cost management (Beccalli, 2007), and in the meantime, brought new competitors from non-bank industries into banking market (Gardener and Molyneux, 1993). Enhanced

competition has forced banks to explore resources that could lead to business success. Previous research shows that intangible assets (e.g., customer capital and human capital) rather than tangible assets are likely to be key resources of sustainable competitive advantage (Clulow et al., 2003; Kamath, 2007). Moreover, the business nature of the banking sector is intellectually intensive (Mavridis and Kyrmizoglou, 2005). Watkins (2000) argues that publicly observable bank products are easy to copy and lack of adequate patent protection, thus competitive advantage mainly derives from hidden intangibles rather than tangibles. In this sense, the banking sector offers an ideal context for investigating intangibles (Mavridis and Kyrmizoglou, 2005; Reed et al., 2006, 2009).

Given the fact that banks are important to the world economy, it is of interest to explore the value creation process in banking, and thus to search for ways of improving bank strategies and performance. Considering the competition environment where banks operate, and the characteristics of bank products and services, investigating bank strategies or performance should take into account the important value driver – intangibles. Wilson et al. (2010) suggest that there is a need to assess the impacts of financial innovation and new technologies on bank risk-taking, market returns and financial stability. Based on the above background, the present study of intangibles, therefore, is set in the banking sector. As will be explained further in chapter five, on the consideration of maximizing sample size and reducing heterogeneity, this thesis focuses on the European banking sector.

1.3   The motivation for this study

Since the 1990s, the topic of intangibles has been the focus of attention for both academic research and business practice. A significant amount of literature attempts to understand the nature of intangibles, to measure and manage them, as well as to assess the value relevance of different intangible elements. However, problems or gaps were observed after reviewing related literature, and those motivated the researcher to conduct the present study.

Given the economic importance of intangibles, a number of intangible measurement frameworks or models have been developed, and different guidelines have been constructed (Sveiby, 1997a; Mouritsen et al., 2001; Bontis et al., 1999; Marr et al., 2003; Meritum, 2002). However, as will be discussed further in section 3.2 of chapter three, some of the proposed qualitative methods, such as the Balanced Scorecard and IC-Index,

tend to be too qualitative, inconsistent and incomparable, and fail to serve the purposes of reducing information asymmetry, improving external comparison and predicting future performance (e.g., Bontis et al., 1999; Nagar and Rajan, 2005; Rodov and Leliaert, 2002). Other quantitative methods, although were widely applied in different industries and countries, especially in the banking sector, such as VAIC™, it tends to be less useful to assess the synergies among different intangible components.

Without appropriate measurements of intangibles, consequently, the level of intangible disclosure across countries or sectors tends to be very low (Beattie and Thomson, 2007), and the remaining information asymmetry related to intangibles is still high (Holland, 2009). Moreover, because of the qualitative nature of many commonly applied measurement frameworks, when there is an intangible disclosure, it is mainly expressed qualitatively rather than quantitatively, and the type of information varies from company to company, and from country to country. As a result, it is difficult to conduct quantitative empirical studies in the field of intangible measurement and on assessing the value process of intangibles (Bollen et al., 2005; Marr et al., 2003). Marr et al. (2003) demonstrate that the majority of intangible measurement research is at the theory building rather than theory testing stage, and suffers from a lack of plausible measures to support empirical evidence in this area. As will be discussed further in section 3.4 of chapter three, although a significant amount of empirical research can be found in the field of value relevance of intangibles, most of this has focused on the impacts of individual intangible elements on firm performance, and little is known regarding the interaction and complementarities between different intangible elements (Cuganesan, 2005; Kim, 2007; Mouritsen et al., 2001). It is widely accepted that intangibles or intellectual capital include three main components, namely human capital, structural capital, and relational capital (Meritum, 2002). From the RBV point of view, these elements are argued to interact and combine together to create value. However, the majority of research dealing with intangibles ignored the correlations and synergies between the categories (Andriessen, 2001). Only a few studies have contributed in this regard, either using qualitative approach (e.g., Cuganesan, 2005; Johanson et al., 2001a; Holland, 2004) or quantitative approach (e.g., Bontis, 1998; Cabrita and Vaz, 2006; Maxham et al., 2008; Nagar and Rajan, 2005; Wang and Chang, 2005), and there are many limitations within them (detailed discussions refer to section 3.4.2 of chapter three).

Having observed this gap, there is an increasing call for more empirical research in

assessing the interactions among different intangible elements (e.g., Bismuth and Tojo, 2008; Lev and Daum, 2004; Marr et al., 2004; Van der Meer-Kooistra and Zijlstra, 2001). Moreover, studies in the field of value relevance of intangibles are argued to be biased towards the analysis of some elements of intangibles (e.g., R&D and advertising) to the detriment of other intangible assets (e.g., human capital or customer relationships) (Canibano et al., 2000), and results tend to be weak and mixed (detail discussions refer to section 3.4.1 of chapter three). Kamukama et al. (2011:155) indicate that "there is far from enough empirical research investigating the practical role of competitive advantage on the relationship between intellectual capital and performance". Therefore, more quantitative research is needed to provide evidence on the interactions among different intangible components and the relationship between intangible elements and firm performance.

On the other hand, although research dealing with intangibles should be improved by testing (e.g., Andriessen, 2004; Marr et al., 2003), more qualitative studies are needed in order to better understand the relationships among intangible elements and between them and firm performance. Marr et al. (2003) suggest that not only quantitative empirical evidence on intangibles is required, but also more "rich, longitudinal case studies that will allow us to understand the specific context which seems to be critical for the analysis of IC" (Marr et al., 2003:455) are desirable.

The present study is motivated by the above gaps noted in the extant literature. It intends to explore the role of intangibles in the bank value creation process by employing both quantitative and qualitative approaches. Although a large body of research can be found in intangibles research, they commonly employed either a quantitative approach or a qualitative approach. As will be explained further in chapter four, given the research objective and practical difficulties, it is better to combine these two approaches together. Petty and Guthrie (2000) suggest that using multiple methods in intangibles research is potential useful in terms of corroborating research findings and enriching an understanding of the phenomenon. This thesis is also inspired by the call for mixed methods research in the field of management research (Cassell et al., 2006). Since the 1980s, mixed-methods research has been applied widely in some fields of social science, such as evaluation research, but has received little attention in finance, accounting and management research. In a project of the Economic and Social Research Council (ESRC), both academics and practitioners advocated using mixed methods in the field of management research (Cassell et al., 2006). This study attempts to build a fluent dialogue between quantitative and

qualitative approaches, and has the potential to take advantages of triangulation and complementarity.

Specifically, the quantitative component of this study attempts to provide evidence on the relationships among intangible elements, in particular, human capital and relational capital, and the relationships between them and bank performance. As will be discussed further in chapter three, some previous studies have examined the interactions among human capital, service quality and the customer relationship (e.g., Nagar and Rajan, 2005; Maxham et al., 2008), but ignored the influence of brands on customer relationships. In response to the call for more research in examining the relationship between customer satisfaction and the brand (e.g., Canibano et al., 2000; Gupta and Zeithaml, 2006), the constructed models in this study assessed the impacts of proxies of human capital and brands on customer relationships, both individually and collectively. In addition, Abhayawansa and Guthrie (2010) review literature on the importance of IC to the capital market, and observe that "there is a dearth of research on the value-relevance and predictive ability of internal capital-related information and human capital information other than relating to the top management" (Abhayawansa and Guthrie, 2010:217). This thesis contributes to the literature by testing the impacts of both top management human capital and employee level human capital on bank performance.

The qualitative component of this study aims to investigate the role of intangibles in the bank value creation process by interviewing bank managers and analysts. Previous interview-based case studies that investigated how organizations measured, managed and reported intangibles tended to focus mainly on internal managers' perspective (e.g., Beattie and Thomson, 2010; Boedker, et al., 2005; Chaminade and Roberts, 2003; Johanson et al., 2001a), and little attention has been paid to interviews with analysts or fund managers in terms of how they use different types of intangible information (Abhayawansa and Guthrie, 2010) with the exceptions of Campbell and Slack (2008) and Holland (2006). This study tries to fill this gap and to provide a more comprehensive picture of the role of intangibles in the bank business model.

1.4   Research questions and methodology

The central research question investigated in this thesis is: *how do intangibles affect bank performance?* This central question is then broken down into several specific

sub-questions, and is answered by the quantitative and qualitative studies respectively or collectively.

- **RQ1:** What are the relationships among different intangible elements and bank performance?
- **RQ2:** What may be the important intangibles for a bank?
- **RQ3:** How do intangibles relate to bank performance?
- **RQ4:** How can intangibles be measured?
- **RQ5:** How have intangibles been reported?
- **RQ6:** What may be the problems and limitations with the quantitative models and data?
- **RQ7:** How can the quantitative models be improved?

The first specific question (**RQ1**) is supposed to be answered by the quantitative study. It intends to explore how different intangible elements interact and combine to affect bank performance. Data is collected from the publicly available sources (e.g., annual reports, social responsibility reports, bank websites, and other databases), and Multiple Ordinary Least Square regression technique (OLS) is employed to test the proposed relationships. The quantitative analysis is designed to be three steps. The first step is to investigate the relationships among different elements of relational capital, focusing on how indicators of brands affect the proxy of customer relationships. The second step is to examine how human capital, including both top management level HC and employee level HC, affect customer relationships. In the final step, the intangibles-performance association is explored. Specifically, models are firstly built to test the individual impacts of human capital and relational capital on bank performance, and then their collective effect is investigated.

The qualitative component of this study aims to answer four specific research questions, that is, RQ2, RQ3, RQ4, and RQ5. In an empirical study of intangibles, Ittner and Larcker (2003) find that although the case companies have a number of non-financial measures of intangibles, they were seldom linked to firm strategy and performance. As a result, the case companies in their study did not understand which measures really matter. RQ2 and RQ3 propose to explore the key drivers of intangibles, and then link those core intangibles to bank performance. RQ4 and RQ5 are concerned with intangible measurement and disclosure. By answering those questions, a comprehensive picture of the role of intangibles in the bank business model is expected to be drawn.

More importantly, the integration and combination of quantitative and qualitative approaches is intended to answer two joint specific research questions: RQ6 and RQ7. Murthy and Mouritsen (2011) argue that cross-sectional research on the effects of intellectual capital tends to ignore the managerial practices that develop and mobilise those IC elements. In the present study, employing mixed methods is helpful to link statistical analysis of intangibles with managerial practices. As will be shown in chapters eight and nine, the qualitative component of this study has the potential to explore problems and limitations within the constructed models and variables of intangible elements used in the quantitative analysis, and also to find new intangible metrics that have been used in business practice.

With regard to research methodology, as will be addressed in detail in chapter four, this project is designed to be a concurrent qualitative-dominant mixed methods research, in which quantitative and qualitative data are collected and analysed concurrently, but more emphases are put on the latter. The quantitative and qualitative studies are framed based on similar ideas and structures. Therefore, these two approaches can be connected and compared under an overall conceptual frame (detailed discussion in section 8.4 of chapter eight). Moreover, the quantitative data and qualitative data are collected, analysed and interpreted approximately at the same time, and thus allow the integration of two approaches to occur during the stages of data collection, data analysis, and the discussion of empirical results. In this sense, this thesis provides a novel example in the field of finance of how quantitative and qualitative approaches can integrate fluently so as to overcome limitations of adopting singular methods.

It should be noted that although the quantitative and qualitative studies are carried out approximately at the same time, the former is completed earlier than the latter. Additionally, because the purposes of the quantitative study are not only to test hypotheses, but also to expose the problems and difficulties within the process of conducting quantitative studies in the area of intangibles research and offer opportunities for the qualitative part of the thesis to further assess these problems, the thesis is structured to introduce the quantitative component firstly, and then come to the discussion of qualitative approach and integration of the two methods.

1.5   Contributions of this thesis

It is expected that this thesis can contribute to the extant literature and knowledge in several ways.

Firstly, this thesis is expected to make a contribution to the methodological development in the fields of management, accounting and finance research by providing a practical example of how quantitative and qualitative approaches can be combined and integrated to investigate the same phenomenon. Although many scholars advocated the combination of quantitative and qualitative approaches in management, accounting and finance research where positivism has long dominated (e.g., Buchanan and Bryman, 2007; Cassell et al. 2006; Modell, 2005, 2009, 2010), the use of mixed methods in a project has not been popular so far. Molina-Azorín (2011) examines mixed methods research in four leading journals in strategic management and entrepreneurship research, and finds that all the four journals are dominated by quantitative articles, and mixed methods articles are the last group in importance in the three entrepreneurship journals compared with quantitative articles and qualitative articles. Even though in other fields of social science research where mixed methods research has been widely applied, such as evaluation, many studies did not integrate quantitative and qualitative data appropriately (Bryman, 2007; Greene et al., 1989). One of the main barriers to integrating quantitative and qualitative approaches in a piece of study is the absence of exemplars (Woolley, 2009). In this sense, this thesis hopes to provide a novel example of how quantitative and qualitative approaches can be integrated at all stages of the project in a concurrent mixed methods research, including designing research questions (section 4.4 of chapter four), collecting data (section 5.2.2 of chapter five and section 7.2.2 of chapter seven), analysing data (section 5.3.3 of chapter five and section 7.3.1 of chapter seven), and reporting the empirical results (section 8.4 of chapter eight and sections 9.3 and 9.5 of chapter nine). By doing so, this thesis is likely to be a "genuinely integrated study", in which "the quantitative and the qualitative findings will be mutually informative" (Bryman, 2007:22).

Secondly, this thesis seeks to explore the potential role that the qualitative approach can have in a mixed methods research. It is argued that the design of mixed methods studies tends to pay more attention to quantitative data, and qualitative data has not been used appropriately (Bazeley, 2008; Cassell and Lee, 2011). This thesis hopes to shed a light on how to maximize the power of the qualitative approach in investigating a complicated social phenomenon in mixed methods design. The qualitative component of this thesis will

be not just used for "subsidiary purpose" that is commonly seen in mixed methods studies in management research (Cassell and Lee, 2011:3). Rather, it will provide the means to explore deeply the problems with intangible measurement, disclosure, and modelling that arose from the quantitative part of the thesis, and has the potential to search for the possible ways of improving future quantitative research in terms of model specification and variable identification.

Thirdly, this thesis aims to fill several gaps in the existing intangible literature, and will improve our understandings of intangibles in terms of their measurement, reporting, and modelling. As will be discussed further in chapter three, the extant literature mainly emphasizes how individual intangible elements affect firm performance, and little attention is paid to the relationship between different intangible elements. This thesis is intended to offer empirical evidence on both of them. Specifically, it will contribute to the extant knowledge of intangibles by investigating the brands-customer relationships association and the impact of employee level human capital on firm performance, which appear to be ignored by previous studies. Moreover, unlike prior interview-based case studies on intangible measurement, disclosure and modelling that mainly focused on the organizational management perspective, this thesis will interview both bank managers and bank analysts and will offer evidence on the communication gaps between the two groups of people.

Fourthly, this thesis can improve our understanding of the bank business model by providing a grounded theory model of the role of intangibles in the bank value creation process. There has been "a well established and growing" bank literature that provides empirical evidence on the determinants of bank performance (Fiordelisi and Molyneux, 2010:1189). Distinct from the majority of empirical research that looked at bank-specific factors, industry-specific factors and macroeconomic factors (e.g., Athanasoglou et al., 2008; Brissimis et al., 2008; Dietrich and Wanzenried, 2011; Fiordelisi and Molyneux, 2010), this thesis aims to offer a new insight into bank value creation story. It will show how knowledge-based resources combining with tangible and financial resources provides the means to improve the financial and information intermediation processes as well as risk management in banking. It will also provide empirical evidence on the importance of management capability to bank performance and the influence of environmental changes on the bank business model.

1.6   Thesis organization

The remainder of this thesis is organized to be nine chapters. The next chapter will provide the theoretical background under which this study is conducted. Until now, intangibles research still suffers from a fundamental problem, that is, the lack of common terminology (Kristandl and Bontis, 2007), and there has been no consensus on the definition and shape of intangibles (Kamukama et al., 2011). In this thesis, the concept of intangibles will be defined and understood on the theoretical framework of the resource-based view (RBV). In addition, contemporary theories of financial intermediation and banking will be used to explain the rationale of choosing the banking sector as the research context, and theories related to intangibles (e.g., human capital theory, organizational capital theory, customer capital theory, and emotional capital theory) will be also used to understand the central phenomenon. The use of these theory sources in this way is intended to provide new examples of how these sources can be used in an integrated way in the field of finance and banking.

Chapter three will review the theoretical and empirical literature in the field of intangibles research. It will firstly discuss the literature on the measurement of intangibles, including the motivations of measuring intangibles and the measurement frameworks or models of intangibles. Then it will provide a review of studies related to intangible disclosure, with the focus on the incentives and disincentives of reporting intangibles as well as the level of information about intangibles that have been disclosed. After that, a detailed discussion of prior literature on modelling the value creation process of intangibles will be provided. It will review two streams of research. One is empirical evidence on the value relevance of different intangible elements, and another is literature on the interactions among intangible elements and their relationships with firm performance. By reviewing related literature and discussing the gaps within the extant knowledge, the motivation and purposes of this thesis will be explained in more detail.

As mentioned before, mixed methods research is adopted as the research methodology in this thesis. Chapter four will discuss in detail the methodological choice, explaining why mixed methods research is appropriate for the present study and what potential benefits can be obtained. Moreover, it will outline the research questions and research design. In particular, three important decisions in designing mixed methods research will be addressed, namely, timing decision, weighting decision, and mixing decision. Finally, this

chapter will discuss issues related to the evaluation of mixed methods research, including the reliability and validity of the quantitative and qualitative components, and barriers and weaknesses that exist in this thesis.

Chapter five will describe the design of the quantitative component of this thesis. As mentioned before, the quantitative data is collected from publicly available sources. Due to the low level of intangible disclosure in public domain, the researcher has encountered great difficulties in collecting and analysing quantitative data. This chapter will firstly address these difficulties and problems and how the researcher deals with those barriers. It will then describe the procedure of data collection and data analysis, including how the proxies of intangible elements have been identified, how the sample of banks has been selected, and how hypotheses have been developed. Furthermore, during these processes, experience that the researcher gained from qualitative interviews plays an important role in identifying and understanding proxies of intangibles, as well as developing hypotheses and models. This chapter will show that the processes of quantitative data collection and analysis are guided not only by the extant literature, but also by the researcher's interview experience.

Chapter six will discuss the empirical results of the quantitative study. The quantitative models will be built based on the extant literature, the researcher's interview experience, and on the consideration of data availability. OLS regression technique will be employed to test those constructed models. Estimated results will be discussed in three steps, that is, the relationships between brand metrics and the customer relationship will be firstly tested, and then the relationships between human capital and the customer relationship will be assessed. The final step will investigate the individual and collective impacts of human capital and relational capital on bank financial performance. In each step of analysis, robustness tests (e.g., rank regression) will be carried out to test the sensitivity of the main models.

Chapter seven will explain the procedures for the qualitative data collection and data analysis. In the qualitative study, semi-structured interviews were conducted with senior bank managers and analysts who specialised in the banking sector. Interview data was collected through the following steps: targeting potential interviewees, designing interview guides, getting access to interviewees, and conducting interviews. Grounded theory data analysis techniques were employed to analyse the interview data. Specifically, data

processing included five stages, namely, familiarization, reflection, open coding, axial coding, and selective coding. The integration of quantitative and qualitative approaches will be discussed in this chapter. In the data collection processes, proxies of intangibles that are utilized in the quantitative study can be used to formulate additional interview questions, and the weaknesses and strengths within these intangible metrics are assessed from the managerial perspective. Moreover, these proxies of intangible elements are the concepts that are derived from the extant literature, which are useful to enhance the researcher's sensitivity to their appearance in the case data, and to identify codes and label concepts during the qualitative data processing.

The empirical results generated from the qualitative study will be presented in chapters eight and nine. In particular, chapter eight will be concerned with how interviewees understood the concept of intangibles and how they modelled the relationships between intangibles and bank performance. Firstly, it will discuss the definition and classification of intangibles, the importance of intangibles, and the core intangible elements in the case banks. Secondly, a grounded theory model of the role of intangibles in the bank value creation process will be presented, which reveals that under certain conditions, there are various interactions among intangible elements and interactions between intangibles and other types of resources or bank intermediation activities occurring, and these interactions then affect institutional performance and information disclosure. Thirdly, this chapter will integrate the quantitative and qualitative studies in discussion of empirical results. It will illustrate that the combination of qualitative and quantitative approaches achieves triangulation in some empirical evidence. For example, findings from both approaches show that the combined or balanced effects of intangibles on institution performance are more significant than they work individually. Apart from the evidence triangulation, the qualitative study also reveals the limitations with quantitative modelling, and provides suggestion of potential ways to improve it.

Chapter nine will cover issues related to intangible measurement and intangible disclosure. It will illustrate how intangibles have been measured in the case institutions, including the incentives and disincentives of measuring intangibles and the methods that case institutions used to measure intangibles, and also bank analysts' views on measuring intangibles. With regard to intangible disclosure, this chapter will discuss the factors that encouraged or discouraged the case institutions to report information related to intangibles and the communication channels of intangible information. In addition, it will discuss the

integration of quantitative and qualitative studies in terms of intangible measurement and disclosure. The problems with intangible metrics used in the quantitative study from practitioners' perspective will be explored, and these to some extent interpret the unexpected results that emerged from the quantitative study. Additionally, problems with intangible disclosure will be also discussed, revealing what factors constrained effective quantitative research in the field of intangibles research.

The final chapter will conclude this thesis. It will summarize the main findings of this study, and provide discussions of policy implication and the contributions that this thesis makes to the literature and knowledge. In addition, it will outline the limitations of this study, and offer suggestions for future research.

Chapter Two: Theoretical Background

2.1 Introduction

Chapter One has introduced the background of this study. What motivate the researcher to conduct this project and how she intends to do it has been addressed briefly. This chapter discusses the theoretical background of this study. Specifically, it has two objectives. Firstly, as this thesis focuses on the banking sector, the basic industrial context is described, including the role of banks in the financial market, the competitive environment in which banks operate, and characteristics that banks have.

Traditionally, banks play an important role in allocating resources from those who have a surplus of funds (deposits) to those who have a shortage of funds (borrowers) by transforming relatively small liquid deposits into large illiquid loans (Berger et al., 2010). During the intermediation process, banks also provide other services, such as payments and delegated monitoring. Since the 1970s, deregulation, technological development and globalization have significantly transformed the banking sector. Banks have to face increasing competition from both rivals in the banking sector and in the non-bank firms. Through merger and acquisition (M&A), large banks in developed banking markets have become multi-product financial service and multinational conglomerates in order to exploit scale economies (Berger et al., 2010; Buch and Delong, 2010), while small banks focus more on traditional strategy that allows them to "deliver highly differentiated small business credit products and high end consumer banking services" (DeYoung et al., 2004:110). Deregulation and advances in technology have also increased the integration between banks and financial markets as well as the linkage of banking activities and real economic activities. Banks appear to be of critical importance to the whole economy, and the stability of banks can significantly influence marcoecnomic and financial market stability. The bank systems seemed to perform well at least until the middle of 2007. However, the financial crisis that occurred in 2007 showed that there were problems with banks' business models and led academics and policy makers to re-examine the "scale, scope, governance, performance and the safety and soundness of financial institutions" (Wilson et al., 2010:154). This thesis aims to explore the potential way of improving bank performance by looking at how intangibles create competitive advantage for banks.

Secondly, this thesis discusses the theoretical framework that supports this study. Although research on intangibles has developed significantly over the past two decades, it still suffers from a fundamental problem, that is, the lack of common terminology (Kristandl and Bontis, 2007). There is no widely accepted definition of intangibles. This thesis tries to build a strong theoretical framework for investigating intangibles by combining various theories together. The researcher will use the resource-based view theory (RBV) to define and understand the concept of intangibles. Under the RBV framework, intangibles can be regarded from a process standpoint, and such a definition locates different components of intangible resources in a network rather than views them separately. This will allow the researcher to investigate the interaction between the various components of intangibles. Based on the RBV theory, other theories related to intangibles, such as human capital theory, organizational capital theory, customer capital theory, and emotional capital theory will be employed to understand different components of intangibles. The above theories will be further linked with banking theory to form a coherent and integrated body of literature to guide this research.

Consequently, the rest of this chapter is structured as follows. In section 2.2, the financial intermediation theory and banking theory are used to explain the role of banks in the financial market and in the world economy, and then the competition that modern banks face is addressed by reviewing the changes that have happened in the banking industry. Sequentially, in section 2.3, the resource-based view is employed to explain why intangibles rather than tangible assets are more likely to be the main source of competitive advantage for banks in an increasingly competitive environment. Section 2.4 discusses the overall theoretical framework of this thesis, in which the concept of intangibles is defined through the lens of the resource-based view, and various theories in the fields of economics, organization analysis and management strategy that are related to intangibles are used to explain the classification of intangibles. These resource based theories will be briefly integrated with banking theory and literature. Finally, this chapter ends with conclusions.

2.2 Financial intermediation theory and contemporary banking theory

As will be discussed later in this chapter, this thesis investigates intangibles from a resource-based view. Following advice from previous literature that it is better to focus on a single industry to conduct empirical research on organization's resources of competitive advantage in order to control for contextual exogenous influences (e.g., Dess et al., 1990;

Hitt et al., 2001; Reed et al., 2006, 2009), this thesis seeks to explore the role of intangibles in the European banking sector. There are several considerations influencing the choice of the banking industry. First, it is the researcher's own interest and previous working experience and knowledge in the banking industry. Second, it is argued that the banking industry provides an excellent context for assessing the central phenomenon due to its intellectually intensive nature and its competitive environment (Mehra, 1996; Reed et al., 2009). Third, given the important role that banks play in the financial market and the whole economy, it is particularly interesting to reveal the value creation process in banks and thus to find potential ways to improve bank profitability and performance. In this section, the basic industry context is discussed in order to show why the banking industry provides a suitable setting for intangibles research.

2.2.1 The existence of financial intermediaries

Although this thesis is specifically focusing on banks, it is necessary to address the broad role of financial intermediaries in the market, as banks at first are a special group of financial intermediaries. In order to understand what banks do, firstly we should make it clear why financial intermediaries exist.

Traditionally, understanding the existence of financial intermediaries starts from market imperfections. Financial intermediaries perform as the agents that transfer funds from people who have a surplus of funds to people who have a shortage of funds (Mishkin, 2006). In a perfect market where borrowers and lenders had perfect knowledge and there were no transaction costs, financial intermediaries would be unnecessary. However, these assumptions are not present in the real world. There are frictions such as transaction costs and information asymmetries occurring in the market, and this makes the existence of financial intermediaries rational (e.g., Allen and Santomero, 1997; Benston and Smith, 1976; Matthews and Thompson, 2008).

Many researchers suggest that financial intermediation can be understood by looking at the role of transaction costs (e.g., Gurley and Shaw, 1960; Benston and Smith, 1976). Benston and Smith (1976) argue that the essential feature of financial intermediaries is to reduce the transactions costs and to effect the consumers' inter- and intra-temporal decisions. Matthews and Thompson (2008) state that financial intermediaries have the ability of lowering various transaction costs, such as search costs, verification costs, monitoring

costs, and enforcement costs.

An alternative rationalization of financial intermediation focuses on the argument of information asymmetry. Some argue that information-based theories of intermediation provide a more fundamental interpretation than some other approaches (e.g., Bhattacharya and Thakor, 1993; Leland and Pyle, 1977). One of the most important papers in this area is Leland and Pyle's (1977) study. They argue that moral hazard prevents direct information transfer between market participants. Borrowers are likely to know more about the project than do lenders, as lenders have to face the problems that it is costly to obtain information and it is difficult to ascertain the quality of the information that lenders get. Financial intermediaries, however, can solve both these problems if they act as information sharing coalitions that buy and hold assets on the basis of their specialized information (Leland and Pyle, 1977; Matthews and Thompson, 2008). Subsequently, Diamond (1984) expands Leland and Pyle's argument and illustrates that financial intermediaries can act as "delegated monitors", which minimize the cost of monitoring information.

Transaction costs and information asymmetry offer some insights into why financial intermediaries exist. However, the reasons for intermediation are complex (Santomero, 1984). In addition, dramatic and rapid changes in the financial market improved the functions of financial intermediation. Only using transaction costs and information asymmetry to interpret financial intermediation is not sufficient (Allen and Santomero, 1997, 2001). Allen and Santomero (2001) witness that, in recent decades, although transaction costs and asymmetric information have declined, intermediation has increased. Some then suggest that risk management becomes the key function of financial intermediaries (e.g., Allen and Santomero, 1997, 2001; Scholtens and Wensveen, 2003). In this viewpoint, financial intermediaries have the ability of transforming more risky assets into less risky ones (Fabozzi et al., 2002; Scholtens and Wensveen, 2003).

Whatever new functions a financial intermediary performs, it basically is an economic agent that specializes in providing brokerage (e.g., transactions services, financial advice, and insurance, etc.) and qualitative asset transformation services (e.g., divisibility offered by mutual funds, and liquidity provided by bank funding, etc.) (Bhattacharya and Thakor, 1993). There are different kinds of financial intermediaries in the financial market, such as building societies, credit unions, insurance companies, and banks, etc. Compared with non-bank financial intermediaries that often specialize in one or more of brokerage and

asset transformation services, banks provide virtually all of the above services (Bhattacharya and Thakor, 1993). The role of banks in the financial market will be discussed in the next subsection.

2.2.2 The traditional role of banks in the financial market

As introduced before, there are a variety of financial institutions that provide intermediation service. Comparing with other financial institutions, banks appear to be special in several aspects. Firstly, banks provide a wider range of services than other financial intermediaries (Bhattacharya and Thakor, 1993). Secondly, banks accept deposits and make loans directly to borrowers, while some other financial institutions, such as insurance companies or pension funds, lend via the purchase of securities (Matthews and Thompson, 2008). Thirdly and more importantly, banks not only provide intermediation service of assets allocation that many financial institutions do, but also offer unique liquidity and payment services. The operation of the payments mechanism gives banks a great advantage over other financial institutions (Heffernan, 2005; Matthews and Thompson, 2008). Therefore, banks play an important role in the financial market and to the world economy. As Molyneux and Wilson (2007:1907) state, "banks are of central importance for economic growth, credit allocation, financial stability, and the competitiveness and development manufacturing and service firms."

However, when looking at the role of banks in different countries, it can be seen that there are different financial systems across the world. As we know, financial intermediaries like banks perform as agents between borrowers and lenders. Funds move through this channel indirectly. Financial markets can also channel funds through direct finance, in which borrowers borrow funds directly from lenders in the capital market by selling securities (Hubbard, 2008; Mishkin, 2006). What are the respective roles of banks and capital markets in a country's economy? In answering this question, two basic financial models emerge: the market-based model and the bank intermediation-based model (Canals, 1997). In some countries, such as the UK and the US, financial system shows a clear dominance of capital markets over bank intermediation. On the other hand, countries like Germany, Spain and Japan, have a bank intermediation-based model, where banks play a more important role than capital market (Allen and Gale, 1995; Canals, 1997).

The debate of whether a market-based model or bank intermediation-based model is

desirable has lasted for several decades. Some researchers argue that the market-based system is to some extent more advanced than the bank intermediation-based system (Allen and Gale, 1995). For example, market-based financial systems provide various instruments through price mechanisms, and hence improve the asset allocation process (Canals, 1997). This system is also efficient in terms of risk diversification (Canals, 1997; Levine, 1991), and provides a high degree of liquidity (Canals, 1997; Holmstrom and Tirole, 1998). On the contrary, others argue that bank intermediation offers some advantages compared with the capital markets. Apart from the benefits of reducing transaction costs and transforming information that have been outlined before, a significant advantage that bank intermediation has is to solve a major part of the agency problem by performing a company-monitoring function (Diamond, 1984; Canals, 1997). Moreover, banks have a comparative advantage of providing investment opportunities for small investors (Canals, 1997).

Although a large number of empirical studies have tried to investigate what type of financial system has the superiority, there is no consistent evidence. Neither market-based nor bank intermediation-based systems are particularly effective at promoting growth (Canals, 1997; Levine, 2002; Scholtens and Wensveen, 2003). Rather, it is better to understand the merits of financial markets and bank intermediation systems in a complicated economy (Allen and Gale, 1995). Actually, what has happened is that, along with the rapid development of capital markets across the world, the economic importance of banks is higher than ever and appears to be increasing, in both market-based and bank intermediation-based countries (Scholtens and Wensveen, 2003).

It is easier to understand the importance of banks in a bank intermediation-based market where the intermediation carried by banks is the main mechanism for allocating financial resources (Canals, 1997). In a market-based financial system where the capital market plays a dominant role in transferring funds, some argue that bank-like intermediaries are not important and may be in the process of disappearing. However, Canals (1997) points out that a market-based system has a significant disadvantage, that is, it is difficult to monitor and supervise companies due to the complete separation between capital market and the company. In this sense, banks as "delegated monitors" (Diamond 1984) that operate in capital markets can provide ongoing information about the borrowers to the lenders. In addition, banks as a mechanism for delegated monitoring can dominate direct lending by using their own capital to reduce default risk as well (Winton, 1995).

Delegated monitoring is only one of the services provided by banks that are argued to be unique, and is not easy to be replicated by direct lending (Gorton and Winton, 2002). Typically, banks involve a large number of agents on each side of the balance sheet. On the liability side, banks often issue a particular kind of securities to householders, namely demand deposits, which appear to be different to those of capital markets. Diamond and Dybvig (1983) address the uniqueness of bank liabilities. They argue that, although the transformation can be carried out directly without banks as well, banks deposit insurance can provide "liquidity insurance" to a firm, which can prevent a liquidity crisis for a firm with short-term debt and limit the firm's need to use bankruptcy to stop such crises. In this sense, bank liabilities provide consumption smoothing against the risk of uncertain preferences for expenditure streams that cannot be obtained from capital markets (Gorton and Winton, 2002). Similar with Diamond and Dybvig (1983), Gorton and Pennacchi (1990) also look at banks' liability side to investigate the role of banks as liquidity providers. They argue that bank deposits are desirable in terms of creating liquidity and protecting relatively uninformed agents.

On the asset side, banks produce loans that are not the same as bonds issued by others. There is a large amount of empirical evidence illustrating the uniqueness of bank loans. James (1987) shows that bank-lending activity provides some special services that are not available from other lenders. He finds a significant positive announcement effect of new bank credit agreements, and on the contrary, significant negative returns for announcements of private placements and straight debt issues used to repay bank loans. Slovin et al. (1993) look at another aspect of the uniqueness of bank loans – the value of bank durability to borrowing firms. They examine excess returns for firms that have publicly documented lending relationships with a bank during the period of the bank's de facto failure and rescue, and find that borrowers incurred significantly negative abnormal returns during the bank's impending failure. Their results show that borrowers obtain relationship-based cost advantages from bank lending, and bank financial distress harms client firms as a result of losing these relationship-based cost advantages intrinsic to bank lending (Slovin et al., 1993). Gorton and Schmid (2000) find that bank equity ownership improves the performance of firms in Germany, and this effect is beyond what nonbank blockholders can achieve.

The above empirical evidence shows that banks can provide some services that are not

easily replicated in capital markets. Furthermore, because of deregulation and technology development, the traditional distinction between financial markets and banks has broken down (Allen and Santomero, 1997). Instead, "there is a natural propensity for banks to become increasingly integrated with markets, and a sort of unprecedented 'co-dependence' emerges that makes banking and capital market risks become increasingly intertwined" (Boot and Thakor, 2010:68). As a consequence, although individual banks can benefit from such integration because it is easier and less costly for them to manage their own risk using the market, the systemic risk may increase as problems that a small subset of banks face may spread quickly through the whole financial market (Boot and Thakor, 2010). The 2007-2009 financial crisis provides a dramatic example of how banking crises can damage the real economy, and evidence the importance of banks to the world economy (Allen and Carletti, 2010). The next subsection will discuss the changes in the banking sector over the past two or three decades and show how bank strategies were altered in response to these dramatic changes.

2.2.3 Changes in the banking industry

It has been addressed that banks are now evolving in response to the dramatic changes that have taken place in the banking industry. The conventional function of taking deposits and making loans still remain fundamental, but it is not the only activity that modern banks have. Banks now have to face increasing competition from within the banking sector and the non-bank financial sectors. Generally, forces such as deregulation, technological change, and globalisation are considered as the major factors that alter the activity and strategy of banks (e.g., Gardener and Molyneux, 1993; Goddard et al., 2007; Heffernan, 2005; Matthews and Thompson, 2008).

It is no doubt true that, since the 1970s, deregulation in the US and Europe has significantly transformed banking business by removing barriers to price competitation, geographic competition and product competition (Berger et al., 2010; DeYoung et al., 2004; Goddard et al., 2010). Firstly, it increased the domestic competition in a country's banking sector by lifting of restrictions on interest rates, credit controls and (in some cases) entry of new banks (Gual, 1999; Matthews and Thompson, 2008)[3]. The second aspect of

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[3] The deregulation in this aspect mainly took place in the 1970s and the 1980s. For example, Matthews and Thompson (2008) introduce that, in the UK, credit restrictions were relaxed in 1971. In the US, the deregulation began with the abolition of regulation Q in 1982. At the beginning of the 1980s, exchange control and the credit control had ended in the UK.

deregulation was to relax the limitations on the scale and scope economies that banks could explore (Gual, 1999). In the US, regulatory reform at the interstate level began in the early 1980s by the dismantling of the McFadden Act (DeYoung et al., 2004). In Europe, the first and second EU directives[4] no doubt had an important impact on the liberalization of capital movement by providing provisions for mutual recognition, home country supervision and the elimination of capital requirements for branches (Canal, 1997; Gual, 1999). Additionally, barriers to cross-border trade in banking and financial services were further removed by the introduction of the euro in 1999 (Berger et al., 2010; Goddard et al., 2007). Thirdly, there is a deregulation that altered the external competitive position of banks. It loosened the specialization of business between banks and non-bank firms, and allowed them to compete in each other's markets (Gual, 1999; Matthews and Thompson, 2008)[5].

Deregulation encouraged banks to expand the scale of their operations and to increase cross-border banking activity, and in doing so they were expected to enjoy scale and scope economies, cost reduction, operational efficiency and risk spreading (Goddard et al., 2010). However, on the other hand, banks have to face increasing competition, not only from rivals in the banking sector, but also from those in the non-bank firms, such as insurance companies, building societies, retail stores and so on.

Deregulation provided an opportunity for banks to change the scale and scope of their activity, and at the meantime, technological development, including both information technology (IT) and financial technology, has also significantly transformed the banking industry by altering bank products, service and production processes (Berger et al., 2010; DeYoung et al., 2004; Frame and Whiter, 2010). Advances in information technology have revolutionized bank front-office delivery systems and their data processing and analysis systems (Berger et al., 2010). New technology created the opportunities for banks to reduce costs, increase lending capacity, and improve the quality and variety of services that banks provide to customers (Berger, 2003; Wilson, et al., 2010). The most substantial

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[4] Canals (1997) discussed the First and Second Banking Directive in detail. The Banking Directives intend to create a single financial market in the EU. The First Banking Directive was approved by the Council of Ministers in 1987, which established the minimum requirements for licensing and supervising credit institutions. The Second Directive was approved in 1989 and continually contributed to European financial integration. It enabled any bank to establish itself or to offer a wide range of financial services in another EC country on a basis of the so-called single banking licence (Canals, 1997).

[5] Matthews and Thompson (2008) give some examples of this aspect of deregulation. In the UK, mortgage market was opened up to competition between banks and building societies in the 1980s, and major retail stores and conglomerates started to provide some banking services. Internationally, GE Capital owned by General Electrical is involved in industrial financing, leasing, consumer credit, investment and insurance.

impact of technology on the banking system may have been on the payments system, in which paper-based payments have switched to electronic-based payments (Berger et al., 2010; DeYoung et al., 2004). Empirical evidence in the US shows that the reduction in costs by processing electronic payments was dramatic (Berger, 2003). In delivery systems, Internet banking has changed "the landscape of the banking industry by reducing the importance of geohraphy and reducing the cost of transactions" (Deyoung et al., 2004:98).

The banking sector was also transformed significantly by developments in financial technologies, which helped banks to create and value new securities, estimate return distributions, make portfolio decisions based on financial data and manage risks more effectively (Berger, 2003; Berger et al., 2010). For example, small business credit scoring was widely used to evaluate credit application and predict future credit performance (Berger, 2003; Frame and White, 2010). Another dramatic example of financial innovation is asset securitization (Berger, 2003), which refers to "the process by which non-traded assets are transformed into tradable 'asset-backed securities' (ABS) by repackaging cashflows" (Frame and White, 2010:497). The increasing importance of securitization has enhanced the integration between banks and financial markets (Boot and Thakor, 2010). It is likely to result in "a more efficient use of capital resources and a better allocation of risks in the system overall" (Wilson et al., 2010:158).

Along with the benefits that banks can enjoy from technological development, they had to face the competition that arose in association with the new technology, such as more foreign banks entering into the market in their home country. In addition, technological development brought new competitors from non-bank industries into the banking market (Gardener and Molyneux, 1993). For instance, the emergence of electronic or digital cash provided an opportunity for some non-banking corporations like PayPal to offer customers service of sending and receiving payments via email, and this is a threat to the dominance of the payments system by banks (Heffernan, 2005). Also, IT companies and the post offices have entered into the corporate banking market to provide services like foreign exchange, electronic funds transfer, and investment management, etc (Gardener and Molyneux, 1993).

The globalisation of banking is related closely to the deregulation and technological development in the banking sector. Deregulation and new technology gave rise to the globalisation of the financial system and the growth of international banking (Canals, 1997;

Matthews and Thompson, 2008). Moreover, there is a trend that regulations are increasing harmonized across counties and different financial sectors (Berger et al., 2010). For example, the harmonizing of regulations reflects in European Union harmonization of financial services under the Single Market Program as well as capital regulation under the Bank for International Settlements Basels I (1988) and the updated Basel II (2006) (Berger et al., 2010:9).

The above factors have altered the competitive environment for banks and largely changed bank activities. Banks have to face the fact that they are losing customers to the capital market and new competitors on both sides of the balance sheet. Banks have lost part of their customers on the liability side who prefer alternative savings or investment products instead of bank deposits. On the asset side, they have lost customers in certain consumer credit operations to new competitors like retail store or telecommunications (Canals, 1997; Goddard et al., 2007). Consequently, net interest margins for banks declined in general (Matthews and Thompson, 2008). Competitive pressures have prompted banks to pursue strategies of M&A and diversification in order to take advanges of "asset growth, realisation of efficiency gains, reduction in idiosyncratic risk and increased profitability" (Wilson et al., 2010:154). As a consequence, the structural features of global banking systems have changed significantly (Berger et al., 2010). Banks in both the US and Europe have experienced significant declines in the number of banks over the past two or three decades (Berger et al., 2010; Deyoung et al., 2004), and deregulation and technological change have driven a "strategic wedge" into the banking industry between large and small banks (Deyoung et al., 2004:116).

The efficiency hypothesis suggests that technological development could increase scale economies over time and allow large banks to be managed more efficiently compared with small banks (Berger et al., 2007). For example, on the lending side of the bank, because large banks have comparative advantage in using hard-information that is based on quantitative data, such as valuations of collateral, financial ratios and credit scores (Berger, 2010), they are better in micro-business lending, asset-based lending, and financial statement lending than small banks. However, on the other hand, large banks have comparative disadvantage relative to small banks in collecting and acting on soft-information that are based mainly on qualitative information (e.g., character and reliability of the owner of the firm), and thus small banks are likely to be better in relationship lending than large banks (Berger et al., 2005; Cole et al., 2004). DeYoung et al.

(2004) find that large banks and small banks in the US tended to pursue different strategies in their lending, deposits, sales and management of mutual funds. They argue that both large banks and small banks can achieve business success by practicing different business models, in which the former tend to have less traditional business strategy practice and the latter emphasize personalized service and relationships based on soft information.

Deregulation and technological development have not only changed the structure of the banking sector, and driven large and small banks to choose different strategies, but also increased the linkages between banks and financial markets as well as banks and real economic activities. For the former, apart from the impact of asset securitization on the integration of banks and financial markets that has been addressed before, Boot and Thakor (2010:66) argue that there are also potential complementarities between bank lending and capital market funding, as "prioritized bank debt may facilitate timely intervention", and borrowers may achieve the reduction in total funding cost by accessing both the bank-credit market and the financial market. With regard to the linkage of banking activities and real economic activities, Cetorelli (2010) points out that on the one hand, banks follow where real activity goes, and on the other hand, they can "develop independently of what goes on in the real economy and that developments in the banking industry can in fact alter economic activities" (Cetorelli, 2010:771). For example, Jayaratne and Strahan (1996) find that bank deregulation has a significant impact on state income growth in the US. Because the important role of banks play in the financial market and the whole economy, the stability of the banking sector significantly influence macroeconomic and financial market stability. The 2007-2009 financial crisis offered a dramatic example in this regard. Before the middle of 2007, it was generally agreed that the global banking sector appeared to be and would continue to be "profitable, fast growing, dynamic and highly innovative" (Wilson et al., 2010:154). However, the financial crisis that occurred in 2007 has made academics and policy makers to express concerns about new banking business models. Brunnermeier (2009) argues that two trends in the banking sector contributed significantly to the financial crisis. The first one was the "originate and distribute" banking business model in which banks repackaged loans and resold them via securitization, and the second one was that banks increasingly financed their asset holdings with shorter maturity instruments (Brunnermeier, 2009:78).

Given the importance of banks to the financial market and the real economy, it is curcial for banks to rethink their business models in response to the changes in the competitive

environment, as bank strategies are of critical importance to the stability of the sector. After the most severe financial crisis since the Great Depression (Brunnermeier, 2009), "commercial and residential real estate values continue to fall, avenues for bank financing via the securitization business and interbank markets have dried up, and major banks have suffered large losses of capital" (Berger et al., 2010:17). Wilson et al. (2010:154) suggest that it is necessay to re-examine "the scale, scope, governance, performance and the safety and soundness of financial institutions".

There has been extensive literature that looks at bank strategies like corporate diversification, M&A, and financial innovation, and how these affect bank performance (Wilson et al., 2010)[6]. This thesis looks insight bank business model from another perspective, that is, how do banks exploit their advantage creating resources in response to the increasing competitive pressure? The next section will discuss where banks' competitive advantage may come from.

2.3 The resource-based view and intangibles

As noted above, banks have to face an increasing competitive pressure. In such a situation, how can a bank perform better than its rivals in terms of profitability or market share? Put it another way, how can a bank gain and retain competitive advantage? In this section, a theory of resource-based view is adopted to explain firms' competitive advantage. Based on this theory, the researcher then draws attention to the importance of intangibles in the bank value creation process.

2.3.1 A resource-based view of competitive advantage

The term of competitive advantage is generally used in literature to describe the ability that a firm has to create more economic value than its competitors in a given market environment (e.g., Barney, 1991; Peteraf and Barney, 2003). Understanding sources of sustained competitive advantage for firms has attracted huge attention in strategic management research since the 1960s (Barney, 1991). Some earlier research focused mainly on external analysis in terms of the opportunities and threats a firm faced, such as Porter (1980)'s generic competitive strategies.

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[6] Wilson et al. (2010) offer a comprehensive review of the recent literature on bank strategies and performance.

Porter (1980) argues that industry structure has a strong influence in determining a competitive strategy. Thus the goal of competitive strategy for a firm in a certain industry is to find its position where a firm can best defend itself against five competitive forces: entry, threat of substitution, bargaining power of buyers, bargaining power of suppliers, and rivalry among current competitors (Porter, 1980:6). In coping with these five competitive forces, he recommends three generic strategic approaches that a firm may adopt to outperform others within an industry (Porter, 1980). The first strategy is overall cost leadership, which suggests that having a low overall cost position can yield a firm above average returns in its industry. Firms may achieve a low cost position by having a high relative market share or other advantages, such as favourable access to raw materials. Secondly, a firm can take advantage of differentiation by offering products or services that are perceived to be unique in the industry. Approaches to differentiating can take various forms, such as design or brand image, technology, customer service, or other dimensions. Finally, a firm can outperform its rivals by focusing on a particular buyer group, a product line, or a geographic market. By narrowing its strategic target, a firm is then able to be more effective or efficient (Porter, 1980:35-40).

Porter (1980) explains the source of competitive advantage by focusing on the link between strategy and the external environment of a firm (Grant, 1991). During the 1980s, most of the literature in the field of strategic management analysed firms from this type of perspective, but paid little attention to the role of the firm's resources. Later, Porter (1991) develops a dynamic theory of strategy, which recognizes the importance of a firm's resources. However, he still argues in favour of industry effects – "the true origin of competitive advantage may be the proximate or local environment in which a firm is based" (Porter, 1991:110).

By contrast, Wernerfelt (1984) argues that a resource perspective provides a basis for analysing firms' competitive advantage. In the words of Wernerfelt (1984), an optimal competitive strategy is based on the substitute resources that a firm has, such as brand names, in-house knowledge of technology, employment of skilled personnel, efficient procedures, or capital, etc. Wernerfelt's paper is "a first cut at a huge can of worms" (Wernerfelt, 1984:180). After that, many other scholars (e.g., Barney, 1991; Grant, 1991; Peteraf, 1993) adopt a resource-based perspective to explain firms' competitive advantage. The resource-based view (RBV) has become one of the most important theories in strategic management literature since the 1990s.

According to Barney (1991), sustained competitive advantage is based on firm-specific resources. He identifies that these resources have four attributes: valuable, rare, imperfectly imitable, and non-substitutable (Barney, 1991). A firm resource as a source of sustained competitive advantage must be valuable in terms of having the potential to exploit opportunities and/or to neutralize threats in a firm's environment. It must also be rare among the firm's current and potential competition, in the sense that it can implement a value-creating strategy that is not implemented by large numbers of other firms at the same time (Barney, 1991). Imperfectly imitable resources refer to those that are difficult to replicate by other firms, due to the fact of unique historical conditions, causally ambiguous (Barney, 1991), and/or socially complex (Dierickx and Cool, 1989). Finally, a firm resource to be a source of sustained competitive advantage must be non-substitutable, which means that it cannot be simply replaced or substituted by another one that are either not rare or imitable (Barney, 1991).

Barney (1991) contributes to the development of RBV by setting out the broad conditions necessary for a resource being a source of competitive advantage (Lockett et al., 2009). Another noted contributor is Peteraf (1993). Peteraf (1993) argues that long-lived differences in firm profitability cannot be attributed to differences in industry conditions. She suggests a resource-based model of the theoretical conditions that underlie competitive advantage, which consists of four conditions: superior resources (heterogeneity within an industry), ex post limits to competition, imperfect resource mobility, and ex ante limits to competition. All of these conditions must be met to achieve sustained competitive advantage (Peteraf, 1993). Collis and Montgomery (1995) claim that managers should build their competitive strategies on resources that meet five tests: inimitability, durability, appropriability, substitutability and competitive superiority.

Although the conditions and characteristics that advantage-creating resources have are slightly different among those researchers, one of the principal insights of the RBV is that not all resources are the source of competitive advantage. The vast bulk of resources support everyday functionality in the firm and allow it to produce and sell its main products and services. Only those resources that are scarce (rare) and superior in use can be potential source to create advantage (Fahy, 2000; Peteraf and Barney, 2003). Grant (1991) illustrates that some internal resources and capabilities, such as patents, brands, and process technology, can provide the basic direction for a firm's strategy, and they are the

primary source of profit for the firm. He also proposes a practical framework of resource-based approach: 1) analysing a firm's resource-base; 2) appraising the firm's capabilities; 3) analysing the profit-earning potential of the firm's resources and capabilities; 4) selecting a strategy; and 5) extending and upgrading the firm's pool of resources and capabilities (Grant, 1991).

To sum up, compared with other theories that explain firm performance by focusing on external factors (e.g., Porter's five forces theory and the market-based view[7]), the RBV holds the point that competitive advantage derives from firm-specific resources and capabilities. The RBV contributes to literature in the way that it offers a framework for analysing inter-firm variations in performance (Lockett et al., 2009). Therefore, it is suggested to be a natural complement to the external, market or industry based approaches to competitive advantage (Lockett et al., 2009; Peteraf and Barney, 2003). In fact, the RBV does not ignore industry. Rather, it acts as a bridge between firm-based and industry-based perspectives of competitive advantage (e.g., Amit and Schoemaker, 1993; Fahy, 2000). Srivastava et al. (2001) argue that emphasizing attributes of resources in the RBV can extend traditional marketing analysis of competitive conditions and help to explain its findings. On the other hand, a marketing perspective that emphasizes customer value can also enhance the understanding of the RBV resource attributes (Srivastava et al., 2001).

It is no doubt that the RBV has been one of the most influential theories in the field of strategic management. However, some researchers have concerns about the methodological and practical problems that the RBV might have (e.g., Fahy, 2000; Foss and Knudsen, 2003; Lockett et al., 2009; Porter, 1991; Priem and Butler, 2001). Firstly, the RBV tends to be static in concept, and this limits its usefulness for strategy researchers (Priem and Butler, 2001). Secondly, the RBV suffers from a tautology problem that resources are defined in terms of the performance outcome associated with them (Fahy, 2000; Lockett et al., 2009; Porter, 1991; Reed et al., 2006). Thirdly, it has been criticised that the RBV seems to be too general. Overly inclusive definitions of resources make it more difficult to establish contextual and prescriptive boundaries (Priem and Butler, 2001; Reed et al., 2006). Thus, some argue that precision should be added to the theory in terms of specifying the different types of advantages that are associated with different types of resources (Miller and

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[7] The market-based view is one of the important theories in strategic management research. In this school of thought, a firm's competitive advantage is due to barriers to competition arising from the external product markets. In other words, a firm's relative performance is explained by its source of market power, such as monopoly, barriers to entry, and bargaining power (see Caves and Porter, 1977; Grant, 1991; Makhija, 2003).

Shamsie, 1996; Reed et al., 2009).

To cope with these critics, researchers further develop the dynamic view of RBV (e.g., Helfat and Peteraf, 2003; Sirmon et al., 2007; Teece, 2007; Teece et al., 1997). The dynamic view of RBV looks at the link between the management of resources and the creation of value, and investigates how the processes involved in managing resources are affected by the environmental context (Sirmon et al., 2007). Sirmon et al. (2007) propose a model that intends to explain how firms use resources and capabilities to create a competitive advantage. Recently, more attention has been put into the dynamic process of managing resources in a firm. Teece (2007) links the RBV with theory of dynamic capabilities, and argues that "dynamic capabilities enable business enterprises to create, deploy, and protect intangible assets that support superior long-run business performance" (Teece, 2007:1319). In the words of Teece (2007), dynamic capabilities that an business enterprise has can be disaggregated into the following capacity: "1) to sense and shape opportunities and threats; 2) to seize opportunities; and 3) to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets" (Teece, 2007:1319). According to this school of thought, a firm's sustainable competitive advantage comes from not only strategic resources that the firm has, but also dynamic capabilities that adapt to the changing environment.

Based on the framework of RBV, this study intends to investigate one aspect of firm special resources/capabilities – intangibles, and the different components of intangibles in the dynamic value creation process of banks. In the next subsection, the reason why this study focuses on intangibles will be explained.

2.3.2 Intangibles in the resource-based view

The principal point of the RBV is that a firm's competitive advantage derives from the firm special resources. Wernerfelt (1984:172) defines a resource as anything that could be thought of as a strength or weakness of a given firm. Firm resources, according to Barney (1991), include all assets, capabilities, organizational processes, firm attributes, information, and knowledge that are controlled by the firm.

Many researchers have tried to identify possible firm resources. Barney (1991) classifies numerous resources into three categories: physical capital resources, human resources, and organizational capital resources. Fahy (2000) suggests that resources comprise three distinct sub-groups: tangibles assets, intangibles assets, and capabilities. Grant (1991), on the other hand, argues that there is a key distinction between resources and capabilities. Resources are inputs into the production process, while the capabilities of a firm are what it can do as a result of teams of resources working together. This thesis follows a widespread accepted classification of resources, which suggests that a firm's resources at a given time include tangible and intangible assets that are tied semi-permanently to the firm (Wernerfelt, 1984). Both tangible and intangible assets can be potential strategic assets. However, many empirical assessments of the RBV find that intangible resources have the characteristics of inimitability, immobility and non-substitutability, and are normally the key strategic resources in a firm (Fahy, 2000; Clulow et al., 2003; Barney and Wright, 1998; Hall, 1992).

Tangible assets normally refer to fixed and current assets like plant, equipment, land, and other capital assets (Fahy, 2000). Those tangible assets can be valuable for a firm, but they are transparent and relatively easily duplicated (Clulow et al., 2003; Fahy, 2000). Grant (1991) acknowledges that financial balance sheets are inadequate on the grounds that they disregard intangible resources and people-based skills, which are probably the most strategically important resources of a firm. Hall (1992) is one of those earlier scholars who argue that sustainable competitive advantage results from the possession of intangible resources. He identifies that intangible resources can produce four differentials for a firm: functional differential, positional differential, cultural differential, and regulatory differential[8] (Hall, 1992). According to Hall (1992), intangible resources can be "assets" or "skills". As assets, intangible resources include things like intellectual property rights of patents, trademarks, copyright and registered designs, as well as contracts, databases and reputation. Skills consist of the know-how of employees (suppliers and advisers) and the collective aptitudes that add up to organizational culture.

As noted before, there are methodological and practical difficulties in designing empirical tests of the resource-performance relationship. For example, Lockett et al. (2009) address that resources that can easily be identified and measured are unlikely to be of great interest to RBV scholars. This to some extent limits the empirical development of the RBV,

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[8] The four types of capability were firstly suggested by Coyne (1986), and then developed by Hall (1992).

especially in the assessment of intangible resource. However, even though with these difficulties, a large proportion of empirical studies have been carried out to assess different kinds of firm resources. Newbert (2007) surveys the RBV empirical studies in the management literature and identifies 55 core studies. He finds that there is a great deal of variation in the resources, capabilities, and core competencies that scholars have examined under the RBV. Among 26 resources and capabilities, two intangible resources − human capital and knowledge are the top resources that examined in more than 10 percent of the total articles.

Therefore, it is evident that intangible assets are the key sources of competitive advantage for a firm. Especially in some technological and service sectors, such as IT, media or banking, the competition is mainly for the development and maintenance of intangible assets.   Clulow et al. (2003) investigate a firm in the Australian financial services industry based on the theoretical framework of the RBV. They find that from managers' perspective, tangible assets do have value, but are not key resources for the firm. Intangible assets that include client trust, reputation and networks are considered as key resources that provide the firm with a sustainable competitive advantage. Clulow et al. (2003) identify that intangible assets have some characteristics that tangible assets lack. For example, they are often developed over a long time by implementing a consistent strategy, which is difficult to replicate by competitors. Brand finance have conducted a global intangible study in 2006, which covered more than 5000 companies quoted in 25 countries over a five-year period. It is found that for these companies, only 39 percent of total enterprise value is represented by tangible net assets.   Especially, the banking sector has witnessed the biggest increase in its total enterprise value over the last four years, and 58% of this has come from increased intangible value (Brand Finance, 2006a)[9].

As discussed before, the fundamental economic, political and technological developments have dramatically changed the environment where banks compete. Banks have seen an erosion of their monopoly power because of deregulation and technological innovation (Matthews and Thompson, 2008), and the competitive emphasis in this industry appears to have shifted from being market based to being more resource based (Mehra, 1996). In this sense, the RBV provides a useful tool rather than some industry-level theories to analyse banks' competitive advantage. Moreover, the business nature of the banking sector is

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[9] It should be noted that because of the 2007-2009 financial crisis, there appeared to be major drops in banks' share prices now. This might show the subjective nature of intangibles in bank or firm value, but expect to return to importance when economy recovers.

intellectually intensive (Mavridis and Kyrmizoglou, 2005), in which all banks provide similar financial intermediation service and payment service, and publicly observable bank products have the characteristics of being easy to copy and lack of adequate patent protection (Watkins, 2000). Kamath (2007) argues that banks that can better use their intangible resources like human capital and customer capital tend to be most likely to survive. As Reed et al. (2009) suggest, the banking industry provides an excellent context for examining the RBV.

It should be noted that although empirical research shows that intangibles rather than tangibles appear to be key strategic resources for a firm, the RBV does not say that tangible assets are not important in the firm value creation process. In fact, the RBV theory emphasizes that the integration or combination of different types of resources is more likely to contribute to a firm's sustainable competitive advantage (Holland, 2010; Reed et al., 2006; Teece et al., 1997). For example, in Clulow et al.'s (2003) study, they find that although tangible assets were not considered to be key sources of competitive advantage from the managerial perspective, they "reinforce the value of capabilities embedded in the firm's culture and enable this to be appropriated to the firm" (Clulow et al., 2003:226). Holland (2010) argues that in the banking sector, "the RBV would expect that intangibles and their impact on tangibles (especially intermediation)" (Holland, 2010:100) would be the primary source of sustainable competitive advantage for banks. In this thesis, the researcher is interested in not just the individual effects of intangibles. Rather, as will be discussed further in chapter three, she looks at how the interaction of various resources contributes to bank business success.

Therefore, the RBV appears to offer an appropriate theoretical foundation for the objective of this study – to investigate the role of intangibles in the banking sector. Focusing on a single industry is also useful to reduce sample heterogeneity. Lockett et al. (2009) identify that firm heterogeneity creates problems for testing specific RBV hypotheses. As a result, previous researchers in this area often focused on single-industry studies (e.g., Curado, 2008; Hitt et al., 2001; Kamukama et al., 2011; Mavridis and Kyrmizoglou, 2005; Reed, et al., 2006, 2009).

2.4 Theories of intangibles

The importance of intangible resources for a business organization has been discussed

from a resource-based view in the previous section. It has been largely accepted that wealth and growth in today's economy are driven primarily by intangible assets (Lev, 2001). Over the past few decades, intangibles have been a major concern for academic research in a number of fields, such as economics, organizational research, management strategy, and accounting research, etc. However, research dealing with intangibles suffers from a fundamental problem: the lack of common terminology (Kristandl and Bontis, 2007). Until now, the key focuses of intangibles research have still been on defining intangibles and identifying its various components (Kristandl and Bontis, 2007; Petty and Guthrie, 2000; Roslender and Fincham, 2004). Some scholars argue that the challenge for academics is to frame the phenomenon of intangibles using extant theories in order to develop a more precise conceptualisation of it (Bontis, 1998; Swart, 2006). In this section, the researcher introduces some theories that are used to explain the definition of intangibles and different components of it, including the resource-based view, human capital theory, theories related to structural capital and relational capital, and emotional capital theory.

2.4.1 The definition of intangibles

As observed by many scholars, the literature offers a number of definitions of intangibles (e.g., Fincham and Roslender, 2003; Johanson et al., 2001b; Kaufmann and Schneider, 2004; Petty and Guthrie, 2000; Marr et al., 2004a). Even the terms referring to intangible resources are various, such as intangibles, intangible assets, intangible capital, intellectual capital, and knowledge resource, etc. (Beattie and Thomson, 2007; Bontis, 2001; Kaufmann and Schneider, 2004; Lev, 2001). Some argue that these terms can be used synonymously. For example, according to Boedker et al. (2005), "knowledge resources" is used interchangeably with "intellectual capital". Similarly, Lev (2001) argues that the terms "intangibles", "knowledge assets", and "intellectual capital" refer essentially to the same thing.

The various terms tend to be associated with different disciplines in literature. The term of intangibles is normally used in the accounting literature, intellectual capital is a term used in the management/human resource field, and economists prefer to use the term "knowledge resources/assets"[10] (Lev, 2001; Meritum, 2002). In this study, the term

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[10] However, some researchers argue that there is a danger in such inexactitude. Fincham and Roslender (2003) point out that it may be acceptable to regard intangibles as a synonym for intellectual capital, but both should be distinguished from the term intangible assets. They argue that if intellectual capital and intangible assets continue to be viewed as being the same, or broadly similar, it will be more difficult to promote a value

"intangibles" is used on the grounds that this study is conducted in the related fields of accounting and finance research. *Intangibles* here refer to the same context and content with *intellectual capital (IC)*.

There is not only a variety of terms, but also a large amount of definitions for each term. No consensus on one set of definition, or even a tendency towards one stream is obvious (Kaufmann and Schneider, 2004). Sullivan (2000) points out that the reasons why different definitions exist are twofold. Firstly, managers have different perspectives of intangibles, and describe it differently. Secondly, each organization has its own worldview. Guthrie et al. (2001) identify that different theories about organisations that reflects different views of the world tend to affect the construction of definitions of intangibles.

Earlier studies about intangibles in the mid-1990s tended to define intangibles as the difference between the market value of a company and the book value of it (Fincham and Roslender, 2003; Kristandl and Bontis, 2007; Upton, 2001). However, it is criticized that this is rather ill-defined (Upton, 2001), because the difference between market value and book value might attribute to many other factors (Kristandl and Bontis, 2007). Garc á-Ayuso (2003b) argues that apart from intangibles, there are many influential factors that can affect stock price, such as undervalued tangible and financial assets, legal events, or timing issues. Therefore, this definition of intangibles is rather misleading and not entirely comprehensive (Kristandl and Bontis, 2007).

Many authors define intangibles by focusing on some characteristics that intangibles have from an accounting perspective. For example, Lev (2001:5) defines intangibles as "a claim to future benefit that does not have a physical or financial (a stock or a band) embodiment". The authors of Meritum (2002:9) describe intangibles as "non-monetary sources of probable future economic profits, lacking physical substance, controlled (or at least influenced) by a firm as a result of previous events and transactions (self-production, purchase or any other type of acquisition) and may or may not be sold separately from other corporate assets". Sullivan simply defines IC as "knowledge that can be converted into profit" (Sullivan, 2000:228).

Some scholars, on the other hand, define intangibles by suggesting categorisations of them. They use the question "what categories of intangibles are there" to replace the question

creation approach to progress intellectual capital accounting (Fincham and Roslender, 2003).

"what are intangibles" (Kristandl and Bontis, 2007). For instance, Sveiby (1997b)[11] defines intangibles over its three categories that include employee competence, internal structure and external structure. Petty and Guthrie (2000) argue that one of the most workable definitions of intellectual capital is offered by OECD in 1999[12], which describes intellectual capital as the economic value of two categories of intangible assets of a company: organisational (structural) capital and human capital. However, this way of defining intangibles to some extent misses the point. By providing categories of intangibles, one still does not know the phenomenological characteristics of the term (Kristandl and Bontis, 2007). This hampers us in seeing the wood from the trees (Andriessen, 2001).

It can be seen that most authors' definitions refer to some forms of economic value that is attached to intangibles (Kaufmann and Schneider, 2004). As discussed before, intangibles are important due to the fact that they significantly contribute to an improved competitive position of an organization (Marr, 2004). Even though there is no consensus on defining intangibles in academic research, it is largely agreed that intangibles or intellectual capital is one aspect of the resources that generate sustainable competitive advantage (Arenas and Lavanderos, 2008). Therefore, some scholars attempt to derive a common definition of intangibles under the theoretical framework of the RBV (e.g., Kristandl and Bontis, 2007; Marr, 2004). Kristandl and Bontis (2007) define intangibles from the resource-based perspective as following (Kristandl and Bontis, 2007:1518-1519):

> "*Intangibles are strategic firm resources that enable an organization to create sustainable value, but are not available to a large number of firms (rarity). They lead to potential future benefits which cannot be taken by others (appropriability), and are not imitable by competitors, or substitutable using other resources. They are not tradeable or transferable on factor markets (immobility) due to corporate control. Because of their intangible nature, they are non-physical, non-financial, are not included in financial statements, and have a finite life. In order to become an intangible asset included in financial statements, these resources need to be clearly linked to a company's products and services, identifiable from other resources, and become a traceable result of past transactions.*"

In this study, the above definition of intangibles is considered to be the best one that helps understanding this phenomenon and conducting the current study.

Firstly, under the RBV framework, intangibles can be regarded from a process standpoint

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[11] This is cited by Kristandl and Bontis (2007), as well as Kaufmann and Schneider (2004) from Sveiby, K.E. (1997b), *The New Organisational Wealth – Managing and Measuring Knowledge-based Assets*, Berrett-Koehler, San Francisco, CA.

[12] This is cited by Petty and Guthrie (2000) from Organisation for Economic Co-operation and Development (OECD) (1999), "Guidelines and instructions for OECD Symposium", International Symposium Measuring Reporting Intellectual Capital: Experiences, Issues, and Prospects, June, Amsterdam, OECD, Paris.

when discussing resources and activities (Kristandl and Bontis, 2007). In many other cases, intangibles or intellectual capital is conceived as a concept of object. When knowledge is treated as an object, although we can design indicators of it, it is difficult to establish the linkage of the indicator and created value (Arenas and Lavanderos, 2008). One of the limitations intangibles literature has is that many empirical studies have not linked the measures of intangibles to firm performance or value (detailed discussion refers to section 3.4 of chapter three). Defining intangibles from the RBV theory, therefore, provides the opportunity to investigate how intangibles contribute to the firm value creation process.

Secondly, this definition locates different components of intangible resources in a network rather than treats them separately. Based on such a fundamental, it is possible to examine the interaction between the various components of intangibles. Andriessen (2001) argues that the combination of the intangible assets makes a company unique and successful. As will be discussed further in section 3.4 of chapter three, a large proportion of research dealing with intangibles only focused on different categories in isolation, but ignored the relationship between them. Separating one type of intangibles from another makes many previous studies lose track of correlation and synergy between the categories (Andriessen, 2001). Thus, the definition from the RBV is likely to better serve the purpose of this thesis that examines the interaction and combination of different components of intangibles.

As Arenas and Lavanderos (2008) argue, intangibles are better to be conceived as a process rather than an object. The RBV tends to be the most workable theoretical foundation in terms of defining and understanding intangibles. This thesis, therefore, adopts the definition offered by Kristandl and Bontis (2007) to investigate intangibles as a subset of corporate resources.

2.4.2 The classification of intangibles

After having chosen an appropriate definition of intangibles, the question arises as to how to categorize them. Similar to the diversity of terms and definitions, various categorizations of intangibles or intellectual capital (IC) have been found in the literature (Kaufmann and Schneider, 2004). For example, Edvinsson (1997) suggests that IC includes two major components: human capital and structural capital. Structural capital can then be divided into organisational capital and customer capital. According to Roos and Roos (1997), IC can be categorized into three groups: human capital, organizational capital, and customer

and relationship capital. Sveiby[13] (1997b) proposes the classification of intangibles into employee competence, internal structure, and external structure.

The above three approaches, however, have something in common. Bukh et al. (2001) compare various models and classifications of intangibles in the literature, and conclude that they refer to some similar things: one type of assets is related to employees (e.g., employee competence and human capital); the second type of assets relates to the processes and procedures of an organization (e.g., databases and organizational routine); and the third type of assets are relations with customers. Despite the usage of different terms, the classification of those three categories is confirmed by most researchers (e.g., Mouritsen et al., 2002; Sanchez et al., 2000; Sullivan, 2000).

In line with the above classification, the Meritum project conducted by the European Commission proposes a categorization of intangibles, which appears to be used most popularly in practice and academic research (OECD, 2006). According to Meritum (2002) guidelines, intangibles comprise three major elements: human capital, structural capital and relational capital.

> *"Human capital is defined as the knowledge that employees take with them when they leave the firm. It includes the knowledge, skills, experiences and ability of people. Structural capital is defined as the knowledge that stays within the firm at the end of the working day. It comprises the organizational routines, procedures, systems, cultures, databases, etc. Relational capital is defined as all resources linked to the external relationships of the firm, with customers, suppliers or R&D partners. It comprises that part of Human and Structural Capital involved with the companies relations with stakeholders (investors, creditors, customers, suppliers, etc.) plus the perceptions that they hold about the company" (Meritum, 2002: 10-11).*

The above classification is adopted in this thesis. Apart from them, emotional capital is taken into account as well. In the following subsections, different components of intangibles will be discussed based on relative theories.

2.4.3 Human capital

Human capital has long been recognized as a critical resource for differentiating financial performance among firms (Reed et al., 2006, 2009). The history of human capital can be traced back to the 1770s, when Smith (1776) included all acquired and useful abilities of a

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[13] This is cited by Kaufmann and Schneider (2004) from Sveiby, K.E. (1997b), *The New Organisational Wealth – Managing and Measuring Knowledge-based Assets*, Berrett-Koehler, San Francisco, CA.

country's inhabitants as part of capital. However, the term of human capital has not attracted great interest in the literature until the 1960s.

Schultz (1961) points out that modern economics failed to take account of human capital and the importance of it in a modern economy. In his point of view, some important activities such as health facilities and service, on-the-job training, formal education, and study programmes for adults can improve human capability, and in turn yield a positive rate of return (Schultz, 1961). Becker (1962, 1993) develops the human capital theory by using economic logic to analyze how education, on-the-job training and health as components of human capital generate economic return.

Human capital theory developed by Schultz (1961) and Becker (1962, 1993) emphasizes the labour costs relative to the return on investment (i.e., future productivity) for developing employee skills and knowledge (i.e., skills education and training). According to this theory, employees own their own human capital, and firms seek to protect themselves from the transfer of their human capital investments to other firms (Lepak and Snell, 1999).

Since human capital theory was introduced in the economics literature, it has attracted interest in the fields of accounting research (e.g., Brummet et al., 1968; Flamholtz, 1972, 1974) and management study (e.g., Snell and Dean, 1992). Human capital is an important determinant of productivity not only at the aggregate level of the national economy, but also at the organizational level. Pfeffer (1994) argues that, as traditional sources of competitive success have become less important, human capital remains as a crucial differentiating factor for organizations.

Human capital is also a primary component of intangibles. As mentioned before, in this study, the conceptualisation of intangibles is based on the theoretical framework of the RBV. From a resource-based view, sustained competitive advantage of a firm comes from some special resources that the firm controls. According to Barney (1991), these resources include physical capital resources, human capital resources and organizational capital resources. Here human capital resources consist of training, experience, judgement, intelligence, relationships, and insight of individual managers and workers in a firm. Wright et al. (1994) explain why human capital qualifies as a source of competitive advantage. Firstly, the demand for and supply of labour is heterogeneous, and there is

variance in individuals' contribution to the firm. Thus, human capital can create value for the firm. Secondly, high quality human resources are rare. Thirdly, human resource advantages are characterized by unique historical conditions, causal ambiguity and social complexity, and hence they are almost inimitable. Finally, human capital does not become obsolete, and has the potential to be transferable across a variety of technologies, products and markets. So other resources, such as technology, might be possible to offset the advantage of human capital in the short term, but such substitution could not result in sustained competitive advantage. Therefore, it is obvious that human capital meets criteria of being valuable, rare, inimitable, and non-substitutable (Wright et al., 1994).

Human capital (HC) is argued to have two dimensions: generic HC and firm-specific HC (Abdel-khalik, 2003; Hitt et al., 2001; Swart, 2006). Swart (2006) identifies that generic HC results from development outside the boundaries of the firm, which is normally measured by level of formal education, years of work experience and managerial experience. Education and experience usually provide employees a high level of knowledge prior to entering the firm that they work for (Hitt et al., 2001). On the other hand, human capital can also be firm specific. After entering a given firm, employees continue to learn and gain knowledge through "learning by doing" (Hitt et al., 2001), and this type of knowledge refers to firm-specific HC. Firm-specific HC is often extremely valuable, because the knowledge and skills held by employees are unique to the firm and cannot easily be transferred to its competitors (Swart, 2006). Firm-specific HC can be measured by years of firm experience, number of unique projects, team-based solutions, and unique operational procedures (Swart, 2006).

In the literature, human capital has been defined on an individual level or as the total workforce (Bontis and Fitz-enz, 2002; Wright et al., 1994). As Hudson[14] suggested, the former is the combination of four factors: genetic inheritance, education, experience, and attitudes about life and business. The latter, on the other hand, refers to the total pool of human capital in a firm (Wright et al., 1994). Some authors emphasize the importance of individual managers, especially top management in the firm (e.g., Barney, 1991; Castanias and Helfat, 1991). Others, however, argue that the total workforce tends to be a more likely source of sustained competitive advantage (Wright et al., 1994).

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[14] This is cited by Bontis (1998) and Bontis and Fitz-enz (2002) from Hudson, W. (1993), *Intellectual Capital: How to Build it, Enhance it, Use it*, John Wiley, New York, USA.

The concept of human capital used in this thesis is consistent with the above framework. On the one hand, it is analyzed in terms of both generic HC (e.g., education and experience) and firm-specific HC (e.g., training and other investment). On the other hand, the researcher looks at both the impact of individual management (especially executive board) on firm performance, and the larger pool of human capital such as the total level of employee satisfaction or training.

Human capital is critical for a firm. However, human capital by itself is of little value. Without the supporting resources of a firm, even very skilled people have no ability to do anything with their ideas (Edvinsson and Sullivan, 1996). A firm's supporting infrastructure is what we call structural capital, which will be addressed in the following subsection.

2.4.4 Structural capital

Structural capital is the second component of intangibles. It refers to the knowledge that stays within the firm at the end of the working day when employees go home (Edvinsson and Sullivan, 1996; Meritum, 2002; Ordóñez de Pablos, 2004). This type of knowledge is often described as organizational routines, information system, work procedures, software programmes, database, and organization culture, etc. (Bontis and Serenko, 2009; Edvinsson and Sullivan, 1996; Meritum, 2002).

Compared with the concept of human capital that has been well-established, structural capital is less studied in the literature (Ordóñez de Pablos, 2004). However, structural capital is also very important, as it is the critical link that allows intellectual capital to be measured and developed in an organization (Bontis, 1998). Bontis (1998) claims that structural capital is helpful in supporting employees to pursue optimum intellectual performance and business performance. Edvinsson and Sullivan (1996) argue that structural capital provides the circumstance that encourages human capital to create and leverage its knowledge. Therefore, successfully designed structural capital has the ability to create competitive advantage for an organization by maximizing intellectual output (Edvinsson and Sullivan, 1996). Collis and Montgomery (1995) illustrate that the organizational capability embedded in a company's routines, processes and culture is valuable, as it contributes to the differentiation of a company.

Some scholars suggest that structural capital can be sub-divided into organizational and technological capital[15] (e.g., Mart ń-de-Castro et al., 2006; Ord óñez de Pablos, 2004). Organizational capital includes all aspects related to the company organization and its decision-making progress, such as culture, structural design, and organizational learning (Mart ń-de-Castro et al., 2006; Ordóñez de Pablos, 2004). Technological capital refers to knowledge that directly link to the development of the technical system of the company (Mart ń-de-Castro et al., 2006), such as results from research and development, or results from process engineering (Ordóñez de Pablos, 2004).

Some structural capital may be legally protected, and then becomes intellectual property rights, such as patents, copyrights, design rights and trademarks (Meritum, 2002; Roslender et al., 2006). Intellectual property as a formal aspect of structural capital is obviously a source of competitive advantage. However, the majority of structural capital that is argued to be of great importance to an organization tends to be informal and/or non-technical, (Roslender et al., 2006), especially in industries like banking where very few intellectual properties exist. Therefore, in this thesis, the researcher mainly concentrates on the non-technical aspect of structural capital, in particular two important elements: organizational culture and organizational learning.

Organizational culture is typically defined as "a complex set of values, beliefs, assumptions, and symbols that define the way in which a firm conducts its business" (Barney, 1986:657). For some successful companies, organizational culture plays an important role in gaining sustained superior financial performance (Barney, 1986).

Organizational culture is firstly valuable, because it enables the firm to do things for its employees, customers, suppliers and other stakeholders (Mart ń-de-Castro et al., 2006). Bontis (1998) states that an organization with a supportive culture will allow individuals to try things, to fail, to learn, and to try again. In this sense, organizational culture is essential to promote human capital output. Firms that have strong customer oriented culture can result in timely market information, joint product development activities, and intense brand loyalties, and in turn lead to a direct positive financial impact (Barney, 1986). Additionally, Barney (1986) argues that some organizational cultures might exist in a relatively small number of firms and tend to be rare. Furthermore, culture is not easy to be copied, because

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[15]Sometimes structural capital and organizational capital refer to the same concept (e.g., Carson et al., 2004; Roslender et al., 2006). Swart (2006) argues that literature often blurs the boundaries between these two forms of capital.

it normally requires certain conditions and time for its formation (Martín-de-Castro et al., 2006). Moreover, values, symbols and beliefs are difficult to describe, and thus it is almost impossible to copy them without clear description (Barney, 1986; Martín-de-Castro et al., 2006). Therefore, it can be seen that a strong organizational culture meets the criteria of being a source of sustained competitive advantage.

Organizational learning is another important source of sustained competitive advantage. Some even argue that the only sustainable competitive advantage is a firm's ability to learn faster than its competitors (Crossan et al., 1995). According to Garvin (1993), organizational learning represents the ability of the organization to create, acquire and transfer knowledge, and to modify its behaviours to reflect new knowledge and insights.

Organizational learning is usually facilitated through training and development programmes (Bontis and Serenko, 2009). It can contribute to human capital by enabling the transfer of knowledge to individuals or groups of employees (Carson, et al., 2004). More importantly, organizational learning is not simply the learning arising from individuals or groups (Huber, 1991), it is rather multi-level: individual, group, and organization (Crossan et al., 1995, 1999). There are some shared understandings or transfers of knowledge from the individual to the organization via organizational learning (Crossan et al., 1995). This kind of knowledge stored in the organization procedures, processes, and contacts will remain, even when some individual employees leave the company.   In this sense, organizational learning is undoubtedly valuable.

Organizational learning is also difficult to imitate, to replace, and to transfer (Martín-de-Castro et al., 2006). Organizational learning is tied to the particular characteristics and history of a certain firm, and thus is often specific to the firm (Martín-de-Castro et al., 2006). An organization can learn from activities such as systematic problem solving, experimentation with new approaches, own experiences and past history (Garvin, 1993), and this knowledge is difficult to be copied by its competitors. Martín-de-Castro et al. (2006) highlight that when learning is an organizational capability and not just a sum of individual knowledge, it is embedded in the culture and structure of the company, and then it is not easy to replace and to transfer. Therefore, it can be concluded that organizational learning is an important source of sustainable competitive advantage (Martín-de-Castro et al., 2006).

Organizational learning is of particularly importance for banks. Holland (2010) examines failing and non-failing banks in the 2007-2009 financial crisis, and argues that failed banks suffered from knowledge problems that concerned banks' understanding of their organizations, intermediation model and risk management in an active market setting, and hence experienced acute difficulties with leaning the new knowledge. He emphasizes that bank knowledge and learning are at the heart of effective bank intermediation and of a sustainable competitive advantage, and suggests that "by ensuring greater bank learning, knowledge creation, and knowledge use, governments and regulators could help reduce individual bank risk and the likelihood of future crisis" (Holland, 2010:87).

2.4.5 Relational capital

Relational capital (sometimes called external capital[16]) refers to all resources linked to the external relationships of the firm (Meritum, 2002). It is widely accepted that relational capital consists of relationships with customers, suppliers, network partners, investors and other stakeholders (Marr et al., 2004; Roos and Roos, 1997; Swart, 2006). Carson et al. (2004) argue that a firm's relational capital should include relationships with competitors as well, because many new ideas arise out of interactions with competitors, and both the firm and the industry as a whole might benefit from that.

Many authors have highlighted the importance of external resources. Teece et al. (1997) argue that it is highly important to develop the capability of learning from sources external to the firm, in order to build new capabilities and contribute to long-term firm success. Collins and Hitt (2006) state that in a changing competitive environment, the ability to recognize, acquire and successfully absorb external knowledge with the firm's existing knowledge is especially valuable, as it allows firms to differentiate their goods and services from those of their competitors.

Relational capital includes all external resources, such as company name and brands, alliances and partnerships, distribution channels, customer relations, supplier relations, and financial relations, etc. (Boedker et al., 2005). Srivastava et al. (1998) argue that these external resources are valuable to a firm in many respects. For example, superior relationships with customers and knowledge of channels lead to lower sales and service costs; brands and channel equity have the ability to attain price premiums; customer

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[16] E.g., Boedker, Guthrie and Cuganesan (2005).

loyalty can generate competitive barriers; and they provide a competitive edge by making other resources more productive and provide managers with options as well (Srivastava et al., 1998). Relational capital is often rare and in some cases may be unique (Srivastava et al., 1998). In addition, external resources are social complex and tacit phenomena (Srivastava et al., 1998), which are normally based on intangible factors such as trust and reputation. For any organization to develop intimate relations with customers, these features are difficult to replicate (Srivastava et al., 2001). Moreover, relationships are difficult for rivals to develop substitutes that would enable them to pursue similar strategies (Srivastava et al., 1998). Therefore, from the resource-based view, these external relationships present a source of competitive advantage.

Among these external resources, knowledge of marketing channel and customer relationships is considered to be extremely important. In fact, some authors even use the term of "customer capital" instead of "relational capital" (e.g., Bontis, 1998; Chen et al., 2004). Woodruff (1997) argues that the next major source of competitive advantage is likely to come from more outward orientation towards customers. The customer relationship is valuable on the grounds that it can help firms to reduce costs, increase sales, and transfer information and knowledge, etc. Storbacka et al. (1994) demonstrate that the cost of obtaining a new customer normally exceeds the cost of retaining an existing customer. Customers may provide knowledge to a firm, such as information about their specific needs that is unknown to competitors, or information about services and products of competitors based on their previous experience (Reed et al., 2009). Therefore, the knowledge and competence of customers provide an opportunity for the firm to create innovative products and to validate the knowledge already accumulated in the organization (Gibbert et al., 2001).

Similar to the interaction between human capital and structural capital, customer capital is closely tied to other types of intangibles. It is the main requirement and determinant to convert human capital and structural capital into market value and in turn organizational performance (Chen et al., 2004). In addition, customer relationships have the value-generating capability of physical assets (Lane and Jacobsen, 1995). On the other hand, customer capital is the most difficult component of intangibles to develop, since it is the most external to the organization's core (Bontis, 1998).

Customer relationships tend to be extraordinarily important in the banking sector. As

mentioned before, due to deregulation, financial innovation and globalisation, banks have lost customers to competitors from both within the financial industry and outside it. Therefore, banks increasingly emphasize on developing, enhancing and maintaining their existing customer bases and on cross selling of products and services (Gardener and Molyneux, 1993). Moreover, banks tend to rely more heavily on their customer relationships to obtain new knowledge. Lewis and Davis (1988) illustrate that banker-customer relationship enable banks to be efficient lenders compared with other financial providers, because banks as their customers' bookkeepers can obtain information advantages.

It should be pointed out that, although intellectual capital is divided into three components, they actually existed and worked together as a whole. Intellectual capital is not just the sum of human, structural and relational capitals. But rather, it is the sum of those three components plus the interaction of them (Carson et al., 2004; Reed et al., 2006). Accordingly, this study focuses on assessing the interaction between different components of intangibles rather than looking at them separately.

2.4.6 Emotional capital

Apart from the above three components of intellectual capital, it is suggested that another factor – emotions – should be taken into account when analyzing the impact of intangibles on business success (e.g., Gendron, 2004; Thomson and Powell, 1999). Thomson and Powell (1999) argue that businesses are run on hearts and also minds. That is, people's emotions and knowledge work together for business success.

Salovey and Mayer (1990) view emotions as organized responses, including the physiological, cognition, motivational, and experiential systems. Emotions can be either positive or negative. Positive emotions like passion, trust and pride can create profit by having impact on an organization's internal human capital and external customers and shareholders (Thomson and Powell, 1999). Salovey and Mayer (1990) then introduce the concept of "emotional intelligence". Emotional intelligence is defined as "the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and action" (Salovey and Mayer, 1990:189). According to Carmeli (2003), emotional intelligence is a factor that potentially contributes to more positive attitudes, behaviors and

outcomes. Emotional intelligence has five elements: self-awareness, motivation, self-regulation, empathy, and adeptness in relationship. These elements are then divided into a number of emotional competencies, which are essential human capacities for success in the workplace (Tomer, 2003).

Emotional intelligence has significant impact on effective leadership (e.g., Dulewicz and Higgs, 2003; Kellett et al., 2002; Rosete and Ciarrochi, 2005; Wolff et al., 2002) and employee performance (Cooper, 1997; Laabs, 1999). In the organizational level, it is also important to develop and improve relationship marketing/selling (Deeter-Schmelz and Sojka, 2003; Heffernan et al., 2008; Rozell et al., 2004). Gendron (2004) demonstrates that, like human capital, emotional competencies are also the results of diverse educational contexts and situations. Since they are acquired by learning, consequently, they can be improved and enhanced, and have to be considered as capital. Based on this consideration, she develops the concept of "emotional capital", which is a booster capital rather than an additional capital to human capital, social capital and culture capital in the field of sociology and economics (Gendron, 2004). According to Gendron (2004: 9), emotional capital is defined as "the set of resources (emotional competencies) that inhere to the person useful for their cognitive, personal, social and economical development". In this thesis, the researcher argues that emotional capital has a particular place among human capital and relational capital, and can be seen as a supporting capital to the three components of intangibles.

Firstly, emotional capital is essential for the constitution of human capital (Gendron, 2004). Gendron (2004) argues that without basic emotional capital, human capital constitution might never happen. Only motivated people will apply and leverage knowledge constructively (Thomson and Powell, 1999). Thomson and Powell (1999) indicate that both human capital and emotional capital working together has a measurable impact on customers, business performance and shareholders. In Carmeli's (2003) study, it is found that emotional intelligence not only augments positive work attitudes, altruistic behavior and work outcomes of senior managers in the organization, but also helps to retain valuable organization members. Gendron (2004) argues that human capital is only a necessary but not sufficient condition for business success. She suggests that optimal knowledge management in an organization will be a collective booster of emotional capital and human capital, and will depend a lot on managers and employees' emotional capital.

Moreover, emotional capital can affect organizational performance in the way of interacting with relational capital, such as building business' brands (Thomson and Powell, 1999; Thompson et al., 2006), and affecting customer experiences and behaviors (Machleit and Eroglu, 2000; Price and Arnould, 1994; Schmitt, 1999; Yu and Dean, 2001). Thompson et al. (2006) argue that benefit-driven branding tied to technological and product design features cannot provide a durable competitive advantage. As Gobe[17] (2002) said, consumers now expect the brand to play a positive, proactive role in their lives. Thus organizations' branding strategies put more concentration on emotional branding that aims to form strong and meaningful affective bonds with consumers[18] (Thompson et al., 2006). By doing so, passionate consumers often act as brand missionaries to promote the brand through their invocative, personalized brand stories (McAlexander et al., 2002; Thompson et al., 2006). Schmitt (1999) argues that consumers are relational and emotional human beings. Their behavior is not only frequently driven by rational reasons, but also by emotions, because their experiences are often toward the pursuit of fantasies, feelings, and fun (Holbrook and Hirschman, 1982). Yu and Dean (2001) investigate the role of emotions in customer satisfaction, and find that positive emotions significantly correlate with positive word of mouth and willingness to pay more. More importantly, emotional competency such as trust is an essential element in building strong customer relationships and sustainable market share (Sirdeshmukh et al., 2002).

In sum, it is evident that emotional capital acts as a special booster capital to human capital and relational capital. On the one hand, emotional capital has the potential to energize or empowers human capital and relational capital (Gendron, 2004). On the other hand, the impact of emotion capital on an organization relies on other types of capitals as well. The only way it affects organization is to interact with human capital or relational capital. As Gendron (2004) concludes, emotional capital without other capitals, or other capitals without emotional capital, is only part of a solution.

2.4.7 Links between banking theory and the resources based theory

Previous subsections have discussed the contemporary banking theory and the RBV theory. As has been discussed in section 2.2, banks have faced increasing competition because of

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[17] This is cited by Thompson et al. (2006) from Gobe, M. (2002), *Citizen Brand*. New York: Allworth Press.
[18] This is cited by Thompson et al. (2006) from Aaker, D. (2004), *Brand Portfolio Management: Creating Relevance, Differentiation, Energy, Leverage, and Clarity*. NewYork: The Free Press.

dramatic changes that occurred in the banking sector over the past two or three decades. As a result, banks have to search for ways to gain competitive advantage. The RBV theory provides a theoretical view to assess the role of intangibles in creating sustainable competitive advantage for banks.

Holland (2010, 2011) has made the links between banking theory and the resource based theory of the firm explicit. He points out that in the theory of RBV, well-established tangible assets in banks were easily duplicated, and intermediation processes that are the core tangible risk and return generation "machines" in all banks would not normally be considered advantage-creating resources. It would be expected, from the RBV point of view, that intangibles and their impact on tangibles (especially intermediation) are the primary source of sustainable competitive advantage in banking (Holland, 2010:100). More specifically, Holland (2010) argues that banks are "learning organisations" (Pedler et al., 1997) and their active learning could produce relevant and focussed knowledge (as intellectual capital) for specialist bank information production and use functions. He states that knowledge as human capital, structural capital, and relational capital was the means to "reduce transaction costs (search, monitor, verify, evaluate) of various banking transactions with customers" and to "exploit new synergies such as a joint client base and stronger capital backing across a large number of syndicated loans, asset based securities and other financial assets" (Holland, 2010:99). The use of knowledge was also expected to create opportunities for reducing information asymmetry, for diversification benefits, for stabilising expected income or narrowing the variance of income via economies of scale and scope, and for improving risk control and intermediation, etc. (Holland, 2010).

Moreover, from the dynamic view of RBV, banks should have dynamic capabilities to maintain the IC advantage within the bank and their core information production and use area, which means that banks are expected to have the capabilities to deal with rapid and unexpected environmental changes (Teece et al., 1997). Holland (2010) highlights the importance of banks' ability to learn and use knowledge in response to the changing environment in the 2007-2009 financial crisis, and argues that lack of knowledge at the top management level of failing banks was deeply implicated in the crisis.

It should be pointed out that for large banks and small banks, the role of intangibles in their business models may differ. As mentioned in section 2.2.3, there appears to be a strategic wedge between large and small banks, and their business models differ considerably. As a

result, they may also behave differently in utilizing intangible resources. For example, small banks appear to be better in exploiting their relationships with customers, such as knowing the names of their customers upon sight than large banks, while large banks attempt to differentiate themselves through spending heavily on advertising and marketing in order to create brand images (DeYoung et al., 2004).

The above discussions illustrate how the literature and theory discussed in this chapter can form a coherent and integrated body of literature to guide this research. Therefore, this research will use the RBV theory and theories related to different intangible components to discuss the utilisation of various resources in creating sustainable competitive advantage in the case of banks.

2.5 Conclusions

This chapter explored the extant literature regarding the industry context and intangibles, and thus provided a theoretic framework for conducting this research. By reviewing financial intermediation theory and contemporary banking theory, it was shown that banks are facing increasing competition in the global market because of deregulation, technological changes and globalization. As a result, building and maintaining sustainable competitive advantage is crucial for banks to outperform their rivals. From a resource-based view, a bank's competitive advantage mainly comes from its intangible resources. Therefore, the setting of this study is the European banking industry due to the fact that the banking industry provides an excellent context to examine intangibles.

The researcher then discussed the theories dealing with the intangibles context. It was argued that the resource-based view provides an appropriate framework to explain and interpret the concept of intangibles. On the basis of the RBV framework, intangibles can be analysed as a process rather than an object, and thus allow the researcher to investigate the link between intangibles and bank performance. Moreover, this framework locates different components of intangibles in a network rather than treats them separately, and then provides an opportunity to assess the interactions between them.

After that, this chapter detailed various components of intangibles, namely human capital, structural capital and relational capital. Emotional capital as a booster capital to these three categories of intangibles was also discussed. Based upon the theoretical fundamental of the

RBV, several economics, organization analysis and strategic management theories are employed to understand those four capitals. In particular, human capital theory, organizational culture theory, organizational learning theory, customer capital theory, and emotional capital theory are highlighted. Although research dealing with intangibles suffers from the lack of a common terminology (Kristandl and Bontis, 2007), the researcher showed that it is possible to construct a strong theoretical framework to understand and assess intangibles using extant theories.

Finally, the researcher discussed the links between banking theory and the resource based theory of the firm explicitly. This illustrated how the literature and theory discussed in this chapter can form a coherent and integrated body of literature to guide this research. In the next chapter, empirical research on intangible measurement, disclosure and modelling will be reviewed.

Chapter three: Literature Review

3.1 Introduction

Chapter two has provided the theoretical framework under which this research is conducted. In this chapter, the theoretical and empirical literature in the field of intangibles research is discussed. The review of related literature helps the researcher to identify gaps in the extant literature, to formulate research questions, to make the decision of methodological choice, and to design the overall project.

Over the past few decades, intangibles or intellectual capital has become a major concern for scholars in areas of economics, management, marketing, accounting and finance research. Early-stage research focused on recognising and understanding the importance of intangibles as sources of competitive advantage, and on defining and classifying them (Brennan and Connell, 2000; Petty and Guthrie, 2000), which has been addressed in chapter two. More recently, more effort has been devoted to measure different components of intangibles and to investigate the ways of reporting them (Brennan and Connell, 2000; Marr et al., 2003). In addition, a number of empirical studies have been undertaken to provide evidence on how intangibles create value for organizations (Canibano et al., 2000; Petty and Guthrie, 2000).

This chapter, therefore, is focusing on the discussion of the measurement and reporting of intangibles, as well as the extant literature on modelling them. By reviewing related literature, several gaps in the existing literature are identified, and those motivate the researcher to explore the role of intangibles in the bank business model using mixed methods.

Firstly, for intangible measurement, it is found that so far there are no appropriate measurement models that can serve both the internal and external purposes of intangible management. Some researchers suggest that there is a need to develop new measures or new frameworks of intangibles (e.g., Catasús and Gröjer, 2006; Ramírez, 2010; Sillanpää et al., 2010). Others, however, criticize this need (e.g., Dumay, 2009; Dumay and Rooney, 2011; Nielsen and Toft Madsen, 2009), and argue that intangible management can be effectively implemented in organizations without concrete measures of them (Dumay and Rooney, 2011). Therefore, the researcher considers that more empirical studies are needed

to investigate whether or not intangibles should be measured, and if so, how to improve intangible measurements.

Secondly, empirical literature on intangible disclosure practices shows that the overall level of intangible disclosure is very low across the world. When there is a disclosure, it is mainly expressed qualitatively rather than quantitatively, and the type of information varies from company to company, and from country to country. In addition, whether or not the disclosed information related to intangibles meets users' needs is in doubt, as empirical studies on intangible disclosure that investigate the capital market actors' perspective tend to be very limited and provide ambivalent evidence. It is necessary to pay more attention to users' demand for intangible information. This thesis, therefore, seeks to investigate intangibles from both information providers' (bank managers) and information users' (bank analysts) perspectives.

Thirdly, with regard to modelling intangibles, prior empirical research mainly focuses on the value relevance of individual intangible elements, and ignores the interactions among them. Moreover, there appears to be a bias toward the investigation of some intangible elements (e.g., R&D) over others (e.g., human capital and customer relationships), because information about the latter tends to be largely unavailable. In such a situation, the researcher argues that there is a need to assess the relationships among different intangible elements and between them and firm performance on the one hand, as research on intangibles should be improved by testing (Marr et al., 2003); on the other hand, an in-depth qualitative study is desirable in order to better understand the interactions among various intangible elements and their joint contribution to firm performance, as well as the appropriate measures for them.

The remainder of this chapter is structured as follows. Section 3.2 discusses the different measurement approaches of intangibles. In section 3.3, issues related to intangible disclosure are discussed. After that, previous empirical evidence on modelling intangibles is presented in section 3.4, including two streams of research: the value relevance of intangibles and the interaction among intangible components. Finally, this chapter is finished by conclusions.

3.2 Measuring intangibles

As has been discussed in chapter two, there is no doubt that intangibles are important for organizations in terms of creating competitive advantage. However, the traditional accounting system has not met the challenge of measuring intangibles (Eckstein, 2004). Historically, intangibles have always been considered to be "risky" (Eckstein, 2004; Siegel and Borgia, 2007), and the majority of investments on intangibles have not met the accounting criteria for the recognition of assets (Canibano et al., 2000). As a result, even though firms make growing investments in intangibles in order to gain future success, in most cases, these investments are not reflected in the balance sheet (Canibano et al., 2000; OECD, 2006).

Given the fact that traditional financial statements by themselves fail to provide a true and fair view of the firm's position (Canibano et al., 2000), there is a growing need to have some supplements that include information on intangibles. Since the late 1990s, a variety of intangible measurement models have been proposed, and researchers have been continuously developing indicators of different intangible components. This section discusses the motivations for measuring intangibles, and reviews some important measurement models.

3.2.1 The motivations for measuring intangibles

Generally speaking, implementing a measurement system must serve some management purposes (Hunter et al., 2005). Since the 1990s, the research on the measurement of intangibles has grown rapidly. Various models have been developed to measure intangibles because of the demand from practitioners (Bontis, 1999). Although these models are primarily designed to solve the organizational problems, it is often not clear what problems a particular measurement model intends to solve (Andriessen, 2004). As a result, there is a danger that many models tend to be "solutions in search of a cause" (Andriessen, 2004: 239). Therefore, some argue that before investigating how to measure intangibles, it is necessary to find out why we want to measure them (Andriessen, 2004; Hunter et al., 2005; Marr et al., 2003).

Kannan and Aulbur (2004) highlight that a key reason why organizations measure their intangibles is to "recognise hidden assets and strategically develop them to achieve organizational goals" (Kannan and Aulbur, 2004: 390). Successful intangible measurement, therefore, can bring organizations significant benefits in the way of determining business

strategy, processing design and providing competitive advantage (Kannan and Aulbur, 2004).

Kannan and Aulbur (2004) identify the internal purposes of measuring intangibles. Hunter et al. (2005) acknowledge that organizations wanting to measure their intangibles may be due to both internal and external purposes. According to Hunter et al. (2005), firms that measure intangibles may be motivated by internal purposes such as to manage their resources more efficiently and thereby to generate more revenue or minimise costs. They may also be motivated by external purposes of maximising the sustainability of supplier and customer relations, and/or minimising the cost of capital.

Marr et al. (2003) conducted a systematic literature review of intangibles research in order to assess the reasons or motives that drive the measurement of intangibles. After reviewing more than 700 articles, they identify five main reasons why organizations seek to measure intangibles. These reasons are (Marr et al., 2003:443):

- To help organizations formulate their strategy;
- To assess strategy execution;
- To assist in diversification and expansion decisions;
- Use these as a basis for compensation; and
- Communication to external stakeholders.

It can be seen that the first four motivations relate to internal management and decision-making, and the final one is for external purpose. For internal management, intangible measurement is closely related to organizational strategy in the way of formulating and assessing it (Marr, 2004; Marr et al., 2003). Andriessen (2004) argues that some valuation or measurement methods of intangibles intend to improve internal management by creating resource-based strategies, monitoring effects from actions, and/or translating business strategy into action. Firms also seek to better exploit intangible resources by strategic alliances, joint ventures and mergers and acquisitions (Marr et al., 2003). Gupta and Roos (2001) argue that intangibles have become the key motivation behind many mergers and acquisitions. Using a case study, they demonstrate that core intangibles have to be at the root of high value synergies, and identifying and measuring them can effectively aid the trade. In addition, using intangible measurements to supplement or replace traditional financial measures as the basis of compensation can overcome some problems caused by financial measures, such as short-term thinking (Ittner

et al., 1997; Ittner and Larcker, 2002; Marr et al., 2003).

Apart from those internal motivations, intangible measures are also used to communicate with external shareholders and investors in order to improve stock valuation and reduce cost of capital (Marr et al., 2003). Andriessen (2004) suggests that firms measure their intangibles maybe due to the motivations of improving external reporting or statutory and transactional issues. Measuring and reporting information related to intangibles can improve stock valuation (Andriessen, 2004; Marr et al., 2003), reduce information asymmetry (Andriessen, 2004), and increase the ability to raise capital (Andriessen, 2004; Lev, 2001; Marr et al., 2003). On the other hand, investors and analysts tend to require more information related to intangibles, and firms are under pressure to disclose some of them either mandatorily or voluntarily (Andriessen, 2004; Marr et al., 2003).

In summary, measuring intangibles can bring firms benefits of improving internal management and/or improving external communications. Sveiby (2007) argues that the most interesting reason for measuring intangibles is a learning motive rather than for management control purposes. Intangible measurement should be used to explore value creation opportunities (Sveiby, 2007).

3.2.2 Overview of the measurement systems of intangibles

Focusing on different purposes and using different methodologies, a number of intangible measurement models[19] have emerged since the 1990s. Sveiby (2007) reviews the current literature and identifies 34 methods. He then tries to categorise these various methods into four approaches[20]. Table 3.1 presents a summary of these approaches:

- Direct intellectual capital methods (DIC);
- Market capitalization methods (MCM);
- Return on assets methods (ROA); and
- Scorecard methods (SC).

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[19] Andriessen (2004) argues that the models should be classified under different eadings like valuation, financial valuation, measurement and assessment, because there is a clear and distinct difference between valuation and measurement. Given the fact that this distinction is not yet recognized in the field and the concepts are being confused (Andriessen, 2004), in this study, those models are all treated as "measurement models".

[20] The categories are an extension of previous classification suggested by Luthy (1998) and Williams (2001). One of those 34 methods – the VAIC^{TM} approach – is categorised into ROA, but it seems not to quite fit any of the categories (Sveiby, 2007). Therefore, some argue that it should be treated as the fifth approach (Chan, 2009). This study follows the classification of four approaches suggested by Sveiby (2007).

Table 3.1: Four approaches of measuring intangibles

Approach	Number of methods	Approx. year (since)	Examples /Major proponents
DIC	11	1970s	Intellectual Asset Valuation (Sullivan, 2000)
MCM	4	1950s	Market-to-Book Value (Stewart, 1997)
ROA	4	1997	Economic Value Added (EVA^{TM}) (Stewart, 1997); Value Added Intellectual Coefficient (VAIC^{TM}) (Pulic, 1998)
SC	15	1992	Balanced Scorecard (Kaplan & Norton, 1992); Skandia Navigator (Edvinsson & Malone, 1997[21]); Intangible Asset Monitor (Sveiby, 1997a); Value Chain Scoreboard (Lev, 2001)
Total	34		

Source: Sveiby (2007)

These approaches can serve different purposes. The market capitalization methods (MCM) suggest that a firm's intangibles can be calculated as the difference between its market capitalization and its stockholders' equity (Sveiby, 2007). The return on assets methods (ROA) also offer a monetary valuation. This kind of approach assumes that a company's above industry average annual earning[22] results from its intangibles. Thus, it suggests that the value of a company's intangibles can be estimated by dividing its above-average earnings by its average cost of capital or an interest rate (Sveiby, 2007). ROA and MCM methods are useful tools for stock market valuation, especially in merger and acquisition situations (Sveiby, 2007). Because they are based on financial figures, they can be used for comparisons between companies within the same industry (Chan, 2009; Sveiby, 2007). Some models based on these approaches, such as EVA^{TM}, provide a common language and benchmark for managers to discuss value-creation (Bontis et al., 1999), and tend to get more attention of the CEOs (Sveiby, 2007).

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[21] This is cited by Sveiby (2007) from Edvinsson, L. and Malone, M. (1997). *Intellectual Capital: Realizing Your Company's True Value by Finding its Hidden Brainpower*. New York, NY: HarperBusiness.
[22] According to Sveiby (2007), a firm's above-average annual earning can be calculated as following: firstly, we can get a company ROA by dividing its average pre-tax earnings for a period of time by the average tangible assets of the company. Then, the company's ROA is compared with its industry average. Finally, an above-average annual earning of the company is calculated when the difference is multiplied by the company's average tangible assets.

However, these kinds of methods have some significant disadvantages, and are criticised as inappropriate measurement systems of intangibles (Bontis, 2001; Caddy, 2002). One of the main problems is that they do not easily assist managers in terms of understanding and managing intangibles (Andriessen, 2004; Bontis, 2001; Caddy, 2002; Chan, 2009; Sveiby, 2007). Translating everything into money terms, they often imply that no specific measures of intangibles are needed (Bontis, 2001; Sveiby, 2007). Using these approaches, managers cannot get information about what intangibles exist in a company and how they contribute to the company's value creation process (Bontis, 2001; Chan, 2009). In addition, these kinds of methods are normally based on the accounting paradigm of historical cost, and may give little indication of current market value (Bontis, 2001; Bontis, et al., 1999; Chan, 2009). Some of them are useless for non-profit organizations, internal departments and public sector organizations (Sveiby, 2007). Apart from these common disadvantages, they also have some specific problems. For example, some ROA methods such as EVA^{TM} assume that a company's superior performance only results from its intangibles. However, this may be a questionable assumption (Chan, 2009). As has been discussed in chapter two, according to the resource-based view, tangible assets may also contribute to a firm's competitive advantage. Moreover, Sveiby (2007) points out that the ROA methods are very sensitive to interest rate and discounting rate assumptions.

The above approaches of measuring intangibles are classified by Caddy (2002) as non-theory-based intellectual capital metrics. He argues that those simple metrics are fundamentally problematical. Accordingly, more sophisticated methods need to be developed in order to more accurately and completely measure an organization's intangibles. The direct intellectual capital methods (DIC) and the scorecard methods (SC) are argued to be more comprehensive measurement systems and form the basis for the development of theory-based intellectual capital metrics (Caddy, 2002).

The direct intellectual capital methods (DIC) estimate the monetary value of intangibles by identifying various components and evaluating them either individually or in an aggregated level (Sveiby, 2007). Similar to DIC methods, the scorecard methods (SC) are also used to generate indictors and indices based on different components of intangibles. But they may not require the assignment of a monetary value to the intangible components (Chan, 2009; Sveiby, 2007). Compared with the MCM and ROA methods, the DIC and SC methods have some advantages. For instance, they can create a more comprehensive picture of an organization's health, can be applied at any level of an organization, and can be used for

non-profit as well as public sector organizations (Pike and Roos, 2004; Sveiby, 2007). Therefore, the DIC and SC methods are more helpful in terms of improving internal management.

On the other hand, the DIC and SC methods also have some weaknesses. Firstly, these methods normally identify and measure various components of intangibles in qualitative ways, and are argued to be highly subjective (Chan, 2009). In the absence of a common theoretical framework of intangibles, these methods tend to make use of different definitions and classification of intangibles, and the indicators or indices vary from industry to industry as well as from organization to organization (Caddy, 2002; Chan, 2009; Sveiby, 2007). Therefore, it is difficult to have a universal method and to make comparison of organizations (Chan, 2009; Sveiby, 2007). Moreover, the qualitative nature of them makes it difficult to communicate with investors (Chan, 2009).

In the next section, some popularly applied models will be reviewed in terms of their applications, advantages and weaknesses.

3.2.3 The models used to measure intangibles

This section introduces some important models used to measure and manage intangibles. By discussing the weaknesses and strengths with these models, it shows the problems within intangible measurement systems, which motivate the researcher investigates bank practice of measuring intangibles in the qualitative study. In addition, the intangible metrics suggested by some models helps the researcher to identify proxies of intangibles in the quantitative study, which will be discussed further in chapter five.

3.2.3.1 The Balanced Scorecard

The Balanced Scorecard (BSC) is a performance measurement and management framework devised by Kaplan and Norton (Kaplan and Norton 1992, 1996, 2000, 2001a, 2001b, 2004). Although the BSC was not designed initially for intangible measurement, it is widely accepted that this method implies an approach to measuring and managing intangibles[23] (e.g., Bontis et al., 1999; Johanson et al., 2001a; Kaufmann and Schneider,

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[23] However, some researchers argue that there are significant differences between the concepts of the BSC and intellectual capital (see Marr and Adams, 2004; Mouritsen et al., 2005). Mouritsen et al. (2005) argue that the BSC and intellectual capital have different theoretical underpinnings in terms of strategy

2004; Petty and Guthrie, 2000; Speckbacher et al., 2003; Sveiby, 2007).

According to Kaplan and Norton (1992, 1996), the BSC is a framework that allows managers to measure business performance from four important perspectives: 1) the financial perspective which represents the long-term objectives of the company and mainly include traditional accounting measures; 2) the customer perspective that consists of measures related to the customers, such as customer satisfaction, retention, and market share etc.; 3) the internal business process perspective that focuses on the processes, decision, and actions occurring throughout an organization; and 4) the learning and growth perspective which focuses on internal skills and capabilities, including measures related to employees and systems (Bontis et al., 1999; Bose, 2004; Kaplan and Norton, 1992, 1996; Mooraj et al., 1999). More importantly, the BSC is not just a collection of four types of measures. Rather, it links all measures together through cause-and-effect relationships (Bontis et al., 1999; Mooraj et al., 1999). By doing so, the BSC serves as a framework that formulates a company's strategy, and translates strategy into actions in the company as well (Bose, 2004; Kaplan and Norton, 2001a; Malmi, 2001; Mooraj et al., 1999; Norreklit, 2000; Speckbacher et al., 2003). Figure 3.1 shows how the BSC translates strategy into operational themes through four perspectives.

Since it was introduced in the early 1990s, the BSC has been one of the most popular performance management systems in practice (Malmi, 2001; Rigby, 2001; Rodov and Leliaert, 2002; Speckbacher et al., 2003). For example, Silk (1998) estimates that 60% of the Fortune 1000 companies in the United States have had experience with the BSC (Speckbacher et al., 2003). Rigby (2001) surveys the use of management tools in companies around the world, and finds that the utilization rate of the BSC in 1999 was nearly 44%. There are a variety of purposes of applying the BSC in practice (see Norreklit, 2000; Malmi, 2001; Speckbacher et al., 2003), and the main motivation of BSC implementation is to formulate and assess companies' strategies. The BSC focuses on developing strategy, translating strategy into action, and obtaining feedback in order to improve strategy (Kaplan and Norton, 1996; Malmi, 2001; Norreklit, 2000; Speckbacher et

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(competitive strategy versus competency strategy), organisation (vertical versus lateral relations), management (detailing versus visualising objectives), and indicators (related causally versus bundled complementarity). Marr and Adams (2004) criticize that the concept of intangible assets introduced by Kaplan and Norton (2004) produces an inconsistent, incomplete, and potentially very confusing classification of intangibles. In this study, the researcher is in line with Marr and Adams's argument that the concept of intangible assets is not just the content of the learning and growth perspective as suggested by Kaplan and Norton (2004). It is in fact cross three perspectives: customer perspective, internal process perspective, and learning and growth perspective. However, although Kaplan and Norton fail to define and classify intangibles in an appropriate way, the BSC can still be used as an intangible measurement and management tool.

al., 2003).

Figure 3.1: The Balanced Scorecard Framework
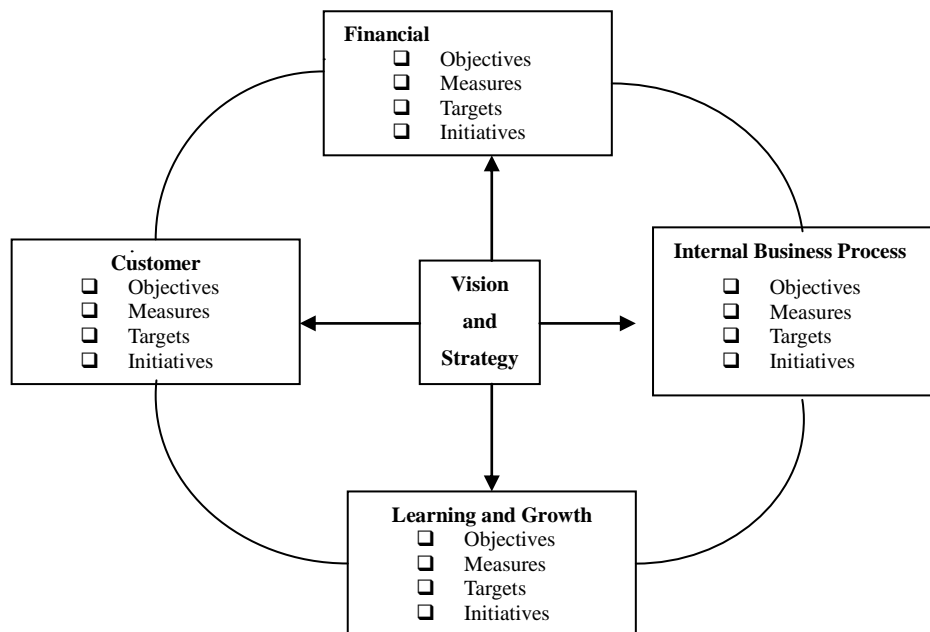
Source: Kaplan and Norton (1996)

As a measurement system, the BSC is not the first one that encourages companies to monitor both financial and non-financial measures (Bontis et al., 1999), but it has some new ideas that allow managers to measure and manage them in a special way. Firstly, the BSC links all the measures of tangibles and intangibles together through a cause-and-effect logic (Bontis et al., 1999; Bose, 2004; Kaplan and Norton, 1996, 2001a; Mooraj et al., 1999; Speckbacher et al., 2003). Kaplan and Norton (2001a) stress that intangibles do not have value by themselves, and the BSC does not attempt to "value" intangibles. Rather, it does measure intangibles in units, and tries to assess how intangibles and tangibles combine together to create superior financial outcomes. Secondly, a fully developed BSC can not only be able to formulate the strategy of a company, but also be used to implement the strategy in the company at different levels of the business units (Speckbacher et al., 2003). Moreover, the BSC can also provide a platform for identifying priorities among various objectives and initiatives (Mooraj et al., 1999).

At the same time, however, the BSC also has weaknesses both theoretically and in practical implementation. First of all, the BSC is relative rigid and static (Bontis et al., 1999; Rodov and Leliaert, 2002; Wu, 2005). As Bontis et al. (1999) criticize, the perspectives and key success factors in the BSC are limiting. As a result, there is a danger that managers may miss some important factors that do not fall into any categories.

Secondly, it is argued that the BSC fails to highlight the contribution of employees and other external relations such as suppliers and alliance partners, etc. (Atkinson et al., 1997; Bontis et al., 1999). Thirdly, as an internal management tool, this model tends to be company-specific, and provides no possibility for external comparison (Bontis et al., 1999; Rodov and Leliaert, 2002). Fourthly, the BSC is argued to be qualitative and cannot be pinned down precisely (Nagar and Rajan, 2005). Apart from these theoretical problems, empirical studies also observed some implication problems when companies implemented the BSC in their business practice. For example, in practice, the learning and growth perspective of the BSC has long been considered as a "black hole" (Marr and Adams, 2004). Speckbacher et al. (2003) investigate the implementation of the BSC in German-speaking countries, and find that a third of the BSC users do not even have a learning and growth perspective. In addition, Malmi (2001) argues that the idea of linking measures together based on assumed cause-and-effect relationships was not well understood by the early adopters of BSCs in Finland.

3.2.3.2 Skandia Navigator

Skandia Navigator is a measurement and reporting model of intellectual capital (IC) developed by Skandia AFS, a financial service company based in Sweden (Bontis, 2001; Bose, 2004; Chen et al., 2004; Roy, 1999; Skyrme and Amidon, 1998). Skandia first developed its IC reporting system internally in the mid 1980s (Bontis, 2001; Roy, 1999), and then became the first company that described IC in a supplement to its traditional financial report in 1994 (Bontis, 2001; Skyrme and Amidon, 1998).

The motivation of developing the Navigator in Skandia was "to visualise and make concrete the assets that drive performance and thereby create prerequisites for long-term competitiveness" (Roy, 1999:59)[24]. It served for several internal management purposes, such as to enable multiple perspectives and dimensions of the organization; to formulate and implement the strategy; to link business strategies to targets; and to work as a communication, information and learning system, etc. (Roy, 1999).

According to the Skandia Navigator model, a company's market value consists of two parts: financial capital and intellectual capital. Intellectual capital can be then divided into human capital and structural capital, and the latter is further broken down into customer capital,

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[24] This is cited by Roy (1999) from Skandia, Supplement to Annual Report (1994).

innovation capital and process capital (see Figure 3.2). The Skandia Navigator model (see Figure 3.3), therefore, focuses on five areas: financial capital, human capital, customer capital, innovation (renew and development) capital, and process capital. For each area, both financial and non-financial metrics are locally defined by the respective business unit managers to evaluate different intangible elements (Bose, 2004). There are up to 164 metrics (91 intangible metrics plus 73 traditional financial based-metrics) in this model (Bontis, 2001; Bose, 2004). Table 3.2 present some examples of measures used in Scandia Navigator model.

Figure 3.2: Skandia's value scheme
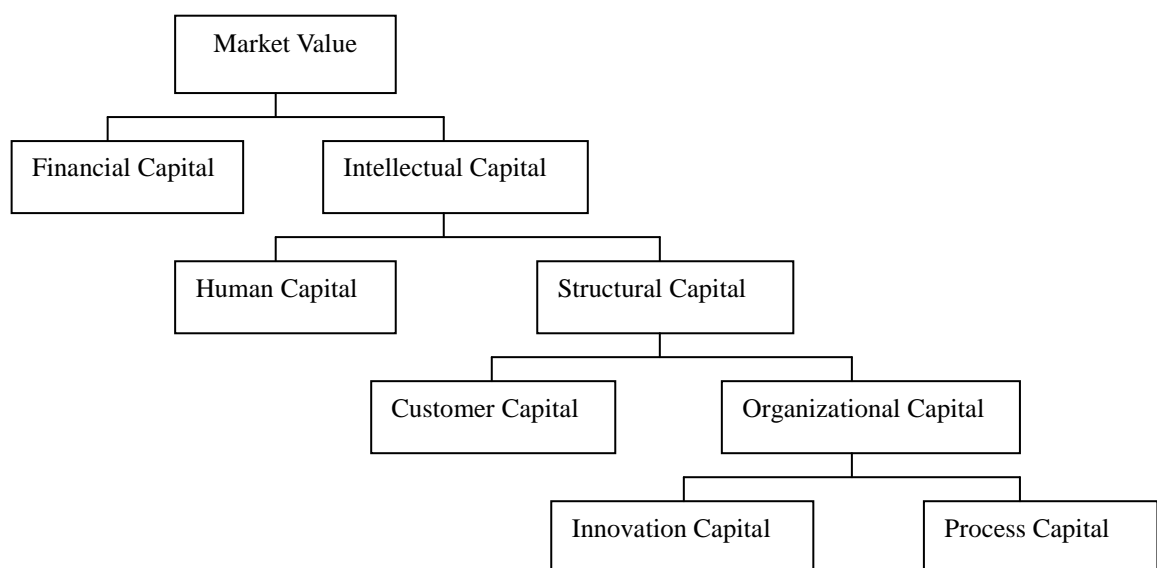
Source: Bontis, (2001); Edvinsson, (1997).

Figure 3.3: **Skandia Navigator**
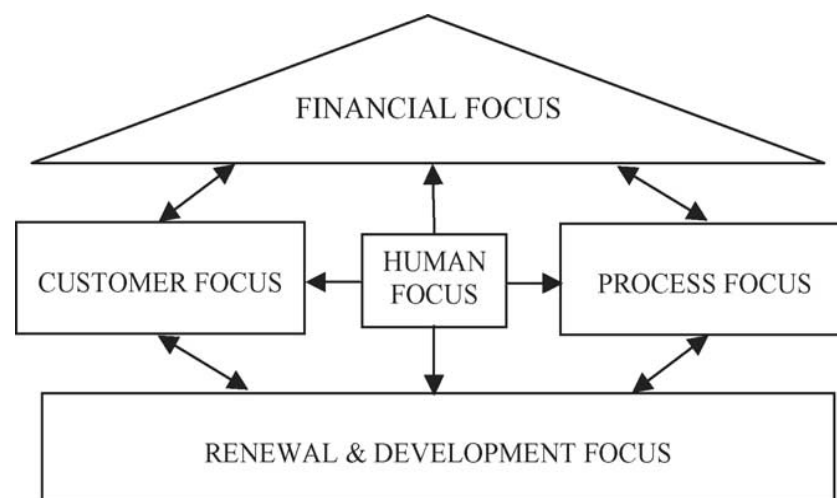
Source: Ax and Bjørnenak[25] (2005)

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[25] This is cited by Ax and Bjørnenak (2005) from Edvinsson, L. and Malone, M.S. (1997). *Intellectual*

Table 3.2: **Examples of Skandia Navigator IC measures**

Focus area	Example of measures
Financial capital	- Revenues/employee; - Revenue from new customers/total revenue; - Profits resulting from new business operations.
Customer capital	- Days spend visiting customers; - Telephone accessibility; - Satisfied customer index.
Human capital	- Training days per year; - Managers with advanced degree; - Annual turnover of staff.
Process capital	- PCs per employee; - IT capacity; - Process time.
Innovation capital	- Increase in premium income; - Satisfied employee index; - Average age of patents.

Source: Bontis, (2001); Skyrme and Amidon, (1998)

It is suggested that there are strong similarities between the BSC and the Skandia Navigator model (Fincham and Roslender, 2003). Both of them use financial and non-financial metrics to measure business performance, and the various concepts of IC in the Skandia Navigator model are closely consistent with the four perspectives in the BSC (Ax and Bjørnenak, 2005; Fincham and Roslender, 2003). However, human capital is presented as a key factor in the Skandia Navigator, while it is considered to be unimportant in the BSC (Ax and Bjørnenak, 2005; Chen et al., 2004). In addition, the Skandia Navigator focuses less on the cause-and-effect relationship than the BSC (Ax and Bjørnenak, 2005).

The Skandia Navigator model contributes significantly to create taxonomy to measure a company's intangibles (Bontis, 2001). It is particularly important that this model recognizes organizational process factors, which has not been attempted before (Bontis, 2001; Petty and Guthrie, 2000). However, Skandia Navigator also has some problems as it was developed specifically for one company (Marr, et al., 2004b). Firstly, some metrics

used in Skandia Navigator offer plausible alternative interpretations about what they might represent for an organization (Bontis, 2001). Therefore, it might be difficult for others to understand and identify appropriate metrics. Secondly, Skandia Navigator follows a balance sheet approach to measure intangibles. As a result, it cannot represent the dynamic flows of an organization (Bontis, 2001), and might neglect some intangible contents such as culture and organizational learning (Chen et al., 2004). Thirdly, it is also not clear how the five components of capital in the Skandia Navigator model relate to each other (Marr et al., 2004b).

3.2.3.3 The Intangible Assets Monitor

The Intangible Assets Monitor (IAM) developed by Sveiby aims to measure intangibles in a simple fashion (Rodov and Leliaert, 2002; Sveiby, 1997a). According to Sveiby (1997a), the main purpose of measuring intangibles is to provide management control in terms of improving external presentation and internally monitoring performance. The IAM that combines both financial and non-financial measures can not only help the company to describe itself more accurately to external stakeholders, customers, creditors and shareholders, but also help managers to monitor progress and take corrective actions (Bontis, 2001; Sveiby, 1997a).

According to the IAM, a company's intangibles can be measured in three dimensions: 1) employee competence that includes the capacity of employees; 2) internal structure, which may include patents, concepts, models and computer and administrative systems; and 3) external structure, which may include relationship with customers and suppliers, brands, trademarks and reputation. Both the internal structure and external structure are created by the employee competence. In each dimension, managers can make use of three types of indicators: indicators of growth and renewal, indicators of efficiency, and indicators of stability to measure and report intangibles (Sveiby, 1997a). Table 3.3 presents some examples of intangible measures in the three dimensions.

Table 3.3: Sample measures of intangibles in the Intangible Asset Monitor

	Employee competence	**Internal structure**	**External structure**
Growth and renewal	1) Number of years in the profession; 2) Level of education; 3) Training and education costs.	1) Investment in the internal structure; 2) Investment in information processing systems.	1) Profitability per customer; 2) Organic growth.
Efficiency	1) Proportion of professionals in the company; 2) Leverage effect; 3) Value added per employee.	1) Proportion of support staff; 2) Sales per support person; 3) Values and attitude measurements.	1) Satisfied customer index; 2) Win/loss index; 3) Sales per customer.
Stability	1) Average age; 2) Seniority (the number of years employed in the same organization); 3) Professional turnover rate.	1) Age of the organization; 2) Support staff turnover; 3) Rookie ratio (the number of people with less than 2 years of employment.	1) Proportion of big customers; 2) Age structure; 3) Devoted customer ratio (sales come from customers who have been with the company for more than 5 years).

Source: Sveiby (1997a)

Similar to the BSC, the IAM model also argues that non-financial measures of intangibles must complement financial measures. In addition, both models argue that non-financial indicators must be lifted from the operational to the strategic level of the firm (Sveiby, 2001). However, these two models also have some significant differences. The IAM is based on the notion that people are the only profit generators in a company (Sveiby, 1997a, 2001), while in the BSC, human capital is considered to be unimportant. In addition, as has been noted before, the external relationships in the BSC model only emphasize customers, but ignore other stakeholders (such as suppliers). In the IAM, the external structures contain customers, suppliers and other external stakeholders (Sveiby, 2001).

The IAM attempts to overcome some problems that the BSC has. It also tries to display a number of relevant indicators in a simple fashion (Sveiby, 1997a), so that external stakeholders can understand it more easily. However, the IAM is still too qualitative (Kaufmann and Schneider, 2004), and the indicators have to be adjusted to the reality of each company (Rodov and Leliaert, 2002). In addition, Pike and Roos (2004) argue that the IAM does not really attempt to combine different dimensions of intangibles or even to combine tangible and intangible assets to give an estimate of market value.

3.2.3.4 Intellectual Capital Index

The models that have been discussed before, such as the BSC and The Skandia Navigator,

are argued to belong to the "first generation" of performance measurements that aim to supplement the traditional financial measures with non-financial measures (Neely et al., 2003). The Intellectual Capital Index (IC-Index) suggested by Roos et al. (1997)[26] is argued to represent a "second generation" approach that started to investigate the dynamics of the value creation process of intangibles and to provide an overall picture of this process rather than focus on individual dimensions (Bontis, 2001; Ditillo, 1998; Neely et al., 2003; Rodov and Leliaert, 2002).

The IC-Index method is based on similar taxonomy with the Skandia Navigator model that intellectual capital can be split into human capital and structural capital (Marr et al., 2004b; Pike and Roos, 2004). But the IC-Index intends to consolidate all the different IC measures into a single index. In this method, the most important IC measures are identified and listed, and are then expressed as numbers and be assigned weight to each of them. Finally, all the indicators can be consolidated into a single index (Ditillo, 1998; Marr et al., 2004b)[27]. The selection processes of indicators and weights are affected by several factors, such as the relative importance of each capital form, the business strategy, the characteristics of the company, and the characteristics of the business the company operates (Bontis, 2001; Marr et al., 2004b).

Compared with the first generation models, the IC-Index has some significant advantages. Firstly, by consolidating all the different IC measures into a single index, it is possible to provide a comprehensive picture of a company's IC (Bontis, 2001; Marr et al., 2004b; Rodov and Leliaert, 2002). Secondly, it also allows companies to measure the correlation between the changes in the IC index and the changes in the market or other performance indicators (Bontis, 2001; Marr et al., 2004b). Thirdly, it is helpful for managers to understand the priorities and relationships existing between different IC measures (Rodov and Leliaert, 2002).

However, this method also has its weaknesses. Using a single index has some advantages. But on the other hand, it may also make it difficult to identify the key business drivers (Marr et al., 2004b). In addition, the choices of indicators and weights are based on subjective judgment. Therefore, there is a danger that the index might not fully reflect the

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[26] This is cited by Bontis (2001) and Ditillo (1998) from Roos, J., Roos, G., Dragonetti, N.C. and Edvinsson, L. (1997). *Intellectual Capital: Navigating the New Business Landscape*, Macmillan, London.
[27] This is cited by Ditillo (1998) and Marr et al. (2004b) from Roos, J., Roos, G., Dragonetti, N.C. and Edvinsson, L. (1997). *Intellectual Capital: Navigating the New Business Landscape*, Macmillan, London.

real IC of a company (Bontis, 2001; Marr et al., 2004b). Furthermore, it is still difficult to make comparison between companies based on the IC-Index, as every company's IC index will be different in terms of indicators and weightings (Marr et al., 2004b).

The IC-Index and other methods that have been discussed in subsections 3.2.3.1 to 3.2.3.4 are considered as "qualitative methods" of measuring intangibles (Levy and Duffey, 2007). The qualitative nature of these methods leads to the lack of standardisation (Andriessen, 2004; Chan, 2009; Kaufmann and Schneider, 2004; Petty and Guthrie, 2000). In most cases, the models are too qualitative and do not inform the user which intangibles are most important to a company's strategy. In addition, it is almost impossible to make comparison between companies based on these measurement models, not only because they are limited to specific company characteristics in terms of information content (Kaufmann and Schneider, 2004), but also these models are generally used internally and the majority of information are not reported to the public[28]. Therefore, some so-called "quantitative models" are designed to assign a numerical value to intangibles (Levy and Duffey, 2007). In the next subsection, the Value Added Intellectual Coefficient, as one of the most popular used quantitative models will be discussed.

3.2.3.5 The Value Added Intellectual Coefficient

The Value Added Intellectual Coefficient (VAIC™), which is also known as the Austrian Approach, was designed and developed by the Austrian Intellectual Capital Research Centre under Pulic from 1998 to 2002 (Chan, 2009; Yalama and Coskun, 2007). Pulic (1998) argues that previous IC measurement systems contains too much subjective evaluation which does not enable comparison. Thus, there is a need to have a simple and quantitative approach for measuring IC. VAIC™ measures the depth and breadth of IC efficiency based on a company's accounting data, and produces a standardized measure that can be used for comparison across companies, industries and nations (Chan, 2009, Pulic, 2000).

There are several key assumptions of the VAIC™ method. Firstly, IC alone cannot operate independently without the support of physical capital. So the value added in a company derives from the combination of intellectual capital and physical capital (Chan, 2009; Pulic, 1998; Seetharman et al., 2004). Secondly, among the three components of IC, human

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[28] Issues related to intangible disclosure will be discussed in section 3.3 of this chapter.

capital is the decisive factor. Neither structural capital nor customer capital could function without the employees (Pulic, 1998; Williams, 2001). Thirdly, the total expenditures on employees are seen not only as compensation for invested time but also as compensation for knowledge input (Pulic, 1998). Hence in this method, human capital can be expressed as the total expenditure on employees (Chan, 2009; Pulic, 1998). Therefore, VAIC™ can be measured as an aggregate of three individual efficiency components: human capital efficiency (HCE), structural capital efficiency (SCE), and physical capital efficiency (CEE), as shown in the following equation (Chan, 2009; Firer and Williams, 2003; Goh, 2007; Levy and Duffey, 2007; Pulic, 2005; Yalama and Coskun, 2007):

$$VAIC™ = HCE + SCE + CEE$$

The calculation of a company's VAIC™ normally involves the following steps (Chan, 2009; Goh, 2007; Pulic, 1998, 2005; Shiu, 2006):

- Value Added (VA) of the company can be calculated as the difference between outputs (sales or total income) and inputs (all the expenses of material, components, and services, etc.):

$$VA = Outputs - Inputs$$

- As human capital can be calculated as the total expenditures on employees, human capital efficiency can be obtained as the amount of value-added divided by the amount of money invested in employees:

$$HCE = VA/HC$$

- In this method, the total amount of value-added for a given period is attributed to the combination of human capital and structural capital. Thus, structural capital (SC) can be obtained as: SC = VA – HC. This equation indicates that structural capital is dependent on created value added and in reverse proportion to HC. Therefore, structural capital efficiency can be calculated as:

$$SCE = SC/VA$$

- As noted before, in this method, it is believed that IC cannot create value on its own. So it is necessary to take into account all the physical and financial capital (CE) when computing the efficiency of value-creation resources. Thus the final step is to calculate the capital employed efficiency, which can be obtained by:

$$CEE = VA/CE$$

- After the above five steps, finally, VAIC™ can be calculated by:

$$VAIC™ = HCE + SCE + CEE$$

The VAIC™ method offers several advantages compared with some qualitative methods. Firstly, it provides standardized and consistent basis of measuring IC, and therefore enables not only internal comparison over a period of time for a company, but also external comparison across companies, sectors and countries (Chan, 2009; Firer and Williams, 2003; Kamath, 2008). Secondly, it uses accounting data based on audited information and without any subjective grading, and the calculations are considered to be objective and verifiable (Chan, 2009; Firer and Williams, 2003; Pulic, 1998). Thirdly, this method is straightforward, and it is easy to be calculated and to be understood by external investors and shareholders (Chan, 2009; Firer and Williams, 2003; Levy and Duffey, 2007; Williams, 2001). Fourthly, it treats human capital as the most important component of IC, and this emphasis has been accepted by many authors (Chan, 2009; Williams, 2001). Finally, this method makes use of public data, so that it may improve data availability and make it is possible to conduct empirical studies that utilize a large sample of data (Chan, 2009; Kamath, 2008).

Therefore, since the VAIC™ was developed in 1998, it has been widely used in empirical research across industries and countries (e.g., Kujansivu and Lönnqvist, 2007; Mavridis, 2004; Shiu, 2006; Williams, 2001). In particular, as the banking sector is considered as intellectually intensive (Kamath, 2007), a number of researchers have attempted to investigate intangibles using this technique in the banking sector in different countries, such as Malaysia (Goh 2007); India (Kamath, 2007); Japan (Mavridis, 2004); Greek (Mavridis and Kyrmizoglou, 2005); and Istanbul (Yalama and Coskun, 2007).

However, there are some limitations or faults with this method. First of all, some researchers[29] disagree with one of its key assumptions that human capital can be measured as expenditures on employees (Levy and Duffey, 2007). They argue that labor expenditure is a cost rather than a measure of investment. Besides, Andriessen offers some other criticisms to this method (Levy and Duffey, 2007)[30]. He argues that the objective of this method is to measure IC efficiency, but does not provide information about the contribution of IC to firms' value creation. In addition, VAIC™ is an aggregate measure of IC, and does not provide a method for assessing the synergies between human capital,

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[29] This is cited by Levy and Duffey (2007) from Andriessen, D. (2004) *Making Sense of Intellectual Capital: Designing a method for the Valuation of Intangibles*, Amsterdam: Elsevier Butterworth-Heinemann, and Stewart, T. (2003) *The Wealth of Knowledge: Intellectual Capital and the Twenty-First Century Organization*, New York: Doubleday Dell Publishing Group.

[30] This is cited by Levy and Duffey (2007) from Andriessen, D. (2004) *Making Sense of Intellectual Capital: Designing a method for the Valuation of Intangibles*, Amsterdam: Elsevier Butterworth-Heinemann.

structural capital and customer capital. Moreover, Chen et al. (2004) argue that the VAIC™ measure for structural capital may be incomplete, as it neglects R&D expenditure that may capture additional information on structural capital. To sum up, although the VAIC™ is a practical IC measurement, the proxies used in this method may not capture a firm's intellectual capital.

3.2.3.6 Summaries and discussions

Subsections 3.2.3.1 to 3.2.3.5 discussed some measurement models of intangibles. It can be seen that although numerous frameworks and models have been developed to measure intangibles, there are no appropriate models that can be used to measure and manage intangibles to serve both the internal and external purposes. Qualitative methods like BSC and the IC-index tend to be too qualitative and to vary from time to time and from company to company. Also, these methods are based on a large number of private information items that external investors may not have access to. Quantitative methods, such as VAIC™, on the other hand, is argued to include too many problematic assumptions or proxies and may fail to capture the nature of intangibles completely (Levy and Duffey, 2007), and also fails to assist managers in examining the synergies among intangible components and their contribution to the value creation process.

Because of the problems with the extant intangible measurement frameworks or models, some academics suggest that there is a need to develop new measures or new frameworks of intangibles (e.g., Catasús and Gröjer, 2006; Ramírez, 2010; Sillanpää et al., 2010). Sillanpää et al. (2010) suggest that future research on intangibles in the non-profit sector should seek to find suitable ways to measure and manage IC factors. However, recently, some scholars criticize this need (e.g., Dumay, 2009; Dumay and Rooney, 2011; Nielsen and Toft Madsen, 2009). Dumay and Rooney (2011) conduct a case study to explore whether or not IC measurement is necessary for the effective management of IC, and find that it is possible to effectively implement IC practices without concrete IC measures in the case organization.

Dumay and Rooney's conclusion is based on the investigation of one case organization, and may have its limitations. Given the importance of intangibles, the researcher argues that it is necessary to conduct more detailed empirical studies to assess intangible measurement in terms of whether or not they should be measured and the appropriate

measures. Moreover, many measurement models of intangibles are firm-specific and are difficult to be widely implemented due to the reason that they are originally developed by practitioners for self-interests (Andriessen, 2004; Van der Meer-Kooistra and Zijlstra, 2001). Therefore, more research on the contemporary intangible measurements is needed to add understandings of the models and indicators and to help practitioners to adopt and improve their intangible measurement (Andriessen, 2004; Catasús and Gröjer, 2006).

As an important source of competitive advantage for companies, information about intangibles has attracted increasing interests from investors in the capital markets (Brennan and Connell, 2000). However, due to the difficulties in measuring intangibles and the disincentives of reporting them, the remaining information asymmetry of intangibles has still been high (Holland, 2009). In the next section, literature related to intangible disclosure will be addressed.

3.3 Reporting intangibles

As has been mentioned before, one of the motivations of measuring intangibles is for communication to external stakeholders. In response to the growing interest amongst investors in looking for more extensive corporate disclosure on intangibles (Williams, 2001), intangible disclosure practice has gained much empirical research attention in the last decade. In this section, whether or not companies should disclose information related to intangibles, what information has been disclosed in practice, and the views of capital market participants on those kinds of information are reviewed.

3.3.1 Incentives and disincentives of reporting intangibles

Although disclosure of intangibles is not to be made mandatory, an increasing number of companies have attempted to publish more information about their intangibles (Marr et al., 2003). Guthrie et al. (2007) identify that the incentives to report intangibles can be classified into external incentives that relate to the external environments and internal firm incentives.

Regarding to external incentives, it is suggested that both analysts and investors respond positively to organizations that report on their intangibles (García-Ayuso, 2003b). With better access to intangible disclosure, analysts may have a better means of assessing a

firm's value (Guthrie et al., 2007). Barth et al. (2001) investigate the relation between analysts' incentives to cover firms and the extent of their intangible assets, and find that analyst coverage is significantly greater for firms that have larger research and development and advertising expenses. Moreover, full disclosure tends to reduce the cost of capital on the grounds that it reduces the uncertainty that investors face in capital markets (Jensen and Meckling, 1976), and also to reduce the cost of debt as it reduces lenders' and underwriters' perception of default risk for the disclosing firm (Sengupta, 1998). Therefore, managers should be willing to produce intangible disclosure in order to provide a better view of the financial position of the firm, which in turn leads to higher share prices (Backhuijs et al., 1999; Canibano et al., 2000; Marr et al., 2003). Canibano et al. (2000) argue that disclosing more and better information on intangibles is important for knowledge-based and technology intensive companies in terms of reducing the volatility of their shares. Otherwise, investors may not appraise their value correctly if they lack adequate information about some critical value drivers.

Furthermore, intangible disclosure is considered to be a useful tool of communication with stakeholders to visualise and support the long-term vision and growth potential of the company (Backhuijs et al., 1999; Van der Meer-Kooistra and Zijlstra, 2001). It is also used by some companies as a marketing tool to highlight their strength compared to peers (Van der Meer-Kooistra and Zijlstra, 2001). Guthrie et al. (2007) suggest that reporting intangibles is helpful to enhance the image and reputation of a firm among external interest groups.

In terms of internal incentives, Guthrie et al. (2007) argue that firms are willing to report their intangibles due to the benefits of better resource allocation, increased operational efficiency, and improved employee morale and motivation. Others suggest that offering more information on intangibles can help a company to create trustworthiness with employees and other important stakeholders (e.g., Backhuijs et al., 1999; Van der Meer-Kooistra and Zijlstra, 2001). In Germany, Denmark and Japan, intangibles reports have been used to attract employees and customers (Bismuth and Tojo, 2008). As Bismuth and Tojo (2008) point out, some firms experienced that the main benefits of IC reports were to improve customer acquisition and retention, as well as to enhance employee motivation and thus to improve employee recruitment and retention.

Previous research also identifies some negative effects that firms fail to adequately

communicate their intangibles with external stakeholders. For example, Holland (2001a) argues that the problems of financial reporting of intangibles have increased the information asymmetry between users and suppliers of equity capital. Fund managers thus have to explore information on intangibles through private channel and share them with large investors. However, smaller investors usually have no access to such kind of information. Therefore, failing to disclose intangibles may bring disadvantages to small investors. In addition, Aboody and Lev (2000) state that inadequate communication of intangible information such as R&D may encourage insider trading, as managers would exploit internally produced information on intangibles that are unknown to external investors.

As both investors and companies may enjoy some benefits through appropriate intangible disclosure, various guidelines for reporting intangibles have been developed to encourage firms to disclose more information on intangibles in European countries, Australia, and Japan[31] (Bismuth and Tojo, 2008; Guthrie et al., 2007). However, because intangibles are difficult to define, to categorise, and to measure and set up indicators for them, it is difficult to report them (Holland, 2003). There are also some drawbacks with reporting intangibles, and thus companies are unwilling to present too much information on their intangibles. The extant literature has shown that firms may have both incentives and disincentives to report information related to intangibles (e.g., Backhuijs et al., 1999; Van der Meer-Kooistra and Zijlstra, 2001). It is even found that, in practice, some firms do not intend to report much information on intangibles due to the fact that the disadvantages outweigh the advantages of intangible disclosure (Van der Meer-Kooistra and Zijlstra, 2001).

One of the most important disincentives of reporting intangibles is that intangibles are often at the heart of competitive advantage for companies. In order to maintain their competitive advantage, companies fear giving away sensitive information to competitors and prefer to keep their intangibles under wraps (Backhuijs et al., 1999; Canibano et al., 2000; Holland, 2003; Marr et al., 2003; Van der Meer-Kooistra and Zijlstra, 2001; Williams, 2001). Canibano et al. (2000) argue that the competitive position of a company

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[31] These include, for example, "Guidelines for Measuring and Reporting on Intangibles" produced by Meritum Project in 2002, which was conducted by the European Union; "A Guideline for Intellectual Capital Statements" produced by Danish Agency of Trade and Industry in 2000; "Intellectual Capital Statement – Made in Germany (Guideline)" produced by German Federal Ministry of Economics and Labour; "The Australian Guiding Principles on Extended Performance Management (SKE)" produced by Australian Society of Knowledge Economics in 2005; and "Guidelines for Disclosure Intellectual Assets Based Management" produced by Japanese Ministry of Economy, Trade and Industry (METI) in 2005.

may depend largely on its intangible resources, and thus disclosing such information may help competitors neutralize competitive advantages.

The second disincentive is the extra costs associated with intangible disclosure (Backhuijs et al., 1999; Marr et al., 2003; Van der Meer-Kooistra and Zijlstra, 2001). Firms often have to spend a large amount of time and money on implementing new procedures or systems to gather information related to intangibles (Backhuijs et al., 1999). In an attempt to develop an IC reporting framework, Van der Meer-Kooistra and Zijlstra (2001) discuss this with managers in several Dutch knowledge-intensive companies, and find that all companies considered the cost of gathering information on intangibles as a disadvantage.

Thirdly, it is argued that internal measures of intangibles are often not yet tested, and therefore firms may run the risk of exposing the company to external criticism when they disclose those measures (Carroll and Tansey, 2000). Carroll and Tansey (2000) argue that it is unclear which measures of intangibles are reliable predictors of a firm's long-run profitability, and some measures may be irrelevant. Nielsen et al. (2006) also highlight that some indicators of intangibles may cause confusion in the way that they represent two or more different knowledge resources at the same time.

Fourthly, managers may prefer to expense intangible investments as incurred rather than include them on the balance sheet due to tax consequences (Canibano et al., 2000; Van der Meer-Kooistra and Zijlstra, 2001). Hirschey and Weygandt (1985) suggest that firms will gain an immediate tax deduction if they expense their intangible investment such as advertising and R&D instead of capitalizing them. Therefore, firms may prefer not to capitalize intangible investment on their balance sheet to take advantage of the tax subsidy (Canibano et al., 2000).

Moreover, reporting intangibles may leave room for manipulation of information, and thus only "positive" information may be presented (Backhuijs et al., 1999; Van der Meer-Kooistra and Zijlstra, 2001). According to Van der Meer-Kooistra and Zijlstra (2001), one of the well-known drawbacks of reporting intangibles is that firms may decide to only publish certain ratios or indicators based on their own discretion in order to present a more favourable picture of their business. Therefore, external stakeholders may be biased in their decision-making. A further disadvantage of external reporting on intangibles is that it may create higher expectations (Backhuijs et al., 1999; Van der Meer-Kooistra and Zijlstra,

2001). Some firms are afraid of presenting too much future-oriented information as that may arouse false expectations among shareholders, because such future-oriented information might not be substantiated (Van der Meer-Kooistra and Zijlstra, 2001).

Because of these drawbacks of intangible disclosure, some authors suggest that companies need to plan carefully if reporting information on intangibles, and to balance the risk of disclosure against the potential gains (Marr et al., 2003). Numerous empirical studies have investigated the extent to which companies have voluntarily reported on their intangibles, and this will be addressed in the next subsection.

3.3.2 Empirical research on corporate practice in intangible disclosure

Given the theoretical explanations of incentives and disincentives for reporting intangibles, what is the corporate practice in this area? Some researchers have attempted to investigate intangible disclosure using content analysis. These studies focus on different resources such as annual reports (e.g., Bozzolan et al., 2003; Brennan, 2001; Goh and Lim, 2004; Guthrie and Petty, 2000), presentations to analysts (e.g., Garc á-Meca et al., 2005), and a wide range of corporate reports (e.g., Striukova et al., 2008); as well as on various nations such as in Australia (Guthrie and Petty, 2000), Canada (Bontis, 2003), Ireland (Brennan, 2001), Italy (Bozzolan et al., 2003), UK (Striukova et al., 2008); South Africa (April et al., 2003), Sri Lanka (Abeysekera and Guthrie, 2005), and Malaysia (Goh and Lim, 2004). Some researchers also try to conduct comparative studies between different countries (e.g., Guthrie et al., 2007; Vandemaele et al., 2005).

One of the earliest and most important studies in this area is Guthrie and Petty's (2000) empirical examination of Australian annual reporting of intellectual capital. They conduct a content analysis of annual reports to assess both the amount and type of IC information being reported in the sample of the 19 largest listed companies in Australia. In this exploratory study, they observe that the main areas of IC reporting are human resources, technology and intellectual property rights, and organisational and workplace structure. They also find that the key IC components are poorly understood and not reported within a consistent framework. Thus, they conclude that there is little evidence of publicly reported information on intangibles in Australia.

Brennan (2001) investigates the IC reporting practice in Ireland by using the same

methodology with Guthrie and Petty's (2000) study and a sample of 11 knowledge-based companies. She finds that the level of IC disclosure in Ireland is low, similar to that in Australia. She observes that Irish companies have substantial intangibles. However, these intangibles are poorly measured, and are rarely referred to in annual reports and, when referred to, it is in the most qualitative terms. Similarly, Bontis (2003) reports a low level of intangible disclosure in Canada. He conducts a content analysis on a large sample of 10,000 organizations' annual reports, and finds that only 68 out of 10,000 even used the terms in their annual reports. He concludes that there is no evidence at all that IC disclosure has garnered any traction for Canadian corporations.

Bozzolan et al. (2003) conduct a content analysis of annual report of 30 Italian non-financial organizations to investigate the intangible disclosure in Italy. Interestingly, they find that Italian companies tend to disclose more information on intangibles on average than Australian companies. They explain that this might be due to the reason that Guthrie and Petty's (2000) study is three years earlier than theirs, and in these three years, an increasing consciousness of the importance of IC drivers on company performance has been witnessed. They also observe another difference that IC disclosure by Italian companies mainly focuses on the external structure such as customers, distribution channels, business collaboration and brands, which is not comparable with Guthrie and Petty's (2000) finding of human capital.

Similar studies have been conducted in some developing countries as well. In line with research in Australia and Ireland, Abeysekera and Guthrie (2005) find that there is no consistent and theoretical framework of reporting intangibles in Sri Lanka. They also identify that the most frequently reported items in Sri Lanka are external capitals, such as brands and corporate image. Interestingly, they find an increase in the frequency of IC reporting over the two year period that they investigated. Their finding confirms the explanation that Bozzolan et al. (2003) make, in which the importance of intangibles has been increasingly recognized in practice. Goh and Lim (2004) adopt the methodology of Guthrie and Petty (2000) to examine the IC disclosure practices of the top 20 listed companies in Malaysia in their annual reports. They find that the incidence of IC disclosure in companies' reports is mainly in qualitative terms rather than quantitative terms, and the most disclosed component is external capital.

The above studies mainly focus on national intangible disclosure practice. Recently,

comparative studies of reporting intangibles between countries have emerged. Vandemaele et al. (2005) investigate the amount and content of intangible disclosure in three European countries: Netherlands, Sweden, and the UK. Their study utilizes a sample of 180 annual reports and covers three years (1998, 2000 and 2002). They observe that Swedish sample companies on average disclose more information on intangibles than companies in Netherlands and the UK. Their study also reveals that, in general, there is an upward trend in the average amount of IC disclosure from 1998 to 2002, which is in line with the findings of Abeysekera and Guthrie's (2005) study in Sri Lanks. Guthrie et al. (2007) conduct a cross-border comparative study of intangible disclosure using Australian and Hong Kong data. They find that the level of IC disclosure is relatively low in both countries, and where intangibles are disclosed, the information is mainly expressed in discursive rather than in numerical terms. They also find that the level of disclosure is positively related to company size.

All the above national and international studies have focused on analysing disclosures in annual reports. Annual reports are argued to be a highly useful source to investigate the communication with stakeholders (Guthrie and Petty, 2000; Guthrie et al., 2007), as they are consistently available, auditable, and comparable (Gray et al., 1995a, 1995b). However, due to the nature of intangibles, disclosure of them is usually made through a wider range of channels rather than only in the annual reports. Garcá-Meca et al. (2005) identify that information on intangibles is disclosed through both public channels (such as annual reports or company websites) and private channels (such as one-to-one meetings, presentations to analysts, or conference calls). They conduct an empirical study to assess the extent and the type of intangible disclosure in presentations to financial analysts in Spain, and find that companies usually reveal information regarding their strategy, customers, and processes through presentations. Striukova et al. (2008) investigate the IC reporting practice in the UK through a content analysis of a wide range of corporate reports, including all documents on the companies' websites (e.g., annual reports, analysts' briefings, and social and environmental reports, etc.). Their study shows that there is a range of different types of corporate reports used for communication information on intangibles, and the annual reports are not a good proxy for this – only about a third of information on intangibles is found in annual reports and accounts. In line with previous studies, they claim that the proportion of intangibles information presented in quantitative terms is very small for the sample companies.

In summary, previous empirical studies of intangible disclosure practices show that although there is an increasing tendency of reporting more information related to intangibles across the world (e.g., Abeysekera and Guthrie, 2005; Vandemaele et al., 2005), the overall level of intangible disclosure is still low (Beattie and Thomson, 2007). When there is a disclosure, it is mainly expressed qualitatively rather than quantitatively, and the type of information varies from company to company, and from country to country. Therefore, it is difficult to conduct quantitative empirical studies to assess the value creation process of intangibles. As Marr et al. (2003) have observed, the majority of research on intangibles is at the theory building stage, and very little of the proposed measurement theory has been tested.

The low level of intangible disclosure not only limits the academic research in this area, but also results in the information asymmetry between firms and the capital market. Because of the importance of intangibles in wealth creation, there is a growing demand for such information from the capital market. However, the amount of disclosed IC-related information is less much than what analysts expect (García-Ayuso, 2003b). Moreover, whether or not the disclosed intangible information meets the users' needs is also in doubt. The next subsection will discuss empirical studies on intangible disclosure from capital market actors' perspectives.

3.3.3 Empirical research on intangible disclosure from capital market actors' perspectives

Previous subsections discussed empirical research on intangible disclosure practices, in particular, the reasons why or why not organizations want to report information on intangibles and the level of information that has been reported. As has been noted in subsection 3.3.1, one of the incentives that motivate managers to disclose information about intangibles is to communicate with capital market actors. Does intangible disclosure serve the purpose of efficient communication with the capital market? In order to answer this question, some academics start to investigate intangible disclosure from the capital market actors' perspectives. Compared with the large amount of empirical studies on corporate practice in intangible disclosure, as have been shown in the previous subsection, empirical research on the use of intangible information by the capital market actors is in its infancy (Abhayawansa and Abeysekera, 2009). Only a few studies using either survey-based method (e.g., Alwert et al., 2009; Ousama et al., 2011; Petty et al.,

2008) or interview-based case study (e.g., Campbell and Slack, 2008; Holland, 2006) contribute in this regard, and their findings tend to be contradictory.

Alwert et al. (2009) investigate whether or not IC reporting matter to analysts. Using methods of survey, expert workshop, and experiment, they explore views of experienced bankers, auditors, and financial analysts in IC reporting. They conclude that IC reports can reduce risks for both investors/banks and SMEs. Their findings also show that although qualitative descriptions about IC are considered important, participants acknowledge that indicators that help to quantify IC information are more important for them. Petty et al. (2008) survey financial professionals in Hong Kong, and find that most respondents believe that they will find IC information useful in their decision-making process if such information is available. Additionally, most respondents point out that the publicly available IC information is poorly suited to their needs. As a result, they are currently gathering IC information through private information channels, and would like companies to be more transparent in this regard. Similarly, Ousama et al. (2011) examine the usefulness of IC information from prepares' (CFO and accountants) and external users' (analysts and lenders) perspectives in Malaysia using the survey method, and find that both of them perceive the IC information disclosed in the annual reports to be useful for their decision-making purposes.

Holland (2006) also provides evidence on the importance of intangible information to capital market actors, in particular fund managers. He conducts semi-structured interviews with 40 fund managers from 1997 to 2000, and finds that fund managers face some major problems in their stock selection and asset allocation decisions because of the increasing importance of intangibles to share price and the limitations of public domain information sources. To deal with those problems, they use private meetings with company management to obtain information about intangibles and to understand the dynamic connections between intangible variables in the value creation process. The combination of private information and public sources creates a knowledge advantage for the case fund managers.

The above discussed studies show that intangible disclosure is relevant to capital market actors. However, Campbell and Slack's (2008) findings are contradictory to this. Campbell and Slack's (2008) study does not investigate intangible information specifically, but provides evidence on how sell-side analysts view the usefulness of information related

to intangibles. They explore the usefulness and materiality of annual report narrative disclosure in the UK, with particular reference to the banking sector. They conduct semi-structured interviews with 19 sell-side analysts who specialize in banks, and observe that the narrative parts of annual reports that normally contain information about banks' intangibles tend to be relatively unimportant to analysts. Their findings show that "there was a general belief that narrative reporting was not immediately applicable nor helpful in the primary tasks of the sell-side which is to construct forecast models and produce written reports for the buy-side" (Campbell and Slack, 2008:7).

It can be seen from the above discussion that, the extant literature on intangible disclosure that investigates users' perspective tends to be very limited, not only in the amount of studies but also in the ambivalent evidence that they offered. Bukh and Johanson (2003) suggest that for the investigation of IC reporting, it is necessary to pay attention to the demand of the financial market, and ensure that the disclosed information meet analysts' and investors' needs. Therefore, more research in this area is desirable. As Abhayawansa and Guthrie (2010) recommend, "there is a scope for case study-based research, preferably using mixed methods, in order to obtain an in-depth understanding of the importance of IC information in company analysis" (Abhayawansa and Guthrie, 2010:218).

3.4. Modelling intangibles

As has been shown before, it is widely accepted that intangibles are an important source of competitive advantage. However, there is not much empirical evidence of how intangibles create value for companies. One reason for this is that although a large number of models have been developed to measure intangibles, few of them provide the opportunities for conducting empirical studies on linking intangibles to firm performance or value (Bollen et al., 2005). In addition, there is not enough information being disclosed in the public channel to support empirical investigations, as has been discussed in section 3.3. Therefore, research on modelling the value creation process of intangibles is limited.

To date, empirical literature has mainly provided two kinds of evidence. One of them focuses on the value relevance of intangibles, that is, to investigate the linkage between different elements of intangibles and firm performance or value. Another kind of research has attempted to understand the interactions among different elements of intangibles, and then model the value creation process of intangibles. A variety of research methods have

been employed to model intangibles, such as interview, case study, questionnaire, or focus groups, and the most popular one may be case study that involves a small sample of companies (Brennan and Connell, 2000; Guthrie and Petty, 2000a). This section reviews some empirical studies in these two streams.

3.4.1 The value relevance of intangibles

There has been a large body of research examining the relationship between intangibles and firm performance or market value (Canibano et al., 2000; Kim, 2007). Some studies focus on the value relevance of different elements of intangibles, in terms of human capital, structural capital and relational capital. Others attempt to investigate how the aggregate level of intangibles affects firm performance or value. Up to now, empirical literature reveals that, in general, more investments in intangibles are associated with higher future earnings and stock returns (Canibano et al., 2000). However, it should also be noted that, evidence on many intangible indicators are often weak, and in some cases (e.g., employee satisfaction), findings are even contradictory to expectations based on theory (Mouritsen, 2004). In addition, there is a significant bias in the existent empirical research, that is, some elements of intangibles such as investments in R&D attract much interest, and the analysis of other elements of intangibles such as human capital has just begun (Canibano et al., 2000).

3.4.1.1 Structural capital

Empirical research on the value relevance of structural capital mainly focuses on some innovation indicators, such as investments in R&D or IT, due to the fact that such information is publicly available and is comparable between firms or industries. Evidence shows that, in general, investments in R&D are positively related to the performance or market value of companies (Canibano et al., 2000; Hall, 1999; Kim, 2007).

Sougiannis (1994) uses cross-sectional data to examine the relationship between R&D activity and profitability as well as market value of companies. He finds that, on average, a one-dollar increase in R&D expenditures leads to a two-dollar increase in profit over a seven-year period, which indicates that reported earnings adjusted for the expensing of R&D reflects realized benefits from R&D. In addition, his results show that a one-dollar increase in R&D expenditure produces a five-dollar increase in market value. Thus, he

concludes that investors place a high value on R&D investments. Many other studies, such as those by Aboody and Lev (1998), Doukas and Switzer (1992), and Lev and Sougiannis (1996), also provide supports to the positive relationship between R&D investments and firm profitability or stock return.

Some authors investigate the relationship between investments in R&D and market value of firms by modelling Tobin's q on measures of R&D intensity (e.g., Ben-Zion, 1978; Cockburn and Griliches, 1988; Griliches, 1981), and find similar evidence on the significant correlation between Tobin's q and investments in R&D[32]. Megna and Klock (1993) investigate the extent to which intangible capital explains difference in Tobin's q across firms. Their findings illustrate that intangible capital that includes R&D investments and patent contributes to the variation in Tobin's q in the semiconductor industry.

More recently, Hsieh et al. (2003) conduct a time series and cross-sectional analysis of how R&D intensity affects firm performance, and confirm the positive association between them. They use an improved model that accounts for both the contemporaneous and firm-specific serial correlation, as well as the feedback between firm profitability and investments. They find that one-dollar investment in R&D earns a higher operating margin return than the industry cost of capital, and the effects of a one-dollar investment in R&D on the firm's market value is about twice as much the effect of a one-dollar investment in fixed assets.

The results of these studies suggest that innovation indicators, such as investments in R&D or patent, are consistently associated with improved firm performance and market value in many industries. However, although the banking sector is considered as an innovation-incentive sector (McKinsey Global Institute, 2002), only few studies have focused on this sector, and the results of them show weak and even non-existent correlation between IT spending and firm profitability (Beccalli, 2007). McKinsey Global Institute conducts research aimed at gaining an understanding of the role played by IT in US retail banking sector (McKinsey Global Institute, 2002). They find in general, IT investments relate to higher productivity but not always to higher profitability of retail banks. They

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[32] However, Hall (1993) reports a surprising finding, which shows that the stock market's valuation of investments in R&D in the US manufacturing sector has fallen precipitously during the 1980's. He explains that this may indicate several possibilities. Firstly, the private rate of return to R&D has indeed fallen. Secondly, R&D capital depreciates much more rapidly than it used to. Thirdly, the stock market has become more myopic and is discounting the cash flows from R&D capital at a very high rate, treating them as if they were highly uncertain. Finally, this may relate to the wave of mergers and leveraged buyouts during that period.

observe that banks' effort to consistently translate their productivity gains from IT into profitability improvement have mixed results. It is difficult for banks to derive competitive advantage through deploying IT innovation alone.

More recently, Beccalli (2007) investigates whether investments in IT influence bank performance in Europe using a large sample of 737 banks and covering the period of 1995-2000. Their results show little relationship between total IT investment and improved bank profitability or efficiency. However, they find that the impact of different types of IT investment (hardware, software and service) on banks' performance is heterogeneous. Investment in IT services from external providers tends to positively affect firm profitability, while other investments in IT have opposite impacts.

3.4.1.2 Human capital

Compared with the studies on innovation indicators, there are a relatively small number of empirical studies examining human capital (Canibano et al., 2000; Kim, 2007). Although human capital has been widely considered as a fundamental source of competitive advantage (Bontis and Fitz-enz, 2002; Wright et al., 1994; Youndt et al., 1996), there is little evidence on the value relevance of it due to the fact that human capital is difficult to identify, to measure and to standardize (Abdel-Khalik, 2003; Bassi et al., 2002). In addition, the concept of human capital seems to be a paradox in academic research and practice. For example, some argue that investments in human capital, such as training, are positively related to firms' performance (e.g., Barrett and O'Connell, 2001; Youndt, 1996). However, on the other hand, training is often criticized for being faddish, too expensive, and sometimes not improving the bottom line (Caudron, 2002; Kraiger et al., 2004).

As has been discussed in section 2.4.3 of Chapter two, human capital tends to have two dimensions: generic HC that can be measured by education or experience, and firm-specific HC that includes firm-specific experience or trainings. Human capital can also be represented at individual level or organizational level. Research on human capital mainly provides two types of evidence. One kind of studies look at how leadership relates to firm performance (e.g., Abdel-Khalik, 2003; Day and Lord, 1988; Waldman et al., 2001; Zahra and Pearce, 1989), and another one focuses on investments in human capital at the organizational level, mainly training expenditures (e.g., Aragón-Sánchez et al., 2003; Ballot et al., 2001; Barrett and O'Connell, 2001; Bassi et al., 2002).

Zahra and Pearce (1989) survey empirical studies on the impact of boards of directors on corporate financial performance, and present an integrative model of board attributes and roles. They identify four board attributes: 1) composition that denotes the size of the board and the type of membership; 2) characteristics that consist of director background such as the age, educational level, or experience; 3) structure that refers to the dimensions of the board's organization, and 4) process, which refers to the approach the board takes in making its decisions. They argue that these four board attributes have both direct and indirect impacts on organizations' performance. For instance, previous empirical research shows that specific board characteristics are essential for the effective performance of the board's roles of service, strategy and control in an organization, and in turn affect the organization's performance (Zahra and Pearce, 1989). One example of studies on board characteristics is that conducted by Norburn (1986). Norburn (1986) investigates several characteristics (e.g., early background, education, experience, beliefs and attitudes) of 354 directors in large UK companies. He finds that those board characteristics are associated with different industry performance.

More recently, Abdel-khalik (2003) investigates whether or not the capital market recognizes and values human capital. He assumes that the managerial-skill component of human capital depends on personal attributes of managers (experience, risk aversion and the value of shares owned) and firm-specific variables that reflect managerial performance (past performance in terms of profit and growth, organizational complexity and operating risk). Then he uses these variables and relative incentive pay and tangible capital to estimate and forecast a latent index for labour skills. By conducting an empirical analysis of estimating the index for executive member of the board in around 600 firms for the years 1998 to 2000, he finds that the predicted index of labor skills are significantly associated with the market's valuation of common equity. The index of labour skills developed by Abdel-khalik (2003) tries to measure managerial-skill from different aspects. However, it should be noted that some of the variables used to estimate the index may presumably be expected to be directly related to firm market value and not necessarily related to human capital (e.g., firm performance and growth or value of shares owned by managers).

The above studies examine how board of directors relates to firm performance. Meanwhile, another type of research attempts to investigate how investments in human capital affect

firm performance. Training is considered a main activity to improve employees' productivity (Aragón-Sánchez et al., 2003). However, in practice, companies usually maintain an ambiguous position regarding investments in training, as they have to face the challenge that there are costs allocated to training and it is difficult to justify those costs without hard evidence (Aragón-Sánchez et al., 2003; Bassi et al., 2002). Therefore, some authors have put effort to provide evidence in this regard (Aragón-Sánchez et al., 2003; Barrett and O'Connell, 2001; Bassi et al., 2002).

Tharenou et al. (2007) review 67 studies that examine the relationship between training and organization-level outcomes (e.g., HR outcomes such as high job performance or low turnover, performance outcomes such as productivity, and financial outcomes such as profit or ROA). They conclude that training is likely to correlate with positive HR outcomes and greater performance outcomes. However, they identify that those effects tend to be small, and the general statement requires some qualification. For example, there is very likely that some other variables also influence the outcomes other than training.

Previous studies regarding training have tried to measure training in different ways (García, 2005; Tharenou et al., 2007), such as training hours or days (e.g., Kidder and Rouiller, 1997), training expenditures (e.g., Bassi et al., 2002; Murray and Raffaele, 1997), types of training provided (e.g., Barrett and O'Connell, 2001), perceptions of trainings (e.g., Aragón-Sánchez et al., 2003), training policy (e.g., García, 2005), or whether or not a formal training is provided (e.g., Delaney and Huselid, 1996). Due to the lack of data on investments in human capital in the financial statements (Canibano et al., 2000), the majority of research uses survey methods to collect data (e.g., Aragón-Sánchez et al., 2003; Barrett and O'Connell, 2001; Delaney and Huselid, 1996; García, 2005; Kidder and Rouiller, 1997).

For example, Barrett and O'Connell (2001) use survey data of enterprises in Ireland to investigate how different types of training (i.e., general training and specific training) affect productivity. They find significant positive effects for both all types of training combined and general training. Aragón-Sánchez et al. (2003) assess the effects of different training methods and training activities on performance measures of effectiveness and profitability using a sample of 457 European SMEs. Their results show some evidence of significant relationships between training activities and performance. For instance, on-the-job training and training inside the company with in-house trainers are positively

related to most effectiveness and profitability measurements. Moreover, Delaney and Huselid (1996) investigate human resource management (HRM) practices in 590 US for-profit and non-profit firms from the National Organizations Survey, and find that there are significant positive associations between some HRM measures, such as training and incentive compensation, and perceived organizational performance.

Some countries, such as the US, have tried to reduce information problem of training[33]. The American Society for Training & Development (ASTD) provided organizations standard definition and metrics of training, and collected information on this since 1997. Using this database, Bassi et al. (2002) examine how training investments are related to different measures of financial performance for US publicly traded companies, with a specific focus on total stock return. They find that, for a dataset of 575 firms from 1996 to 1998, firms with higher training investments have higher total stock return in the following year.

3.4.1.3 Relational capital

As noted in chapter two, relational capital includes all external resources, such as company name and brands, distribution channels, relations with customers and other stakeholders, etc. (Boedker et al., 2005). Empirical research on the linkage of relational capital and firm performance or value has mainly looked at brand measures, such as advertising and market expenditure[34] or brand value, and customer relationship measures, such as customer satisfaction and loyalty.

There has been growing empirical evidence to suggest that, as an investment in long-term brand equity, advertising is likely to be positively related with firms' profitability or sales, and in turn related to their market value (Canibano et al., 2000; Ali Shah and Akbar, 2008). Early studies tend to consider advertising as a barrier to entry, and provide evidence on the significant relation between advertising and profit at both the industry level (e.g., Weiss, 1969) and the firm level (e.g., Comanor and Wilson, 1967). Weiss (1969) finds that some industries that advertise heavily appear to have higher earnings. Comanor and Wilson's

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[33] To the researcher's knowledge, information related to training activities is not standardized or publicly available in the UK and some other European countries. Data problems will be further discussed in chapter five.
[34] Advertising/marketing expenditure as a proxy of brand has been suggested by many authors, such as the authors of Meritum project (2002); Barth and Kasznik (1999); Barth, Clement, Foster, and Kasznik (1998); and Flöstrand (2006). For example, Barth and Kasznik (1999) argue that firms making investments in advertising likely have intangible assets related to brand name. Thus they select it as a proxy of brand.

(1967) study shows that advertising has a significant and quantitatively important impact on profit rates[35] in the consumer goods industry. They argue that past advertising outlays appear to be an important determinant of the extent of product differentiation.

After that, further evidence on the positive relation between advertising and profitability has been provided (e.g., Pitelis, 1991; Graham and Frankenberger, 2000; Örs, 2006). Pitelis (1991) argues that advertising can affect profit from both supply-side and demand-side, and then constructs a model to capture the effects from both sides. Using annual time series data from 1955 to 1980 in the UK, he finds that advertising has a positive and significant impact on aggregate profits. On the other hand, Graham and Frankenberger (2000) look at changes in advertising expenditures rather than the level of them. They find that, for a sample of 320 firms with reported advertising expenditures for 10 years, depending on the industry, changes in advertising expenditures are significantly associated with earnings up to 4 years following the year in which the expenditures occurred. Örs (2006) uses commercial bank data obtained from the US Call Reports 2001 through 2004 to investigate the role of advertising in the banking sector. He finds that advertising has a positive and economically significant impact on bank profitability.

Some empirical studies have also investigated the relationship between advertising and market value of firms (e.g., Chauvin and Hirschey, 1993; Hirschey and Weygandt, 1985; Morck and Yeung, 1991). Hirschey and Weygandt (1985) show that both advertising and R&D expenditures have systematic influences on market value of firms for a sample of 390 firms. Similarly, Chauvin and Hirschey (1993) utilize a large sample of around 1500 firms for three years (1988-1990) to examine how advertising and R&D expenditures affect market value. Their findings support the positive effects of advertising and R&D on market value.

Apart from advertising, some researchers also look at other variables related to brands, such as goodwill (e.g., Chauvin and Hirschey, 1994) and other brand value (e.g., Barth et al., 1998). According to Chauvin and Hirschey (1994), accounting goodwill numbers appear to be potentially useful indicators of brand name recognition, good customer relations, and good management. They identify that there is a consistently positive influence of accounting goodwill numbers on both profitability and the market value of the firm in the non-manufacturing industries. Barth et al. (1998) examine the association

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[35] The profit rate variable used in this study is profit after taxes as a percentage of stockholders' equity.

between brand value estimated by *Financial World*[36] and market value of firms owning the brands. After controlling for net income and changes in net income, they find that the estimated brand values are consistently and significantly associated with the market value of firms.

The above studies indicate that brand measures tend to positively affect firm performance or market value. However, it is argued that, similar with evidence on innovation indicators, the available empirical evidence on brands still appears to be ambiguous (Ali Shah and Akbar, 2008). Some empirical studies are unable to identify a significant relationship between advertising and profitability or market value (e.g., Core et al., 2003; Erickson and Jacobson, 1992), especially in the banking sector (e.g., Edwards, 1973; Kohers and Simpson, 1981; Santos, 1995). Moreover, Ali Shah and Akbar (2008) review the existing empirical studies on advertising and brand value, and identify several problems with the data and models. They highlight that the majority of these studies have used data from the US, and there is little evidence in the UK. This might be due to the relative absence of advertising data availability in the UK. In addition, many studies on advertising have focused on grasping the product advertising aspects, but ignored the influence of corporate advertising (Ali Shah and Akbar, 2008).

Apart from the issue of brands, customer relationships have also been the focus of empirical studies. The literature pertaining to customer relationships propose that customer satisfaction is related to customer loyalty, and in turn related to firm profitability (Fiordelisi and Molyneux, 2007; Hallowell, 1996; Storbacka et al., 1994). Gupta and Zeithaml (2006) address that customer metrics include a variety of constructs, such as perceptual measures (e.g., customer satisfaction, service quality and loyalty and intentions to purchase, etc.), and behavioral measures (e.g., customer acquisition, customer retention, and cross selling, etc.) The extant quantitatively empirical studies on linking customer metrics to firm performance or value mainly look at metrics of customer satisfaction.

Many empirical studies have found a positive association between customer satisfaction metrics and firm performance or market value (e.g., Anderson et al., 1994, 2004; Gruca and Rego, 2005; Hallowell, 1996; Ittner and Larcker, 1998). Anderson et al. (1994) assume

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[36] *Financial World* (FW) began publishing an annual survey of brand values estimated using a methodology developed by InterBrand (a brand consulting firm) in 1992, reporting 42 brands for fiscal year 1991. By 1997, the survey included over 330 brands that were owned by firms in a variety of industries (Barth et al., 1998). Barth et al. (1998) use a dataset from 1991 to 1996.

that high customer satisfaction is a sign of increased current customers' loyalty, reduced price elasticities, insulation of current customers from competitive effort, and lower costs, and thus reflects positively in the firm's economic return. Using annual customer satisfaction indices[37] of 77 firms in a wide variety of industries in Sweden, they show that an annual one-point increase in the customer satisfaction index has a net present value of $7.48 million or 11.5% of current ROI (return on investment) over five years for a typical firm. This implies that firms that achieve high customer satisfaction also enjoy superior economic returns in Sweden. Using firm-level data from the ACSI in the US[38], Ittner and Larcker (1998) also find positive and significant relations between customer satisfaction measures and firm performance. They find that a one-unit difference in the customer satisfaction index is associated with a difference in the market value of equity of between $236 to $243 million, after controlling for accounting book value. In this study, apart from using firm-level data, they also investigate how customer satisfaction measures relate to firm performance at the customer-level and industry-unit level[39], and find modest support for claims that customer satisfaction measures are leading indicators of accounting performance. However, their results show that many of the relations are nonlinear, and there is some evidence of diminishing performance benefits at high satisfaction levels. They also argue that customer satisfaction measures in practice tend to be somewhat arbitrary.

Gruca and Rego (2005), on the other hand, examine the relationship between customer satisfaction and future cash flow. They argue that, "the firm benefits from customer satisfaction primarily in the future, during the next buying opportunity (because of increased loyalty) or company-initiated contact (through an increased receptivity to cross-selling)" (Gruca and Rego, 2005:115). Similar with Ittner and Larcker (1998), they use ACSI data for around 100 firms from 1994 to 2002. Their results show that a one-point increase in customer satisfaction leads to a $55 million increase in net operating cash flow in the next year or a more than 4% reduction in the variance of future cash flows. Also using ACSI data of nearly 200 firms from 1994 to 1997, Anderson et al. (2004) find a significant and

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[37] These annual indices of firm-level quality, expectation, and customer satisfaction are named Swedish Customer Satisfaction Barometer (SCSB), which are collected by the National Quality Research Centre (NQRC) at the University of Michigan Business School and the International Centre for studies of Quality and Productivity at the Stockholm School of Economics, by surveying large firms in a variety of industries (Anderson et al., 1994).

[38] Ittner and Larcker (1998) use firm-level data from the American Customer Satisfaction Index (ACSI), a national economic indicator of customer satisfaction collected by the National Quality Research Center (NQRC) at the University of Michigan Business School and the American Society for Quality.

[39] In Ittner and Larcker's (1998) study, for customer level analysis, they use customer satisfaction index of 2491 business customers collected by a telecommunications firm in the US. While for industry unit analysis, they use data of 73 retail branch banks in the US of a leading financial service provider.

positive association between ACSI and Tobin's q.

The above empirical studies use similar databases and provide cross-industry evidence. It is argued that the strength of the satisfaction-profit link varies across industries (Gupta and Zeithaml, 2006). Gupta and Zeithaml (2006) suggest that the impact of customer satisfaction on firm performance is likely to be larger in service industries where customers are highly involved, and the quality of a service firm is determined by the frontline employees. Hallowell (1996) tests the satisfaction-profit link in a large US retail bank. Using data of 12,000 customers at 59 divisions, he finds that a one-point increase in customer satisfaction leads to 0.59% increase in ROA for divisions with lower satisfaction score.

However, Anderson et al. (1997) assume that there may be potential tradeoffs between customer satisfaction and productivity for service industries such as airlines, banking, education, hotels, and restaurants, where customer satisfaction is dependent more on dimensions of quality that are more difficult to standardize. Using SCSB data from 1989 to 1992, they find that the association between customer satisfaction and productivity for goods industries is positive and significant, but the association between them for service industries is negative and significant.

Some empirical studies further investigate the relationships among customer satisfaction, customer loyalty, and firm performance (e.g., Hallowell, 1996; Kamakura et al., 2002; Rust and Zahorik, 1993). Using a sample of 100 retail bank customers, Rust and Zahorik (1993) find that increasing customer satisfaction is likely to increase customer retention, and in turn affects market share of the bank. Kamakura et al. (2002) argue that superior satisfaction alone is not an unconditional guarantee of profitability. Using data from 500 branches of a national bank in Brazil, they indicate that for a branch to achieve superior profitability, managers should be efficient in not only achieving superior satisfaction, but also translating such attitudes and intentions into relevant behaviors such as customer retentions.

To sum up, in spite of the effort on investigating the relationship between customer satisfaction and firm performance, empirical research so far has failed to reach a clear and consistent conclusion (Canibano et al., 2000). Evidence on the positive association is mainly provided by studies that use similar databases in the US and Sweden. There are

some studies reporting contradictory results (Canibano et al., 2000). Moreover, only few studies have attempted to build comprehensive models of the satisfaction-profit chain (e.g., Kamakura et al., 2002), and the majority of empirical research examines only a few constructs at a time (Gupta and Zeithaml, 2006). Having observed these gaps, this thesis, therefore, not only intends to examine the customer relationship-performance association using publicly available data for European banks, but also seeks to build a more comprehensive model of it through an in depth case study.

3.4.1.4 Summaries and discussions

The above subsections have discussed empirical research on the value relevance of intangibles in terms of structural capital, human capital, and relational capital. It can be seen that, to date, the evidence on the relations between intangibles and firm performance or value tends to be limited, and this provides rooms for further research.

Firstly, data availability is a significant problem that has prevented researchers from contributing empirical evidence on the value relevance of intangibles. As has been discussed in section 3.3.2, the low level of intangible disclosure in the public domain offers very limited data sources for conducting quantitative empirical research in this area. Canibano et al. (2000) point out that there is an existence of bias in accounting research towards the analysis of some elements of intangibles (e.g., R&D and advertising) to the detriment of other intangible assets (e.g., human capital or customer relationships). This is due to the factor that for the latter, there is an absence of data available in public reports. For example, training expenditure is often not separately reported in financial statements in many countries. Even though many firms have measured their customer satisfaction, the metrics they used are not standardized and not comparable. As a result, the empirical evidence tends to be limited in terms of database and sample – most empirical studies on customer satisfaction have used ACSI data in the US. In addition, research on advertising also presents a geographical bias that they have focused mainly on the US data, and there is little evidence in the UK due to the lack of data there.

Secondly, the metrics of intangibles appear to have some problems. For example, Ittner and Larcker (1998) use three different customer satisfaction measures to conduct three different levels of analyses: customer lever, industry unit, and firm level. They argue that customer satisfaction metrics in their study, like all satisfaction measures used in practice, have

somewhat arbitrary measurement properties. Gupta and Zeithaml (2006) identify another problem regarding customer metrics. They argue that there are overlaps existing in definition and measurement of the constructs on which perceptual customer metrics are based. As a result, "many studies have examined different pairs or combinations of variables, and the pattern of relationship among the variables is not clear" (Gupta and Zeithaml, 2006:733).

The third type of problems is with the valuation models used in previous studies. Zulfiqar et al. (2008) identify that research on the value relevance of advertising expenditures suffers from endogeneity problem within the single equation model that has been commonly used. They argue that a number of factors that are not included in the model might be correlated with both the dependent variable (e.g., market value of firm) and the independent variables (e.g., advertising expenditures), and this may lead to biased results.

Finally, and most importantly, there has been little empirical research on the interactions among different elements of intangibles (Kim, 2007). From the RBV point of view, it is expected that human capital, structural capital and relational capital are correlated with each other, as has been discussed in chapter two. However, empirical research has focused heavily on the impact of individual element of intangibles on firm performance or value, but ignored the interactions and complementarities between different elements (Cuganesan, 2005; Mouritsen et al., 2001). For instance, brands and customer satisfaction are closely related to each other. However, research on brands and customer metrics has grown almost independent of each other (Gupta and Zeithaml, 2006). Future research should put more effort to investigate the relationship between customer satisfaction and brands (Canibano et al., 2000; Gupta and Zeithaml, 2006). Kamakura et al. (2002) also identify that customer satisfaction alone cannot achieve superior profitability, and they provide evidence on how customer satisfaction and retention working together affect the profitability of bank branches.

Many researchers have recognized these problems, and there is an increasing call for empirical research on the interactions among different intangibles (e.g., Bismuth and Tojo, 2008; Lev and Daum, 2004; Marr et al., 2004; Van der Meer-Kooistra and Zijlstra, 2001). However, little has been known so far on this regard (Kim, 2007). The next section will discuss some empirical studies on how different elements of intangibles relate to each other, either qualitatively or quantitatively.

3.4.2 The interactions among different intangibles

Section 3.4.1 has reviewed empirical literature on the value relevance of intangibles, and shown that intangibles do have impacts on firm performance and market value. However, focusing on individual intangible assets is not enough. Instead, companies should have a holistic view of the entire value creation process of intangibles in order to create sustainable competitive advantage (Lev and Daum, 2004). This section discusses some empirical studies that contribute to the literature in this area, which employ either qualitative or quantitative approach.

3.4.2.1 Qualitative empirical studies

Brennan and Connell (2000) review prior empirical research on intangibles, and indentify some main methods used to collect data, such as case study, interview, and survey. As the measurement of intangibles so far remains at the theory building stage (Marr et al., 2003), a qualitative approach, especially case study, appears to be one of the most popular methods for data collection in this stage (Brennan and Connell, 2000; Petty and Guthrie, 2000).

Johanson et al. (2001a) conduct a qualitative exploratory multiple-case study to investigate how Swedish organizations understand the importance of intangibles as performance drivers. They use semi-structured interviews and internal documents analysis to assess the measurement and control process for a sample of 11 large/medium-sized Swedish companies. They find that in five of the organizations, internal analyses of the correlation among different elements of intangibles and the correlation between them and profitability have been performed. For example, it is found that leadership is correlated to some other indicators of human capital and correlated to customers' perceptions of the firm, which are in turn correlated to customer satisfaction.

Similarly, using a mixture of archival research and interviews with managers in 25 UK FTSE250 companies, Holland (2004) provides a comprehensive picture of knowledge-intensive value creation processes, which include hierarchical value creation; horizontal value creation; and network value creation. The hierarchical value creation process involves several elements of human capital and structural capital, such as top

management quality, quality and coherence of strategy, executive pay schemes, and corporate performance systems. They interact with each other, and act as the principal drivers of a wide range of other elements of intangibles in the horizontal and network value creation processes. The horizontal value creation process is normally conducted at middle management and employee operational levels. It consists of input sourcing decisions and processes (exploiting input intangibles such as supply chain management skills, staff training, retention and recruitment skills, etc.); transformation decisions and processes (exploiting process intangibles such as effectiveness of R&D systems or innovation for new products, quality of industrial relations, etc.); and output decisions and processes (exploiting intangibles such as brand power, effectiveness of marketing and promotional skills, quality of distribution systems, etc.). Both hierarchical and horizontal value creation models focus on the value creation processes of intangibles within the organization. The network value creation process, on the other hand, involves interaction among tangible and intangible value drivers at the boundary of the company. Each of these value creation processes are separate, but are closely connected, and are dynamic over time (Holland, 2004).

Both Johanson et al. (2001a) and Holland (2004) conduct case studies using a sample of companies. Cuganesan (2005), on the other hand, investigates the interrelationship between different components of intangibles by conducting a single in-depth case study of an innovation project within an Australian financial services firm. His study shows that different components of intangibles transform each other often in a pluralistic and fluid manner. In the case company, relations between the same components of intangibles cannot be described fully in terms of multiple separate causal relationships. Instead, the relations observed among different components of intangibles may be both positive and negative transformations and appear to be dynamic throughout the innovation project. For example, relational capital in terms of suppliers' expertise and capabilities not only enhanced but also impeded the transformation of human capital into structural capital. Similarly, human capital allowed the building of some elements of structural capital in the earlier stage of the innovation project, but hindered its progression in the latter stages.

It can be seen from the above discussion that there are various forms of interactions and transformations among different elements of intangibles rather than simple cause-and-effect relations between individual intangible elements and performance. These interrelationships, however, are complicated and dynamic, and almost no general

conclusion can be drawn. Moreover, the complexity of the value creation model of intangibles reflects not only the interrelationship among different intangible components, but also their correlation with tangible or financial assets. Murthy and Mouritsen (2011) argue that, on the one hand, various items of IC are interacted; on the other hand, they tend to compete with each other because of their relations with financial capital. They explore the relationship between intellectual capital elements and financial capital via an interview-based case study in a bank, and find that financial capital is not only an effect but also an important input for IC, because IC has to be developed through the firm's budgeting process and the budget may reduce the relationships between IC elements.

The above studies offer qualitative evidence on the interactions among intangible components and their correlations with other types of capital. Besides, some researchers have attempted to investigate these interrelationships by employing quantitative approaches, which will be discussed in the following subsection.

3.4.2.2 Quantitative empirical studies

The previous subsection discussed qualitative empirical studies that explore the interactions among different elements of intangibles and reveal the value creation process of intangibles by telling narrative stories. Quantitative research on this issue mainly focuses on two types of studies. One of them attempts to form an integrated framework of investigating the relationships among all three categories of intangibles (e.g., Cabrita and Vaz, 2006; Kamukama et al., 2010; Shih et al., 2010; Wang and Chang, 2005). Another type of research focuses on interrelationships among some indicators of intangibles, such as the interaction between brands and customer relationships, or the interaction between human capital and customer relationships. As has been addressed in section 3.2, the measurement models of intangibles used in practice tend to be qualitative, and limited information has been reported publicly. Researchers have to face the challenge of demonstrating a meaningful interplay between hard quantitative measures and softer qualitative indicators (Petty and Guthrie, 2000). Therefore, the survey method has been used in the majority of the quantitative studies to collect qualitative information.

One of the pioneering studies conducted by Bontis (1998) provides some insights into the causal link between components of intangibles. In this empirical study, a survey with 63 items is designed to capture the three intangible components (human capital, structural

capital and customer capital) and performance. Data is collected from a sample of MBA students, and a Partial Least Squares[40] (PLS) approach is used to test the conceptual models (measurement model and structural model). The results show that all the path analyses of interrelation between different intangible components as well as their effects on performance are significant, with the exception of the effect of customer relation on structural relation. Bontis' (1998) study provides evidence on the existence of a constant interplay among human, structural and customer capital. He argues that isolated stocks of the brightest individuals will never positively affect business performance, unless the organization has also supported and nurtured "bright individuals into sharing their human capital through organizational learning" (Bontis, 1998:71).

The methodology of Bontis' (1998) research is used by several subsequent studies (e.g., Cabrita and Vaz, 2006; Cleary, 2009). Cabrita and Vaz (2006) carry out a similar empirical study on the interrelationship among different intangibles in the Portuguese banking industry. Using original survey data and the PLS approach, they confirm that there are significantly direct and indirect relationships between intangible components and organizational performance. Apart from these main effects, there are also interaction effects existing in the structural model. For example, structural capital and relational capital positively moderates the relationship between human capital and firm performance. Cleary's (2009) study strongly supports the relationships between relational capital and structural capital as well as between human capital and relational capital, and also partially supports the proposed positive association between human capital and structural capital. However, there is no significant relationship found between structural capital and performance.

More recently, Kamukama et al. (2010) explore the relationships between the three components of intangibles and how they jointly affect financial performance in microfinance institutions by using the survey method. The measurement of intangibles they used is based on works of many other authors. In particular, human capital is measured using the Intangible Asset Monitor, structural capital is measured from different aspects (e.g., organizational culture, orientation to quality, innovation, continuous improvement, information systems and teamwork), and relational capital is measured through aspects of

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[40] Partial Least Squares is a variance-based structural equation modelling technique for constructing predictive models when the factors are many and highly collinear (Tobias, 1995; Wang and Chang, 2005). It is particularly useful to predict a set of dependent variables from a large number of independent variables (Abdi, 2003).

network levels, customer capital and level of marketing channels. They find that the magnitude effect of human capital on performance depends on either structural or relational capital, but there is no significant relationship between relational and structural capital present.

The above studies utilize questionnaires to measure intangible elements. By doing so, they can take advantage of capturing various aspects of intangible components. However, this method also has limitations. Some measures of intangible components used in these studies may be questionable in terms of the extent to which they can fit into the actual metrics that have been used in practice. For example, one of the customer capital items is "customers generally satisfied", which should be answered from customers' perspective, but was answered by organization managers in Bontis' (1998) research.

Alternatively, Wang and Chang (2005) utilize secondary data that is collected from annual reports and some other databases to investigate the phenomenon. They suggest that intangibles can be classified into three categories: human capital, relational capital, and structural capital which can be further divided into innovation capital and process capital. They assume that there may exist three different forms of relationships among these four elements: 1) they may have a direct impact on performance; 2) human capital may affect the other three elements of intangibles first, and these three elements then affect performance; 3) there may also exist a cause-and-effect relationship among innovation capital, process capital and relational capital, and ultimately these elements of intangibles affect performance indirectly through their interrelationship. Using a sample of listed firms in the IT industry in Taiwan during the period 1997-2001, Wang and Chang (2005) investigate the impact of intangible elements on firm performance as well as the relationships among intangibles elements. Their results show that intangible elements directly affect firm performance with the exception of human capital. However, human capital has an impact on performance indirectly through affecting the other three elements of intangibles. Besides, innovation capital also affects process capital, which in turn influences customer capital. Ultimately, customer capital can contribute to firm performance. Therefore, they conclude that human capital is the primary leading factor for the case companies.

Wang and Chang's (2005) study contributes to the literature in that the metrics used to measure intangibles tend to be more objective. Although one might doubt if they can

capture the nature of intangibles, many metrics in their study, such as education degree as a human capital variable, R&D as innovation capital variable, advertising expense as a customer capital variable, are suggested by the literature.

Another noteworthy study in this area is Reed et al.'s (2006) study that explores not only the interactions among intangible components, but also the contingent effects of industry context. On the basis of general resource interaction and from a resource-based view, they focus more specifically on the assumption that the relation of each intangible component to firm performance is contingent on the value of other components. In addition, they suggest that interactions among intangibles are best understood within the very specific industry conditions in which they are developed. Using survey and FDIC data in the US, they conduct an empirical study in a sample of two non-competing sectors in the banking industry (personal and commercial banking). Their results generally support the hypotheses of interactions among intangible components and the contingent industry effects. Interestingly, they show that interactions among intangible components in some markets may experience diminished returns. For example, there are negative coefficients in two interaction terms in the personal banking sample. This indicates that having high levels of organizational capital might lead to insular or bureaucratic behavior that will negatively affect performance in the long run (Reed et al., 2006).

The above studies intend to construct an overall structural model of intangibles. Some other researchers, on the other hand, attempt to provide empirical evidence on the interrelationships among intangibles with special interests to some indicators only.

Bantel and Jackson (1989) investigate the relationship between the characteristics of top management teams (e.g., average age, average tenure in the firm, education level, etc.) and innovation adoptions (technical and administrative innovations) in a sample of 199 banks. They find that more innovative banks are headed by more educated managers who came from diverse functional background. Bantel and Jackson's (1989) findings are in line with the suggestion by Nelson and Phelps (1966) that education may increase one's ability to innovate and to adapt to new technologies. Ballot et al. (2001) examine the effects of human capital (as measured by past and present training expenditures) and technological capital (as measured by R&D), using a sample of large firms in France and Sweden. Interestingly, they find that there are some positive interactions between R&D and managers/engineers' training capital in France, but not with other employees' training

capital. They explain that this confirms the higher importance of training for innovation than for adoption.

The above studies provide evidence on the effect of human capital on structural capital. Human capital, which is regarded by many researchers as the most fundamental intangible component (Bontis and Fitz-enz, 2002; Backhuijs et al., 1999; Van der Meer-Kooistra and Zijlstra, 2001; Wang and Chang, 2005), affects not only structural capital but also relational capital as well. Rucci et al. (1998:84) suggest that "there is a chain of cause and effect running from employee behavior to customer behavior to profits, and it's not hard to see that behavior depends primarily on attitude".

These effects are empirically supported by Nagar and Rajan's (2005) study. In this study, they develop a model to measure customer relationships, and provide a test on the empirical validity of intangible measurements. Nagar and Rajan (2005) argue that customer relationships are multifaceted processes and that customer satisfaction is only one dimension of a firm's customer relationships. Thus, they measure customer relationships by combining four metrics: price metrics (such as interest rate); service metrics (such as percentage of voluntary turnover of tellers, the number of weeks it takes for the bank to process small-business loans on average, and the cross-sell ratio, etc.); customer satisfaction; and customer usage and volume metrics (such as the growth in insured deposits and in customer loan). Using a unique cross-sectional data set of the US retail banking industry that has been gathered from employee and customer surveys as well as from financial reports, they find that these measures do not individually predict future earnings, but gain individual significance in a collective setting, increasing the predictive power substantially. This is due to the fact that the activities underlying the measures are causally interlinked to profits. Their results show that both price and service measures appear to affect customer satisfaction and customer satisfaction is significantly positively correlated to customer usage and volume.

Also using multi-source data collected from a retail firm's employees, managers, and customers and store records, Maxham et al. (2008) provide further support to the service-customer-profit chain (Heskett et al., 1994). They specify models at individual employee, customer, and store levels, as well as at an aggregated level. For the overall aggregated model, they investigate relationships among different employee job perceptions, different dimensions of employee performance, customer evaluation variables formed by

satisfaction and loyalty data, and store performance. They find that employee job perceptions have main and interactive effects on dimensions of employee job performance, which in turn influence customer evaluations. They also show that there is a direct effect of employee perceptions on customer evaluations, and customer evaluations can then affect store performance.

Using multi-source data to measure intangibles from employees', managers', and customers' perspectives, Nagar and Rajan's (2005) study and Maxham et al.'s (2008) study can overcome some data problems existing in Bontis' (1998) study. However, their models tend to ignore the influence of brands on customer relationships, which is argued to be theoretically important (Gupta and Zeithaml, 2006).

3.4.2.3 Summaries and discussions

The above discussion reveals that, compared with the large number of studies on the value relevance of individual elements of intangibles, little is known regarding the interactions among intangible components. Although in principle there should be some fundamental relations between elements of intangibles, the lack of empirical evidence prevents managers from understanding these relations and their impacts on financial performance (Marr et al., 2003; Mouritsen, 2006). There are only few empirical studies providing some insights into this area, either qualitatively or quantitatively, and many limitations exist with these studies. Considering the two streams of empirical research in terms of value relevance of intangibles and interactions among intangibles, empirical research on intangibles should pay more attention to the following issues.

The first concern is related to the methodological issue. It can be seen that current intangibles research tends to shift from theory building into theory testing. As suggested by Marr et al. (2003) and others (e.g., Andriessen, 2004), research on intangibles has to be improved by testing. It seems that the current interest on intangibles research is towards providing more quantitative empirical evidence. There is no doubt that we have captured many aspects of these relationships theoretically, such as the employee-customer-profit chain. However, does this mean that there are consolidated models and therefore the key concern of research is to test them? In fact, little is known so far regarding the real value creation process of intangibles, not only with the interactions among intangible components, but also the evidence on the value relevance of them is often weak and

sometimes contradictory. It is even not clear in terms of the measurement of intangibles. As shown by the qualitative studies on the interrelationships among intangible elements, the value creation process of intangibles is complex and dynamic. Therefore, more qualitative studies are needed to be done to better understand these relationships and construct more solid models. Besides, empirical studies using quantitative methods are also needed. In this study, therefore, the researcher argues that it is better to use multi-methods to collect data. Petty and Guthrie (2000) suggest that using multiple methods in intangibles research is potential useful in terms of corroborating research findings and enriching an understanding of the phenomenon.

Secondly, there is a neglected issue in the extant literature, which is the allocation of funds for intangibles (Kaufmann and Schneider, 2004). Kaufmann and Schneider (2004) highlight that there is a dearth of research that explores how to allocate resources in the intangibles literature. Because "investment in intellectual capital happen in the context of all manner of other investment" and "bounded by the budgeting process" (Murthy and Mouritsen 2011:622), it is necessary to look at the allocation of different types of intangibles. Neely et al. (2003) suggest that the measurement tool of intangibles should be used to support decision-making. Therefore, they call for a third generation of performance measurement that explores the linkages between intangible dimensions of organizational performance and the cash flow consequence of these. The researcher argues that the financial capital for a firm is limited, and managers have to make a decision of how to allocate them into different elements of intangibles to achieve superior performance. In order to efficiently allocate funds for intangibles, several concerns should be taken into account.

At first it is necessary to understand what the key drivers of intangibles are. Although it is suggested that human capital should be the fundamental source of intangibles, it is not clear which elements of human capital are most important and should be allocated more funds in order to gain competitive advantage. Once the key drivers have been identified, we should link these factors to other intangibles and performance. There appears to be not enough attention on this in either academic research or practice. Ittner and Larcker (2003) find that a common mistake companies have is that they do not link the non-financial measures of intangibles to their strategy and performance, so they do not understand which measures really matter. Moreover, the interrelationships among intangible elements are found to be dynamic and change along with industrial conditions, and thus the intangible

models should be restructured as well.

Thirdly, it is found that some empirical studies use models generated from the literature, and might ignore some important factors that influence the dependent variables or independent variables. For example, both Nagar and Rajan's (2005) study and Maxham et al.'s (2008) study have not taken into account the influence of brands on customer relationships. In this regards, the researcher tries to model intangibles based on not only the literature but also the findings from a previous exploratory study conducted by the researcher during her MRes study (2006-2007). In that study, she investigated what were the most important intangibles in the retail banking industry as perceived by bank managers, how to measure them, and how they affected bank profitability. Using semi-structured interviews with bank managers, she introduced a customer-facing intangibles model. This model suggests that human resource can affect service quality. Service quality and brand building will have significant impacts on customer satisfaction. Satisfied customers lead to more loyal customers with the bank, in turn improving the bank profitability (Chen, 2007). Based on the extant literature and the customer-facing intangibles model, the present study intends to further explore the interrelationships among intangible elements and bank performance.

Taking into the above consideration, this study intends to provide some insight into the value creation process in the banking industry by answering the following central research question: how do intangibles affect bank performance? Both quantitative and qualitative methods are used to assess this problem.

3.5 Summaries and Conclusions

This chapter reviewed theoretical and empirical literature on measuring, reporting, and modeling intangibles. It firstly discussed some measurement models of intangibles, and showed that there are no appropriate models so far that can be used to measure and manage intangibles. Some proposed models (e.g., the BSC and the Intangible Assets Monitor) tend to be too qualitative and to vary from time to time and from company to company, and fail to provide comparable information about intangibles among different companies. Others, such as VAIC™, do not provide a method to assess the interactions between different components of intangibles.

Then it discussed literature on intangible disclosure from either corporate practice aspect or capital market actors' perspective. It was found that although there is an increasing tendency that more information about intangibles is disclosed in the public domain, the overall level of intangible disclosure tends to be very low across the world. Moreover, when there is a disclosure, it is mainly expressed qualitatively rather than quantitatively, and the type of information varies from company to company, and from country to country. In addition, empirical research on intangible disclosure tends to focus on corporate practice, and little attention has been paid to whether or not and how capital market actors use such information.

After that, empirical research on the value relevance of intangibles and the interactions among intangible elements was reviewed. Because of the problems with intangible measurement and disclosure, the majority of research on intangibles is at the theory building stage, and very little of the proposed measurement theory has been tested empirically (Marr et al., 2003). With regard to the value relevance of intangibles, there appears to be a bias toward the investigation of some elements of intangibles (e.g., R&D) over others (e.g., human capital and customer relationships) due to data availability problem. In addition, evidence on the relationships between many intangible elements and form performance or market value appears to be ambiguous. More importantly, there is a dearth of research on exploring the interactions among various intangible elements and their joint contribution to firm performance. Until now, we are not clear about how to allocate funds of intangibles, what the key drivers of intangibles are, and how to make these factors measurable and comparable.

Having observed the gaps in the extant literature, this study intends to further explore the role of intangibles in the bank value creation process. On the one hand, more quantitative evidence on the relationships among intangible elements and between them and bank performance is desirable. On the other hand, the literature review shows that it is difficult to conduct a quantitative study in this regard due to the lack of standardized and comparable data for intangibles in the public domain. In this sense, more qualitative research, especially in-depth case study is needed to better understand intangible measurement and to construct solid model of intangibles. Therefore, mixed methods research is adopted in this thesis to answer the research question: how do intangibles affect bank performance? In the next chapter, the methodology choice will be discussed in detail.

Chapter Four: Research Methodology and Research Design

4.1 Introduction

Previous chapters covered the theoretical framework and literature review that guided this study. This chapter discusses in detail the methodological choice and the research design process of this study based on the research purposes and research questions. Specifically, it explains why mixed methods research is considered being appropriate for this thesis, what potential benefits can be obtained, and the weaknesses and barriers of this strategy.

Mixed methods research as a methodology has been applied widely in many fields of social science (e.g., sociology, education, and health science) (Bryman, 2005). In the fields of management, accounting and finance research where positivism has long dominated, there is an increasing call for using multiple methods to explore the same phenomenon (e.g., Cassell et al., 2006; Laughlin, 1995, Modell, 2005, 2009, 2010). Inspired by this methodological development and motivated by the observed gaps in intangible literature that have been discussed in the previous chapter, this thesis adopts mixed methods research as its methodology to explore a central research question: ***how do intangibles affect bank performance***? The researcher's middle-range philosophical position makes the combination of quantitative and qualitative approaches desirable. Such a methodological choice is also influenced by practical considerations (e.g., problem with data availability).

Based on research questions, research purposes, and some practical issues (e.g., data availability and time constrain), this thesis is designed to be a concurrent qualitative-dominant study in which quantitative and qualitative data are collected and analyzed appropriately at the same time, but the latter is given more weights than the former. Such a design allows the two types of data to integrate at all stages of the project. The central research question is broken down into seven specific research questions that are answered by the quantitative and qualitative studies, either individually or collectively. By doing so, this thesis is expected to take advantages of evidence triangulation and complementarity, and thus enhance the validity of the overall project. It should be pointed out that although the combination of quantitative and qualitative data has the potential to gain complementary strengths and nonoverlapping weaknesses (Johnson and Onwuegbuzie, 2004), this thesis has some limitations in its research design, data collection, and data

analysis processes, such as sample mismatching problem and the proxies used in the quantitative study.

The rest of this chapter is structured as follows. Section 4.2 introduces the general philosophical viewpoints of different methodologies. Section 4.3 illustrates the characteristics of mixed methods research as a distinct methodology, and then explains the rationales of the adoption of mixed methods research in this thesis. Section 4.4 addresses research questions and the two specific research methods used in this study, that is, quantitative statistical analysis and interview-based case study. The overall research design of this study, including the timing decision, the weighting decision, and mixing decision is then discussed in detail in section 4.5. Section 4.6 explains the purposes of such research design and the potential advantages of the research design adopted in this study, namely triangulation and complementarity. Section 4.7 discusses the evaluation of the research, including the reliability and validity of the quantitative and qualitative components. Section 4.8 outlines possible barriers and weaknesses existing in this thesis. Finally, section 4.9 concludes this chapter.

4.2 Philosophical assumptions and methodology

Research methodology refers to 'the overall approach to the research process, from the theoretical underpinning to the collection and analysis of the data" (Collis and Hussey, 2003:55). It is the general approach adopted by a researcher to investigate the research topic (Silverman, 2000). The methodological choice a researcher makes is determined by both his/her philosophical assumptions about ontology, human nature and epistemology[41] (Collis and Hussey, 2003; Morgan and Smircich, 1980; Gill and Johnson, 2002), and the research question he/she is investigating (Collis and Hussey, 2003). This section addresses the different philosophical assumptions on these three dimensions: ontology, human nature and epistemology.

4.2.1 Ontology and human nature

The assumptions about ontology and human nature are concerned with the views that

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[41] Regarding the common philosophical elements of worldviews, some social scientists argue that, apart from ontology, epistemology, human nature, and methodology, there is a dimension of axiology that refers to the role of value in inquiry (e.g., Tashakkori and Teddlie, 1998). In this study, the researcher adopts the commonly used three-part schema of philosophical assumptions related to social science research.

social scientists hold about the world and human beings, which together provide the grounds of social theorizing and embrace different epistemological and methodological positions (Morgan and Smircich, 1980). With regard to the ontological assumption, the researcher must answer the following question: what is the nature of reality (Creswell, 1994)? The human nature assumption is concerned with the question about the role of the investigator in such a reality (Laughlin, 1995). Indeed, human nature is treated by some social scientists as a part of ontology. For instance, Eriksson and Kovalainen (2008) define ontology broadly as "the ideas about the existence of and relationship between people, society and the world in general" (Eriksson and Kovalainen, 2008:13).   The central point here is the question of whether the reality is objective and human beings are a product of the external reality, or whether the reality is subjective and the human beings can shape the world within their own experience (Morgan and Smircich, 1980). The former position refers to objectivism and the latter refers to subjectivism or constructionism.

An objectivist view on ontology asserts that social reality has an existence that is independent of social actors. It is a hard, concrete, real thing, and objective phenomenon that lends itself to accurate observation and measurement (Morgan and Smircich, 1980). Therefore, one can discuss social entity, in the case of both organization and culture, as something in the same way that physical scientists investigate physical phenomena (Bryman, 2004; Johnson and Onwuegbuzie, 2004). Objective purists claim that human beings, which are a product of the external reality to which they are exposed, only work as responding mechanisms, even though their perception may influence this process to some degree (Morgan and Smircich, 1980).

On the contrary, subjectivists or constructivists reject the objectivist view, and treat social reality as a projection of human imagination (Morgan and Smircich, 1980). According to this school of thought, "reality is masked by those human processes which judge and interpret the phenomenon in consciousness prior to a full understanding of the structure of meaning it expresses" (Morgan and Smircich, 1980:494). Subjective purists argue that the social world is not the case that the natural world is. Therefore, human beings who are unlike animals or physical objects should be able to attach meanings to the events and phenomenon that surround them, and be able to shape the world within their perceptions and experience about it (Gill and Johnson, 2002; Morgan and Smircich, 1980).

However, the view of the social world and human beings is not simply either objective or

subjective. As Morgan and Smircich (1980) suggest, there are different ontological assumptions from the extremely objective to the extremely subjective point of view. In their subjective-objective continuum, social scientists hold six different assumptions about the world and human beings: reality as a projection of human imagination (subjectivist approach), reality as a social construction, reality as a realm of symbolic discourse, reality as a contextual field of information, reality as a concrete process, and reality as a concrete structure (objectivist approach). At one end of the continuum, an objectivist approach encourages an epistemological stance of positivism; while at the other end of the continuum, the subjectivist approach is in favour of a phenomenological epistemology.

In this thesis, the researcher takes a middle position between objectivism and subjectivism. It is near the position of reality as a realm of symbolic discourse and is closer to the subjective extreme (Morgan and Smircich, 1980). On the one hand, she recognizes the existence and importance of the natural or physical world as well as the emergent social and psychological world. On the other hand, she also accepts the view of human beings as social actors (Morgan and Smircich, 1980; Johnson and Onwuegbuzie, 2004). She believes that human beings have the capability to utilize language, labels, and other modes of culturally specific action to interpret, modify their surroundings, in turn contributing to the enactment of a reality, in line with the view of Morgan and Smircich (1980). With regard to the phenomenon investigated in this study, namely intangibles, she concentrates primarily on investigating how people who are related to this phenomenon, in particular bank managers and bank analysts, perceive, interpret and enact intangibles. Besides, she also believes that there may be some causal relationships between the central phenomenon (intangibles) and other social phenomena (i.e. bank performance), and tries to identify such relationships.

4.2.2 Epistemology

Epistemology asks the following question: what is the relationship between the researcher and that researched (Creswell, 1994)? In other words, epistemology is concerned with the study of knowledge and what we accept as being valid knowledge (Collis and Hussey, 2003). It defines how knowledge can be produced and argued for, including the criteria by which knowledge is possible, what kind of scientific knowledge is available, and what are the limits for that knowledge (Eriksson and Kovalainen, 2008). The two controversial assumptions regarding ontology and human nature − objective ontology and subjective

ontology – then pose two distinct epistemological positions: positive epistemology and phenomenological (or normative, interpretive) epistemology (Morgan and Smircich, 1980; Collis and Hussey, 2003; Bryman, 2004).

One with objective ontology that treats the social world in the same way as the natural world would encourage an epistemological consideration of positivism. Positivism emphasizes the importance of studying the nature of relationships among the elements constituting that structure (Morgan and Smircich, 1980). Positivists believe that the researchers cannot have knowledge of anything, except observing phenomena and the relations between them. Thus, they argue that researchers should maintain an independent and objective stance (Keat and Urry, 1982; Collis and Hussey, 2003). Bryman (2004:11) highlights several characteristics of positivism as: 1) only phenomena and hence knowledge confirmed by the senses can genuinely be warranted as knowledge; 2) the purpose of theory is to generate hypotheses that can be tested and that will thereby allow explanations of laws to be assessed; 3) knowledge is arrived at through the gathering of facts that provide the basis for laws; and 4) science must (and presumably can) be conducted in a way that is value free.

On the other hand, bearing with subjective ontological assumption in mind, people will be in favour of a phenomenological epistemology. Phenomenological epistemology emphasizes the importance of understanding the processes through which human beings concretise their relationship to their world (Morgan and Smircich, 1980). Unlike positivism, phenomenologism supports the view that the subject matter of the social science, namely people and their institutions, is fundamentally different from that of the natural science. Therefore, social scientists are required to grasp the subjective meaning of social action through a different logic of research procedure (Bryman, 2004). They interact with what is researched, and try to minimise the distance between themselves and what is researched (Creswell, 1994; Collis and Hussey, 2003).

As the researcher adopts a middle position in her ontological assumption, she also has a middle-range viewpoint on the epistemological stance in this study. She views knowledge as a construction based on the reality of the world where human beings experience and live (Johnson and Onwuegbuzie, 2004). In this study, she believes that knowledge can be gained by understanding the role of human beings playing in the social reality (Morgan and Smircich, 1980) rather than separating the knower and the known. She also recognizes that

it is important to study the nature of relationships among social phenomena, which are the relationships between different elements of intangibles and bank performance in this study.

4.2.3 Methodology

Methodology refers to the overall approach to the research process. Social scientists with different philosophical assumptions would adopt different approaches in their research. Corresponding to the objective-subjective debate in ontology and the positive-phenomenological contrast in epistemology, there is the quantitative-qualitative debate in the methodology dimension.

One with objective ontological and positive epistemological assumptions will prefer a quantitative approach in methodological position. Creswell (2003:18) defines a quantitative approach as:

> *"One in which the investigator primarily uses postpositivist claims for developing knowledge (i.e., cause and effect thinking, reduction to specific variables and hypotheses and questions, use of measurement and observation, and the test of theories), employs strategies of inquiry such as experiments and surveys, and collects data on predetermined instruments that yield statistical data".*

Therefore, if a quantitative approach is adopted, a researcher tends to emphasize quantifications in the collection and analysis of data. He/she is likely to employ a deductive approach to look at the relationship between theory and research, and the focus is to test the theory or develop hypotheses. He/she may use large samples and data that are highly specific and precise, hence results from a representative sample can be generalized to the population (Collis and Hussey, 2003; Bryman, 2004).

By contrast, under the ontological orientation of subjectivism and the epistemological orientation of phenomenologism, a qualitative approach will be adopted in the research process. Instead of the emphasis on testing of theory, qualitative research aims to generate theories by employing an inductive approach. This school of thought rejects the natural scientific model that is suggested by quantitative approach. On the other hand, they argue that there is a fundamental difference in subject matter between the natural and social areas (Smith and Heshusius, 1986), and prefer an emphasis on the way in which individuals interpret their social world (Bryman, 2004). In this point of view, it is impossible to separate the knower and known and to differentiate fully causes and effects in the social world. Thus it is inappropriate to utilize the scientific method of the physical sciences to

study social and human issues (Onwuegbuzie, 2002; Johnson and Onwuegbuzie, 2004). Qualitative approach is also characterized by using small samples and rich and subjective data (Collis and Hussey, 2003).

Around the crucial question of whether or not social scientists could and/or should borrow the methodology used in physical sciences to investigate the social world and human behaviour (Smith, 1983), the quantitative-qualitative debate in social science research has been discussed for more than a decade since the late 19th century (Onwuegbuzie, 2002; Smith, 1983; Smith and Heshusius, 1986). Given the fundamentally different philosophical assumptions, quantitative and qualitative methodologies are argued to be conflicting and incompatible (Smith, 1983; Smith and Heshusius, 1986).

However, as discussed before, there are different positions between extremely objective-subjective ontology and positive-phenomenological epistemology. As a result, it is also possible to have different methodologies apart from purely quantitative and qualitative approaches.

Campbell and Fiske (1959) developed an idea of "multiple operationalism" in contrast with the "single operationalism" dominated in social psychology at that time. They argue that "in order to estimate the relative contributions of trait and method variance, *more than one trait* as well as *more than one method* must be employed in the validation process" (Campbell and Fiske, 1959:81). They opened the door for social scientists to use both quantitative and qualitative methods in a study, which was called "methodological triangulation".

Recently, Johnson et al. (2006) summarized four approaches in management research. The first approach is positivism that has dominated management research for a long period. This approach is concerned with using quantitative methods to collect data and test hypotheses. The second one is neo-empiricism (also called qualitative positivism), which emphasizes the use of non-quantitative methods with largely positivistic assumptions to inductively describe and explain human action in and around organizations. The third approach, namely critical theory, holds a social constructionist stance in philosophical assumptions. This mode involves using qualitative methods to enable a structural phenomenology or critical ethnography. The fourth approach is affirmative postmodernism, which is similar to critical theory in ontological level, but focuses on using qualitative

methods to enable deconstruction.

It can be seen that, therefore, it is possible to combine qualitative and quantitative methods to investigate different dimensions of actors' behaviour if one adopts the approach of neo-empiricism. Indeed, as the quantitative-qualitative debate has died down, there has been an increasing interest in combining quantitative and qualitative methods in different ways (Cassell and Lee, 2011).

In this study, the researcher tends to have a middle-range philosophical position between objectivist and subjectivist. Therefore, it seems that her methodological consideration crosses positivist and neo-empiricist (qualitative positivist). In this methodological position, on the one hand, she has the belief of a positivist that there is an objective social world out there to be explored, in which there should be some causal relationships between different elements that she is interested in. She can therefore use quantitative methods to analyse these relationships. On the other hand, she also considers the phenomenon in the way neo-empiricism suggests. She believes that the actors can use subjective meanings to interpret and interact with the everyday life world, and those interpretations and interactions can be investigated with a "third-person point of view" (Schwandt, 1996:62). Consequently, she can use a qualitative method, in particular interviews with the actors, to explore how the actors subjectively experience the social world. In the next section, the methodological choice of this study will be discussed in detail.

4.3 The methodological choice in this thesis

The previous section addressed the researcher's philosophical assumptions. It showed that she takes a middle position in ontological and epistemological stances. Consequently, it is possible that she can locate her methodological considerations in both positivist and neo-empiricist approaches. As has been noted in chapter one and three, the methodological choice in this thesis is to use mixed methods research where the quantitative and qualitative methods are combined together. This section discusses in detail why mixed methods research, as a methodology, is appropriate for the current study.

4.3.1 Mixed methods research as a methodology

Mixed methods research by definition (Johnson et al., 2007: 123) is: "the type of research

in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration". This research methodology is argued to be intellectual and practical, as it is likely to take the advantage of overcoming the weaknesses in singular methods (Johnson and Onwuegbuzie, 2004), and to provide the most informative, complete, balanced, and useful research results (Johnson et al., 2007).

However, tracing back the history of mixed methods research, although Campbell and Fiske already argued for using multiple methods in 1959, the adoption of mixed methods research in social science inquiry has not been popular until the 1980s, because of the paradigm war that emphasizes the distinctions between positivism and phenomenologism. Paradigm purists argue that the compatibility of positive and phenomenological epistemologies is impossible. As a result, the quantitative and qualitative methodologies which are underlain by different epistemological considerations are incompatible (e.g., Smith, 1983; Smith and Heshusius, 1986). Social scientists who encourage using multiple methodologies/methods have to counter such a paradigm-methodology link. In addition, the early advocators of methodological triangulation also fail to indicate how the prescribed triangulation is actually performed and accomplished (Jick, 1979).

In response to the paradigm-methodology link held by paradigm purists, Howe (1988) appeals for a pragmatic philosophical perspective. This pragmatist point of view is illustrated as rejecting the forced choice between positivism and phenomenologism with regard to methods, logic and epistemology (Tashakkori and Teddlie, 1998). Standing on the middle point, pragmatists maintain that scientific inquiry is not formalistic and the researcher may be both objective and subjective in epistemological orientation over the course of studying a research question (Tashakkori and Teddlie, 1998:24). Therefore, some social scientists assert that both qualitative and quantitative approaches are useful and that the researchers should make the most efficient use of them in order to better understand the social phenomena (Tashakkori and Teddlie, 1998; Onwuegbuzie, 2002).

Pragmatism was suggested as the philosophical assumption by many social scientists (e.g., Tashakkori and Teddlie, 1998; Onwuegbuzie, 2002; Johnson and Onwuegbuzie, 2004; Morgan, 2007) for mixing quantitative and qualitative approaches. Morgan (2007:73) argues that "the great strength of this pragmatic approach to social science research

methodology is its emphasis on the connection between epistemological concerns about the nature of the knowledge that we produce and technical concerns about the methods that we use to generate that knowledge".

Apart from pragmatism that has been most commonly associated with mixed methods research (Feilzer, 2010)[42], there are some other views regarding the philosophical foundation for mixed methods research emerged from the literature (Creswell and Plano Clark, 2007). Greene and Caracelli (1997, 2003[43]) hold a "dialectical" perspective, which states that there may be no one best paradigm that fits mixed methods research and researchers can use multiple paradigms in their mixed methods study. Creswell et al. (2003)[44] view mixed methods research as a method rather than a methodology. They argue that the philosophical assumptions relate to the type of mixed methods design and may differ depending on the type of design used (Creswell and Plano Clark, 2007). Mertens (2008) suggests that the transformative-emancipatory perspective[45] offers a philosophical foundation for mixed methods research.

Despite the debate in social science about which paradigms fit best the mixed methods research, it is no doubt that in the last two decades, mixed-methods research has been applied widely in many fields of social science, such as sociology, education, evaluation, and health science (Bryman, 2005; Creswell, 2009; Molina-Azor ń, 2011). Nowadays, mixed method research has become the third paradigm in social science research, as a natural complement to traditional qualitative and quantitative research (Johnson and Onwuegbuzie, 2004).

In the fields of management and accounting research where positivism has long dominated, mixed methods research has recently attracted increasing attention (e.g., Cassell and Lee,

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[42] This is cited by Feilzer (2010) from Teddlie, C., and Tashakkori, A. (2009). *Foundations of Mixed Methods Research*, Thousand Oaks, CA:SAGE.

[43] These are cited by Creswell and Plano Clark (2007) from Greene, J. C. and Caracelli, V. J. (2003) "Making Paradigmatic Sense of Mixed Methods Practice", in A. Tashakkori and C. Teddlie (Eds.), *Handbook of Mixed Methods in Social and Behavioural Research* (pp. 91-110). Thousand Oaks, CA: Sage.

[44] This is cited by Creswell and Plano Clark (2007) from Creswell, J. W., Plano Clark, V. L., Gutmann, M. and Hanson, W. (2003) "Advanced Mixed Methods Research Designs", in A. Tashakkori and C. Teddlie (Eds.), *Handbook of Mixed Methods in Social and Behavioural Research* (pp. 209-240). Thousand Oaks, CA: Sage.

[45] According to Mertens (2008), the transformative-emancipatory paradigm is characterized as emphasizing the lives and experiences of marginalized groups who suffer oppression and discrimination. The ontological view of this paradigm describes reality within a historical, political, cultural, and economic context, and the epistemological position of this paradigm holds that interaction between the researchers and the participants is essential and requires a level of trust and understanding to accurately represent viewpoints of all groups fairly (Mertens, 2008:98).

2011; Cassell et al., 2006; Currall and Towler, 2003; Grafton et al., 2011; Jogulu and Pansiri, 2011; Lillis and Mundy, 2005; Modell, 2005, 2009, 2010). Challenging the dominance of positivism, Laughlin (1995) suggests a "middle-range" thinking, which stands at the mid-point of all philosophical assumptions in terms of ontology, epistemology and methodology. He argues that there is no single research approach that can discover absolute truth as all approaches provide partial depictions of reality. Therefore, it is better to explore accounting reality through multiple ways (Laughlin, 1995, 2004, 2007). Modell (2009, 2010) notes that mixed methods research is helpful to "bridge the divide between the economics-based, functionalist 'mainstream' and the 'alternative' paradigm informed by interpretive and critical perspectives" (Modell, 2010: 124) in management accounting research.

The Economic and Social Research Council (ESRC) set out a project[46] that aimed to enhance good practice in the use of qualitative methods in management research. As part of the project, Cassell et al. (2006) conducted in-depth interviews with what they called 'stakeholder groups', which included academic disseminators, practitioners, doctoral students, and qualitative researchers. They find that a number of interviewees advocated mixed methods in management research, because of the sense that quantitative and qualitative methods could support and complement each other.

Motivated by the methodology development in the management and accounting research, the researcher adopts mixed method research in the present study to examine the research problem. As noted previously, the researcher has a middle position in her philosophical assumptions, and this offers a foundation for the adoption of mixed methods research. Moreover, the methodological choice in this thesis is determined by the research objective and influenced by the practice constraints as well, which will be discussed in the next subsection.

4.3.2 Mixed methods research in this study

In undertaking a piece of research, the researcher should make a methodological choice,

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[46] This project named as "Benchmarking Good Practice in Qualitative Management Research" (Grant No H33250006) started in 2003 and ended in 2005. Led by Professor Catherine Cassell of Manchester Business School, a team from Manchester Business School, Birkbeck College and the University of Sheffield examined how qualitative research was done, and then designed training materials that aimed to deal with the shortcomings they found. Their work included a review of written material and 45 in-depth interviews with key people, such as journal editors, qualitative research funders, opinion pollsters and consultants, university doctoral programme leaders, and researchers. (Source: http://www.esrcsocietytoday.ac.uk/)

which is influenced by his/her philosophical assumptions. More importantly, the methodological choice is determined by the nature and content of the research phenomenon, as well as the extent of the available resources (Gill and Johnson, 2002). In this study, the adoption of mixed methods research not only is influenced by the researcher's philosophical assumptions and the gaps in the extant literature, as discussed before, but also to a large extent reflects the practical problems in the field of intangibles research. Before explaining the methodological choice, it is apposite here to introduce the research history of this study.

As has been discussed in chapter three, although a huge amount of empirical research has been conducted in the field of intangibles research, there is a dearth of quantitative evidence on the relationships among different intangible elements and how they relate to firm performance. One of the factors that limit quantitative empirical research in this regard is that there are no widespread accepted models that can serve the purpose of measuring intangibles and comparing intangibles among firms (see section 3.2 of chapter three).

Therefore, in an attempt to build up an appropriate model to investigate the relationship between intangibles and firm performance, the researcher conducted an exploratory case study in the retail banking sector prior to this study[47], and introduced a customer-facing intangible model based on the findings of the case study (Chen, 2007).   Then she wanted to further examine the relationship between customer-facing intangibles and bank performance using quantitative approaches. However, she found that it was difficult to carry out a solely quantitative study because of the problem with data availability.

Previous works suggest that there are two ways to collect quantitative data in the investigation of intangible-performance association (see section 3.4 of chapter three). One is to collect private data by using instruments such as survey (e.g., Bontis, 1998; Kamukama et al., 2010; Nagar and Rajan, 2005). However, this way of data collection is very time consuming and costly, and also heavily relies on the cooperation of case companies. As will be explained further in section 5.2.1 of chapter five, such a mode of

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[47] Prior to this study, the researcher conducted a case study during her MRes study (2006-2007) investigating what were the most important intangibles in the retail banking industry as perceived by bank managers, how to measure them, and how they affected bank profitability. That case study used semi-structured interviews with bank managers, and introduced a customer-facing intangibles model. This model suggests that human resources can affect service quality. Service quality and brand building will have significant impacts on customer satisfaction. Satisfied customers lead to more loyal customers with the bank, and in turn, according to bank managers, improving the bank profitability.

data collection was not feasible for this study. Therefore, the researcher turned to look at data source in public domain. She then found that the level of publicly available data about intangibles is very low in terms of the amount of information disclosed and the proportion of quantitative data (see section 3.3 of chapter three). Lack of information to a large extent limits the variables and data that can be used in quantitative studies, and weakens the generalization of the results. Some researchers, therefore, suggested using proxies to measure intangibles (e.g., Fiordelisi and Molyneux, 2007; Abdel-khalik 2003; Dick, 2006, 2007). This way of data collection seems to be more practical for a PhD student than collecting private survey data, but has an obvious weakness in that the extent to which these proxies capture the nature of intangibles is doubtful.

Therefore, the researcher considered that a purely quantitative study might not be suitable for exploring the research phenomenon. She supposed that intangibles could be measured and there were causal relationship between them and firm performance. However, we have not found the proper measures and have not understood explicitly the model yet, as has been discussed in section 3.4.2 of chapter three. In this sense, qualitative study is helpful to better understand the relationships among intangible elements and between them and firm performance, and to construct more solid models for quantitative analysis. Given the above consideration, and also motivated by the methodology development in management and accounting research that has been discussed in the previous subsection, the researcher argues that it is better to use mixed methods research that combines quantitative and qualitative methods to investigate intangibles in this thesis. Besides, mixed methods research seems to be more suitable to explore the objective of this study and to answer the research question than singular methods.

The core objective of this study is to investigate and understand the role of intangibles in banks' business models and their impacts on bank performance. Despite the lack of terminology in intangibles research, there is a common consensus that intangibles refer to the knowledge-based resources of a firm (Kristandl and Bontis, 2007). If taking the view of objectivism, knowledge should be a reality that is objective and observable, and then can be measured as numbers. But can knowledge be represented just on the basis of its physical characteristics? Obviously, knowledge is something that involves human behaviours, culture, and subjective thoughts rather than the purely physical characteristics. Hence, pure positivism which treats social phenomenon the same as that in the natural world seems not suitable for this study. On the other hand, a subjective perception is useful for

understanding and describing complex social phenomena, but makes measuring intangibles impossible. However, measuring intangibles is indeed an important purpose of this study. Therefore, it is better to stand in the middle of objectivism-subjectivism to investigate intangibles. As intangibles refer to the term of a dynamic process rather than an object (Arenas and Lavanderos, 2008), the middle position has the potential to fit together the insights provided by quantitative and qualitative research into a workable solution, and offer an expansive and creative form of research (Johnson and Onwuegbuzie, 2004).

With regard to the research question, as has been outlined in section 1.4 of chapter one and section 4.1 of this chapter, the central question of this study is: ***how do intangibles affect bank performance?*** Previous literature has devoted considerable effort to measure intangibles and provide information on them, and different measurements, indicators or proxies of intangibles do exist (Kaufmann and Schneider, 2004). Therefore, based on current knowledge, it is likely that the researcher can apply a quantitative approach to answer this question by testing the relationship between bank performance and proxies of intangibles. On the other hand, the field of intangibles research is still in its embryonic stages (Kristandl and Bontis, 2007). As has been discussed in chapter three, although the most popular method that has been used in this field is case study (Petty and Guthrie, 2000), more work is needed to understand and explain the function of intangibles (García-Ayuso, 2003a; Kaufmann and Schneider, 2004). A qualitative approach, in particular interview-based case study, therefore, is useful to gain insight into the value creation process of intangibles and to search for appropriate intangible measures from practitioners' perspective.

It can be seen from the above discussion that mixed methods research is the best way to fulfil the research objective and to answer the research question. As all social phenomena are quantitative and qualitative at the same time (Ercikan and Roth, 2006), the researcher argues that knowledge about intangibles should be obtained in both quantitative form and qualitative form to provide a rich and comprehensive description. As Jogulu and Pansiri (2011:688) point out, "divergent findings created through differing data collection and analysis techniques appear to lead to greater depth and breadth in overall results, from which researchers can make more accurate inference with increased credibility."

Specifically, in the quantitative study of this thesis, the researcher uses proxies of intangibles suggested by previous works and her interview experience and collects

quantitative data from publicly available sources (e.g., annual reports, social responsibility reports, bank websites and presentations). Then, statistical techniques are employed to test the hypotheses of the relationships among different intangible elements and between them and bank performance. In the meantime, a qualitative approach, in particular interview-based case study is adopted to explore how intangibles have been measured, reported, and modelled in bank business practice. In the next section, specific research questions that are answered by the quantitative and qualitative studies either individually or collectively will be addressed.

4.4 Specific research questions and research methods

The importance of research questions in mixed methods research has been widely discussed in the literature (e.g., Bryman, 2007; Creswell and Plano Clark, 2007; Tashakkori and Creswell, 2007; Tashakkori and Teddlie, 1998). Given the distinct nature of quantitative questions and qualitative questions, it is more difficult to frame a research question in a mixed methods study than that in a single method study. For example, Greene et al. (1989) examine 57 mixed methods studies and find that only 5 of them integrated the quantitative and qualitative data. This may be, to some extent, due to the reason that those projects were designed to address distinct research questions rather than integrative questions (Bryman, 2007).

Tashakkori and Creswell (2007) review some mixed methods studies and suggest that there might be three ways of stating mixed methods research questions. The first one is to write separate quantitative and qualitative questions, followed by an explicit mixed methods question. Secondly, researchers could write an overarching mixed research question, which is later broken down into separate quantitative and qualitative sub-questions. The third way is to write research questions for each phase of a study as the study evolves. They argue that the second one is more frequent in parallel or concurrent studies, while the third one is found in sequential studies more than in concurrent studies. This study attempts to conduct parallel quantitative and qualitative research. Therefore, the research question is formulated as follows. At first, a central research question is framed (see the central research question in section 4.3). Then it is broken down into separate specific research questions, which include quantitative and qualitative sub-questions that are answered in each strand of the study, as well as integrated questions that are explored by the combination of quantitative and qualitative studies.

The first sub-question is supposed to be answered by the quantitative component of this thesis, which is specified as following:

- ***RQ1: what are the relationships among different intangible elements and bank performance?***

The quantitative study intends to test the relationships among different intangible elements and how they affect bank performance either individual or collectively. Data is gathered from publicly available sources, as mentioned in the previous section. Intangible elements are measured based on the works of other authors and modified according to the data availability. Additionally, some of the measures are also guided by the interview experience that the researcher gained from the qualitative study[48].

It should be pointed out that some variables used in previous literature might be problematic. Because of data availability problem, researchers have to use proxies of intangibles that might not fully capture the feature of intangibles. Despite the limitations with the proxies of intangibles, the researcher argues that it is worthwhile to conduct a quantitative study to answer the research question due to several considerations.

Firstly, although the public disclosure about intangibles is poor, it is the main source that the analysts and investors use to grasp the meaning of intangibles. It is important to investigate the extent to which the public information is helpful in capital market actors' investment decision-making process. Secondly, the proxies of intangibles used in this thesis are suggested by previous literature. Although they might not be the most appropriate measures of intangibles, they are the best possible metrics that can be got, and have been proved to be powerful factors as well. Finally and more importantly, the quantitative component in this thesis is not just a hypotheses testing process. Further, it identifies problems and limitations with intangibles research in terms of measurement, disclosure and modelling. This provides opportunities for the qualitative component of this thesis to further investigate those problems and search for potential ways to improve future quantitative research in this regard.

The qualitative component of this thesis involves undertaking in-depth interviews with bank analysts and bank managers. Qualitative research is argued to be suitable for

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[48]Proxy identification will be discussed further in section 5.2.2 of chapter five.

exploring issues about which little is known or about which much is known to gain novel understanding (Strauss and Corbin, 1998). As has been discussed in section 3.4 of chapter three, although the focus of intangibles research tends to shift from theory building into theory testing, more qualitative studies are needed in order to better understand the value creation process of intangibles. Specifically, the qualitative study of this thesis aims to investigate the role of intangibles in banks' business model by looking at it from the practitioners' perspective. It proposes to answer the following sub-questions:

- *RQ2: What may be the important intangibles for a bank?*
- *RQ3: How do intangibles relate to bank performance?*
- *RQ4: How can intangibles be measured?*
- *RQ5: How have intangibles been reported?*

By answering these specific research questions, the qualitative study seeks to explore how intangibles are measured, reported, and modelled in bank business practice. As has been discussed in chapter three, previous literature on intangibles that used interview-based case study mainly focused on the investigation of firm management perspective, and little attention was paid to capital market actors' view. This study intends to examine intangibles through interviewing both bank managers and bank analysts. Bank managers are essential participants who directly relate to the value creation process of intangibles, while bank analysts are the primary users of the information and they can provide perceptions about intangibles from standing outside the company. Therefore, by collecting interview data from the two groups of participants, the qualitative part of this thesis is likely to provide a more comprehensive picture of intangibles than previous studies.

The above five specific research questions are supposed to be answered by either the quantitative study or the qualitative study. Bearing in mind that this thesis uses a mixed methods research, the quantitative and qualitative components should be connected with each other rather than be separated. As Bryman (2007) suggests, a genuine mixed methods project is "much like a conversation or debate, and the idea is then to construct a negotiated account of what they mean together" (Bryman, 2007:21). In this thesis, the conversation between quantitative and qualitative studies starts at the beginning of the research design, that is, from the stage of constructing research questions. The quantitative study shows us the problems and limitations with intangible measurement, disclosure, and modelling. On the other hand, by exploring the value creation process of intangibles, the qualitative study has the opportunity to examine in depth those problems and limitations,

and search for potential ways to improve the variables and models used in the quantitative study. Jointly, the following hybrid specific questions will be answered:

- *RQ6: What may be the problems and limitations with the quantitative models and data?*

- *RQ7: How can the quantitative models be improved?*

The detailed description and discussion about the quantitative and qualitative study will be addressed thoroughly in chapters five and seven. Chapter five will outline how the hypotheses are developed, how the quantitative models are specified, how the variables used in the quantitative models are identified, and what the final sample looks like. Chapter seven will discuss the specific procedures of collecting interview data in this study and the data analyses process. In each chapter, the difficulties associated with either the quantitative or qualitative methods will be discussed. The next section will show how the research is designed.

4.5 Research Design

Creswell and Plano Clark (2007:58) define research design as "procedures for collecting, analysing, interpreting, and reporting data in research studies". There has been a great deal of attention paid to the classification of mixed methods design since the end of the 1980s (Creswell and Plano Clark, 2007)[49]. For example, Tashakkori and Teddlie (1998) generate three different types of mixed method designs: 1) equivalent status designs (sequential or parallel); 2) dominant/less dominant designs (sequential or parallel); and 3) multilevel use of approaches. Creswell and Plano Clark (2007) classify that there are four major types of mixed methods designs: triangulation design, embedded design, explanatory design, and exploratory design.

The various classifications of mixed methods designs seem to suggest that there may be an infinite number of design options. However, although different features have been emphasized and different names have been given, there are more similarities than differences among these classifications, in which certain issues are involved in all of them (Creswell and Plano Clark, 2007). These issues are important for every piece of mixed

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[49] Creswell and Plano Clark (2007) summarize the range of previous classifications of mixed methods design, and provide a list of 12 classifications (see page 60 in their book). These classifications represented different social science disciplines, including evaluation, health research, and educational research, and emphasized different facets of mixed methods designs.

methods study, and need to be carefully taken into account at the research design stage. Such issues include 1) the sequence of the data collection and analysis, 2) the priority or weight given to the quantitative and qualitative study, and 3) the stage/stages in the research process at which the quantitative and qualitative phases are connected and the results are integrated (Morgan, 1998; Ivankova et al., 2006; Creswell and Plano Clark, 2007). In this section, the decision-making process of this study will be addressed in light of these issues, namely timing decision, weighting decision, and mixing decision.

4.5.1 The timing decision of this study

Timing (also named as "implementation" or "sequence") refers to the temporal relationship of the quantitative and qualitative data collection and analysis (Greene et al., 1989; Morgan, 1998; Creswell and Plano Clark, 2007). In other words, it relates to the decision whether the quantitative and qualitative studies come in sequence (one following another), or concurrently (Ivankova et al., 2006). Different answers to this question result in two ways of designing mixed methods research: concurrent (also referred to as "parallel") or sequential study (Tashakkori and Teddlie, 1998; Creswell and Plano Clark, 2007).

Concurrent timing (or parallel) occurs when the quantitative data and qualitative data are collected, analysed and interpreted at (or approximately at) the same time. On the other hand, in the sequential study, quantitative and qualitative data are collected and analysed over the period of time in two distinct phases. It means that the researchers use one type of data before using the other data type (Ivankova et al., 2006; Creswell and Plano Clark, 2007). It is suggested that the concurrent design is more appropriate for a mixed methods study in which the purpose is to take advantage of data triangulation or embedding results. If the research purpose is to seek explanatory or development by combining quantitative data and qualitative data, then the sequential design is more likely to be chosen (Creswell and Plano Clark, 2007).

In this study, a concurrent mixed methods design is adopted due to both theoretical and practical considerations. The main purpose of this study is to use both numerical and narrative data to understand the same phenomenon, in order to provide a broad and complementary explanation of the phenomenon. In other words, this study aims to seek

triangulation and complementarity[50]. As Creswell and Plano Clark (2007) suggest, concurrent design seems to be suitable for such type of mixed methods research.

Apart from the theoretical reason, the choice of concurrent design is to a large extent influenced by some practical considerations as well. Firstly, although the two types of data are collected from different sources, the researcher wants to analyse them in a complementary manner. In this sense, rather than conducting two distinct analyses, it is better to analyse them approximately at the same time. Additionally, in such a design, as the data collection, data analysis and interpreting results of quantitative and qualitative studies occur approximately at the same time, they can talk to each other whenever there is a need[51].

Moreover, the qualitative study attempts to undertake interviews with bank analysts and bank managers. It is difficult to arrange interview with them, especially in the current economic environment[52]. Also, the procedure of arranging an interview normally takes quite a long time. The researcher has to wait for the interviewee's response passively.   If the quantitative and qualitative studies are conducted in the way of one following another, it is difficult to finish the overall project in the limited time available for a PhD thesis. Therefore, concurrent design seems to be more feasible for this study.

Once the timing decision has been made, the researcher will consider the second issue: which approach, quantitative or qualitative, or both of them, have more emphasis in her study design.   That is, she needs to make the weighting decision of this study.

4.5.2 The weighting decision of this study

Weighting refers to the relative importance or priority of the quantitative and qualitative methods to answering the research questions (Creswell and Plano Clark, 2007). When selecting a mixed methods approach, researchers must answer the question: What will the weighting of the quantitative and qualitative methods be?

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[50]   The purposes of this study will be discussed in detail in section 4.6 of this chapter.
[51]   How quantitative and qualitative data are integrated will be discussed in subsection 4.5.3 of this chapter.
[52]   The difficulties that the researcher encountered during the qualitative data collection process will be discussed in section 7.2.3 of chapter seven.

In concurrent designs, there are two possible weighting options. The research may give equal weight to quantitative and qualitative methods, or may weight them unequally. In the latter case, one of the methods will play a more important role in addressing the research problem than the other method (Creswell and Plano Clark, 2007). Which approach will be given more attention during the data collection and analysis processes might depend on numerous considerations, including the researcher's worldview, the research purposes and questions, and also some practical issues (Morgan, 1998; Creswell, 2003; Creswell and Plano Clark, 2007).

In this thesis, priority, typically, is given to the qualitative approach. This decision is influenced essentially by the research purpose of the current study, which is to explore the role of intangibles in banks' business models and how intangibles affect bank performance. Qualitative methods, in particular case study, are argued to be powerful tools when the phenomenon being investigated is highly complex and where limited theories are available (Dul and Hak, 2008). As has been discussed in chapter three, the development of intangibles research so far is still in its initial stage, and there is lack of strong theoretical fundamental in this area. In addition, our knowledge about the relationships among different intangible elements and between them and firm performance is limited. In such a situation, the qualitative study is more important in terms of understanding deeply the phenomenon and adding knowledge to the theoretical foundations.

Moreover, the weighting decision is also influenced by practical consideration. The relative importance of the qualitative study over the quantitative study reflects the limitation of resources that can be used in this study. In fact, the researcher must answer two questions at the research design stage: "what she wants to do", and "what she has to do". As can be seen from the research history that has been discussed before, initially, the researcher wished to conduct a quantitative study that attempted to investigate the relationship between intangible elements and bank performance. However, she found that the data availability restricts the proposal, and has to consider if there is another way to examine the research problem in such a background. Alternatively, she decided to conduct mixed methods research, and put more emphasis on the qualitative approach. In this sense, the qualitative dominant research design is more likely to make good use of the limited data source.

Considering the above issues, obviously, the best choice for the researcher is to conduct a concurrent qualitative-dominant mixed methods study. Mixed methods research is such a procedure that not only collects and analyses two types of data, but also mixes or integrates them together (Ivankova et al., 2006). So in addition to timing and weighting, it is more important to make the decision about at which stage/stages the quantitative and qualitative phases are connected and the results are integrated.

4.5.3 The mixing decision of this study

The mixing (or integration) decision, as the third procedural consideration for mixed methods design, refers to how the quantitative and qualitative data relate to each other. Without explicit relating of the two datasets, a study will be simply a collection of multiple methods rather than a real and strong mixed methods design, even if it includes both quantitative and qualitative study (Creswell and Plano Clark, 2007).

Reportedly, despite the fact that mixed methods research has become increasingly popular in the social science, there is a common problem in many mixed methods studies. That is, the quantitative and qualitative components are treated as separate domains and do not integrate or mix with each other (Bryman, 2007). Early examination by Greene et al. (1989) found that 44% of the 57 articles they reviewed did not integrate the quantitative and qualitative data. More recently, Bryman (2006) examined 232 mixed methods research articles from 1994 to 2003 using content analysis, and also found the lack of integration. These findings and comments suggest that if mixed methods researchers wish to make the most of the data they collect, they must solve the integration issue, which seems to be the most difficult part in the mixed methods research design.

Woolley (2009:7) suggests that "quantitative and qualitative components can be considered 'integrated' to the extent that these components are explicitly related to each other within a single study and in such a way as to be mutually illuminating thereby producing findings that are greater than the sum of parts". In concurrent studies, researchers normally collect and analyze the quantitative and qualitative data separately and independently, and then merge the two datasets in terms of relating or comparing two types of data (Creswell and Plano Clark, 2007). As Bazeley (2009) points out, integration of conclusion is commonly seen in mixed methods research, "but blending data or meshing analyses has been much less common" (Bazeley, 2009:204) and "few authors focus on the process through which

the combined value is achieved" (Jones and Bugge, 2006:613). In this thesis, quantitative data and qualitative data are integrated not only at the stage of results reporting, but also during the processes of data collection and data analysis in order to maximise the integration of two methods.

During the data collection period, the quantitative data is gathered from annual reports, bank websites and other public information, and in the meantime, the researcher collects qualitative data by interviewing the participants. The connection between the two datasets may occur in several ways. The variables used in the quantitative study are helpful to formulate interview questions in order to explore the participants' perspective about these proxies of intangibles used in academic research[53]. On the other hand, interview experience that the researcher gained can facilitate the quantitative study in terms of identifying proxies of intangibles[54].

The basic data analysis procedure in this study involves conducting separate data analyses for each of the quantitative and the qualitative data, but relating one to the other with the purpose of triangulation and embedding. The proxies or indicators summarized from the extant literature and used in the quantitative model are also useful concepts in coding the interview data and develop further categories[55], while the qualitative interviews helps the researcher develop hypotheses that will be tested in the quantitative study[56].

During the final stage of empirical results presentation, findings from the quantitative study and qualitative study are further compared and connected. Mertens (2011) highlights that it is important for a mixed methods study to "explain clearly how the results were integrated and the contribution to improve understanding that was achieved based on that integration" (Mertens, 2011: 5). In this thesis, the results of the quantitative study and the qualitative study are firstly reported separately, and then brought together to answer the integrated research questions outlined in section 4.4. The integration of findings enables empirical results from one approach to complement the other. For instance, through discussing the variables used in the quantitative analysis with interviewees, the weaknesses and strengths within those intangible proxies are further explored, and possible ways of improving some indictors are emerging Moreover, the integration of two datasets achieves

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[53] Further discussion refers to section 7.2.2 of chapter seven.
[54] Examples of how qualitative interview experience helps the researcher to better understand the intangible proxies and to identify new proxies will be discussed in section 5.2.2 of chapter five.
[55] Further discussion refers to section 7.3.1 of chapter seven.
[56] Further discussion refers to section 5.3.3 of chapter five.

evidence triangulation in some important findings, and thus enhances the validity of the overall research. The integration of quantitative and qualitative empirical results will be discussed in detail in section 8.4 of chapter eight and sections 9.3 and 9.5 of chapter nine.

In conclusion, this section talked about how the researcher deals with the several important issues related to the mixed methods research design, such as timing, weighting, and mixing decisions. The choices are guided by the research purposes, research questions, and some practical considerations. Specifically, this study is designed to be a concurrent qualitative-dominant mixed methods study in which the quantitative and qualitative data are connected thoroughly at all the stages of the project.

4.6 The purposes of mixed methods research

It is argued that both quantitative and qualitative research has strengths and weaknesses, and combining different approaches is likely to result in complementary strengths and nonoverlapping weaknesses (Johnson and Onwuegbuzie, 2004). Greene et al. (1989) also maintain that all methods have inherent biases and limitations, so use of different methods that have offsetting biases to assess a phenomenon has the potential to enhance the validity of inquiry results.

In practice, researchers who use different methods in a single study may have certain purposes. For example, a common purpose is to take advantage of triangulation (Greene et al., 1989). As Jick (1979) has pointed out, triangulation provides researchers with opportunities such as allowing them to be more confident of their results; helping to refashion old theory or develop new theory by uncovering the deviant dimension of a phenomenon; and leading to integration of theory, etc. Jogulu and Pansiri (2011) indicate that triangulation will strengthen the findings, and as a result, mixed methods researchers can make better inferences by employing multiple techniques.

Apart from triangulation, there may be other possible benefits of mixed methods research. Along with the increasing interest in this methodology, social scientists have also discussed more concretely how qualitative and quantitative methods could be combined to enhance the understanding of social phenomenon. Rossman and Wilson (1994), for example, suggest that mixing quantitative and qualitative methods generally have four purposes:

corroboration, elaboration, developing, and initiating[57], so that it can better address complex research questions.

Greene et al. (1989) identify five purposes for mixed methods research: triangulation, complementarity, development, initiation, and expansion. They state that researchers can take benefit of triangulation by seeking convergence, corroboration, correspondence of results from different methods, and/or achieve a complementarity that use different methods to measure overlapping but also different facets of a phenomenon, yielding an enriched, elaborated understanding of that phenomenon. Development refers to the purpose that uses sequentially quantitative and qualitative methods in which the first method helps inform the development of the second one. Initiation involves the discovery of paradox and fresh perspectives rather than constitute a planned intent. Expansion relates to the opportunity that extends the breadth and range of inquiry by using different methods for different inquiry components (Greene et al., 1989).

With respect to the current study, it attempts to seek benefits of triangulation and complementarity[58]. Firstly, this study is designed to investigate the relationships among different intangible elements and between them and bank performance through utilising both quantitative data and qualitative data. By employing multiple methods, this study is able to compare findings obtained through different instruments and cross check assessments. Subsequently, it is possible to match the statistical relationships found from the quantitative hypothesis testing with subjective descriptions and explanations that are obtained from interviews with participants. By doing so, the researcher can "make inferences with confidence" (Jogulu and Pansiri, 2011:689).

Secondly, this study seeks the opportunity of complementarity in measuring, reporting and modelling of intangibles. For example, the variables used in the quantitative study might not measure intangibles properly, as mentioned before, and the qualitative study

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[57] According to Rossman and Wilson (1994), corroboration refers to classical triangulation where different methods are employed to test the consistency of finding from one method to another; elaboration refers to the purpose that provides a richness and detail that is often lacking if just one method is employed; development refers to that the results generated by one method shape subsequent instrumentation, sampling or analysis strategies of the other method; and initiation refers to that results from one method foster new lines of thinking, uncover paradox and contradiction, suggest alternative ways to pose the research questions, and generally challenge the original conceptual framework of the study.

[58] The researcher argues that this study may also take the advantage of development. As states before, the model used in the quantitative study is built based on not only the extant literature, but also the results emerged from a pilot case study during her MRes progress. Actually, the quantitative study used in this thesis can be seen as a development of the previous qualitative study.

complements the quantitative study by exploring the limitations with those variables from practitioners' perspective. The quality of quantitative data reflects the problems with intangible disclosure in the public domain, and the qualitative interviews further reveal the reasons why these problems exist. Moreover, the qualitative study offers meaningful and in-depth insights into the value creation process of intangibles, and this helps the quantitative study in terms of hypothesis development and model specification

In order to accomplish the above purposes, the researcher has to evaluate her project properly. A mixed methods research is a complex progress as it involves undertaking different research methods that have distinct characteristics. In the next section, the evaluation criteria for quantitative and qualitative studies will be discussed.

4.7 Evaluation of mixed methods research

Traditionally, evaluating the quality of a piece of research involves judging how reliable and valid the research's data collection and analysis are. Generally speaking, reliability refers to the extent to which a measurement procedure yields the same results on repeated trials. Validity, on the other hand, is concerned with the extent to which the measurement gives the accurate relationship between concept and indicator (Carmines and Zeller, 1979; Kirk and Miller, 1986). Initially, validity and reliability are evaluative criteria that are pursued by positivist to ensure the objectivity of the quantitative research (Kirk and Miller, 1986; Johnson et al., 2006).

With regard to qualitative research, because it has distinct underlying philosophical assumption to that of the quantitative approach, some researchers argue that different assessment criteria should be applied to it (Johnson et al., 2006). For example, Lincoln and Guba[59], as cited by Onwuegbuzie and Johnson (2006), outline four types of evaluation criteria to replace reliability and validity: internal validity should be replaced by credibility; external validity should be replaced by transferability; reliability should be replaced by dependability; and objectivity should be replaced by confirmability. Others, however, suggest that objectivity is the essential basis of all good research (Kirk and Miller, 1986). They prefer using the same terms of reliability and validity, but translate and make them relevant for qualitative research (LeCompte and Goetz, 1982; Kirk and Miller, 1986).

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[59] This is cited by Onwuegbuzie and Johnson (2006) from Lincoln, Y. S. and Guba, E. G. (1985) *Naturalistic Inquiry*, Beverly Hills, CA:Sage; and Lincoln, Y. S. and Guba, E. G. (1990) "Judging the Quality of Case Study Reports". *International journal of Qualitative Studies in Education*, 3, 53-59.

In this study, as both quantitative and qualitative methods are employed, in order to discuss the evaluation criteria in a consistent way, the researcher will use the term 'reliability' and 'validity' for both studies. It is important to note that whatever assessment criteria used in evaluating quantitative and qualitative research, because of the different data collection and analysis processes, the strategies to enhance creditability of quantitative and qualitative research are different. Indeed, even though different names of evaluation criteria have been used, the ways previous literature suggested to produce a good research are similar.

4.7.1 Reliability in quantitative and qualitative research

Reliability, by definition, refers to the extent to which studies can be replicated. It requires that different researchers, or the same research on different occasions, using the same methods, can obtain the same results as those of a prior study (LeCompte and Goetz, 1982; Johnson et al., 2006).

The basic notion of reliability in quantitative social research is that a measurement is consistent (Jordan and Hoefer, 2001). In a quantitative study, the reliability of a measurement can be tested by statistical instruments (Jordan and Hoefer, 2001; Tashakkori and Teddlie, 1998). However, in qualitative research, reliability tends to be a contentious issue. Reliability depends on a philosophical assumption that the world is both stable and neutrally accessible (Johnson et al., 2006). In qualitative research, human being is an important actor in the social world, and human behaviour is never static. Therefore, it is difficult to replicate a qualitative study in this sense.

Does this mean that reliability does not matter in qualitative research? The answer given by many qualitative methodologists is no. As Kirk and Miller (1986:70) argue, "qualitative research conducted as science should complement nonqualitative science". In their opinion, one reason why qualitative research has not built cumulatively on other qualitative research is that researchers are not paying enough attention to reliability (Kirk and Miller, 1986). Indeed, in order to evaluate the qualitative research in terms of objectivity, alternative ways of addressing reliability are suggested by many social researchers (e.g., Franklin and Ballan, 2001; Kirk and Miller, 1986; LeCompte and Goetz, 1982; Seale, 1999; Silverman, 2001).

In order to satisfy the criterion of reliability in a piece of research – no matter it is quantitative or qualitative – it is important for the researcher to document his/her research procedure explicitly (Franklin and Ballan, 2001; Kirk and Miller, 1986; LeCompte and Goetz, 1982). LeCompte and Goetz (1982) argue that replicability is impossible without precise identification and thorough description of the strategies used to collect and analyse data. This is what Franklin and Ballan (2001) called the "audit trail", which is important to provide a basis for checking the researcher's dependability.

As can be seen in section 4.5, what research methods are used in this thesis and how the overall project is designed in light of timing, weighting, and mixing decisions are documented clearly. For the quantitative study, what indicators are used to measure or proxy intangible elements are explained explicitly (see section 5.2.2 of chapter five), and the procedure of sample collection and the source of data used in the quantitative analysis are described in detail (see section 5.2.3 of chapter five). Similarly, for the qualitative study, the interview procedure and the data analysis process are discussed clearly as well (see chapter seven).

Moreover, for the qualitative study, the focus of enhancing reliability is on achieving consistent similarity in the quality of the results rather than on obtaining exactly the same results (Collingridge and Gantt, 2008). In order to improve the quality of data, firstly, the researcher tried to use low-inference descriptors to enhance reliability of the qualitative study (LeCompte and Goetz, 1982; Seale, 1999; Silverman, 2001). Low-inference descriptors involves recording observations as concrete as possible (Seale, 1999). Recording interviews can positively affect the outcome of the interview in several ways. For example, the researcher can hence concentrate on what the interviewee said and then organize follow-up questions. It also provides the opportunity of an unbiased record of the conversation (Easterby-Smith et al., 2008), and thus enhances the reliability of the qualitative study. In this study, the researcher tried to record the interviews with the participants' permission. Eighteen of twenty-three interviews were audio-recorded, and were then transcribed carefully in order to provide a basis for reliable analysis. In addition, the researcher also tries to check the accuracy of the data by sending the transcripts or notes of the interviews back to the participants and getting their feedbacks.

Secondly, during the data collection process, effort is made to reduce errors and bias, and to make sure that what the researcher has captured is the true value of what interviewees

see and the researcher maintains a neutral role in the research (Arksey and Knight, 1999). For example, different types of questions, such as main questions, follow-up questions and probing questions, were asked to ensure the consistent answers were got from interviewees[60]. McKinnon (1988) argues that asking probing questions is a powerful technique to reduce threats to reliability and validity in terms of allowing the research to accommodate some of the problems caused by the complexities and limitations of the human mind. Besides, attempts were also made to avoid leading questions and other potential introduction of bias.

Thirdly, the researcher applies a consistent coding method to enhance the reliability in the qualitative study during the data analysis process. In interview-based case study, coding is an important procedure to represent the researcher's thoughts about the meaning of the data (Seale, 1999). Even though qualitative data analyses are vague and personalistic, a consistent coding process is helpful to improve the reliability in a qualitative study (Franklin and Ballan, 2001; LeCompte and Goetz, 1982; Seale, 1999). In this study, grounded theory coding technique that included open coding, axial coding and selective coding was employed. The grounded theory method of data analysis is argued to be a systematic data analysis procedure in terms of understanding the essence of structured qualitative data (Franklin and Ballan, 2001; Strauss and Corbin, 1998), in which inaccuracies and misleading interpretations are guarded against by techniques such as comparative analysis and integration of theoretical concepts (Glaser and Strauss, 1967; Parker and Roffey, 1997). The coding will be discussed further in section 7.3 of chapter seven.

4.7.2 Validity in quantitative and qualitative research

Validity is another important criterion of a good piece of research. Validity serves the purpose of checking on the quality of the data and the results (Creswell and Plano Clark, 2007). While the reliability is concerned with whether the findings of the research is repeatable or not, validity refers to the accuracy of the research findings (LeCompte and Goetz, 1982).

Generally, there are two key types of validity in a quantitative study. One is external validity that refers to the extent to which the findings of a particular study can be

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[60] The main interviews questions will be outlined in section 7.2.3 of chapter seven.

generalized across populations, contexts and time (Birnberg et al., 1990; Dellinger and Leech, 2007; Modell, 2005). Another type of validity is internal validity, which is conceptualised as the degree to which the researcher is confident about the conclusion/inferences of the causal relationship between variables/events (Tashakkori and Teddlie, 1998). An abundance of literature has discussed how to control for treats to internal and external validities at the research design, data collection, data analysis, and/or data interpretation stages of the quantitative research process[61] (e.g., Onwuegbuzie, 2000; Onwuegbuzie and Johnson, 2006).

However, similar to reliability, validity is perceived as being an unclear and ambiguous concept in qualitative research as well (e.g., Dellinger and Leech, 2007; Onwuegbuzie and Johnson, 2006). There are various commentaries about validity in qualitative research (Creswell and Plano Clark, 2007; Dellinger and Leech, 2007). Some argue that it is better to develop an entirely different set of criteria to assess validity instead of traditional criteria used in quantitative studies (Dellinger and Leech, 2007; Onwuegbuzie and Johnson, 2006). Others suggest that the same criteria as that in quantitative studies, namely external validity and internal validity, can be used in qualitative research, but should be developed to be more complex concepts and a criterion of construct validity is added into the evaluation (e.g., Messick, 1995; Modell, 2005; Yin, 2003). Construct validity, according to Modell (2005:237), refers to "whether theoretical concepts are adequately reflected by the operational definitions and measures of empirical phenomenon".

In mixed methods research, assessing the validity of studies is even more complicated than that in single method studies. Some argue that due to the complex views of validity in a qualitative study, it is better to use alternative terms instead of the term validity in mixed methods research. For example, Onwuegbuzie and Johnson (2006) recommended replacing validity with legitimation. Others, such as Creswell and Plano Clark (2007), suggest that it is appropriate to still use the term "validity" in mixed methods research. In this thesis, the researcher prefers the latter suggestion, and discusses validity in light of external validity, internal validity, and construct validity.

External validity emphasizes the generalization of the research findings. It is easy to understand generalization in a quantitative study. However, the claim about the

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[61] Onwuegbuzie and Johnson (2006) recommended some references, such as American Educational Research Association and American Psychological Association.

generalization in qualitative research is more problematic due to the small samples often used in qualitative studies (Johnson et al., 2006). Mitchell (1983) argues that there are two types of inferences in social research: statistical inference and logical (i.e., scientific or causal) inference. He demonstrates that in analytical thinking based on quantitative method, both types of inference proceed. However, the inference drawn from qualitative research, such as case study, can only be logical inference (Mitchell, 1983). As Bryman (2004:285) argues, "the findings of qualitative research are to generalize to theory rather than to population". Because of the qualitative dominant design, the generalization in this thesis mainly refers to an inductive mode, which means that data is gathered from multiple cases to build up theory, and then the conclusions could be transferred or generalized to other contexts (Tashakkori and Teddlie, 1998).

The external validity of this study can be enhanced through the following ways. Firstly, purposive sampling allows the researcher to select the cases that represent the feature of what she is interested in (Silverman, 2001). For example, when arranging interviews with bank analysts, she contacted several big banks in the UK to identify the target analysts rather than selecting them randomly. This ensures that she can obtain knowledge from the most important participants. Secondly, Bryman (1988) suggests that studying more than one case is helpful solution to improve generalization in qualitative research. The researcher tried to investigate multiple cases gathered from different organizations, so the abstracted theory is expected to possibly occur in other organizations with similar conditions. Thirdly, Parry (1998) argues that gathering multiple perspectives on the same incident can help to moderate the negative impact of single sources on research validity. In this thesis, the researcher tries to investigate the central phenomenon of interest from not only internal managers' perception but also external analysts' perspective. The use of two sets of interviewees, therefore, is helpful to enhance validity. Fourthly, for the quantitative study, because of data availability, the problems with the sample size and the quality of data pose great threats to the external validity in the quantitative study. In dealing with those problems, the researcher tries to collect as much data as possible and modify the indicators in order to increase the sample size and improve data quality (see further discussions in sections 5.2 and 5.3 of chapter five).

More importantly, this thesis is a piece of mixed methods research, in which the combination of qualitative and quantitative studies has the potential to achieve triangulation, which is one of the important ways to enhance external validity. Bryman

(1988) argues that combining quantitative and qualitative approaches can enhance the generalization of the researchers' findings if "they can be shown to provide mutual confirmation" (Bryman, 1988:131). This thesis examines the relationships among different intangible elements and between them and bank performance using both quantitative statistical technique and qualitative interpretation and description. By doing so, it is possible to achieve consistency in some findings, and thus increases the external validity of the overall research. It should be noted that, even though this study aims to enhance external validity by combining quantitative and qualitative methods, generalization is still a limitation in this qualitative dominant study.

Internal validity is concerned with the causal relationship between variables or events (Modell, 2005; Yin, 2003). Achieving high internal validity means that the researcher is confident that the categories, relationships, and interpretations she generates is actually true (Tashakkori and Teddlie, 1998). Conclusion of a quantitative study has internal validity if the changes in the dependent variable can be attributed to the independent variables rather than to other potential causal factors (Tashakkori and Teddlie[62], 1998). In a hypothesis testing study, internal validity is normally pursued through complex statistical procedures that enable control over extraneous variables (Johnson et al., 2006). In this study, the assumed relationship between dependent variable and independent variables is based on theoretical foundation and the findings of empirical work, and several control variables that are extraneous but may affect the experiment as well are also introduced into the models. Moreover, several statistical instruments are used to test the robustness of the estimated results, such as rank regression, which will be discussed further in chapter six.

On the other hand, internal validity in qualitative research describes a more general concept. It refers to the extent to which the observations and measurement represent the social reality (LeCompte and Goetz, 1982). The researcher examines carefully the inferences drawn from the qualitative data by adopting some tactics suggested by previous literature (e.g., Onwuegbuzie and Leech, 2007; Yin, 2003). For instance, during the interviews, the researcher found some unexpected concepts and some controversial issues. She followed up these surprises rather than dismissing them, and took into consideration rival explanations and possibilities[63]. The qualitative data was analysed in accordance with

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[62] This is cited by Tashakkori and Teddlie (1998) from Cook, T. D. and Campbell, D. T. (1979) *Quasiexperimentation: Design and analysis issues for field settings*, Boston: Houghton Mifflin.
[63] Examples of unexpected concepts and controversial issues can be seen from later chapters (chapters eight and nine), e.g., "quality of portfolio" as an example of unexpected concepts (see discussion in section 8.2.1

the theoretical coding procedure (i.e., using techniques such as open coding, axial coding, and selective coding), and this provided proper explanations about how theory was built.

Moreover, as a piece of mixed methods research, it is possible to enhance the internal validity by combining quantitative and qualitative data. For example, if there are unexpected findings emerging from the statistical analysis, the qualitative method may be useful for assessing the limited quantitative validity based on in-depth examination of qualitative evidence (Jick, 1979; Modell, 2005). In this thesis, unexpected or unstable results that are found in the quantitative study are further examined in the qualitative interviews in order to cross check evidence and explore the possible interpretations for them.

With regard to construct validity, it refers to establishing correct operational measures for the concepts in both quantitative and qualitative studies (Yin, 2003). In other words, the researcher should ask herself the question: "am I truly measuring/recording what I intend to measure/record rather than something else" (Tashakkori and Teddlie, 1998)? This set of validity is considered as especially difficult to achieve in qualitative research (Tashakkori and Teddlie, 1998; Yin, 2003). In this study, validating construction is problematic not only in the qualitative study but also in the quantitative part. The quantitative study attempts to measure the phenomena based on the distinction between concepts and indicators (Seale, 1999), and assessing validity in this sense is to assess whether the researcher has found the most appropriate indicators. The researcher recognizes that the variables used in the quantitative models might not truly measure what is intended to be measured due to the data availability problem. To reduce the treats to construct validity in the quantitative study, the researcher tries to select proxies of intangibles that have been suggested by previous literature and that have been found to be powerful indicators. Moreover, the use of multiple methods is likely to reduce the threats to the construct validity. The indicators used in the quantitative analysis are further assessed in the qualitative interviews so as to check the accuracy of the definition of indicators.

In the qualitative study, the researcher's subjectivity and bias existing in the data analysis process pose a significant threat to the construct validity. In order to ensure that the outcomes of the analysis represent the true meaning of the raw data, the research tries to enhance her theoretical sensitivity and make use of some important coding techniques such

of chapter eight), and controversial views on the industry context (see section 8.3.1.3 of chapter eight).

as constant comparison, which are helpful in guarding against bias and achieving great precision[64].

4.8 The barriers and weaknesses in mixed methods research

Previous sections have discussed the benefits that mixed methods researchers may enjoy. However, this strategy, like all other research methodologies, has some weaknesses in its research design, data collection, and data analysis processes. Especially, because of the distinctions between quantitative and qualitative data, a significant problem that mixed methods researchers have to solve is how to integrate the two types of data fluently. This section addresses the overall weaknesses of mixed methods research, and the barriers to integrating quantitative and qualitative research.

4.8.1 The weaknesses of mixed methods research

As has been noted before, using mixed methods in this thesis has the potential to take advantages of triangulation and complementarity. On the other hand, it also has some disadvantages in both methodological position and practical issues.

Firstly, mixed methods research is criticized by methodological purists for a lack of philosophical foundation. They contend that one should always work within either a qualitative or a quantitative paradigm (Johnson and Onwuegbuzie, 2004), and the compatibility and cooperation between the two methods cannot be sustained (Smith and Heshusius, 1986). The researcher, however, argues that this may not necessarily be a weakness of mixed methods study. Rather, the misunderstanding of mixed methods research is, to some extent, due to the absence of a detailed methodological framework. Although mixed methods research has become popular in the social science, there are many puzzles that need to be worked out, such as problems of paradigm mixing, how to interpret if the quantitative and qualitative results are conflicting; and how to evaluate the mixed methods study (Creswell and Plano Clark, 2007; Johnson and Onwuegbuzie, 2004). One may also challenge this study in terms of methodological choice that crosses positivism and neo-empiricism. However, some social scientists advocate a pluralistic methodological assumption that there are not significant philosophical differences at play (Johnson et al., 2006). In this sense, the researcher argues that although there is a divide

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[64] The qualitative analysis will be discussed further in chapter seven.

between positivism and neo-empiricism, they can be partly bridged. As Johnson et al. (2006) argue, neo-empiricists are indeed "qualitative positivists" who use non-quantitative methods within largely positivistic assumptions. Therefore, these two methodological positions to some extent overlap rather than being totally divided.

Other problems in mixed methods research are practical considerations. It is more difficult for a researcher to carry out mixed methods research than single quantitative/qualitative approach (Johnson and Onwuegbuzie, 2004). It is more time consuming and more expensive, and researchers have to put more effort into collecting and analysing data.   In fact, the use of two methods often implies more than twice the work, because it requires not only undertaking each part of the project properly, but also combining or integrating them together (Alexander et al., 2008).   Additionally, this strategy requires high level of skills and experience of the researchers. They have to learn about and practice multiple methods and know how to integrate them appropriately (Johnson and Onwuegbuzie, 2004). Cassell and Lee (2011) highlight that "a key question in relation to the increased use of mixed methods within the management domain is the extent to which management researchers are trained to use these techniques" (Cassell and Lee, 2011:3). They outline a concern with the research capability, that is, qualitative and quantitative methods appear to be taught as separate entities rather than combining methods. Thus, some scholars suggest that it is better to conduct mixed methods research by forming a research team that includes members of both quantitative and qualitative experts (Creswell and Plano Clark, 2007; Johnson and Onwuegbuzie, 2004). With regard to this project, which is a concurrent mixed methods study that is argued to be especially difficult compared with other types of mixed methods design (Johnson and Onwuegbuzie, 2004), as it is carried out by a single researcher, it may not fully achieve the purposes that the researcher expected.

Apart from the above weaknesses, a significant difficulty that mixed methods researchers encounter is how to integrate the different datasets (Bryman, 2007), which will be discussed in the following subsection.

4.8.2 The barriers to integrating quantitative and qualitative research

As has been addressed before, a large number of mixed methods studies did not integrate the quantitative and qualitative parts (e.g., Bryman, 2006; Greene et al., 1989). One possible reason for this tendency is that the integration of quantitative and qualitative

findings may not always be intended (Bryman, 2007). Another reason is the existence of some barriers to integrating quantitative and qualitative studies. Through interviews with social researchers, Bryman (2007) finds that mixed methods researchers experienced different possible barriers to integration during their studies. He demonstrates that these barriers might be grouped into three categories: 1) barriers that relate to intrinsic aspects of quantitative and qualitative research methods; 2) barriers with institutional context of mixed methods research; and 3) barriers that relate to the skills and preferences of social researchers (Bryman, 2007).

According to Bryman (2007), the first type of barriers includes three factors. Firstly, if a mixed methods project is structured in such a way that either the quantitative or the qualitative parts dominates, it will be difficult to bring the findings together. Secondly, it is difficult to bridge ontological divides in some fields. Thirdly, the timelines of the quantitative and qualitative components may get out of phase so that one is generated faster than the other, and this can also be a possible barrier to integrating two parts of research. The second category of barriers includes: 1) different audiences may have biases in one type of research; 2) journal editors or referees may prefer one research method as well. The final group of barriers includes methodological preferences and skill specialisms of the researchers themselves, and some researchers may view one set of data more interesting than another.

With regard to this study, on the one hand, the researcher recognises that such barriers obviously make the integration of quantitative and qualitative studies difficult; on the other hand, she argues that, to some extent, some of these barriers can be turned into opportunities as well.

Because of the intrinsic difference between quantitative and qualitative research methods, the structure of research projects, the ontological divides, and the role of timelines may hinder them from integrating genuinely. However, either the quantitative or the qualitative domination in a mixed methods project may not necessarily be a barrier. As mentioned before, the weighting decision in mixed methods research can be to weight either equally or unequally. In fact, in mixed methods projects that seek different purposes, sometimes it is important that one component is weighted more heavily than another. In this study, based on the data availability and some other practical considerations, the researcher should not place equal emphases on the quantitative and qualitative parts. As long as the

theoretical and practical issues are taken into consideration carefully and the research design is structured explicitly, the mixed methods researcher can manage dominance of one approach over another. In this thesis, specifically, a qualitative dominant study has the advantage of economizing the use of limited resources. Likewise, in mixed methods research that takes advantage of development, sometimes findings of one study provide the basis for conducting another piece of research. Furthermore, as discussed before, the ontological divides between quantitative and qualitative studies can be bridged as well.

Another group of barriers relate to social researchers' personal skills and preferences. Ideally, some social researchers have methodological predilections. This to some extent makes them tending to emphasize more on one type of method. However, there is a tendency that more and more scholars argue for putting aside the methodological conflict in social research. Bryman (2007) finds that the majority of the interviewees in his study depicted themselves as pragmatists. The researcher in this thesis is also standing in a middle position in terms of ontological and epistemological levels. Regarding personnel skills, as a PhD student, the researcher has been trained in both aspects of research methodology and techniques, and it is possible for her to conduct a mixed methods project. Moreover, during the process of conducting this project, the researcher continued to improve her research skills by discussing the problems she found with her supervisors and taking self-training for mixed methods research.

It should be noted that the sample problem that has been noted previously tends to be a barrier to integration in this study. The qualitative and quantitative studies have different sample size. The quantitative data is collected from a larger sample than the qualitative data, covering different countries in Europe. The qualitative interview data is mainly gathered in the UK. This is due to time and expenses considerations. Even though the researcher attempts to conduct as many interviews as possible, the special economic condition and the difficulty to get access to data weaken the results of this study.

There are also other limitations associated with this study. For example, the proxies or measures of intangibles in this study are problematic, the qualitative study might be too subjective and lack generalizability, and there are practical difficulties with both data collections[65]. However, every method has strengths and weaknesses. The researcher argues

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[65] Limitations with the quantitative and qualitative components of this thesis will be discussed further in chapters five and seven.

that mixed method research used in this study provides opportunities to overcome some degree of the weakness associated with quantitative and qualitative methods, and represents a valid research procedure for investigate the research problem.

4.9 Conclusions

This chapter discussed the methodological decision the researcher made and the overall procedures for collecting, analysing, interpreting, and reporting data. The underlying philosophical assumptions were addressed at the beginning of the chapter. The researcher identified that this study adopted the "middle-range" position (Laughlin, 1995, 2004) in both the ontological and the epistemological stances. This worldview makes the adoption of mixed methods research in this study possible. Mixed methods research as a methodology has been widely used in social science, and researchers in the fields of management and accounting also call for the combination of different research approaches to assess the same phenomenon. The researcher believes that, given the research purposes and the general research question, mixing quantitative and qualitative methods in the current study makes it possible to take advantages of triangulation and complementarity, and enhance the validity of the overall research.

The overall procedure of this study was also shown in this chapter. Three important types of decisions that the researcher made were detailed. Based on the research purposes, the specific research questions, and some practical considerations, this study is designed to be a concurrent qualitative-dominant mixed methods research. In addition, the researcher described the tactics she applied to minimize the treats to external, internal, and construct validities. However, although considerable effort has been devoted to enhance the validity of this study, there are some weaknesses existing in this study. The possible limitations include lack of solid fundamental framework, the difficulties of collecting and analysing data, and more importantly, the barriers to integrating the quantitative and qualitative results.

Overall, by explaining explicitly the research design, research questions, and research purposes, it can be seen that mixed methods research is the best choice to assess the central phenomenon. The researcher argues that the use of disparate data source is likely to achieve confirmation and consistency on evidence, and also gain an enriched and

elaborated understanding of the value creation process of intangibles. In the next chapter, the quantitative part of this project will be discussed.

Chapter Five: Quantitative Data Collection and Data Analysis

5.1 Introduction

The previous chapter has discussed the methodological choice in the current study, as well as the timing, weighting, and mixing decisions of mixed methods design. This chapter addresses the design of the quantitative component of the thesis in detail. It attempts to provide a comprehensive picture about how the quantitative data has been collected and analysed.

This chapter has three objectives. Firstly, it outlines the processes of quantitative data collection and analysis, including the data sources, sample selection, and hypothesis development. Specifically, the sample banks used in the quantitative study are drawn from the population of banks in Europe, including 63 banks in 17 countries from 2005 to 2007. Quantitative data is manually collected from banks' annual reports, corporate (social) responsibility reports, presentations, bank websites, databases (e.g., *BoardEX* and *DataStream*) and other websites (see Appendix 1 for variable definitions and sources). The quantitative analysis is conducted through three steps, and five hypotheses are developed in order to test the relationship between different elements of relational capital, the relationship between human capital and relational capital, and the relationships between intangible elements and bank financial performance, ether individually or in a collective setting.

In addition, as it has been highlighted in chapter four, the quantitative and qualitative components of this study are integrated during both the data collection process and the data analysis process. The stage of quantitative data collection began in early 2008, and in the meantime, the qualitative data collection was prepared. Qualitative interviews were transcribed immediately after each interview, and the researcher wrote up whatever experience or reflection she gained from the interviews as soon as possible.   During the processes of collecting and analysing quantitative data, those interview experiences and initial reflections played very important roles in identifying and understanding proxies of intangibles, as well as developing hypotheses and models. The second objective of this chapter, therefore, is to discuss how the processes of the quantitative data collection and analysis are guided not only by the extant literature, but also by the researcher's interview experience.

Thirdly, the researcher has encountered great difficulties in collecting and analysing quantitative data due to the data availability problem. The third objective of this chapter is to address the difficulties and problems of conducting a quantitative empirical study of intangibles on the basis of public data sources, and discuss how the researcher dealt with those barriers. The main difficulties that the researcher has encountered in collecting and analysing quantitative data were indicators identification and poor data quality caused by the low level of intangible disclosure in the public domain. Because of no access to survey based intangible information, the research had to use proxies to measure intangible elements. Although the adopted proxies are based on works of other researchers and/or suggested by interviewees, the extent to which those proxies can reflect the dimensions and properties of intangible elements is still doubtable. Additionally, the low level of data quality, including missing data and problems with data standardization, poses a significant threat to the validity of the quantitative study. In order to deal with those problems, considerable effort has been put to reduce the effect of missing data and improve data standardization, such as using alternative indicators for some intangible elements (e.g., general administrative expenses are used to instead of advertising and marketing expenses), and imputing missing value (e.g., brand value). Despite the effort to maximizing the size of the usable sample, the validity of the quantitative study is weakened by the problematic proxies and poor data quality. However, because the purposes of the quantitative study are not only to test the hypothesized relationships, but also to explore the potential problems and hindrances within quantitative empirical research on intangibles that uses publicly available data, the researcher argues that it is still worthwhile to conduct this study.

The rest of this chapter is organised as following. Section 5.2 describes the procedure of quantitative data collection, including the difficulties that the researcher has encountered at this stage, how the proxies of intangible elements have been identified, and how the sample of banks has been selected. After that, section 5.3 discusses issues related to data analysis, in particular the problems with data quality and the development of hypotheses. Finally, this chapter ends by drawing conclusions in section 5.4.

5.2 Procedure of quantitative data collection

As has been introduced in section 4.3 of chapter four, quantitative data is collected from publicly available sources. This decision has to be made due to the difficulties the

researcher encountered at the stage of preparation for data collection, which are addressed in subsection 5.2.1. The procedure of quantitative data collection is guided by both extant literature and qualitative interview experience. The rationale for proxy identification and sample selection are explained in subsections 5.2.2 and 5.2.3, respectively.

5.2.1 Difficulties of quantitative data collection

In section 4.3 of chapter four, the researcher has briefly introduced the practical difficulties she faced in an attempt to carry out a quantitative study of intangibles. As problems connected with data availability has a notable influence on the research design of the quantitative study, and is a major cause of limitation within this study, it is necessary to discuss them in more detail.

After reviewing relevant literature that employed quantitative approaches to investigate either the value relevance of intangibles or the interactions among intangible elements (see section 3.4 of chapter three), it is found that there are two options of data collection offered to the researcher. The first option is to gather primary data through instruments such as surveys. This type of data collection design is commonly utilized by prior literature (e.g., Aragón-Sánchez, 2003; Barrett and O'Connell, 2001; Bontis, 1998; Delaney and Huselid, 1996; Ittner and Larcker, 1998; Nagar and Rajan, 2005) in consideration of the nature of intangibles.

As mentioned in section 3.2 of chapter three, there are four approaches serving the purpose of measuring intangibles. Among them, direct intellectual capital methods and scorecard methods tend to be more appropriate and more accurate in terms of capturing the nature of intangibles. These two approaches generate indicators or indices based on different components of intangibles in either monetary term or non-monetary term (for detailed discussion refers to section 3.2.2 of chapter three). Many previous researchers, therefore, have employed survey methods to collect detailed information on intangible elements that they were interested in. In this way, the indicators they generated can reflect different aspects of a particular intangible element. For example, in Barrett and O'Connell's (2001) study on the value relevance of training activities, standardised questionnaires are designed to collect information on a firm's training practice. The special surveys allow them to investigate the productivity effects of different types of training, namely general training and specific training.

Moreover, utilising survey data, researchers can conduct studies on intangibles at different levels of organizations. For example, Ittner and Larcker (1998) examine the value relevance of customer satisfaction by using three different levels of data: customer-level data of a firm, business-unit data of retail banks, and firm-level data in the USA. With regard to research on interaction between intangible components, the majority of prior studies have employed survey methods to gather data (e.g., Bantel and Jackson, 1989; Bontis, 1998; Nagar and Rajan, 2005).

Because of the above advantages of using survey methods, at the initial stage of preparation for quantitative data collection, the researcher checked the feasibility of undertaking this approach in her study. However, she found that this way of data collection was too time consuming and costly to be conducted by a PhD student.[66]   Considering the time and financial constraints, the survey method seemed not to be a reasonable choice. Apart from this, the biggest obstacle of using a survey in this study was that the researcher had to rely on the co-operation of banks. She tried to discuss with several senior bank managers if it was possible for her to use bank databases[67] or to survey their employees and customers. Unfortunately, their co-operation was not forthcoming. Under the circumstances, the researcher had to consider another option of data collection, that is, using secondary data that has been disclosed publicly.

It can be seen from chapter three that, some scholars have contributed by carrying out quantitative empirical studies using publicly available data. For instance, Barth and Kasznik (1999) use advertising expenditure obtained from a public database as a proxy of brands to investigate how intangibles had impacts on share repurchase. Wang and Chang (2005) collect data from a public database, annual reports and other resources to conduct an empirical study on the interactions among intangible components and relationship between them and firm performance. They use various proxies to measure intangible components, such as the number of employees, average education level, and the ratio of change in number of employees for human capital; firm age and administrative expense per employee for process capital; as well as the number of main customers and advertising

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[66] For example, in Nagar and Rajan's (2005) study of customer relationship in retail banking, the special data they utilised was collected by two organizations: a financial institution research centre and a professional marketing firm. The research centre had to discontinue the original plan of surveying banks every year after collecting only one year of data due to excessive costs.

[67] During interviews with bank managers in her MRes study, she found that case banks had measured and managed their intangibles (e.g., surveying employees and customers) for a long period, and built up their proprietary database of information on intangibles (Chen, 2007).

expenses for customer capital. These studies gave the researcher a clue as to the accessible data sources which could be used in her study. She then started to assess the feasibility of utilising public data sources.

However, after reviewing relevant literature on intangible disclosure, it was observed that up to now, the level of intangible disclosure through public channels (such as annual reports, social and environmental reports, and company websites, etc.) was low across the world (e.g., Beattie and Thomson, 2007; Brennan, 2001; Guthrie and Petty, 2000; Guthrie et al., 2007), and the disclosed information about intangibles was mainly in qualitative terms rather than quantitative terms (e.g., Striukova et al., 2008, among others).

Moreover, the researcher checked banks' annual reports, social (or corporate) responsibility reports and other information published on their websites, and found that information on intangibles was disclosed often in an inconsistent way and was not comparable among banks. For example, many banks have surveyed their employees and customers either internally or by external independent organizations, and some of them disclosed some survey results. These results should be adequate indicators of employee satisfaction or customer satisfaction[68]. However, for banks whose employee survey or customer survey data were available publicly, the constructions of their surveys were either undisclosed or different from bank to bank[69]. In this case, the researcher had to turn to using some proxies of intangibles in this study. The next subsection will demonstrate the process of identifying proxies of intangibles elements.

5.2.2 Identifying proxies of intangible elements

As has been mentioned in the previous chapter, the purpose of the quantitative component of this study is to investigate the intangibles-performance association as well as interactions among different intangible elements. It follows one of the most commonly

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[68] This is not only suggested by extant literature that has been discussed in chapter three, but also used as intangible measurement in business practice. For example, in Skandia Navigator (an IC measurement model that has been introduced in section 3.2.3), satisfied customer index is one of the measures for human capital.

[69] For example, in the UK, Lloyds TSB disclosed their "employee engagement index" results from 2005 to 2007, but the content of this index is unavailable. On the other hand, RBS measured their employee satisfaction by "employee opinion survey (EOS)". They disclosed the results of EOS and detailed contents of it, including 15 categories (i.e., communication, job satisfaction and engagement, and recognition and reward, etc.). With regard to customer satisfaction level, HBOS measured their customer satisfaction by "Proportion of customers who were 'delighted' or 'completely satisfied' with service from HBOS", while Lloyds TSB asked personal and business customers every month, and calculated their customer satisfaction score based on assessment of customer understanding, accessibility, responsibility and Expertise. RBS, on the other hand, disclosed their ranking for customer satisfaction in an independent survey.

used classifications of intangibles, which suggests that intangibles include three categories: human capital, structural capital, and relational capital. In this thesis, quantitative analysis mainly focuses on indicators of human capital and relational capital. The rationale for this decision is due to the following considerations.

Firstly, previous quantitative empirical studies on structural capital that utilized publicly accessible data tend to be restricted to some innovation indicators, such as investment in R&D or IT, as has been discussed in section 3.4.1 of chapter three. However, a large proportion of R&D or IT disclosure is voluntary in the European banking sector, where there is no specific requirement for reporting R&D or IT investments (Beccalli, 2007). As a result, little information on R&D or IT investment can be found in bank annual reports and other public resources. Therefore, the researcher has to exclude structural capital from the quantitative analysis due to lack of data.

Secondly, as mentioned in section 3.4.1.1 of chapter three, the nature of the banking sector determines that bank products are generally not protected by patent, and it is difficult for them to gain competitive advantage from product innovations. Consequently, banks tend to derive sustainable competitive advantage from human capital and relational capital (BERR, 2007), as well as non-technical aspect of structural capital. A few empirical studies have shown that there is very weak or even non-existent correlation between IT investment and profitability (e.g., Beccalli, 2007). Therefore, it may be reasonable to rule out the innovation indicators of structural capital from the quantitative study, while the non-technical aspect of structural capital, such as organizational culture and organizational learning, will be taken into consideration in the qualitative part of this research.

Because of the above considerations, the researcher takes account of proxies of intangible components with the exception of structural capital in the quantitative analyses. The following subsections will explain how various proxies of human capital and relational capital are identified based on the extant literature and her interview experience. It should be pointed out that, since limited intangible information is available, the researcher tries to generate as many proxies as possible at the stage of data collection. When stepping into the data analysis stage, she will then start to select variables according to the data quality.

5.2.2.1 Proxies of human capital

Chapter two has discussed various aspects of human capital. On the one hand, human capital can be divided into two dimensions: generic HC and firm-specific HC (e.g., Abdel-khalik, 2003; Swart, 2006). On the other hand, human capital has been explored at two distinct levels: individual management level (e.g., Barney, 1991; Castanias and Helfat, 1991) and total workforce level (e.g., Wright et al., 1994). In this study, the researcher attempts to gather proxies for both generic HC and firm-specific HC at either the individual level of board members[70] or at the organizational level of employees, in order to measure human capital from a comprehensive perspective.

It can be seen from chapter three that a number of researchers have conducted studies on top management quality. The adopted proxies include generic HC that managers developed before they enter a typical firm, such as education level and general working experience; and firm-specific HC that managers gain after entering the firm, such as firm-specific working experience or tenure (e.g., Abdel-khalik, 2003; Bantel and Jackson, 1989; Harris and Helfat, 1997; Castanias and Helfat, 1991; 2001; Hitt et al., 2001; Kor, 2003). For example, Bantel and Jackson (1989) argue that education level is correlated with cognitive ability, and hence should be one of the important factors that have impacts on bank innovation. Hitt et al. (2001) point out that extensive education and training that managers have prior to entering their fields can provide them a high level of articulable knowledge[71]. Abdel-khalik (2003) employs the number of years credited towards retirement benefits for CEOs and other executive members of the boards of directors to proxy labour skill. Previous literature has also provided evidence on how these proxies of top management quality and skill affect other intangible components and firm performance (for detailed discussions refer to sections 3.4.1.2 and 3.4.2.2 of chapter three). Therefore, on the basis of previous research, education level, managerial experience before entering a typical bank, and bank-specific managerial experience are adopted as proxies of management quality in the current study.

Besides quality of management, human capital for the total workforce can also be expected to have direct or indirect impact on firm performance, especially for some service industries such as the banking sector (e.g., Low, 2001; Namasivayam and Denizci, 2006). Namasivayam and Denizci (2006) highlight the importance of employee characteristics in

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[70] The management level in this study is limited to bank boards, due to the reason that with the exception of board members, detailed information about other senior managers is normally unavailable in public sources.
[71] According to Hitt et al. (2001), knowledge that individuals have can be both articulable and tacit. The former is gained through formal education, and the latter is through learning on the job.

service sectors where frontline employees should have the knowledge and capability of assisting in the assembly of suitable products to customers. Therefore, it is argued that factors related to employees, such as education, knowledge, training, intellectual agility, attitude, and motivation should be taken into consideration when assessing human capital (e.g., Black and Lynch, 1996; Namasivayam and Denizci, 2006).

The extant literature on measuring human capital follows two streams: human resource costing and accounting as well as balanced scorecard (Johanson et al., 1998). The former measures human capital in financial values in terms of costs, investments and outcomes, while the latter is in favour of measuring human capital in both financial and non-financial terms (Johanson et al., 1998; Namasivayam and Denizci, 2006). Although measurement models of balanced scorecard are argued to be more closely related to the nature of intangibles (Johanson et al., 1998), a large proportion of their measures are in qualitative term and many metrics are not released to the public. On the contrary, human resource costing and accounting is more measurement-oriented (Johanson et al., 1998). In this study, considering the data accessibility, adopted proxies of human capital at the employee level mainly follow the stream of human resource costing and accounting.

The first proxy for the employee level HC is staff costs, which is disclosed in banks' financial statements. Pulic (1998) argues that labour expenditures should be treated as compensation for both invested time and knowledge inputs. Based on this assumption, he developed an intellectual capital measurement model – Value added intellectual coefficient (VAIC^{TM})[72], in which human capital of a firm is measured by the total expenditure on employees. This model has been widely applied to assess intangibles in the banking sector (e.g., Goh, 2007; Kamath, 2007). Fiordelisi and Molyneux (2007) suggest that higher staff costs may provide information on higher level of employee satisfaction. Thus, staff costs are used by some researchers as one of the human capital indicators (e.g., Fey et al., 2000; Hansson, 2004; Rosett, 2001).

Apart from staff costs, training investment is also adopted by many previous studies to proxy organizational human capital, as has been addressed in section 3.4.1.2 of chapter three. Training is argued to be an important activity that can improve employees' firm-specific knowledge (e.g., Hitt et al., 2001; among others). In spite of the absence of standardized requirement for training disclosure in Europe, some banks have released

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[72] Detailed discussions about VAIC^{TM} refer to section 3.2.3.5 of chapter three.

information on their training activities in annual reports or social responsibility reports. The researcher, therefore, tries to collect two proxies of training: training expenditures and training days or hours that banks have provided to their employees.

Moreover, employee turnover may be another reasonable indicator of human capital (e.g., Koys, 2001; Nagar and Rajan, 2005; Schneider and Bowen, 1985; Ulrich et al., 1991). For example, in a case study of a large retail firm, Ulrich et al. (1991) identify a number of indicators of employee attachment, and employee turnover is one of the most critical indicators among them. Koys (2001) argues that employee turnover as an indicator of employee behaviour will influence organizational effectiveness, since a lower turnover rate means less hiring and training activities. Besides, more experienced employees retained in an organization would improve its performance, because they have more knowledge about customer and organizational goals than new hired employee (Schneider and Bowen, 1985). It should be noted that, there is no standard definition and measure of employee turnover rate in the European banking industry. As a result, instead of using employee turnover rate, the researcher has to collect data for two indicators: the number of employee recruited and the number of employee departures, respectively.

It is desirable to point out that the above indicators are not only suggested by the extant literature, but they are also in line with human capital metrics used in some intangible measurement models. For example, section 3.2.2.2 of chapter three gave several examples of IC measures in Skandia Navigator (see Table 3.2). Among them, training days per year, managers with advanced degrees, and annual turnover of staff are recommended as indicators of human capital. Similarly, in the Intangible Asset Monitor (see Table 3.3), training cost and level of education are treated as indicators of employee competence growth and renewal, while the professional turnover rate represents the stability of employee competence.

The proxies of human capital discussed so far are based on the extant literature or measurement models. Besides learning from existing knowledge, the researcher attempts to generate further proxies from her interview experience. During the process of qualitative data collection, she tried to summarize whatever reflections she has got from each interview. These reflections play an important role in shaping the process of quantitative proxy identification, such as helping the researcher to better understand proxies adopted by literature and giving a clue to new proxies.

For example, when discussing whether or not experience can be seen as a suitable indicator of management quality, a bank manager talked about the "balancing experience" for bank board:

> *"I think in any board, we do need a balancing experience. If you've got a grocery, say Asda, what would be the worst thing to have a banker, an experienced banker on your board? But you didn't want ten bankers and one grocer. Because the bankers will know nothing about potatoes,... how can they run grocery stores? We have very few bankers on our board but with lots of experts in other businesses, and they didn't fully appreciate, I think, the risk inherent in a bank."* (Interview B4)

It is observed that the extant literature normally utilizes age and firm-specific experience as proxies of human capital, as mentioned before. However, little attention has been paid to professional or industry experience. Only a few authors have addressed the importance of it (e.g., Bailey and Helfat, 2001; Castanias and Helfat, 1991, 2001; Kor, 2003), and the empirical research tends to be very limited[73]. To the researcher's knowledge, up to now, there are no empirical studies looking at the industry-specific managerial experience in the banking sector. Because of industry differences, it is worthwhile to distinguish industry-specific experience from general managerial experience as well as firm-specific experience when measuring management quality. Therefore, the proxy of industry-specific experience is adopted in the current study, which is defined as the number of years the manager has been worked in the banking industry.

5.2.2.2 Proxies of relational capital

Even though relational capital includes all resources linked to the external relationships of the firm, previous empirical research tends to put emphasis on brands and customer relations[74]. This tendency is not only due to the extraordinary importance of these elements, as has been discussed in section 2.4.5 of chapter two, but also owing to the relatively better availability of information on them compared with other elements of relational capital.

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[73] For example, Castanias and Helfat (1991) develop a managerial rents model that analyses the role that top management plays in generating firm rent. Their model classifies three types of managerial skills: generic, firm-specific, and industry-specific. More recently, Kor (2003) develops a multilevel experience-based top management team competence model, which proposes three levels experience: firm-specific, shared team-specific, and industry-specific managerial experience. He provides an empirical test of this model based on entrepreneurial firms that complete an IPO, and finds that founders' past industry-specific management experience contributes to the competence of the top management team. It should be noted that the proxy of industry-specific working experience is used in the current study, rather than industry-specific managerial experience that is suggested by the above researchers.

[74] Detailed discussions refer to section 3.4.1 of chapter three.

However, similar to data approachability of human capital measurements, data of relational capital used by previous literature is also mainly collected from private sources, which is difficult to access for the researcher. For example, the majority of quantitative empirical studies on customer satisfaction have used either special databases (such as Gruca and Rego, 2005; Ittner and Larcker, 1998) or primary survey data (such as Hollowel, 1996). Indicators of customer satisfaction recommended by intangible measurement models also tend to be survey based, such as the satisfied customer index used by Skandia Navigator or the Intangible Asset Monitor. Given data availability constraint, it is not easy for the researcher to find appropriate proxies of customer relationships.

Davis and Albright (2004) conduct a study to investigate the effectiveness of balanced scorecard in a bank. They argue that better customer satisfaction may result in an increasing customer base that is indicated by loan and deposit growths. In this sense, loan and deposit growth rate can be used as a proxy of customer satisfaction (Fiordelisi and Molyneux, 2007). In addition, Nagar and Rajan (2005) use loan and deposit growth rate to measure customer usage and volume in their customer relationship model. Similarly, in Wang and Chang's (2005) study of the intangibles-performance association, growth rate in sales has been adopted as an indicator of customer capital growth. Therefore, it may be reasonable to utilize loan/deposit growth rate as a proxy to measure customer relationships with a bank. However, it should be noted that, as a proxy of customer relationships, this indicator has its inherent weakness, because the increase in customer loans or deposits in a bank may not be due to good relationships between the bank and its customers. Other factors, such as costs, the economic environment (e.g., GDP growth) or M&A, are also likely to affect a bank's deposit taking and loan lending. For example, banks could have rapid loan growth if they were low costs, even though that may not have anything to do with customer relationships. A bank may also achieve a significant increase in the numbers of customer deposits and loans on its balance sheet through taking over other banks. Therefore, this indicator may not reflect correctly a bank's relationships with its customers.

With regard to another important element of relational capital, namely brands, one of the most commonly used indicators is advertising and marketing expenditures, as discussed in section 3.4.1.3 of chapter three. A number of scholars suggest that advertising and marketing investments are likely to be in connection with brand name or brand equity[75]

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[75] It should be noted that, although expenditures made in promoting a brand, such as adverting and marketing expenses, is commonly suggested to be a potential measure for brand, several researchers, however, point out that not all these expenditures result in increases in brand value (e.g., Barth et al., 1998).

(e.g., Barth and Kasznik, 1999; Kotha et al., 2001; Ali Shah and Akbar, 2008). For example, Kotha et al. (2001) argue that advertising is one important action that firms take to build their reputation, and is likely to increase "awareness of and interest in the firm" (Kotha et al., 2001:572). Advertising and marketing expenditures, therefore, are selected to be a proxy of brands in this study.

The second indicator of brands suggested by previous literature is the estimated brand value (Barth et al., 1998). Some independent brand consulting firms, such as Interbrand, have developed methodologies to estimate the value of brands for firms cross-country and cross-industry. Barth et al. (1998) utilise the data of brand value published by Financial World to investigate the brand value-market value association in a variety of industries. As an independent consultancy, Brand Finance has tried to estimate the band value for banks in different countries, and has published their reports of brand index for year 2005 and 2007 respectively. In this study, brand value provided by Brand Finance will be adopted as another proxy of bank brands.

Apart from advertising and marketing expenditures and brand value, there are some other indicators that may be potentially useful to proxy brands. Dick (2006) suggests that age of the bank might be a proxy of bank branding, as a bank that has operated for longer time is expected to enjoy greater reputation than a younger bank. Chauvin and Hirschey (1994) argue that accounting goodwill numbers appear to be related to brand name recognition. As noted before, the researcher tries to collect as many proxies as possible, and she then takes these two indicators into consideration as well.

During the process of identifying relational capital proxies, the interview experiences played an important role in helping the researcher to understand and select potential indicators. For example, although some authors have suggested that the distribution channel should be included in the content of relational capital elements (e.g., Boedker et al., 2005), there are few empirical studies that have paid attention to this factor, with the exception of Dick[76] (2006, 2007) and Örs (2006). The absence of research in this regard might be due to the fact that, along with the technological development that has occurred in the banking industry, the importance of the traditional physical branch has tended to decline, as discussed in section 2.2.3 of chapter two. However, during the process of

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[76] Dick (2007) argues that branch is indeed a form of advertising for banks. In his studies, the number of employees per branch is used as a proxy of service quality, while branch density is used to measure the branch network of a bank.

collecting interview data, several bank managers emphasized the role of the branch network. For example, a bank manager has discussed the importance of the branch network for them[77],

> *"Another one I want to say is distribution network across countries. Some may say distribution network is a physical asset; it's tangible. But I think it can be seen as an intangible as well, in terms of making your bank global and providing accesses to customers, so they can access their accounts everywhere. In that sense, it can be seen as an intangible of globalicity…. This globalicity represents our culture, fits into our brand, and builds up out franchise. It is an important intangible."* (Interview B7)

Therefore, based on interview experience, branch network that places a bank's brand on the "high street" all the time in a physical way is considered to be a potentially useful indicator of bank brands in this study. Stable branches with a stable customer base are also a proxy for stability of bank relationships with customers.

5.2.2.3 Proxy of service quality

Previous subsections showed how proxies of human capital and relational capital have been identified. As this study intends to examine the intangibles-performance association, service quality as an important factor that determines bank profitability, cannot be ignored. Örs (2006) argues that service quality may have a positive impact on bank profit due to the fact that banks' customers are probably willing to pay more for their loans or be paid less for their deposits because of higher service quality. Some previous studies have provided empirical evidence in this regard (e.g., Duncan and Elliott, 2002, 2004; Kiser, 2002).

Additionally, from the case study conducted in her MRes, the researcher found that service quality and brand building have important effects on banks' customer relationships (Chen, 2007), in line with Örs' (2006) suggestions that advertising and service quality tend to be jointly determined. Thus, the effect of service quality should be taken into account when investigating the interactions among intangible elements as well as the relationship between intangibles and bank performance.

The proxy of service quality used in this study is the number of employees per branch, which is suggested by Dick (2006, 2007) and Örs (2006). Both of them argue that, a larger number of employees per branch may represent higher service quality, as the customer

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[77] It should be noted that this paragraph is not a direct quote. Rather, it is based on the notes that the researcher has taken during the interview.

waiting time should be reduced. Avkiran (1999) also finds that even with the increasing high-technology solutions as the substitutes of branch staff, staff contact still tends to be an important factor that determines service quality. Therefore, it is necessary to provide adequate staff numbers to serve customers.

In summary of what have been addressed so far, given the constraints of data availability, it is not easy to identify proxies of human capital and relational capital that are accessible in public resource. Some may argue against the extent to which the proxies used in this study can capture the nature of intangibles. The researcher recognises their limitations. However, the researcher has to rely on them, as there are no other options that she can choose. In addition, the process of proxy identification is guided by the extant literature, business practice, as well as the researcher's own interview experience, and this makes the selection of variables rational. More importantly, the problems associated with proxy identification and data quality[78] present an opportunity in the mixed methods research. By further exploring these problems in the qualitative part of this thesis, it will be shown how the combination of quantitative and qualitative approaches can help the researcher to find new ways to overcome in part these problems. Section 5.3.2 of this chapter will provide the detailed definitions of the intangible proxies used in this thesis.

5.2.3 Sample selection and data sources

The previous subsection discussed how the potential proxies of human capital and relational capital have been identified. In this subsection, the procedure of sample selection and the sources of data used in the current study are discussed.

5.2.3.1 Sample selection

The sample firms used in the current study are drawn from the population of banks in Europe. The rationale of setting this study in the banking sector is, as has been explained in section 2.3.2 of chapter two, due to the changes to the competition environment in the banking industry as well as the characteristics of bank products and services. This choice is also influenced by the researcher's personal interest and previous working experience.

Additionally, it can be seen from chapter three that, due to the data availability problem,

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[78] Problems with data quality will be discussed later in section 5.3.1 of this chapter.

quantitative empirical studies of some intangible elements, such as training, advertising or customer satisfaction, tend to focus on the US data, while there is little evidence in the UK and other countries in Europe. With the purpose of filling this gap, therefore, the researcher chooses banks in Western European countries as the population of the quantitative study.

Apart from the above considerations, the European banking industry provides an appropriate context for investigating intangibles from a resource-based view. As Reed et al. (2006, 2009) suggest, it is better to limit intangibles research to one market or region in order to control for the variance of exogenous market and regulatory conditions. As this study relies on public resources, it is difficult to get enough observations within one country in Europe to conduct appropriate statistical analyses. On the other hand, the European banking sector has experienced increasing integration and harmonization in recent years (Goddard et al., 2007; Molyneux and Wilson, 2007). As has been discussed in section 2.2.3 of chapter two, since the late-1970s, there have been various legislative frameworks, such as the First and Second Banking Directives, contributing to create a single financial market in the EU. Recently, the implementation of the EU's Financial Services Action Plan (FASP)[79] has further promoted the integration of European banking and financial markets (Molyneux and Wilson, 2007).   Governed by a set of harmonizing regulations and supervisories, although differences across countries still exist[80] (Goddard et al., 2007; Gual, 1999), banks now tend to operate more freely throughout Europe (Molyneux and Wilson, 2007). Therefore, looking at this "single market" has the potential to reduce sample heterogeneity, on the one hand; and to maximise the sample size, on the other hand.

The procedure of sample selection followed several steps. To begin with, the names of sample banks were drawn from the bank list provided by the ***Bankscope*** database[81] in April 2008, including four types of 139 banks: bank holdings and holding companies, commercial banks, saving banks, and cooperative banks. Then each bank's website was

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[79] FASP is a legislative framework published by the European Commission in 1999, and was largely completed by 2004.   The overall objective of FASP was to remove remaining barriers so as to develop the Single Market in financial services. It has several specific objectives, such as 1) developing a single market in wholesale financial services; 2) creating open and secure retail markets; 3) establishing state of the art prudential rules and supervision (European Commission, 1999, 2007, 2009; HM Treasury, 2003).

[80] It is generally argued that the integration process has advanced further in the wholesale market than that in the retail market (e.g., Ávila, 2007; Goddard et al., 2007; HM Treasury, 2003; Molyneux and Wilson, 2007). Ávila (2007:1940) pointed out that "the process of full integration of wholesale markets can be seen as complete while the retail-banking sector is in the process of realisation".

[81] It should be pointed out that, at this stage, the researcher did not use any of the data from the ***Bankscope*** database, other than a printed list of the bank names.

checked, and banks that met the following criteria were chosen[82]: 1) banks who are independent and for which electronic copies of annual reports in English version for at least two continuous fiscal years during the period of 2005 to 2008 is available; and 2) whose main operating activities include retail banking service[83]. After that, a list of bank names in 17 countries was identified, and was cross-checked with the bank list published by Wikipedia[84], from where 20 more banks who met the above criteria were identified.

It should be pointed out that the researcher's initial interest was in the retail banking sector. Previous literature suggested that the role of intangibles might differ according to bank types. For example, Reed et al. (2006) argue that the impacts of intellectual capital components on bank performance will vary across different types of banks, due to the dissimilarities in customer needs, loan offering, rivals, density, and intensity of competition existing in them. They find that the profile of IC components, namely human capital, organizational capital, and external social capital, differs across personal banking and commercial banking sectors in the US. Moreover, the researcher has experienced similar viewpoints from interviews with some bank analysts. For instance, in interview A6, the analyst argued that reputation of a bank did not matter in retail banking, compared with price; but it was extremely important in investment banking. The interviewee in interview A2 held the similar opinion that intangibles were important for banks, but the value of different intangible elements varied between investment banking and retail banking. Therefore, it would be better to investigate intangible components within retail and other types of banks separately.

However, the relative information regarding intangibles produced by the sample banks are generally in a consolidated way across different business divisions of them, and there is no particular data available for the retail banking unit. Therefore, the researcher has to conduct analyses on the basis of consolidated data for all the banking activities within a bank. In order to control the variance of exogenous market, the sample banks were divided into two groups according to the proportion of their retail banking activities[85]:

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[82] Among those 139 banks, some of them have to be eliminated due to the following reasons: 1) they do not have accessible websites; or 2) they operate as parts of a banking group and do not produce their own individual annual reports.

[83] Banks whose main activities are investment banking, asset (wealth) management, insurance, or real estate leasing, rather than commercial banking, are eliminated from the final sample. Besides, pure online banks are not included in the sample either, as their profiles of intangibles differ significantly from traditional branch-based banks.

[84] Webpage: http://en.wikipedia.org/wiki/List_of_banks_in_Europe.

[85] There is lack of detailed information related to interest income for some banks. In this case, the percentage of total operating income for retail banking activities is used instead of net interest income. Even

1) banks that earn at least 50% of their net interest income from retail banking activities;

2) banks that earn less than 50% but at least 10% of their net interest income from retail banking activities.

So far there were around 74 banks included in the sample. It should be noted that, the final sample of this study has not been constructed yet in this subsection, as it has to be subject to the data availability of these banks (see Table 5.1 of sample construction in the next subsection). The next subsection will describe the types and sources of data used in this study, and how the final sample looks like at the end of data collection process.

5.2.3.2 Data sources

The type of data used in this study is panel data for a three-year period of time, which combines both time series and cross-sectional data. The main purpose of using panel data is to boost the sample size. As mentioned before, there were only 74 banks in accordance with the imposed criteria after initial sample selection. This sample size is not large enough to carry out powerful statistical analyses. In this case, panel data enables the researcher to apply certain statistical techniques in this study. Aside from this reason, panel data may give "more informative data, more variability, less collinearity among variables" (Gujarati and Porter, 2009:592), compared with time series or cross-sectional data. Moreover, Gujarati and Porter (2009) suggest that panel data is useful to examine the dynamic of change in the way of studying the repeated cross section of observations. During the qualitative data collection process, the researcher learned from her interview experience that the role of intangibles in the bank value creation process might change along with the economic cycle. Therefore, it might be better to investigate them using panel data.

The time series of panel data in the current study begin from fiscal year of 2005 and end in 2007[86]. This is for the reason that, since 1 January 2005, all listed firms in the European Union have been required to publish their consolidated financial statements on the basis of International Accounting Standards. Even though the harmonisation is only partial, due to

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so, there are still 12 banks that did not provide detailed information about either net interest income or operating income regarding their retail banking divisions. As they have described their banking activities on their websites, and shown that they operated mainly in retail or commercial banking market, they are still included in the sample for the purpose of maximising the sample size.

[86] It should be noted that when conducting lagged financial performance-intangible elements association tests, the financial performance data used in this study ends in year 2008.

the factor that it is optional in some of the standards (Banque de France, 2005), this to some extent may reduce the variances with the financial performance data caused by different accounting standards. However, towards the end of the study period, a global financial crisis occurred, which has a significant effect on the European banks' financial performance. This to some extent increases the sample variance. In order to control for any time effects, year dummies are introduced to the specified models, as will be discussed further in chapter six.

There are various data sources that have been used in this study. Firstly, the majority of intangible variables and all financial variables were manually collected from banks' annual reports, corporate (social) responsibility reports, presentations, and other online information. All the above documents were obtained from banks' individual websites. Among them, reports and presentations were downloaded in electronic format, while some other information (such as bank history or management profiles) was printed directly from the relevant webpage. Secondly, data related to executive directors, such as education level, working experience, and professional qualification, were collected from the ***BoardEX*** database, bank websites, and other websites (such as *Businessweek.com* and *Wikipedia.org*). Thirdly, data of brand value[87] is provided by Brand Finance (2008) report: "Global 500 Financial Brands Index". Finally, in this study, for banks whose presentation currency of financial statements was not the Euro, financial data will be translated into Euros using the exchange rates[88] at the closing data of each fiscal year, which were obtained from the ***DataStream*** database.

During the above process of data collection, some banks had to be excluded from the final sample, as they provided very little information related to intangibles (see Table 5.1 of sample construction). Finally, a sample of 63 banks over three years[89] and across 17 countries was constructed (see Table 5.2).

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[87] The methodology used by Brand Finance to estimate global 500 banks' brand value is the Discounted Cash Flow (DCF) technique. This method discounts estimated future royalties at an appropriate discount rate, and then obtain a Net Present Value – the "brand value" (Brand Finance, 2008).

[88] Data type of the exchange rate is ER (Exchange rate-middle). *Datastream* definition of ER: this rate is the midpoint between the bid rate and the offered rate.

[89] It should be noted that, among the sample of 63 banks, 4 banks only have observations for year 2007, and another 3 banks have observations for year 2006 and 2007.

Table 5.1: Summary of sample construction process

	No. of banks
The 4 types of banks in Western Europe at 25/04/2008	139
Excluding Banks that do not have accessible websites, do not have English information, or do not produce independent annual reports;	-61
Excluding banks whose main operating activities do not include retail banking services;	-22
Excluding banks in which there are no annual reports for at least two continue fiscal year available;	-2
Including banks whose name are identified from Wikipedia;	+20
Excluding banks that only provide little information about intangibles.	-11
Final sample	*63*

Table 5.2: Summary of the sample

	No. of banks in each country	*Percentage of total sample*
Italy	9	14.3
Germany	8	12.7
Spain	7	11.1
UK	6	9.5
Denmark	5	7.9
Greece	5	7.9
France	4	6.3
Sweden	4	6.3
Austria	3	4.8
Belgium	3	4.8
Cyprus	3	4.8
Finland	1	1.6
Ireland	1	1.6
Netherlands	1	1.6
Norway	1	1.6
Portugal	1	1.6
Switzerland	1	1.6
Total sample	*63*	*100*

It should be noted that, in order to gather as much data as possible, considerable effort has been put into the process of data collection. However, due to the low level of intangible disclosure, the final sample that the researcher can get is not unproblematic. There are still a number of missing values for some intangible variables, and many data items are not

noise-free. Problems with data quality will be discussed in detail in the following section.

5.3 Procedure of quantitative data analysis

Section 5.2 has introduced the procedure of quantitative data collection. In this section, the procedure of quantitative data analysis is discussed. Specifically, subsection 5.3.1 demonstrates the problems within the data quality. After that, the dependent and independent variables used in the current study are introduced in subsection 5.3.2. At the end of this section, how the hypotheses have been developed based on previous literature and the researcher's interview experience is addressed.

5.3.1 Problems with data quality

As mentioned in the previous section, the data used in the current study are not noise-free. Rather, the low level of data quality is a significant threat to the validity of this study. It is the researcher's responsibility to address clearly the potential sources of invalidity (Onwuegbuzie, 2000). More importantly, identifying threats to validity here may be useful to explore the problems with conducting quantitative study in the field of intangibles research, which is one of the purposes of the quantitative component of this thesis. Therefore, this subsection discusses problems with data quality in the quantitative models of interest. In general, there are two main problems inherent in the dataset of this study, including missing data and problem with data standardization.

5.3.1.1 Missing data

Missing data is a common problem for empirical social science research (Allison, 2002; Greene, 2008; Horton and Kleinman, 2007). Greene (2008:61-62) identifies that the cases of missing data may fall into three different types: 1) the data may be simply unavailable, which is normally called missing completely at random (MCAR) or ignorable case; 2) missing data is not random but tends to be systematically related to the phenomenon being modelled, which is labelled as not missing at random (NMAR); and 3) an intermediate case in which there is information about the missing data contained in the complete observations that can be used to improve inference about the model, and missing data in this case is termed missing at random (MAR).

With particular regard to this study, unfortunately, it suffers heavily from missing data problem. For several indicators, the problem of missing data is extremely serious, and the researcher has to exclude these indicators from the quantitative data analysis. For example, employee recruited and employee departures were initially considered to proxy employee turnover. After data collection, however, the researcher found that the available observations for these two indicators were not enough to carry out appropriate statistical analysis. For the sample of 178 bank-years, there were only 64 and 43 observations for indicators of employee recruited and employee departures, respectively. As a result, employee recruited and employee departures have to be eliminated from the proposed statistical analyses. For other indicators that are still taken into consideration, the researcher has to find appropriate ways to cope with missing values with them.

Previous researchers have proposed a variety of methods to deal with missing data. Conventionally, the simplest method is Listwise Deletion (also known as complete case analysis), in which any observations that have missing data on any variables in the model are deleted from the sample, and analyses are just applied for the complete datasets (Allison, 2002). Other traditional methods, such as Pairwise Deletion (also known as available case analysis) and unconditional mean imputation, are also widely used to work with missing data (Allison, 2002; Horton and Kleinman, 2007; Little and Schenker, 1995). In this study, the Listwise Deletion approach is adopted to deal with missing data. The majority of the missing data in this study seems to fall in MACR case, as they are unavailable information simply due to disclosure problem. It is suggested that when missing data is MCAR, the estimates for Listwise deleted dataset will be unbiased (e.g., Allison, 2002; Horton and Kleinman, 2007). In this case, Listwise Deletion seems to be more suitable than some other traditional approaches[90]. However, it has to be noticed that, applying Listwise Deletion will exclude a large fraction of the observations (Allison, 2002; Horton and Kleinman, 2007). As the sample size in this study is relatively small, this will create inefficient analyses, such as inflating the standard error and reduce the level of significance (Acock, 2005).

In order to reduce the effect of missing data on the efficiency of the statistical analyses, other effort has been devoted to enlarge the datasets. For example, for the variable of brand

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[90] Comparing Listwise deletion with Pairwise deletion, for example, the latter can use more available information than the former. However, Allison (2002) argues that Pairwise deletion produces more efficient estimates only when the correlations among variables are generally low. When there are relatively high correlations present, which appears to be the case for some models in this study, Listwise deletion does better.

value, Brand Finance provided estimated brand value and brand rating for banks for years 2005 and 2007 only, and the data of them for year 2006 were missing. In this case, the researcher has to make an assumption that the brand value or rating of a bank in 2006 should remain unchanged compared with that in 2005. Thus, the missing data of a bank's brand value or rating for year 2006 can be imputed by using the bank's brand value or rating in 2005. The variable of advertising and marketing expenditures has missing data on over 35% of the cases. If it is used as an independent variable in a multiple regression model, the statistical power losses after Listwise deleted data will be substantial. Therefore, an alternative variable, namely other general and administrative expenditure (exclusive of staff costs), is introduced due to the factor that, for a number of banks, the expenditure on advertising and marketing is generally lumped with staff costs and other expenses in line with item of general and administrative expenses in the income statement. Similarly, some banks in the sample didn't report goodwill and other intangibles separately. In order to cope with missing value problem, the total number of goodwill and other intangible assets on the balance sheet was used instead of goodwill[91]. Moreover, previous literature also suggests that general and administrative expenditure can be seen as a proxy of intangibles, as it contains expenditures on brand beyond advertising (Hand and Lev, 2003). Kotha et al. (2001) use sales and general administration figure to measure marketing investment in reputation for internet firms, and find a significant and positive relationship between it and firm performance.

In spite of the above effort to maximizing the size of the usable sample, the existence of missing data is likely to cause a significant reduction in statistical power, and to pose a threat to the external validity of this study in terms of weakening the representativeness of the sample. Except for the problem of missing data, the quantitative study also suffers from another serious data quality problem, that is, many indicators of intangibles are not defined or measured in a standardized way across different banks. In the next subsection, problem with data standardization will be discussed.

5.3.1.2 Problem with data standardization

Onwuegbuzie (2000) argues that specificity of variables, such as operational definition of dependent or independent variables and types of instruments used, can be one of the most common threats to external validity at the data collection and analysis stages of

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[91] The definitions of the proxies will be outlined in section 5.3.2 of this chapter.

quantitative studies. In the current study, this threat tends to be in particularly noticeable.

As noted before, the majority of information related to intangibles is disclosed voluntarily. Due to the absence of legislation or standards in measuring or reporting them, some indicators are not defined or measured in a standardized manner across banks and countries. For example, the data of employee number was available for almost all the banks in the sample[92]. However, around 30% of them did not provide clear definition on how the number of employees was calculated. For banks that identified the definition of employee number, the majority of them used a "full-time equivalents" method to calculate employee number at the end of each fiscal year, while some others reported the average number of employee in each year. Likewise, there was no clear and standardized definition for the variable of advertising and marketing expenditures. In banks' income statements, apart from the item "advertising expenses", a variety of terms regarding expenses related to advertising and marketing were found, such as marketing and public relations; marketing and communication; marketing and entertainment expenses, etc.

Differences were found not only in definition of indicators, but also in the measurement unit of them. For instance, the sample banks measured the time they spent on employee training in different units. Some banks disclosed the amount of hours they spent on employee training, while others provided information about average training days per employee. In such a case, the researcher has to make an assumption that one training day should be equal to 7.5 training hours[93], and converted working days per employee to working hours per employee based on this assumption.

To sum up, the above problems with data standardization, along with the problem of missing data discussed previously, may weaken the validity of this study. As a result, the empirical results that will be presented later in chapter six must be interpreted with extreme caution. However, does this mean the quantitative part of this study is a waste of time? The researcher would argue that it does not. As explained in section 4.4 of chapter four, one of the main purposes of this study is to explore the potential problems and hindrances of conducting quantitative empirical research in this field. In this sense, the problems with

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[92] Among the sample of 63 banks, 62 of them have disclosed information on the number of employees.

[93] According to data from the EU Labour Force Survey for Q4 2007, the average weekly working hours for full-time staff in the Europe at between 35 hours and 40 hours a week (Source: FedEE 2010 report: *Untangling the myths of working time: how long is the European working week?* Available at: http://www.fedee.com/workinghours.shtml). Therefore, on average, working hours for European full-time staff can be assumed at 7.5 hours a day.

data quality represent the current level of information availability of intangible disclosure. An empirical study of the information content of intangible disclosure, and whether the presence of intangible indicators, as reported by companies, is associated with bank performance is thus warranted. The results are presented in chapter six.

5.3.2 Summary of proxies for intangibles

Sections 5.2.2 and 5.3.1 of this chapter demonstrated how the proxies of intangible elements have been identified, and what the problems are with the data quality of these proxies. This section summarizes the proxies of human capital and relational capital the researcher has collected (also see Appendix 1 for summary of variables definitions, measurements and sources). It should be pointed out that some proxies introduced here may not be used in the proposed models in the later chapter. Due to the data availability constraint, the researcher tried to collect as many intangible proxies as possible. However, the proxies that can be used in the final constructed models rely not only on the underlying theories, but also to a large extent on the actually available data for them.

5.3.2.1 Proxies of human capital

The proxies of human capital can be classified into two levels: top management level HC and employee level HC.

For human capital at the top management level, data for the following proxies have been collected:

1) CEO's firm-specific experience. This indicator is used to measure firm-specific managerial experience of the CEO in the bank, and is defined as the total number of years the CEO has been a member of the board[94].

2) CEO's past managerial experience. It measures the CEO's general managerial experience before he/she came into the specific bank, and is defined as the total number of years the CEO has been an executive member of a board in other firms before he/she came into the bank.

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[94] For a few banks in which the CEO is not a member of the board, the number of years the CEO has been a CEO in that bank is used to measure CEO experience.

3) CEO's industry-specific experience. This indicator measures CEO's industry-specific experience. It is defined as the total number of years the CEO has been working in the banking industry.

4) CEO's level of education, which is rated by[95]: undergraduate = 2, postgraduate or master = 3, MBA = 4, PhD = 5, others = 1. If the CEO has got two degrees at the same level, then plus 1.

5) Average experiences of other executive directors on the board. This indicator is used to measure firm-specific managerial experiences of other executive directors on the bank's board, and is calculated as: the total number of years all other executive directors have been members of the board divided by the number of other executive directors on the board.

6) Average past managerial experiences of other executive directors on the board. This indicator measures other executive directors' general managerial experiences before they came into the specific bank. It is defined as the total number of years all other executive directors have been executive members of boards in other companies before they came into the specific bank divided by the number of other executive directors on the board.

7) Average industry experiences of other executive directors on the board. This indicator measures other executive directors' industry-specific experience. It is defined as the total number of years all other executive directors have been working in the banking industry divided by the number of other executive directors on the board.

8) Average education level of other executive directors on the board. The level of education for each executive director is rated in the same way as CEO's level of education, and then the average education level is calculated as the total education level of all other executive directors divided by the number of other executive directors on the board.

With regard to human capital at employee level, there are three proxies obtained, exclusive of employee recruited and employee departures that have to be discarded owing to missing data problems:

1) Average staff costs, which is defined as the total staff costs over the number of employees.

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[95] It should be noted that, it would be better to take the professional qualifications that bank managers have into consideration. However, such information is largely unavailable for bank CEOs in some European countries.

2) Average training hours per employee. This indicator is calculated as the total number of training hours over the number of employees[96]. For some banks that provide information on training days rather than training hours, training days is converted into hours in the way of 1 unit of training day equal to 7.5 units of training hours, as has been explained before.

3) Average training expenses per employee, which is defined as the total expenses on staff training over the number of employees.

5.3.2.2 Proxies of relational capital

As noted before, the proxies of relational capital used in this study are mainly to measure brands and customer relationships. To sum up, there are the following brand metrics:

1) Goodwill and other intangible assets, which is defined as the accounting number of goodwill and other intangible assets on the balance sheet over total assets at the end of the fiscal year.

2) Advertising and marketing expenditures, which is defined as the total advertising and marketing expenses over total assets at the end of the fiscal year.

3) Administrative expenses, which is defined as the total general and administrative expenses (exclusive of staff costs) over total assets at the end of the fiscal year. This indicator is used instead of advertising and marketing expenses in case of the latter having not got enough observations to run statistical analyses.

4) Bank age, which is defined as the number of years since the beginning of the bank's operations[97].

5) Branch numbers.

6) Brand value, which is defined as the brand value of a bank over its total assets at the end of the fiscal year. Data of brand value is provided by Brand Finance 2008 report "*Global 500 Financial Brands Index: An Annual Review of the Top Banking Brands in the World*".

7) Brand rating. The definition of brand rating was based on the above Brand Finance report as well. Banks were rated from AAA to C[98] by Brand Finance. Then

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[96] There are a few banks that provided directly the number of training hours or days per employee.

[97] If a bank group was created by merger or acquisition of two or more banks, then the beginning of this bank's operation is traced back to the earliest year that one of its group members was established.

[98] The definitions of brand ratings given by Brand Finance is as following: AAA: extremely strong; AA: very strong; A: strong; BBB: average; BB: under-performing; B: weak; CCC: very weak; CC: extremely weak; C: failing. The ratings from AA to CCC is altered by including a plus (+) or minus (-) sign to show their more detailed positioning compared with the general rating group.

each rating was given a score, from "1" for the rating of C up to "22" for the rating of AAA.

The customer relationship metric utilized in this study is measured as the average value of borrowers' relationship (BR) and depositors' relationship (DR). BR/DR is defined as the customer loans/deposits growth rate, as previous literature suggest that growth rate of bank loans or deposits can represent the customer usage and volume of lending or borrowing transactions (Nagar and Rajan, 2005). Particularly, BR and DR are calculated as[99]:

$$\text{BR} = \frac{L_{B,t} - L_{B,t-1}}{L_{B,t-1}} \times 100 \text{, and DR} = \frac{D_{B,t} - D_{B,t-1}}{D_{B,t-1}} \times 100$$

Where $L_{B,t}$, $L_{B,t-1}$ is the total amount of loans to customers in a bank's balance sheet at the end of year *t* and *t-1* respectively, and $D_{B,t}$, $D_{B,t-1}$ is the total amount of deposits to customers in the bank's balance sheet at the end of year *t* and *t-1* respectively.

Apart from the above proxies of human capital and relational capital, the number of employees per branch is used to proxy service quality, which is defined as the number of employees over the number of branches for the bank.

It should be noted that, to the researcher's knowledge, the above proxies have covered most of the available public data sources expressed in quantitative terms. Further, as noted before, unlike some other quantitative studies, the researcher in this thesis encountered great difficulties with data availability. In spite of considerable effort to maximizing sample size and improving data quality, the usable data tends to be limited. Consequently, the testable models have to be constructed depending upon both the underlying hypotheses and the available data. The next section will discuss how the hypotheses have been developed.

5.3.3 Hypotheses development

As have been addressed in chapter one and chapter four, the central research question investigated in the current study is: *how do intangibles affect bank performance?* This central question is then broken down into several specific sub-questions, which are answered by the quantitative and qualitative studies, either respectively or collectively. The

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[99] In Nagar and Rajan's (2005) study, the growth rate of deposits and loans they used are growth in the Federal Deposit Insurance Corporation (FDIC) insured deposit base in year *t* and consumer loans in year *t*, respectively.

first specific question which is supposed to be answered by the quantitative study is: what are the relationships among different intangible elements and bank performance?

As has been discussed in chapter three, each intangible component can be directly linked to firm performance, and the extant literature has provided a large amount of evidence on the individual impact of intangible elements on firm performance. Moreover, the researcher experienced from interviews with bank managers that the individual strengths of intangible elements that the case banks have tended to be critical resources for differentiating performance among banks. Accordingly, they sought to gain sustainable competitive advantage by enhancing their relative strengths of human capital, structural capital, or relational capital. Thus, it is rational to test whether or not intangible indicators can directly affect bank financial performance.

On the other hand, both the extant literature and the researcher's interview experience show that the combination of different intangible elements is more likely to contribute to superior performance. From a resource-based view, achieving strategic advantage requires the integration of different types of firm-specific resources and capabilities (Teece et al., 1997). As has been pointed out in section 2.4 of chapter two, intangible components seldom work independently. Rather, as Reed et al. (2006) highlight, "the knowledge embedded in one component of intellectual capital (IC) can leverage the value of knowledge in the other components, such that the combination of the two results in a distinctive, indivisible resource endowment that directly affects a business' financial performance" (Reed et al., 2006: 869). The importance of integration of intangible elements is similarly argued by some bank managers who have been interviewed during the process of qualitative data collection. It is found that, although the case banks prioritised different intangible elements in which they had relative strengths compared with their peers, they tended to appreciate more the integration of the three. The unique combination of HC, SC, and RC, and their special individual strengths plus their collective strength, are likely to be the source of bank competitive advantage.

Therefore, for the purpose of exploring the impacts of intangibles upon bank performance clearly, it is better to test the interactions between intangibles at first, and then to test the individual and collective impacts of intangible elements on bank performance. Specifically, the quantitative analysis in this thesis is conducted through the following three steps:

- Step 1: the relationship between different elements of relational capital;

- Step 2: the relationship between human capital and relational capital;
- Step 3: the relationships between intangibles and bank performance.

5.3.3.1 The relationship between different elements of relational capital

The investigation of the relationship between different elements of relational capital mainly focuses on how indicators of brands have impacts on customer relationships. The brand-customer relationship association is of particular interest to the researcher due to two reasons.

Firstly, as has been discussed in section 3.4.1.4 of chapter three, previous literature on brands and customer relationships tended to be developed separately, and ignored the interaction between them (Gupta and Zeithaml, 2006). However, brands and customer relationships can be expected to be closely related to each other, and it is better to focus on both of them rather than to look at one of them alone (Ambler et al., 2002). Ambler et al. (2002) suggest that brand strength can be used to acquire new customers, and often encourage existing customers to purchase more products from the firm. In this sense, a strong brand is expected to be associated with better customer relationships than a relatively weak brand. Some scholars have provided empirical evidence in support of the brand-customer relationship association. For example, Hung (2008) finds that brand image had a strong impact on customer loyalty in the insurance industry in Taiwan.

In the financial service sector, however, it is difficult to keep brands differentiated from each other because of the industry characteristics (Foo, et al., 2008). In particular, although promotion expenditures, such as advertising and marketing expenses, can be used to attract deposits and marketing loans (Hason et al., 2000), the effectiveness of advertising expenditure is open to question (Howcroft and Lavis, 1986). As Örs (2006) identifies, findings of previous studies on the role of advertising in the banking sector were often contradictory. In this case, it is worthwhile to investigate whether or not proxies of brands, such as advertising expenditure, have impacts on customer relationships.

Secondly, during the process of qualitative data collection, the researcher found that brands were seen to be powerful in the banking business practice in terms of developing and maintaining customer relationships from both bank managers' and bank analysts' perspectives. For example, a bank analyst said,

> *"Retail banking is personal financial service and where I think the brand is very powerful. And also people tend to buy their financial services, products, and put their savings with institutions they are familiar with and they have good brands."*
>
> <div align="right">(Interview A2)</div>

Likewise, several bank managers (e.g., bank managers in interview B7 and B10) also discussed how their brands helped them to retain loyal customers.

Therefore, encouraged by the calls for more empirical research on interaction between brands and customer relationships (e.g., Canibano et al., 2000; Gupta and Zeithaml, 2006), and also motivated by the researcher's interview experience, the first hypothesis was developed to examine the impacts of band indicators on the customer relationship:

- *Hypothesis 1 (H₁)*: a bank's brand will positively affect its customer relationships.

Where customer relationships, as discussed in section 5.3.2.2 above, are calculated as the average of the growth in loans and deposits.

5.3.3.2 The relationship between human capital and relational capital

As discussed in section 2.4 of chapter two, the three components of intangibles, namely human capital, structural capital and relational capital, are interacted with each other. Among them, human capital is argued to be the most fundamental one (e.g., Chen et al., 2004; Wang and Chang, 2005; Van der Meer-Kooistra and Zijlstra, 2001), as it affects firm performance through having impacts on structural and relational capitals (e.g., Bontis et al., 2000; Van der Meer-Kooistra and Zijlstra, 2001). Specifically, in this subsection, hypothesis 2 is proposed to investigate the relationship between human capital and the customer relationship:

- *Hypothesis 2 (H₂)*: a bank's human capital will positively affect its customer relationships.

The frequently addressed issue related to the impact of human capital on relational capital is the employee-customer-profit chain[100] (e.g., Bontis et al., 2000; Kaplan and Norton, 1996). Simply speaking, the employee-customer-profit chain believes that there are positive correlations between employee satisfaction and loyalty, customer satisfaction and loyalty, and financial performance (Loveman, 1998). A number of studies have provided

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[100] The employee-customer-profit chain, which is also called as service-profit chain, is first proposed by Heskett et al. (1994), and has attracted many scholars to conduct a large number of empirical studies.

empirical evidence supporting this conceptual framework[101] (e.g., Harter and Schmidt, 2002; Rucci et al., 1998). For example, the employee-customer-profit model is developed in Sears to track how employee attitudes affect employee retention, how employee retention affects customer satisfaction, and finally how customer satisfaction affects financial performance (Rucci et al., 1998). In the financial sector, Payne et al. (2000) argue that retail banks would benefit greatly if they could integrate employee measures, customer measures and shareholder measures together. Moreover, Maddern et al. (2007) find that staff satisfaction and service quality are key factors in determining customer satisfaction in UK financial service companies, but the relationships tend to be complex rather than simple and linear.

There are several studies of particular interest to the researcher, as they shed light on the role of some proxies that has been discussed before (such as training or employee cost) on the customer relationship. For instance, Kidder and Rouiller (1997) investigate the impact of training on quality-related outcomes. They find that the amount of training received by the work group members tend to be an important factor in determining quality-related outcomes that consist of service quality, productivity, and customer satisfaction. Chebat et al. (2002) conduct an empirical study to investigate what makes bank contact employees more likely to perform positively towards their customers. They find that among four factors, namely training, behavioural control, pay management and managerial orientation, pay management has the strongest effect on service employee behaviour. Aside from pay management, training also significantly affects employee behaviour. These studies provide further evidence on how human capital at the employee level affects customer relationships with a firm.

On the basis of extant knowledge, therefore, it can be expected that employee level human capital has a positive impact on the customer relationship. In addition to this, it is observed from the qualitative interviews that, top management quality may be closely related to a bank's relational capital. Some bank managers and analysts argued that top management quality could have direct or indirect impacts on a bank's brand and customer relationships in the way of setting bank strategy, improving lower level manager and employee engagement, enhancing organizational culture, and so on. A bank analyst gave an

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[101] Despite the large amount of empirical evidence supporting these links, some argue that the implementation of the satisfaction-profit chain has been problematic for many firms (Anderson and Mittal, 2000). Anderson and Mittal (2000) then suggest that it is better to strengthen the service-profit chain by accounting for the asymmetric and nonlinear nature of each link.

example of how top managers' decision-making might have negative impact on the customer relationship:

> *"But the reality is that banks are reactive, they are not proactive. You know, they moved their call centres to India because this saved their money. And then they moved them back because the customers didn't like it. Had they actually asked the customer in the first place: do you want to be spoken to by someone in banks with accent and you may be unfamiliar with? They wouldn't have done it. But that's how managers manage their companies."* (Interview A6)

In this sense, it can be assumed that senior managers' knowledge provided by their experience and education will affect their decision-making, and will then have an impact on the bank's customer relationships.

On the basis of previous literature and the researcher's interview experience discussed above, Hypothesis 2 can then be broken down into three sub-hypotheses:

- *Hypothesis 2a (H_{2a})*: Top management HC of a bank will positively affect its customer relationships;

- *Hypothesis 2b (H_{2b})*: Employee level HC of a bank will positively affect its customer relationships;

- *Hypothesis 2c (H_{2c})*: a bank's Human capital at top management level and employee level will jointly positively affect its customer relationships.

5.3.3.3 The relationships between intangibles and bank performance

Previous subsections have addressed hypotheses developed in the first two steps of the quantitative study, which intend to examine the relationships among intangible elements. In the final step, the intangibles-performance association is explored using various models. Specifically, models are firstly built to test the individual impacts of human capital and relational capital on bank performance. After that, the collective impacts of them are investigated.

As has been discussed in section 3.4.1.2 of chapter three, the extant literature has provided some empirical evidence on the human capital-firm performance associations at both top management level and employee level. Firstly, previous studies have revealed that top management HC, especially CEOs' human capital feature, has an impact on firm performance (e.g., Bailey and Helfat, 2003; Boone et al., 1996; Castanias and Helfat, 1991; Holbrook et al., 2000). For example, Castanias and Helfat (1991) argue that the superior

managerial skills that CEOs developed from education and prior work experience are profitable for their firms. Holbrook et al. (2000) find that the prior experience and knowledge of founders of new U.S. semiconductor firms can affect firm's success or failure.

Secondly, the employee level HC, such as training investment (e.g., Aragón-Sánchez et al., 2003; Barrett and O'Connell, 2001) and staff costs (e.g., Fey et al., 2000; Fiordelisi and Molyneux, 2007; 2010), can also affect firms' performance. Becker et al. (1997) argue that there is a firm-specific relationship, in which employee skills and motivation, as well as job design and work structures, will affect the productivity, creativity, and discretionary effort of the work force, and in turn improve the firm's operating performance. In particular for the retail banking sector, as Reed et al. (2009) argue, a bank's human capital has an important impact on the quality and volume of bank loans as well as earnings from lending activities, and thus positively relate to the bank's financial performance. Therefore, the following hypothesis is proposed to assess the impact of human capital on bank performance:

- *Hypothesis 3 (H_3):* a bank's human capital will positively affect its performance.

In considering the different levels of human capital, H_3 is decomposed into three sub-hypotheses:

- *Hypothesis 3a (H_{3a}):* a bank's top management HC will positively affect its performance.
- *Hypothesis 3b (H_{3b}):* a bank's employee level HC will positively affect its performance.
- *Hypothesis 3c (H_{3c}):* a bank's HC at both top management level and employee level will jointly positively affect its performance.

Likewise, high level of relational capital, such as advertising (e.g., Örs, 2006; Pitelis, 1991) and customer satisfaction and loyalty (e.g., Anderson et al., 1994, 2004; Ittner and Larcker, 1998), is argued to be associated with superior firm performance, as has been presented in section 3.4.1.3 of chapter three. Srivastava et al. (1998) point out that, greater relational capital can be used by a firm to lower costs, attain price premiums, and generate competitive barriers, etc., which in turn lead to better performance. In the personal banking sector, Reed et al. (2009) find that external relations are useful to improve loan quantity and quality. Consequently, it can be expected that relational capital will have impacts on

bank performance, and the following hypothesis is developed:

- *Hypothesis 4 (H_4):* a bank's relational capital will positively affect its performance.

As noted before, the present study focuses mainly on two kinds of relational capital: brands and customer relationships. Thus, H_4 is broken down into the following sub-hypotheses so as to investigate if bank performance is influenced by brands and customer relationships, either individually or in a collective setting:

- *Hypothesis 4a (H_{4a}):* a bank's brand will positively affect its performance.
- *Hypothesis 4b (H_{4b}):* a bank's customer relationships will positively affect its performance.
- *Hypothesis 4c (H_{4c}):* a bank's brand and customer relationships will jointly positively affect its performance.

H_3 and H_4 concern the influences of human capital and relational capital on bank performance respectively. More importantly, the combination of the two intangible components can make more contribution to superior firm performance than they work individually, as shown before. Kaplan and Norton (2004) argue that intangible elements tend to affect performance indirectly through their interactions. In fact, some intangible elements by themselves are of little value. Only when they combine with other resources, they can create value for a firm. For example, Castanias and Helfat (1991, 2001) highlight that top management skill has the potential to create competitive advantage for a firm by combining with other firm assets and capabilities. Even though previous studies focus more on the direct impacts of individual element of intangibles, some researchers have tried to explore the joint impacts of intangible elements (e.g., Cabrita and Vaz, 2006; Nagar and Rajan, 2005; Reed et al., 2009; Wang and Chang, 2005). Nagar and Rajan (2005) find that metrics of service, customer satisfaction, and customer usage and volume do not individually affect bank profitability, but gain individual significance when they join together. Similarly, Reed et al. (2009) hypothesize that improving only one form of human capital or social capital without the improvement of the other might be insufficient to positively affect performance, and they then suggest that it is better to assess these two capitals concurrently.

Besides the above evidence provided by previous studies, interviews with bank managers also helped the researcher to further understand the joint impacts of different intangible elements on bank performance. In general, bank managers interviewed believed that there

were relations between individual intangible elements and bank performance. However, some of them highlighted that human capital, structural capital, and relational capital should be combined rather than analysed separately, because they could not create value in isolation. For example, the manager in interview B8 said that,

> "*I think it's a combination of all three. You need to do all three absolutely right. Human capital, if you get it wrong, then you lose; if you get structural capital wrong, you lose; if you get your relational capital wrong, you also lose. So you do need to do all three at the same time. But I don't believe in those companies that only focus on relational capital, because it is very nice to have very loyal customers, but if your business model is too expensive, you can't make money. In the long-term, you can't continue to give your customers a great service, because you are just not efficient enough. So you have to do all three, clearly.*"　　　　　　　　　　(Interview B8)

Therefore, based on extant knowledge and interview experience, the following hypothesis is developed to assess the intangibles-performance association:

- *Hypothesis 5 (H_5):* a bank's human capital and relational capital will jointly positively affect its performance.

5.4 Conclusions

This chapter has described the procedures of quantitative data collection and data analysis in detail. It attempted to achieve several objectives. Firstly, it identified the difficulties the researcher encountered during the processes of collecting and analysing quantitative data on intangibles. These difficulties are mainly caused by the data availability problem. Considerable effort has been devoted to identify proxies of intangible elements, maximize sample size, and improve data quality. Secondly, this chapter demonstrated how the qualitative component of this study was integrated with the quantitative study. The concurrent design of mixed methods allows the researcher to take advantage of using both extant knowledge and qualitative interview experience to guide the quantitative data collection and analysis. Thirdly, this chapter explained clearly how the proxies of intangibles have been identified and defined, and how the hypotheses used to answer the specific research question have been developed.

Specifically, the quantitative study intended to explore the intangibles-performance association step by step on the basis of the extant literature and the researcher's interview experience. It is argued that each intangible element is likely to have an individual impact on bank performance. Moreover, there are potential important interactions among different intangible elements, and intangible elements appear to make more contribution to firms'

superior performance when they are combined or integrated than they work individually. Therefore, the first and second steps of the quantitative analyses aimed to test the interactions among intangible elements. At first, the relationship between different elements of relational capital, namely brands and customer relationships, was tested, and then the relationship between human capital and relational capital was examined. The final step of data analysis looked at the individual and collective effects that intangible elements put on bank performance. In particular, it firstly explored the individual impacts of human capital and relational capital on bank performance. After that, how the combination of the two affected bank performance were tested.

It has to be noticed that, the proxies of intangibles used in the current study are problematic, as one may challenge the extent to which they can capture the nature of intangibles. In addition, the low level of data quality is also a serious threat to the validity of this study. However, the researcher argues that proxies used here are on the basis of extant knowledge, and covered most of the available public data sources expressed in quantitative terms. In addition, they are the information related to intangibles that can be accessed by external investors. It is worthwhile to explore their impacts on firm performance, even through with the above discussed weaknesses.

Overall, this chapter provided a detailed description regarding sample selection, data sources, and hypotheses development. In the next chapter, various testable models will be constructed to examine the developed hypotheses.

Chapter Six: Empirical Results from the Quantitative Study

6.1 Introduction

Chapter five has described how the key hypotheses were developed to investigate the intangibles-performance association, and what proxies of intangibles and data could be used in the quantitative analyses. This chapter presents the empirical results of models that are constructed to test the following key hypotheses:

- *Hypothesis 1 (H_1)***:** a bank's brand will positively affect its customer relationships.
- *Hypothesis 2 (H_2)*: a bank's human capital will positively affect its customer relationships.
- *Hypothesis 3 (H_3):* a bank's human capital will positively affect its performance.
- *Hypothesis 4 (H_4):* a bank's relational capital will positively affect its performance.
- *Hypothesis 5 (H_5):* a bank's human capital and relational capital will jointly positively affect its performance.

The testable models are built based on the extant literature, interview experience, as well as data availability. Multiple Ordinary Least Square regression technique (OLS) is employed to test the constructed models. Moreover, various statistical analyses are carried out to test the robustness of some key models.

Overall, the empirical results provide partial evidence in support of those hypotheses. For hypotheses 1 and 2, it is found that the combination of top management HC and employee level HC has a much higher explanatory power for explaining the variation in the proxy of customer relationships than the two levels of HC do individually. Specifically, CEOs' firm-specific experience has a positive impact on banks' customer relationships, either individually or in a collective setting. Contrary to the expectation, staff costs as a proxy of employee level HC, appears to affect customer relationships negatively.

Moreover, the relationships between intangible elements and bank financial performance (hypotheses 3, 4 and 5) are tested by several lagged models. Empirical evidence shows that higher level of CEOs' industry-specific experience is likely to be associated with better financial performance (measured by return on assets) for the sample banks, while CEOs' level of education appears to affect ROA negatively. With regard to proxies of employee

level HC, staff costs tend to have negative impact on ROA, although such an effect turns to be statistically insignificant when control variables are added to the models. Similar to finding of hypotheses 1 and 2, it is also found that the combination of different intangible elements appears to better explain the level of bank financial performance than they do seperatedly, as can be seen from the adjusted R^2 for models. It should be pointed out that when control variables, namely bank size, bank type and year dummies are included to regressors, the adjusted R^2 improves significantly. An interesting finding from the quantitative analysis is that as proxies of top management HC, CEOs' industry-specific experience is likely to better explain the variation in the sample banks' ROA than CEOs' firm-specific and past managerial experience, evident by both the significance of their coefficients and their contributions to improve the overall explanatory power for the constructed models.

However, it should be noted that some of the empirical results appear not to be stable, suggesting by the robustness tests used to check the sensitivity of the main models. The sensitivities may be caused by the limitations and problems with the models, the proxies used to measure intangibles, and the low level of sample size, which will be discussed in detail in a later section (section 6.6).

The remainder of this chapter is organized as follows. At first, section 6.2 outlines the descriptive statistics of dependent, independent, and control variables used in the regression models. After that, how the regression models are constructed and the estimated OLS results of these models are discussed step by step, with corresponding robustness check for the key models in each step. Specifically, section 6.3 describes the construction process and empirical results of the models that are used to test the relationship between brand metrics and the customer relationship. Then section 6.4 demonstrates the model specification and empirical results for testing the relationship between human capital and the customer relationship, as well as the robustness tests for the key models in this step. The final step, which intends to investigate the individual and collective impacts of human capital and relational capital on bank performance, is discussed in section 6.5, including the model construction, empirical results and some robustness tests. Section 6.6 highlights the weakness of the quantitative analyses. Finally, section 6.7 provides the overall discussions and conclusions.

6.2 Summary descriptive statistics of main variables

This section presents descriptive statistics about the key proxies of human capital and relational capital, the financial performance variable, and the main control variables that are adopted in the constructed models.

6.2.1 Descriptive statistics of human capital and service quality variables

Table 6.1 contains the summary descriptive statistics of human capital and service quality variables[102].

Table 6.1: **Summary descriptive statistics of human capital and service quality variables**

This table presents summary descriptive statistics of human capital and service quality variables, including 12 variables: CEO's firm-specific experience (CEOEX), CEO's past managerial experience (CEOP), CEO's industry-specific experience (CEOIN), CEO's level of education (CEOED), average firm-specific experiences of other executive directors at the board (OEDEX), average past managerial experiences of other executive directors on the board (OEDP), average industry-specific experiences of other executive directors on the board (OEDIN), average education level of other executive directors on the board (OEDED), average staff costs (SC) that is measured in ten thousand euros, average training hours per employee (TH), average training expenses per employee (TE) that is measured in euros, and number of employees per branch (EPB). For the purpose of reducing skewness, variables of CEOEX, CEOP, OEDEX, OEDP, SC, TE, and EPB were transformed by taking natural logarithm of them[103].

Panel A: Summary descriptive statistics of human capital and service quality variables for all the bank years

	N	Min	Max	Mean	Std. Deviation	Skewness
LNCEOEX	166	0.000	3.584	1.628	0.827	-0.263
LNCEOP	152	0.000	3.401	0.826	1.083	0.912
CEOIN	143	0.000	49.000	24.740	10.958	0.068
CEOED	152	1.000	5.000	3.507	1.302	-0.133
LNOEDEX	114	0.000	3.199	1.549	0.682	-0.093
LNOEDP	101	0.000	3.091	0.891	0.884	0.592
OEDIN	89	4.000	33.700	22.061	5.443	-0.364
OEDED	100	1.000	5.000	2.931	0.877	-0.094
LNSC	176	0.520	2.968	1.813	0.331	0.005
TH	51	5.600	63.190	34.478	13.779	0.058
LNTE	53	4.539	7.663	6.278	0.791	-0.404
LNEPB	126	0.687	4.042	2.753	0.622	-0.715
Valid N (listwise)	15					

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[102] The descriptive statistics and all other statistical analyses in this thesis were produced by using *PASW Statistics 18* technique.

[103] There were value of zero existing in some variables, such as CEOEX, CEOP, OEDEX, and OEDP. In this case, data was transformed by taking the natural logarithm of the original value plus 1.

Panel B: Summary descriptive statistics of human capital and service quality variables for years 2005, 2006, and 2007 respectively

	Min			Max			Mean			Std. Deviation			Skewness		
	2005	2006	2007	2005	2006	2007	2005	2006	2007	2005	2006	2007	2005	2006	2007
LNCEOEX	0.000	0.000	0.000	3.584	3.258	3.296	1.570	1.589	1.716	0.839	0.826	0.825	-0.099	-0.288	-0.405
LNCEOP	0.000	0.000	0.000	3.401	3.401	3.401	0.904	0.768	0.812	1.154	1.072	1.043	0.800	1.076	0.909
CEOIN	9.000	0.000	1.000	47.000	48.000	49.000	26.220	23.650	24.430	10.435	11.235	11.232	0.221	-0.011	0.088
CEOED	1.000	1.000	1.000	5.000	5.000	5.000	3.480	3.520	3.520	1.368	1.297	1.270	-0.163	-0.133	-0.100
LNOEDEX	0.560	0.000	0.000	3.114	3.157	3.199	1.614	1.636	1.422	0.568	0.669	0.767	0.431	-0.201	-0.030
LNOEDP	0.000	0.000	0.000	2.560	2.620	3.090	0.835	0.860	0.962	0.859	0.888	0.919	0.573	0.540	0.668
OEDIN	4.000	5.000	15.000	33.500	32.250	33.700	21.411	22.435	22.260	5.909	5.390	5.208	-0.640	-0.970	0.625
OEDED	1.000	1.000	1.000	5.000	5.000	5.000	2.946	2.890	2.955	0.914	0.853	0.889	-0.154	-0.196	0.017
SC	1.681	3.262	3.067	19.444	18.864	17.909	6.443	6.570	6.423	2.473	2.449	2.221	2.641	2.319	2.266
LNSC	0.520	1.182	1.121	2.968	2.937	2.885	1.802	1.826	1.811	0.356	0.333	0.310	-0.431	0.248	0.318
TH	18.000	5.600	10.700	63.190	55.070	62.170	37.936	31.473	35.385	13.971	13.807	13.766	0.362	0.015	-0.023
LNTE	4.864	4.857	4.539	7.244	7.662	7.576	6.179	6.365	6.269	0.804	0.812	0.793	-0.443	-0.371	-0.512
EPB	1.987	2.005	2.018	52.296	54.942	56.958	18.637	18.582	18.630	10.353	10.830	11.321	1.133	1.191	1.532
LNEPB	0.687	0.695	0.702	3.957	4.006	4.042	2.765	2.747	2.750	0.616	0.640	0.625	-0.910	-0.747	-0.584

Panel A of table 6.1 reports summary descriptive statistics of human capital and service quality variables for the overall study period. It can be seen from row 14, column 2 that the valid number of observations would be very low (N = 15) if including all the 12 variables listed in this table in a regression. In other words, there are only 15 bank-year observations with complete data when combining these 12 variables together. Although data for individual factors shows a minimum number of 51 (row 11, column 2), the combination of variables, results in a significant reduction in the valid number of observations, due to the fact that not only some banks disclose very little information about their intangibles, but also banks tend to disclose different piece of intangible-related information [104] . Therefore, variables related to other executive directors, namely LNOEDEX, LNOEDP, OEDIN, and OEDED, have to be discarded from the constructed models[105].It should be pointed out that the later reported models in this chapter are constructed in consideration of maximizing the number of observations rather than for a balanced sample, due to the limited available data and the purpose of maintain as large sample size as possible.

Panel A of Table 6.1 shows that CEOs' industry-specific experience (CEOIN) ranges from a minimum of 0 to a maximum of 49 (row 4, columns 3 to 4), with a mean of 24.74 (row 4, column 5). Such a wide range of value indicates that there is a big difference in CEOs'

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[104] For example, it is found that banks in Germany and France tend to disclose very little information regarding their training activities, while information related to other executive directors is largely unavailable for banks in Italy. As a result, the combination of variables related to other executive directors and training hours leads to the valid number of observations for only 27 bank firm years. For banks that have provided information on their training activities, they also appear to disclose different types of information. Data for training hours (TH) and training expenditures (TE) are available for 51 and 53 observations respectively, but the combination of these two variables have only 26 valid cases.

[105] The reasons why these four variables were dropped are due to the following considerations. Firstly, there are around 30% to 40% missing values in these variables. If they were included in the constructed models, the valid number of cases would be relatively low. For example, if LNOEDEX, LNOEDP and OEDED were included in Model 2.3 (see section 6.4.2), the valid number of observation would decrease from 50 to 37. Therefore, in order to keep the regressors low and get as many valid observations as possible, these four variables were not taken into consideration. Secondly, even though indicators of other executive directors HC have been used in some previous studies (e.g. Abdel-khalik, 2003), the majority of empirical research on top management HC took account of variables related to CEO or chair of the board only (e.g., Weiner and Mahoney, 1981; Waldman et al., 2001). Moreover, this decision is also influenced by the researcher's interview experience. When discussing about the impact of executive directors' experience on a bank's performance, the manager in interview B4 argued that the power of the director should be taken into consideration as well. The CEO is normally the most powerful executive director in a bank. Therefore, it may be rational to discard variables of other executive directors from the regressors. It should be noted that variables of TH and LNTE have more missing values than LNOEDEX, LNOEDP, OEDIN, or OEDED, but are included in the specified models, because training investment is argued to be an important indicator for employee level HC by previous literature, as has been discussed in chapters four and five. Even so, for the purpose of maximizing sample size, the specific models will include either training hours or training expenditures, rather than the combination of these two variables.

industry-specific experience across the sample banks. The skewness of 0.068 (row 4, column 7) suggests that the distribution of CEOIN is slightly skewed to the right, but is close to be symmetrical. The mean of CEOED is 3.507, which indicates that the average education level of the CEOs in the sample banks is over the degree of postgraduate or master.

It can be seen from the first column of Panel A that only about 30 percent of the sample banks provide information on their training activities. The value of average training hours per employee (TH) ranges from 5.6 to 63.19 (row 11, columns 3 to 4), with a mean of 34.478 (row 11, column 5), and standard deviation of 13.779 (row 11, column 6). This shows a quite large variation in the training activities for those banks. LNSC and TH present a nearly normal distribution, with the skewness of 0.005 (row 10, column 7) and 0.058 (row 11, column 7) respectively. On the other hand, for LNCEOP and LNEPB, even though the data have been transformed so as to improve the normality of their distribution, they are moderately skewed at 0.912 (row 3, column 7) and -0.715 (row 13, column 7) respectively.

Panel B of Table 6.1 presents the summary statistics of HC and service quality variables for each year over the study period of year 2005 to 2007, including both original data and transformed data. It can be seen from row 10, columns 8 to 10 that, the mean of SC from 2005 to 2007 has not changed much, which suggests that the average level of cost per employee for the sample banks remains at a stable level during the three-year period. However, it is notable that the standard deviation of SC has decreased, at 2.473, 2.449, and 2.221 (row 10, columns 11 to 13) for years 2005, 2006, and 2007 respectively. This suggests that the variation of average staff costs for the sample banks has lessened from 2005 to 2007.

Row 14, columns 8 to 10 of Panel B shows that the average value for the number of employees per branch remains almost unchanged over the study period, at 18.637, 18.582, and 18.630 for years 2005, 2006, and 2007, respectively. This finding is consistent with what Dick (2006) observed in the US banking industry. He found that the number of employees per branch showed little change from 1993 to 1999. This suggests that, although the technological development has created more channels for banks to deliver their products and services (such as the Internet), the traditional branch service seems to remain important in the banking industry.

6.2.2 Descriptive statistics of relational capital variables

Table 6.2 provides the summary descriptive statistics of relational capital variables. Specifically, the summary descriptive statistics of relational capital variables for all the study period are presented in Panel A, while descriptive statistics of them for each year are reported in Panel B.

Table 6.2: Summary descriptive statistics of relational capital variables

This table presents summary descriptive statistics of relational capital variables, including the number of branches (B), goodwill and other intangible assets as a percentage of total assets (IAA%), advertising and marketing expenditures as a percentage of total assets (ADVA%), administrative expenses as a percentage of total assets (ADMA%), brand value as a percentage of total assets (BVA%), brand rating (BR), bank age (AGE), and the customer relationship (CR%) that is proxied by average value of customer loans and deposits growth. For the purpose of reducing skewness, variables of B and AGE were transformed by taking natural logarithm of them.

Panel A: Summary descriptive statistics of relational capital variables for all the bank years

	N	Min	Max	Mean	Std. Deviation	Skewness
LNB	126	3.219	9.393	6.987	1.396	-0.321
IAA%	175	0.000	5.965	0.808	1.025	2.623
ADVA%	115	0.009	0.152	0.050	0.031	1.254
ADMA%	175	0.114	1.766	0.520	0.261	1.715
BVA%	99	0.160	2.230	0.750	0.444	1.184
BR	98	7.000	22.000	14.628	3.104	-0.699
LNAGE	173	2.708	6.282	4.906	0.660	-0.957
CR%	178	-12.391	77.603	15.046	12.347	1.915
Valid N (listwise)	41					

Panel B: Summary descriptive statistics of relational capital variables for years 2005, 2006, and 2007 respectively.

	Min			Max			Mean			Std. Deviation			Skewness		
	2005	2006	2007	2005	2006	2007	2005	2006	2007	2005	2006	2007	2005	2006	2007
B	25	25	25	12000	12000	12000	2245	2353	2645	2.851	10.830	3.369	2.045	1.957	1.678
LNB	3.219	3.219	3.219	9.393	9.393	9.393	6.935	6.940	7.070	1.411	1.405	1.402	-0.460	-0.256	-0.292
IAA%	0.001	0.000	0.000	2.566	5.965	5.427	0.599	0.797	1.003	0.618	1.028	1.262	1.498	2.902	2.122
ADVA%	0.012	0.009	0.011	0.143	0.147	0.152	0.052	0.049	0.018	0.031	0.305	0.030	1.186	1.290	1.383
ADMA%	0.117	0.114	0.126	1.766	1.678	1.562	0.549	0.509	0.504	0.283	0.264	0.240	1.674	1.866	1.609
BVA%	0.237	0.191	0.106	2.230	1.800	1.905	0.815	0.647	0.768	0.515	0.414	0.422	1.425	1.538	0.864
BR	7.000	7.000	7.000	21.000	21.000	22.000	14.667	14.652	14.598	3.435	3.511	2.800	-0.829	-0.801	-0.568
LNAGE	2.708	2.773	2.833	6.279	6.280	6.282	4.922	4.917	4.882	0.668	0.653	0.669	-1.085	-0.977	-0.872
CR%	-5.145	-11.598	-12.391	48.083	68.794	77.603	12.741	14.905	17.227	9.326	13.223	13.595	0.932	1.876	2.056

Similar with what has been found in section 6.2.1, the combination of relational capital variables also causes the problem of small number of observations (Panel A of Table 6.2, row 10, column 2), as banks in different countries appear to disclose information on different intangible variables. For example, among the sample banks, data for brand value (BVA%) and brand rating (BR) are largely available for banks in the UK or France, but very few banks in these two countries have provided information about their advertising and marketing expenditures (ADVA%). The inconsistence in intangibles reporting across countries in Europe makes it difficult to conduct quantitative research in this area. Moreover, when both human capital and relational capital variables are needed in the same regression models (see sections 6.4 and 6.5), further reduction in the valid number of cases are found, and significant influence the power of statistical analyses.

Turning to the descriptive statistics of individual variables, it can be seen from row 2 of Panel A that, LNB ranges from 3.219 to 9.393, with a mean value of 6.987 and a standard deviation of 1.396. If we look at the original value of this variable (see Panel B of Table 6.2), the average number of branches for the sample banks has increased over the three year period, observed as 2245, 2353, and 2645 for years 2005, 2006, and 2007 (row 2, columns 8 to 10) respectively. Given the technological innovations in the banking sector, this might be a surprising finding. Some may argue that the development of alternative channels such as internet banking should reduce the need for banks to have physical presence (Heffernan, 2005). However, similar findings have been reported by some previous researchers in other countries, such as the U.S[106]. In Europe, Hernando and Nieto (2007) argue that the branch network remains an important channel for delivering retail banking products and services in Spain, and Internet banking seems to be a complementary channel rather than a substitute for physical branches despite the large investment on it.

Row 3 in Panel A of Table 6.2 reports the accounting number of goodwill and other intangible assets as a percentage of total assets. It has a mean value of 0.808 and a standard deviation of 1.025, indicating that there is a quite big difference in this variable across the sample banks. It is observed from Panel B of Table 6.2 that, on average, the proportion of intangible assets to total assets for the sample banks increased significantly, from 0.599 for year 2005 to 1.003 for year 2007 (row 4, columns 8 to 10).

With regard to the advertising and marketing expenditures, very little change has been

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[106] For example, Hannan and Hanweck (2008) identify that the number of offices of commercial banks in the U.S increased 39 percent from 1988 to 2006, and the rise has even picked up speed in recent years.

observed from 2005 to 2006, with mean of 0.052 and 0.049 (row 5, columns 8 to 9) respectively. Some researchers argue that during the recession, increasing marketing expenditures, or at least maintaining the same level as before, will be helpful to increase company performance (e.g., Köksal and Özgül, 2007). However, this seems not to be the case for the sample banks during the financial crisis of 2007-2009, as there is a remarkable decrease in the proportion of marketing expenditures to total assets for year 2007, to only 0.018 (row 5, column 10).

The final row in Panel B of Table 6.2 shows the descriptive statistics of the customer relationship that is measured as the average level of deposits and loans change rate. It suggests that, on average, the sample banks have seen an increasing growth in their customer loans and deposits during the study period, even in the year 2007 when the global financial crisis occurred. However, there is quite a large variation across the sample banks, as this variable ranges from a minimum value of -12.391 to a maximum value of 77.603 in 2007.

6.2.3 Descriptive statistics of financial performance and control variables

Table 6.3 provides information on descriptive statistics of the financial performance variable and some control variables. In this study, financial performance is used as the dependent variable in a lagged financial performance-intangibles model, and is measured by a bank's return before tax as a percentage of its total assets (ROA%)[107].

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[107] The rationale of using this performance measure will be discussed later in section 6.5.1 of this chapter.

Table 6.3: **Summary descriptive statistics of financial performance and control variables**

This table presents summary descriptive statistics of the financial performance variable: return on assets (ROA), and two control variables: bank size that is proxied as the natural logarithm of a bank's total assets (LNASSETS), and a dummy variable of bank type (BTYPE) taking the value 1 if a bank earns at least 50% of its net interest income from retail banking activities, and zero otherwise.

Panel A: Summary descriptive statistics of financial performance and control variables for all the bank years

	N	Min	Max	Mean	Std. Deviation	Skewness
ROA%	178	-4.200	2.105	0.614	0.876	-1.861
LNASSETS	178	7.336	14.768	11.851	1.705	-0.528
BTYPE	146	0.000	1.000	0.644	0.481	-0.607
Valid N (listwise)	146					

Panel B: Summary descriptive statistics of financial performance and control variables for years 2006, 2007, and 2008 respectively

	Min			Max			Mean			Std. Deviation			Skewness		
	2006	2007	2008	2006	2007	2008	2006	2007	2008	2006	2007	2008	2006	2007	2008
ROA%	-1.069	-1.262	-4.202	1.881	2.105	1.902	0.956	0.869	0.071	0.526	0.610	1.063	-0.853	-0.418	-1.640
LNASSETS$_{t-1}$	7.346	7.337	7.491	14.115	14.216	14.768	11.834	11.834	11.882	1.696	1.729	1.717	-0.625	-0.563	-0.438

Panel A of Table 6.3 shows that ROA ranges from a minimum of -4.200% to a maximum of 2.105% (row 2, columns 3 to 4), with an average rate of 0.614% (row 2, column 5) for the overall study period. It is noticeable that due to the financial crisis that occurred in 2007, the average banks' ROA decreases dramatically from 0.869% in 2007 to 0.071% in 2008 (Panel B of Table 6.3, row 2, columns 9 to 10). The standard deviation of ROA for the overall sample period is 0.876 (Panel A of Table 6.3, row 2, column 6), suggesting that there is a significant variation in the return on assets among the sample banks over the study period. Specifically, it can be seen from Panel B of Table 6.3 that the standard deviation for ROA tends to be moderate in 2006 and 2007, at 0.526 and 0.610 (row 2, columns 11 to 12) respectively. However, dramatic variation in ROA among the sample banks occurs in year 2008, with a standard deviation of 1.063 (Row 2, column 13). This indicates that there is a big difference in the financial performance across European banks in 2008 when the global financial crisis that started in 2007 showed its further effects. It is noticed that the skewness of ROA is -1.861, indicating that the distribution of it departs from symmetry with a quite longer left tail than that of a normal distribution.

Firm size as one of the main control variables in this study is proxied by the natural logarithm of a bank's total assets (LNASSETS). It can be seen that after taking the natural logarithm, the distribution of bank size variable is moderately skewed to the left from symmetry, with a skewness of -0.528 (Panel A of Table 6.3, row 3, column7). In addition, Panel B of Table 6.3 shows that there are very little changes in the mean and standard deviation of LNASSETS from 2005 to 2007. It ranges from 7.336 to 14.768 (Panel A of Table 6.3, row 3, columns 3 to 4), with an average value of 11.851 and a standard deviation of 1.705 (Panel A of Table 6.3, row 3, columns 5 to 6).

Panel A of Table 6.3 also presents the summary descriptive statistics for another control variable, namely bank types (BTYPE). BTYPE is a dummy variable that takes score of "1" if a bank earns at least 50% of its interest income from retail banking activities and "0" otherwise[108]. It has an average value of 0.644, suggesting that there are more than 60 percent of banks in the sample whose main banking activities is retail banking.

In short, this section discusses briefly the descriptive statistics of variables of intangible elements, financial performance variable, and two control variables. In the present study, Multiple Ordinary Least Square regression technique (OLS) is applied, and these variables

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[108] For definition of this variable, refers to section 5.2.2.1 of chapter five and Appendix 1.

are utilized in different models to test the hypotheses that have been discussed in chapter five. The subsequent sections will then discuss the constructed models and the empirical results of OLS regressions.

6.3 Testing the relationship between brands and customer relationships

6.3.1 Model construction

As has been shown in section 5.3.3.1 of chapter five, the first step of data analysis is to assess the relationship between different elements of relational capital, in particular to test the following hypothesis:

- *Hypothesis 1:* a bank's brand will positively affect its customer relationships.

In order to test the above hypothesis, several models are constructed. The dependent variable of them is the customer relationship (CR%), which is proxied by the average value of the loan and deposit growth rates. The independent variables are chosen from seven proxies of brands that have been collected:

- Goodwill and other intangible assets (IAA%);
- Advertising and marketing expenditures (ADVA%);
- Administrative expenses (ADMA %);
- Bank age (LNAGE);
- Branch number (LNB);
- Brand value (BVA%);
- Brand rating (BR).

Among these brand metrics, brand value and brand rating are direct measurements of the overall brand of a bank, and are provided by an external independent consultancy. The other proxies of brands are provided by banks' own reports, and tend to measure bank brands indirectly.

As OLS regression technique is used to test the hypothesis, in order to check the OLS assumption of multicollinearlity, at first a correlation matrix among the above variables is conducted, as presented by Table 6.4.

Table 6.4 shows that the correlation coefficient between any two variables of brands tends

to be mild. It is noticeable that brand value (BVA%) is significantly correlated to ADVA% (0.329), ADMA% (0.476), as well as BR (0.602). It is not difficult to understand the correlation between estimated brand value and brand rating, as they are provided by the same brand valuation consultancy. As a result, BVA% and BR are used as independent variables alternatively. Regarding the correlation between estimated brand value and advertising expenses, similar result has been reported by Barth et al. (1998). They find that firms' brand value estimated by *FinancialWorld* were significantly positively associated with their advertising expenses.

Table 6.4: Pearson correlations of relational capital variables

		IAA%	ADVA%	ADMA%	LNAGE	LNB	BVA%	BR
ADVA%	Correlation	.212						
	Sig.	.184						
ADMA%	Correlation	.213	.471***					
	Sig.	.181	.002					
LNAGE	Correlation	.177	-.101	.013				
	Sig.	.267	.529	.937				
LNB	Correlation	.333**	.030	-.019	.414***			
	Sig.	.033	.853	.907	.007			
BVA%	Correlation	.043	.329**	.476***	-.119	.110		
	Sig.	.789	.036	.002	.457	.494		
BR	Correlation	.197	.214	.200	-.256	.175	.602***	
	Sig.	.218	.179	.211	.106	.273	.000	
CS%	Correlation	.442***	.124	.164	-.224	-.107	.044	.136
	Sig.	.004	.441	.307	.160	.505	.784	.396

Notes: *, **, and *** indicate two-tailed significance at 10%, 5%, and 1% respectively. The variables are as defined in section 6.2.2.

Another brand variable is branch number (LNB), which is significantly correlated with two other variables: IAA% (0.333) and LNAGE (0.414). Moreover, it can be seen that ADVA% and ADMA% are significantly correlated to each other, due to the fact that advertising expenditure is generally included in the administrative expenditure that is listed in banks' financial statements. In this study, ADMA% is used as an alternative to ADVA% in the final step of data analysis.

Overall speaking, the correlations among the independent variables are not high (less that 0.50), with the exception of that between BVA and BR, indicating that there might be no

serious multicollinearity problems existing[109]. Therefore, considering the correlations among variables of brands, the following models are built to test hypothesis 1.

At first, following Barth et al. (1998) who argue that brand value estimated and published by a well-respected financial magazine contains value-relevant information to investors, it can be expected that the direct measure of brands – brand value, which is estimated by a leading independent brand valuation consultancy, will reflect useful information to bank customers and affect customer relations. Specifically, BVA% is likely to have a positive effect on a bank's customer relationships. Model 1.1 is constructed to assess if such a relationship exists:

$$CS\%_{i,t} = \beta_0 + \beta_1 BVA\%_{i,t} + \varepsilon_{i,t} \qquad \text{(Model 1.1)}$$

Where $CS\%_{i,t}$ is the proxy of customer relationships for bank i in period t (for detailed definition of the variable refers to section 5.3.2.2 of chapter five); $BVA\%_{i,t}$ is estimated brand value for bank i as a percentage of its total assets in period t; and $\varepsilon_{i,t}$ is the error term.

Moreover, Vakratsas and Ambler (1999) demonstrate that advertising input may have impacts on customer behaviour (e.g., choice, loyalty, and habit, etc.) through some mental effect on customers (e.g., awareness, memory, and attitude toward brands, etc.). Logically, it can be conjectured that the more advertising expenditures for a bank, the more growth on its loans and deposits. In addition, Bank age is likely to affect customer behaviour as well, as older banks are likely to enjoy greater reputation than younger banks, and tend to know their customers better than younger banks (Dick, 2006). Therefore, older banks can be expected to gain more benefits of good customer relationships than younger banks. Model 1.1 is then extended to incorporate these two proxies of brands:

$$CS\%_{i,t} = \beta_0 + \beta_1 BVA\%_{i,t} + \beta_2 ADVA\%_{i,t} + \beta_3 LNAGE_{i,t} + \varepsilon_{i,t} \qquad \text{(Model 1.2)}$$

Where $ADVA\%_{i,t}$ is the percentage of total advertising and marketing expenses to total assets for bank i in year t; and $LNAGE_{i,t}$ is the natural log of bank age.

Besides, there are other proxies provided by banks' reports to capture different aspects of brands, such as LNB and IAA%. Branch network is argued to be a form of advertising for banks (Dick, 2007, 2008). Thus, it may affect the customer experience and behaviour by using many prime public locations to constantly remind them of the brand name of the bank. In addition, banks with a large number of bank offices are likely to provide more

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[109] Gujarati and Porter (2009) suggest that if the pair-wise correlation coefficient between two independent variables is in excess of 0.8, then multicollinearity is a serious problem.

convenience to the customers (Kumbhakar et al., 2001). In this sense, branch number can be seen as an indicator of accessibility of a bank, and is likely to have a positive influence on the customer relationship. Therefore, Model 1.3[110] is constructed as the extension of Model 1.2:

$$CS\%_{i,t} = \beta_0 + \beta_1 BVA\%_{i,t} + \beta_2\, ADVA\%_{i,t} + \beta_3\, LNAGE_{i,t} + \beta_4 LNB_{i,t} + \varepsilon_{i,t}$$

(Model 1.3)

Where $LNB_{i,t}$ is the natural log of total branch numbers.

6.3.2 Empirical results

This subsection reports the findings of Models 1.1, 1.2, and 1.3. Before these models are applied to the sample data, it is necessary to address the potential problem of outliers, as they may have an undesirable influence on the estimates produced by OLS (Kennedy, 2003).

The descriptive statistics of variables presented in subsection 6.2.2 show that there are extreme values in the dependent variable, namely the customer relationship (CR%). It can be seen from Panel A of Table 6.2 that, CR% ranges from a minimum value of -12.391 to a maximum value of 77.603, with some extreme values that are more than four standard deviations away from the average value of CR% (15.046). The presence of outliers may pose a serious threat to the OLS assumptions. Therefore, in order to reduce the potential bias caused by the outliers, the dependent variable in Models 1.1, 1.2, and 1.3, namely CR%, is winsorized[111] at the 5% and 95% levels. Specifically, the top and bottom 5% values of CR% are replaced by the value at the 5th and 95th percentiles respectively. After winsorization, the skewness of CR% is reduced from 1.915 (Panel A of Table 6.2, row 9, column 7) to 0.361. Therefore, the winsorized CR% (WCR%) is used as the dependent variable for Models 1.1, 1.2, and 1.3. Table 6.5 presents the findings of these models for the entire sample.

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[110] IAA% is not included in the model, as the accounting number of goodwill and other intangible assets itself has information content of brand name recognition, good customer relations, and so forth (Chauvin and Hirschey, 1994). As a result, CR% and IAA% are more likely to interact with each other as both cause and effect, rather than present a causal relationship.

[111] There are different ways of dealing with outliers, such as winsorisation, exclusion, or retention. In this study, since the number of observations is small, and the extreme values in CR% are likely to seriously bias the OLS results, either exclusion or retention seems to be unsuitable. In addition, following some previous studies of intellectual capital in which variables with outliers were winsorized (e.g., Callahan and Stuebs, Jr, 2007), winsorization is considered to be an appropriate method to deal with outliers in this study. In this study, all winsorizing are done based on full sample rather than on balanced sample. Therefore, CR% is winsorized on the basis of 178 cases.

It can be seen from the last row of Table 6.5 that, the number of observations tends to decrease, from 99 in Model 1.1 to 43 in Model 1.3. It suggests that sample size falls when more explanatory variables are included in the model. As has been discussed in section 6.2, the combination of intangible variables results in significant decreasing number of observations, and analyses are based on the maximum sample rather than the balanced sample. With regard to the individual models, Table 6.5 shows that, the coefficient for BVA% in Model 1.1 is not statistically significant at any reasonable level, suggesting that we cannot conclude that the regression coefficient for this explanatory variable is significantly different from 0. The adjusted R^2 for Model 1.1 is very small (0.011), which indicates that the Model 1.1 does not provide a good fit to the sample data. This might be a sign of omitted variables bias with the model. In addition, the coefficient for the intercept is highly significant at the 1% level, also suggesting that there may be some explanatory variables missing from the model.

Table 6.5: **Regressions of customer relationships on brand metrics (dependent variable: winsorized CR%)**

	Model 1.1	Model 1.2	Model 1.3
Intercept	13.497***	26.161***	28.662***
	(.000)	(.009)	(.008)
BVA%	2.749	2.191	0.120
	(.151)	(.501)	(.973)
ADVA%		24.033	36.989
		(.625)	(.484)
LNAGE		-2.857	-2.280
		(.109)	(.254)
LNB			-0.493
			(.672)
Adj. R^2	0.011	0.018	-0.008
Sig. F	0.151	0.258	0.463
N	99	63	43

Notes: *P*-values are in parentheses. *, **, and *** indicate two-tailed significance at 10%, 5%, and 1% respectively. The variables are as defined in section 6.2.2.

After adding another two independent variables into Model 1.1, namely ADVA% and LNAGE, the specified Model 1.2, however, does not present a good fit to the sample data either. Compared with Model 1.1, the adjusted R^2 for Model 1.2 has risen very slightly, from 0.011 to 0.018. Neither the overall significance of the regression model (Sig. *F*) nor the coefficients for those three explanatory variables are statistically significant at any level, indicating that there are not strong relationships between those brand metrics and customer relationships for the sample banks. When the variable of brand network is included into Model 1.2, the adjusted R^2 for the constructed Model 1.3 has even dropped to a negative value (-0.008). This indicates that the inclusion of LNB does not improve the explanatory

power of the regression model. Instead, LNB appears to have no contribution to loan/deposit growth across the sample banks.

With reference to the coefficients on metrics, all of them appear to be statistically insignificant, suggesting that the estimated brand value, advertising expenditure, bank age and brand network, are likely to have no significant impacts on customer relationships for the sample banks. Moreover, it is noticeable that the signs of coefficients on some regressors, such as LNAGE and LNB, are opposite to the expectation. Based on the extant literature, both bank age and brand network are assumed to positively affect the customer relationship. For example, Dick (2008) finds that customers valued branch density[112] and bank age when they chose deposit institutions in the US. However, these two explanatory variables have negative coefficients in both Models 1.2 and 1.3. On the other hand, as expected, BVA% and ADVA% have positive coefficients, even though they are not significant.

To sum up, the above models do not provide evidence to support the assumed relationship between brand strength and customer relationships as captured by growth in customer deposits and loans. The adjusted R^2 for the three models are very low, and the coefficients for all the independent variables in them are not statistically significant at any reasonable level. There are several possible interpretations for these results. Firstly, this may be due to the fact that the variables used in the model are not appropriately defined, as has been discussed in chapter five. Especially, there is only one type of measure for customer relationships used in the models, and this has its limitations. The average deposit and loan growth rate is used to proxy the customer relationship. However, other factors (e.g., economic growth) may also affect this indicator. For example, manager in interview B3 argued that deposit and loan growth rate was likely to be driven by market conditions[113]. Therefore, it would be interesting if future research could take account of market effect when using this proxy (e.g., adjust for economic growth).

Secondly, the models may not be correctly specified. As the coefficients for all the intercepts in the three models are highly significant, it suggests that there may be some omitted variables excluded from those models, such as other intangible elements. For

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[112]In Dick's (2008) study, branch density is measured as the number of branches in a local market divided by the square miles of the local market.

[113] The weaknesses of intangible proxies used in the quantitative study are discussed with interviewees in the qualitative study, and this will be illustrated further in section 9.3 of chapter nine.

example, human capital metrics are argued to be potential factors that may influence the customer relationship as well, as mentioned in previous chapter. Therefore, in the next subsection, human capital metrics will be taken into consideration both individually and collectively with brand metrics in examining what factors may be the potential drivers of banks' customer relationships.

6.4 Testing the relationship between human capital and relational capital

6.4.1 Model construction

The second step of data analysis in the quantitative study is to test the relationship between different components of intangibles. In particular, as has been demonstrated in section 5.3.3.2 of chapter five, hypothesis 2 is developed to investigate whether or not human capital has an impact on relational capital:

- *Hypothesis 2 (H_2):* a bank's human capital will positively affect its customer relationships.

In order to test the above hypothesis, H_2 is broken down into several sub-hypotheses:

- *Hypothesis 2a (H_{2a})*: Top management HC of a bank will positively affect its customer relationships;
- *Hypothesis 2b (H_{2b})*: Employee level HC of a bank will positively affect its customer relationships;
- *Hypothesis 2c (H_{2c})*: a bank's Human capital at top management level and employee level will jointly positively affect its customer relationships.

This subsection introduces the regression models which are constructed so as to examine the impacts of human capital at top management HC and employee level HC on customer relationships both individually and collectively.

The model construction begins from the individual impact of top management HC on customer relationships. As has been addressed in section 5.3.3.2 of chapter five, the researcher learnt from her interview experience that human capital at top management level is likely to have a direct effect on banks' customer relationships, such as through setting the bank customer service strategy. Therefore, at first, Model 2.1 is built to test H_{2a}, which seeks to find whether or not some top management HC measures can affect a

bank's customer relationships directly:

$$CS\%_{i,t} = \beta_0 + \beta_1 LNCEOEX_{i,t} + \beta_2\, LNCEOP_{i,t} + \beta_3\, CEOED_{i,t} + \varepsilon_{i,t} \qquad \text{(Model 2.1)}$$

Where $LNCEOEX_{i,t}$ is the natural logarithm of the number of years the CEO has been on the board for bank i as of period t; $LNCEOP_{i,t}$ is the natural logarithm of the number of years the CEO has been an executive member of a board in other firms before he/she came into the bank; and $CEOED_{i,t}$ is the CEO's level of education.

Secondly, previous research suggests that some employee level HC elements, such as training play important roles in determining customer relationships (e.g., Chebat et al., 2002; Kidder and Rouiller, 1997; Pennings et al., 1998). For example, Pennings et al. (1998) argue that professional firms' ability to deliver high quality service and to attract and retain clients depends on their firm-level human capital. Based on the extant literature, Model 2.2 is constructed to test **H$_{2b}$**:

$$CS\%_{i,t} = \beta_0 + \beta_1 LNSC_{i,t} + \beta_2 LNTE_{i,t} \; + \varepsilon_{i,t} \qquad \text{(Model 2.2)}$$

Where $LNSC_{i,t}$ is the natural logarithm of average staff costs per employee (in 10 thousand Euro) for bank i in period t; and LNTE is the natural logarithm of average training expenses per employee (in Euro) for bank i in period t.

The above two models look at the individual impact of human capital at either top management level or employee level on customer relationships. Apart from their individual effect, these two aspects of human capital may affect customer relationships jointly. For example, as mentioned before, top management level HC can affect customer relationships indirectly through having effects on employee level HC, such as pursuing effective strategy of employee recruitment and training, improving low level manager and employee engagement, and so on. In order to test **H$_{2c}$**, which looks at the collective effect of top management HC and employee level HC on customer relationships, the following model is constructed:

$$CS\%_{i,t} = \beta_0 + \beta_1 LNCEOEX_{i,t} + \beta_2\, LNCEOP_{i,t} + \beta_3\, CEOED_{i,t} + \beta_4 LNSC_{i,t}$$
$$+ \beta_5 LNTE_{i,t} + \varepsilon_{i,t} \qquad \text{(Model 2.3)}$$

In addition, when examining the factors that determine the relationship of customers with service organizations, the quality of service the organizations provide to their customers is argued to be a critical one (e.g., Bell et al., 2005; Heskett et al., 1994; Liljander and Strandvik, 1995). Liljander and Strandvik (1995) highlight that customer retention as an indicator of relationship between customers and a firm depends critically on the quality of

and satisfaction with the service they have received. Therefore, taking into account of service quality metric in determining banks' customer relationships, Model 2.3 is extended to be as the following:

$$CS\%_{i,t} = \beta_0 + \beta_1 LNCEOEX_{i,t} + \beta_2 LNCEOP_{i,t} + \beta_3 CEOED_{i,t} + \beta_4 LNSC_{i,t}$$
$$+\beta_5 LNTE_{i,t} + \beta_6 LNEPB_{i,t} + \varepsilon_{i,t} \qquad \text{(Model 2.4)}$$

Where $LNEPB_{i,t}$ is the natural logarithm of the average number of employees per branch for bank i in period t, which is suggested to be a proxy of service quality of a bank (e.g., Dick, 2006, 2007; Örs, 2006).

Finally, the previous section has tested the relationship between brands and the customer relationships, and shown that brand metrics seemed to have no significant effects on customer relationships for the sample banks. However, it was found that there might be problems of omitted variables within the constructed models that were used to investigate the brand-customer relationship association, such as human capital metrics. Therefore, it is worth to assess if the combination of human capital and brand metrics has joint effects on bank customer relationships. Consequently, an additional sub-hypothesis is postulated as the following:

- *Hypothesis 2d (H_{2d})*: a bank's Human capital and brand will jointly positively affect its customer relationships.

In order to test H_{2d}, three brand metrics[114]: ADVA%, LNAGE, and LNB are added into Model 2.4, as stated below:

$$CS\%_{i,t} = \beta_0 + \beta_1 LNCEOEX_{i,t} + \beta_2 LNCEOP_{i,t} + \beta_3 CEOED_{i,t} + \beta_4 LNSC_{i,t}$$
$$+\beta_5 LNTE_{i,t} + \beta_6 LNEPB_{i,t} + \beta_7 ADVA\%_{i,t} + \beta_8 LNAGE_{i,t} + \beta_9 LNB_{i,t} + \varepsilon_{i,t}$$
$$\text{(Model 2.5)}$$

Empirical results of the above models will be presented in the next subsection.

6.4.2 Empirical results

Table 6.6 reports the OLS regression results of Models 2.1 to 2.5 based on the winsorized CR% (WCR%). The last row of it shows that sample size changes as more independent variables are added into the model. The number of observations for Model 2.1 is 146,

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[114] Brand value (BVA%) is excluded from Model 2.5 due to the reason that if adding this variable, the number of observations would be too small to conduct OLS regression analysis.

indicating that missing data is not a serious problem for variables related to CEO. However, data for employee level HC variables tends to be limited, and there are only 53 cases for training expenditures (LNTE) (see Table 6.1). As a result, sample size for Model 2.2 appears to be quite small (53), and when combining variables related to CEO and employee together, the number of observation is only 50 (Model 2.3). Moreover, after the variable of service quality that is captured by the number of employees per branch is included into the model, sample size for Model 2.4 further decreases to 41. Finally, Model 2.5 that includes both human capital variables and brand variables has a small sample size of only 31.

Table 6.6: Regressions of customer relationships on human capital and brand metrics (dependent variable: winsorized CR%)

	Model 2.1	Model 2.2	Model 2.3	Model 2.4	Model 2.5
Intercept	15.907***	30.486***	31.033***	30.677**	8.391
	(.000)	(.004)	(.006)	(.017)	(.802)
LNCEOEX	1.684*		3.046**	2.789**	4.358**
	(.054)		(.022)	(.037)	(.019)
LNCEOP	-0.596		-1.387	-1.947**	-3.269*
	(.385)		(.177)	(.039)	(.053)
CEOED	-0.946		-0.425	-0.701	-1.737
	(.103)		(.700)	(.485)	(.201)
LNSC		-10.702**	-11.871**	-9.464*	-5.671
		(.023)	(.035)	(.088)	(.605)
LNTE		0.366	0.307	1.356	3.190
		(.783)	(.822)	(.291)	(.145)
LNEPB				-3.536	-2.436
				(.116)	(.460)
ADVA%					-96.232
					(.586)
LNAGE					-0.641
					(.796)
LNB					1.439
					(.652)
Adj. R^2	0.021	0.065	0.128	0.226	0.259
Sig. F	0.114	0.071*	0.049**	0.020**	0.070*
N	146	53	50	41	31

Notes: *P*-values are in parentheses. *, **, and *** indicate two-tailed significance at 10%, 5%, and 1% respectively. The variables are as defined in sections 6.2.1 and 6.2.2.

It can be seen from row 12 of Table 6.6 that, the *F* test for Model 2.3 is statistically significant at the 5% level, while that for Model 2.1 is not statistically significant at any reasonable level. It suggests that the null hypothesis that the coefficients on the top management level HC variables are jointly equal to zero cannot be rejected. However, the coefficients on human capital variables at both top management and employee level are not

jointly equal to zero, and they can explain at least 12.8% of the variations in customer relationship variable across the sample banks. Moreover, recall that the *F*-test for Model 1.3 is not statistically significant at any reasonable level (Table 6.5), but that for Models 2.4 and 2.5 are statistically significant. This suggests that only using brand metrics may not explain the variations in the sample banks' customer relationships, but variables of human capital, service quality, and brands combined together can explain 25.9% of those variations. This is consistent with the RBV theory whereby competitive advantage may be based on combinations of intangibles – one alone not enough.

Note that the adjusted R^2 increases from 0.021 in Model 2.1 to 0.259 in Model 2.5, suggesting that the explanatory power has improved when adding more variables of intangible elements into the model. Row 12 of Table 6.6 shows that top management HC alone can explain only 2% of the variations in sample banks' customer relationships, while the changes of employee level HC can explain about 6.5% of that. By comparison, once combining top management HC and employee level HC metrics together as the explanatory variables to explain the variations in customer relationships, the explanatory power is up to 12.8%. Further, when the service quality variable (LNEPB) is added into the regression model, the adjusted R^2 goes up rapidly, from 12.8% in Model 2.3 to 22.6% in Model 2.4, suggesting that the increase in explanatory power is likely to be largely attributed to the inclusion of the service quality metrics. However, as mentioned before, the valid number of observations decreases as more explanatory variables are included. When including LNEPB into Model 2.4, the number of observations (41) relative to the number of explanatory variables (6) is low. Thus, the above results should be interpreted with caution, as they may not be stable due to the small simple size.

With regard to the coefficients on the independent variables, LNCEOEX remains significant in all the models where it acts as a regressor, suggesting that CEOs' firm-specific managerial experience has a statistically significant and positive impact on customer relationships for the sample banks. On the other hand, staff costs (LNSC) have a significant coefficient in Models 2.2, 2.3, and 2.4, but becomes insignificant in Model 2.5 where brand metrics are added into it. Similar change is also found for another variable, that is, CEOs' past managerial experience (LNCEOP). LNCEOP that is insignificant in Models 2.1 and 2.3 appears to be statistically significant in Models 2.4 and 2.5. These sensitivities may be due to the omitted variables bias caused by the exclusion of the brand variables. It can be seen from the last column of Table 6.6 that, with the inclusion of brand

variables, the coefficient on the intercept in Model 2.5 becomes statistically insignificant, while that in Models 2.1 to 2.4 are all highly significant. It suggests that adding brand metrics into the model may to some extent reduce the omitted variables problem, even though they tend to have insignificant individual impacts on the dependent variable. Indeed, as mentioned in chapter two, from the RBV point of view, it can be expected that different elements of intangibles are interacted together rather than separated. The evidence presented here shows that the combination of brand metrics and human capital proxies seem to better explain the variation on the proxy of customer relationships than human capital alone.

It should be pointed out that the coefficient on LNCEOP shows an opposite sign to the expectation. It is expected that a CEO who has more managerial experience should have better knowledge of customers and set better customer strategies, such as creating an effective system for customer relationship management, which would then be associated with better customer relationships. However, LNCEOP tends to affect growth in customer loans and deposits (CR%) negatively in all the models, either significantly or insignificantly. One possible interpretation may be related to the definition of this variable. The CEOs' past managerial experience includes their experience as board members in not only banks, but also other types of organizations. Therefore, this variable may not actually capture CEOs' managerial experience about bank customers. In addition, the longer the CEO has been with previous companies may be negatively related to how long he/she has been with the current bank, and this may also explain the positive coefficient on LNCEOEX and the negative coefficient on LNCEOP.

With the exceptions of the above three regressors, the coefficients on all other variables are not statistically significant at any reasonable level in any model. Among them, some variables such as training expenditure (LNTE) and branch number (LNB) that capture employee level HC and brand strength respectively are positively related to the customer relationship (CR%), which are consistent with what the researcher expected. Recall that the sign of coefficient on LNB was found to be negative and insignificant in Model 1.3. Interestingly, when looking at the joint effects of human capital and brand metrics on the customer relationship (Model 2.5), LNB appears to have a positive impact on CR%, although it remains insignificant. There may be several possible explanations for it. Firstly, the change of sign may be due to the fact that Model 1.3 is not correctly specified, as noted before. As a result, the negative coefficient on LNB in Model 1.3 may not reflect the actual

relationship between it and the customer relationship. Secondly, the sensitivity may be caused by potential correlations among LNB and some human capital metrics[115]. Therefore, further robustness checks are carried out and will be introduced and discussed in the next subsection. Moreover, the sample size for Model 2.5 is very low, only 31 observations for 9 independent variables, while in Model 1.3, there are 43 observations for 4 independent variables. Change in sample may also have an impact on such sensitivity.

On the other hand, the signs of coefficients on staff costs (LNSC), number of employees per branch (LNEPB), advertising and marketing expenditures (ADVA%) and bank age (LNAGE) are inconsistent with theoretical expectations, although most of them are not statistically significant in any model, except for LNSC. For example, staff costs represent the compensation for invested times and knowledge inputs by employees (Pulic, 1998). Employees who are compensated by higher salary can be expected to have better knowledge of customers and deliver better service to customers than those who are paid less. As a result, staff costs are likely to have a positive effect on the customer relationship. However, the results show that LNSC has negative coefficients in all the models. Likewise, unexpected negative signs are also found for the variables LNEPB, ADVA% and LNAGE, which are conjectured to affect positively the customer relationship.

In sum, the above findings show that the human capital at top management level alone appears to have no statistically significant effect on banks' customer relationships. When combined with employee level HC and service quality metrics, both the joint effect of them and the individual effect of top management HC tend to be significant for the sample banks, and the explanatory power of the regression model increases dramatically. However, when human capital, service quality and brand metrics are combined together, although the overall regression remains significant, many explanatory variables appear to have insignificant coefficients, with the exceptions of two top management HC variables. The failure of providing empirical support to relationships between the customer relationship and employee level HC, service quality and brand metrics may be due to several possible reasons. Firstly, the definitions of those intangible proxies may not capture the nature of the intangible elements accurately. Secondly, the low level quality of the sample data and the small sample size may result in invalid findings, as has been discussed in chapter five. For example, it is noted that the number of observations for Model 2.5 is only 31, in which there are nine independent variables. Thirdly, as the models are analysed

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[115] The Pearson correlation of variables in Model 2.5 will be discussed later in section 6.4.3 (see Table 6.7).

using the OLS regression technique, there might be some problems with the underlying assumptions of OLS methodology. For example, Greene (2008:57) highlights that "the interaction among the variables may serve to obscure their individual contribution to the fit of the regression, whereas their joint effect may still be significant", which is the case for Model 2.5. This might be a sign of multicollinearity problem. Therefore, the following subsection will examine the extent to which the existence of potential problems may weaken the validity of the above results.

6.4.3 Robustness tests

As noted in the previous subsection, there is a possibility of multicollinearity among the regressors included in Model 2.5. In order to test the degree of multicollinearity problem, the following statistical analyses are conducted.

At first, Pearson's correlations among the variables in Model 2.5 are computed to check if multicollinearity is a problem (see Table 6.7). Table 6.7 shows that the significant correlation coefficients between LNB and LNCEOP, as well as ANB and ADVA% exceed the absolute value of "0.6", at 0.624 and 0.679 respectively. This suggests that there may be a high level of multicollinearity problem in the regression model[116]. In addition, LNB also has statistically significant correlations with three other regressors, namely LNSC, LNEPB, and LNAGE, although these correlations appear to be modest. Therefore, tolerance statistics (TOL) and variance inflation factor (VIF) are calculated to further test for multicollinearity (see Table 6.8).

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[116] Regarding to what level of correlation coefficient between regressors indicates serious multicollinearity problem, there were different suggestions given by previous researchers. As mentioned in subsection 6.3.1, Gujarati and Porter (2009) suggest that if the correlation coefficient between two independent variables is in excess of 0.8, then multicollinearity is a serious problem, while Eastman (1984) suggests that a correlation coefficient of +/-0.6 normally indicates serious multicollinearity problem.

Table 6.7: Pearson correlation of variables in Model 2.5

		LNCEOEX	LNCEOP	CEOED	LNSC	LNTE	LNEPB	ADVA%	LNAGE	LNB
LNCEOP	Correlation	.233								
	Sig.	.207								
CEOED	Correlation	.248	**-.434**[**]							
	Sig.	.179	.015							
LNSC	Correlation	-.065	**-.476**[***]	**.564**[***]						
	Sig.	.728	.007	.001						
LNTE	Correlation	-.030	.067	-.087	-.055					
	Sig.	.873	.722	.642	.768					
LNEPB	Correlation	-.242	-.013	.042	.016	.126				
	Sig.	.190	.946	.823	.931	.498				
ADVA%	Correlation	-.137	**.577**[***]	-.242	**-.382**[**]	-.164	.282			
	Sig.	.461	.001	.189	.034	.379	.125			
LNAGE	Correlation	.147	.027	.183	.260	.131	**.369**[**]	-.138		
	Sig.	.429	.885	.325	.158	.481	.041	.458		
LNB	Correlation	.040	**.624**[***]	-.274	**-.496**[***]	-.147	**.382**[**]	**.679**[***]	**.398**[**]	
	Sig.	.829	.000	.136	.005	.430	.034	.000	.026	
CS%	Correlation	**.372**[**]	-.190	-.076	-.170	.240	-.247	**-.374**[**]	-.026	-.212
	Sig.	.039	.305	.686	.361	.193	.181	.038	.888	.253

Notes: *, **, and *** indicate two-tailed significance at 10%, 5%, and 1% respectively. The variables are as defined in sections 6.2.1 and 6.2.2.

Gujarati and Porter (2009) suggest that a value of tolerance for a regressor close to zero means that there may be great degree of collinearity of that variable with other regressors, while if close to one would be a sign of little multicollinearity. Additionally, as an indicator of multicollinearity, the larger the value of VIF, the more serious the multicollinearity problem, and normally a value of VIF more than ten indicates harmful multicollinearity (Gujarati and Porter, 2009; Kennedy, 2003). It can be seen from Table 6.8 that, none of the VIF value exceeds "10", suggesting that the multicollinearity problem may not be too serious in Model 2.5. However, the value of TOL for some variables appears to be small, such as for LNB, LNEPB, and LNTE. Among them, the variable LNB has the lowest value of TOL (0.107), and the highest value of VIF (9.351).

Table 6.8: Collinearity statistics for Model 2.5

	LNCEOEX	LNCEOP	CEOED	LNSC	LNTE	LNEPB	ADVA%	LNAGE	LNB
TOL	0.591	0.318	0.482	0.598	0.244	0.226	0.658	0.279	0.107
VIF	1.693	3.144	2.074	1.672	4.099	4.426	1.519	3.579	9.351

For the purpose of assessing the extent to which the multicollinearity problem may weaken the robustness of the model, the variable LNB is dropped from the original model[117]. The result of the revised model (Model 2.6) is presented in Table 6.9.

Table 6.9 shows that the significance of coefficients on individual variables does not change after LNB being removed from Model 2.5 – the coefficients of LNCEOEX and LNCEOP remain statistically significant, while other independent variables are still insignificant at any reasonable level. However, the sign of the coefficient on LNAGE has changed, from a negative value in Model 2.5 (-0.641) to a positive value in the revised model (0.266), although it remains statistically insignificant. Moreover, it can be seen that the adjusted R^2 increases from 0.259 in Model 2.5 to 0.286 in Model 2.6, indicating that dropping LNB from the regression model results in 2.7% increase in explanatory power. This suggests that the revised model may perform better in explaining the level of customer relationships across the sample banks. Additionally, even though LNB is removed from the model, the information related to branch network is to some extent

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[117] Dropping a collinear variable from the regression model is one of the recommended solutions of dealing with multicollinearity problem. For example, Maddala (2005) suggests that multillinearity problem is essentially due to the lack of sufficient information in the sample to estimate accurately the individual parameters, and we can drop some variables to partially solve this problem. However, dropping one or more variables may cause another problem – specification bias (e.g., Gujarati and Porter, 2009; Kennedy, 2003), which arises due to omitting relevant variables.

already reflected in another independent variable in Model 2.6, namely LNEPB, which is calculated by the average employee number over the number of branches.

Table 6.9: **Comparing results of Model 2.5 and Model 2.6 (dependent variable: winsorized CR%)**

	Model 2.5	Model 2.6
Intercept	8.391	20.495
	(.802)	(.304)
LNCEOEX	**4.358****	**4.240****
	(.019)	(.018)
LNCEOP	**-3.269***	**-2.994***
	(.053)	(.051)
CEOED	-1.737	-1.666
	(.201)	(.207)
LNSC	-5.671	-9.059
	(.605)	(.255)
LNTE	3.190	2.720
	(.145)	(.146)
LNEPB	-2.436	-2.173
	(.460)	(.495)
ADVA%	-96.232	-45.740
	(.586)	(.732)
LNAGE	-0.641	0.266
	(.796)	(.190)
LNB	1.439	
	(.652)	
Adj. R^2	0.259	0.286
Sig. F	0.070	0.042
N	31	31

Notes: *P*-values are in parentheses. *, **, and *** indicate two-tailed significance at 10%, 5%, and 1% respectively. The variables are as defined in sections 6.2.1 and 6.2.2.

Apart from multicollinearity, OLS regressions may also suffer from heteroscedasticity problems in which the variances of regression disturbances are not constant across observations (Greene, 2008). Heteroscedasticity can arise due to different reasons, and the presence of outliers is one of the main causes (Gujarati and Porter, 2009). Therefore, Cook's distances and studentized residuals are computed so as to test the existence of outliers in CR% even after being winsorized. As practice operational rules, Cook's distance value more than "1" suggests that there are outliers within the regression model (e.g., Chatterjee and Price, 1991; Rousseeuw and Leroy, 2003), while the absolute value of studentized residual greater than "2.5" is suggested to be a sign of outliers (Rousseeuw and Leroy, 2003). For Model 2.5, the Cook's distances range from 0.000 to 0.572, while the value of studentized residuals locate between a minimum of -1.528 and the maximum of 2.443, indicating that there are no outliers existing in this model. The studentized residuals for Model 2.6 range from -1.619 to 2.532 with a mean of 0.000, showing that there may be

little outliers in it. However, the Cook's distances for all the observations in Model 2.6 are very small, from a minimum value of 0.000 to a maximum value of 0.200, suggesting that the problem of outliers tend not to be considerable.

In order to further test the robustness of the estimated results, rank regression technique is applied to Models 2.4, 2.5, and 2.6. Chaudhury and Ng (1992) point out that, rank regression is relatively less sensitive to extreme values than OLS regression, due to the reason that the former is rank based rather than value based. Therefore, if similar results were obtained from OLS regression models and rank regression models, it might suggest that the OLS results are robust. Therefore, Models 2.4, 2.5, and 2.6 are re-estimated by running the following rank-based regressions:

$$Rank\_CS\%_{i,t} = \beta_0 + \beta_1 Rank\_LNCEOEX_{i,t} + \beta_2 Rank\_LNCEOP_{i,t}$$
$$+ \beta_3\ Rank\_CEOED_{i,t} + \beta_4\ Rank\_LNSC_{i,t}$$
$$+ \beta_5 Rank\_LNTE_{i,t} + \beta_6 Rank\_LNEPB_{i,t} + \varepsilon_{i,t} \qquad \text{(Model 2.7)}$$

$$Rank\_CS\%_{i,t} = \beta_0 + \beta_1 Rank\_LNCEOEX_{i,t} + \beta_2 Rank\_LNCEOP_{i,t}$$
$$+ \beta_3 Rank\_CEOED_{i,t} + \beta_4 Rank\_LNSC_{i,t} + \beta_5 Rank\_LNTE_{i,t}$$
$$+ \beta_6\ Rank\_LNEPB_{i,t} + \beta_7\ Rank\_ADVA\%_{i,t} + \beta_8\ Rank\_LNAGE_{i,t}$$
$$+ \beta\ Rank\__9 LNB_{i,t} + \varepsilon_i \qquad \text{(Model 2.8)}$$

$$Rank\_CS\%_{i,t} = \beta_0 + \beta_1 Rank\_LNCEOEX_{i,t} + \beta_2 Rank\_LNCEOP_{i,t}$$
$$+ \beta_3 Rank\_CEOED_{i,t} + \beta_4 Rank\_LNSC_{i,t} + \beta_5 Rank\_LNTE_{i,t}$$
$$+ \beta_6\ Rank\_LNEPB_{i,t} + \beta_7\ Rank\_ADVA\%_{i,t} + \beta_8\ Rank\_LNAGE_{i,t}$$
$$+ \varepsilon_i \qquad \text{(Model 2.9)}$$

Table 6.10 reports the estimated results for Models 2.7, 2.8, and 2.9[118]. For the purpose of comparison, estimated OLS results for Models 2.4, 2.5, and 2.6 are also listed. It can be seen from Table 6.10 that the signs of the estimated coefficients on the explanatory variables in the OLS regression models are similar to those of the estimated results in the corresponding rank-based regressions, except for LNB in Model 2.5 and LNAGE in Model 2.6, although the coefficients on these variables remain statistically insignificant. Moreover, two explanatory variables, namely LNCEOEX and LNCEOP, that are significant in the three OLS regression models are also found to be statistically significant in the rank-based regression models, indicating that the impacts of top management HC that are captured by CEO's firm-specific and past managerial experiences on growth in customer loans and

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[118] Only estimated coefficients are reported, as rank regression "does not deal with squared variations and the estimated regression equation is not designed to pass through the point of sample means (for the regressand and regressors), it does not produce statistics such as R^2" (Chaudhury and Ng, 1992:623).

deposits are likely to be robust. However, the coefficient on staff costs (LNSC) that is significant in Model 2.4 changes to insignificant in the rank-based regression, suggesting that the estimated relationship between staff costs and growth in customer loans and deposits tends to be unstable. On the other hand, the negative coefficient on CEOED and positive coefficient on LNTE that are statistical insignificant in Model 2.6 become significant under rank regression estimation in Model 2.9, which show that the findings that CEOs' education level and training expenses per employee have no significant effects on customer loans and deposits growth rate might not be stable results.

Table 6.10: Results of rank regressions for Models 2.7 to 2.9

	OLS Model 2.4	Rank Model 2.7	OLS Model 2.5	Rank Model 2.8	OLS Model 2.6	Rank Model 2.9
Intercept	**30.677****	**128.958*****	8.391	**152.050*****	20.495	**149.743*****
	(.017)	(.004)	(.802)	(.007)	(.304)	(.001)
LNCEOEX	**2.789****	**0.270***	**4.358****	**0.539*****	**4.240****	**0.542*****
	(.037)	(.073)	(.019)	(.009)	(.018)	(.006)
LNCEOP	**-1.947****	**-0.318***	**-3.269***	**-0.635***	**-2.994***	**-0.645****
	(.039)	(.081)	(.053)	(.063)	(.051)	(.036)
CEOED	-0.701	-0.221	-1.737	**-0.507****	-1.666	**-0.506****
	(.485)	(.264)	(.201)	(.037)	(.207)	(.033)
LNSC	**-9.464***	-0.275	-5.671	-0.304	-9.059	-0.292
	(.088)	(.155)	(.605)	(.313)	(.255)	(.239)
LNTE	1.356	0.586	3.190	1.026	2.720	**1.058***
	(.291)	(.199)	(.145)	(.167)	(.146)	(.075)
LNEPB	-3.536	-0.319	-2.436	-0.088	-2.173	-0.083
	(.116)	(.201)	(.460)	(.810)	(.495)	(.814)
ADVA%			-96.232	-0.276	-45.740	-0.305
			(.586)	(.668)	(.732)	(.538)
LNAGE			-0.641	-0.006	0.266	-0.021
			(.796)	(.983)	(.190)	(.891)
LNB			1.439	-0.050		
			(.652)	(.940)		

Notes: *P*-values are in parentheses. *, **, and *** indicate two-tailed significance at 10%, 5%, and 1% respectively. The variables are as defined in sections 6.2.1 and 6.2.2.

Finally, the autocorrelation problem is checked by conducting the Durbin-Watson (DW) test. It is recommended that the closer the value of DW is to "2", the greater the evidence that there is no autocorrelation existing (e.g., Chatterjee and Price, 1991; Gujarati and Porter, 2009). Specifically, the DW statistics for Models 2.5 and 2.6 are 0.786 and 0.810 respectively. Referring to the DW tables (Gujarati and Porter, 2009), it is found that the values of DW for both models are statistically significant at the 5% level, suggesting that there is autocorrelation present in them[119]. This may overestimate R^2 or weaken the validity

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[119] According to previous researchers (e.g., Chatterjee and Price, 1991; Gujarati and Porter, 2009), the value of DW is between "0" to "4", and a value close to "0" shows positive autocorrelation, while a value close to "4" is a sign of negative autocorrelation. The formal procedure for positive autocorrelation test is suggested as follows: if DW < d_L reject the null hypothesis of no autocorrelation; if DW > d_U do not reject the null hypothesis; and if d_L<DW < d_U, the test is inconclusive. For number of observations equal to 31 and the number of explanatory variables equal to 9 (Model 2.5) and 8 (Model 2.6), the significant points of d_L at the 5% level equal to 0.810 and 0.879, respectively.

of the statistical significance of the estimated regression coefficients (Gujarati and Porter, 2009). However, the DW statistics for both the models are close to "1", and are insignificant at the 1% level, indicating that the autocorrelation problems appear to be modest rather than serious.

6.5 Testing the relationship between intangibles and bank performance

The final step of the quantitative data analyses, as addressed in section 5.3.3.3 of chapter five, is to explore how different intangible elements affect bank financial performance. This section shows how different models are built in order to test the individual and collective impacts of human capital and relational capital on bank performance, and then presents the empirical results of these models. Before discussing the model construction, subsection 6.5.1 introduces firstly the choice of bank performance measure.

6.5.1 Choice of bank performance measure

There are various firm performance measures found in the extant literature. Some researchers use accounting-based firm performance measures, such as ROA and ROE (e.g., Cochran, 1985; Delery and Doty, 1996; Nagar and Rajan, 2005), while others use market-based measures, such as Market Value Added (MVA) (e.g., Ellinger, 2002), market adjusted return and share price (e.g., Amir and Lev, 1996). In this study, bank performance is measured by return on assets (ROA), which is computed by a bank's profit before tax over the book value of its total assets at the end of the fiscal year[120]. The rationale of this choice is due to several considerations.

Firstly, direct profitability tests are argued to be more appropriate compared with market-based measures in assessing value relevance of financial and nonfinancial measures (e.g., Nagar and Rajan, 2005; Shevlin, 1996). Shevlin (1996) points out that the main problem of using market value is the maintained assumption of an efficient market. Nagar and Rajan (2005) argue that stock markets can significantly misprice information, especially in high-tech industries, and "the aim of stock market valuation study is to establish the 'true' economic content of nonfinancial measures" rather than to document "a behavioural investor fixation on these measures" (Nagar and Rajan, 2005:907). Therefore,

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[120] Some researchers calculated ROA by profit over average total assets (the average number of total assets at the beginning of the fiscal year and at the end of fiscal year). In this study, similar results have been got when calculating ROA in these two different ways, and results are reported for only one option.

they use a direct profitability measure – future earning – as the dependent variable in their study of customer relationships. Moreover, Sáenz (2005) points out that, market value of a firm is not only based on its management capacity, but also depends on factors such as the general economic situation or the stability of the political context. Therefore, following previous researchers[121], and in consideration of the purpose of the current study, which is to investigate whether or not intangible factors such as management capability and customer relations are value drivers, rather than to look at the general economic factors, a direct profitability test tends to be more appropriate.

Secondly, compared with other accounting-based measures, such as ROE, ROA is considered a better indicator of the bank's efficiency in asset management (Cornett and Tehranian, 1992), as it has the strength of being free from the effects that are caused by the different choice of financing (Cochran et al., 1985). If using ROE as the dependent variable, it may be affected by not only the tangible and intangible assets, but also the capital structure of a bank. Therefore, given the purpose of this study, ROA seems to be more appropriate than ROE. While the former measures how efficiently a bank manages its tangible and intangible assets, the latter measures how well a bank manages the resources invested by shareholders (Beccalli, 2007).

In particular, all the specified models testing the relationship between intangible indicators and ROA take a one-year lag. The rationale of using a lagged-model is due to the following considerations. Firstly, it is suggested that the impacts of intangibles on firm performance appear to be lagged effects. For example, Ali Shah and Akbar (2008), among others, highlight the existence of a lagged effect of advertising expenditure on sales growth. Ittner and Larcker (1998) argue that there is a short lag between customers' experience and current economic performance present. As a result, many previous studies use a one-year lag in examining the intangibles-performance association (e.g., Ittner and Larcker, 1998; Nagar and Rajan, 2005). Secondly, using a lagged-model can to some extent reduce the endogeneity problem. It is argued that many intangible measures could potentially be endogenous (e.g., Ali Shah and Akbar, 2008; Chenhall and Moers, 2007; Nagar and Rajan, 2005). For example, better customer relationships or more advertising expenditures may result in more sales and in turn more profits for a firm. However, the causality from the customer relationship or advertising to performance could also be reversed, as firms that

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[121] Many other studies that investigated the effects of intangible elements on firm performance in the banking sector used financial performance measures rather than market-based performance metrics (e.g., Dick, 2006; Örs, 2006; Reed et al., 2006).

have earned more may have more resources to invest in activities for improving customer relationships or for promoting their products and service (e.g., Nagar and Rajan, 2005). In this case, a lagged-model appears to be more appropriate to investigate the causal relationship between intangibles and bank performance.

It should be pointed out that, ROA as a performance measure has its limitations. For example, Ellinger et al. (2002) highlight that ROA and ROE tend to be historical in context and are sensitive to the choice of accounting methods. Also there are problems existed with bank accounting in the study period[122]. Moreover, it would be better if we can distinguish the effects of tangible and intangible assets in the current study. However, given the restriction of time and the relevant weight of quantitative component in the mixed methods, this study did not cover other options of bank performance indicators. It should be desirable to use additional performance measures in future research.

6.5.2 Model construction

As explained in section 5.3.3.3 of chapter five, the intangibles-performance association is explored by three hypotheses:

- *Hypothesis 3:* a bank's human capital will positively affect its performance;
- *Hypothesis 4:* a bank's relational capital will positively affect its performance;
- *Hypothesis 5:* a bank's human capital and relational capital will jointly positively affect its performance.

This section discusses how testable models have been constructed to examine these hypotheses.

6.5.2.1 Hypothesis 3

Hypothesis 3 assumes that financial performance of a bank is influenced by the level of human capital the bank has, and more particular, it is further broken down into three sub-hypotheses, as has been explained in section 5.3.3.3 of chapter five.

- *Hypothesis 3a (H_{3a}):* a bank's top management HC will affect positively its performance.

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[122] For example, as mentioned in 5.2.3, the harmonisation in sample banks' financial statements is only partial.

- ***Hypothesis 3b (H$_{3b}$):*** a bank's employee level HC will positively affect its performance.
- ***Hypothesis 3c (H$_{3c}$):*** a bank's HC at both top management level and employee level will jointly positively affect its performance.

In this subsection, the above conjectured hypotheses are tested by five models that are constructed based on different human capital measures.

First of all, as have been shown in sections 5.2.2.1 and 5.3.3.3 of chapter five, organizations' performance can be influenced by top management HC, such as managers' education level or experience (e.g., Castanias and Helfat, 1991; 2001; Hitt et al., 2001; Norburn, 1986; Zahra and Pearce, 1989). For instance, Hitt et al. (2001) argue that managers who have more advanced education background are perceived to have better articulable knowledge and to have high intellectual potential to learn and accumulate tacit knowledge, and then should be more productive. Logically, it can be conjectured that higher level of education for top managers is likely to be associated with better firm performance. Moreover, it is generally expected that more experienced managers are able to make better decisions, and hence to generate more profits for the firm (e.g., Shrader and Siegel; Thomas and Simerly, 1994). Given the theoretic reasoning outlined above, in order to test ***H$_{3a}$***, the first model is constructed based on traditional indicators of top management HC, such as CEO's firm-specific experience (LNCEOEX), prior managerial experience (LNCEOP), and education level (CEOED):

$$ROA_{i,t} = \beta_0 + \beta_1 LNCEOEX_{i,t-1} + \beta_2 LNCEOP_{i,t-1} + \beta_3 CEOED_{i,t-1} + \varepsilon_{i,t}$$

(Model 3.1)

Firm-specific experience and managerial experience have been used in many previous studies. Alternatively, industry-specific experience that bank managers have is suggested by interviewees to be a useful indicator of top management HC, as has been demonstrated in section 5.2.2.1 of chapter five. As a result, Model 3.1 is revised by using industry-specific experience instead of firm-specific and managerial experience to further test ***H$_{3a}$***:

$$ROA_{i,t} = \beta_0 + \beta_1 CEOIN_{i,t-1} + \beta_2 CEOED_{i,t-1} + \varepsilon_{i,t} \qquad \text{(Model 3.2)}$$

Where $CEOIN_{i,t-1}$ is the number of years the CEO has been worked in the banking industry for the previous year.

The second sub-hypothesis H_{3b} aims to test whether or not bank performance is affected by employee level HC. Staff costs as an important indicator of employee level HC (see section 5.2.2.1 of chapter five), are likely to have an impact on firm performance or shareholder value (e.g., Fey et al., 2000; Fiordelisi and Molyneux, 2007). For example, Fey et al. (2000) argue that employees who are paid high salaries tend to be more motivated and more satisfied with their job, and hence produce better outcomes. Their findings show that there are significant and positive relationships between salary level for both managers and employees and firm performance in Russia. Accordingly, staff costs (LNSC) are used as an explanatory variable[123] in the regression model so as to test H_{3b}. Besides, the quality of service that bank front-line employees provide to customers cannot be left out when examining the effect of employee level HC on firm performance. In the service sector, employees may affect firm performance by their ability to deliver high-quality service to customers, thus employee level HC and service quality are likely to jointly determine the level of bank performance. As a result, some researchers tend to take both of them into consideration when examining the factors that influence bank performance (e.g., Nagar and Rajan, 2005). Therefore, the following model is formulated to test H_{3b}:

$$ROA_{i,t} = \beta_0 + \beta_1 LNSC_{i,t-1} + \beta_2\ LNEPB_{i,t-1} + \varepsilon_{i,t} \qquad \text{(Model 3.3)}$$

The above models look at the effects of human capital on bank performance at top management level and employee level respectively. Similar with the joint effect of human capital at these two levels on the customer relationship, they may have collective impact on firm performance as well, as assumed by H_{3c}. The following models, therefore, attempt to examine the potentially joint effects of human capital at these two levels based on different metrics of top management HC:

$$ROA_{i,t} = \beta_0 + \beta_1 LNCEOEX_{i,t-1} + \beta_2\ LNCEOP_{i,t-1} + \beta_3\ CEOED_{i,t-1} + \beta_4 LNSC_{i,t-1}$$
$$+ \beta_5\ LNEPB_{i,t-1} + \varepsilon_{i,t} \qquad \text{(Model 3.4)}$$

$$ROA_{i,t} = \beta_0 + \beta_1 CEOIN_{i,t-1} + \beta_2\ CEOED_{i,t-1} + \beta_3 LNSC_{i,t-1} + \beta_4\ LNEPB_{i,t-1} + \varepsilon_{i,t}$$
$$\text{(Model 3.5)}$$

6.5.2.2 Hypothesis 4

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[123] Training investment (TH/LNTE) is also an important indicator of employee level HC. However, it has to be excluded from Models 5.1 to 5.4 due to too many missing values in this variable. For the purpose of comparison, it is also excluded from models that are used to test H_3. Similarly, in the next subsection, brand value (BVA%) has to be excluded from the specified models because of missing value problem. Moreover, administrative expenditure (ADMA%) is used instead of advertising/marketing expenditure (ADVA%) in constructed models that are used to test H_4 and H_5.

Recall that in section 5.3.3.3 of chapter five, Hypothesis 4 has been developed to check whether or not the changes of relational capital will be associated with different levels of firm performance. Hypothesis 4 was decomposed into three testable sub-hypotheses:

- **Hypothesis 4a (H_{4a}):** a bank's brand will positively affect its performance.
- **Hypothesis 4b (H_{4b}):** a bank's customer relationships will positively affect its performance.
- **Hypothesis 4c (H_{4c}):** a bank's brand and customer relationships will jointly positively affect its performance.

In order to empirically test these proposed hypotheses, three models are specified. At first, Model 1.1 is formulated to test H_{4a}:

$$\text{ROA}_{i,t} = \beta_0 + \beta_1 \text{ADMA\%}_{i,t-1} + \beta_2 \text{IAA\%}_{i,t-1} + \beta_3 \text{LNAGE}_{i,t-1} + \beta_4 \text{LNB}_{i,t-1} + \varepsilon_{i,t}$$

(Model 4.1)

Where $\text{ADMA\%}_{i,t-1}$ is the general and administrative expenses as a percentage of total assets for bank i in period $t-1$; $\text{IAA\%}_{i,t-1}$ is the goodwill and other intangible assets as a percentage of total assets for bank i in period $t-1$; $\text{LNAGE}_{i,t-1}$ and $\text{LNB}_{i,t-1}$ are the natural logarithm of bank age and the number of branches for bank i in period $t-1$, respectively.

Specifically, ADMA% as a proxy of advertising and marketing investment is expected to positively affect bank performance. Some previous studies have provided empirical evidence on such as positive association (e.g., Kotha et al., 2001; Wang and Chang, 2005). For instance, Kotha et al. (2001) use the sales and general administrative figure to measure marketing investment in firm reputation, and find a significantly positive relationship between it and firm performance. Following Chauvin and Hirschey's (1994) study, in which the accounting number of goodwill is found to have a consistently positive effect on a nonmanufacturing firm's profitability, it is expected that the sign of the coefficient of IAA% is likely to be positive. With regard to bank age, as Dick (2006, 2007) suggests, older banks may enjoy greater reputation than younger banks, LNAGE is more likely to have a positive coefficient. Finally, the relationship between LNB and ROA is conjectured to be positive as well. As identified in section 5.2.2.2 of chapter five, the branch network represents the brand name and other intangibles for a bank, and may have a positive effect on bank performance. In addition, banks that have larger branch networks are likely to provide more convenience to customers than those with less number of branches (e.g., Dick, 2007, 2008; Kumbhakar et al., 2001), and may attract more customers (e.g., Dick, 2008). Given the above theoretical reasoning, it is logical to conjecture a positive

association between LNB and ROA.

H_{4b} assumes that different levels of customer relationships may be associated with different firm performance, and in line with suggestion by some previous authors (e.g., Nagar and Rajan, 2005; Wang and Chang, 2005). For example, Nagar and Rajan (2005) suggest that deposit/loan growth can be used as an indicator of customer usage and volume metrics. They find that the more customer usage and volume, the higher future earnings. The second model, therefore, links the customer relationship directly to bank performance to test H_{4b}:

$$\text{ROA}_{i,t} = \beta_0 + \beta_1 \text{CR}_{i,t-1} + \varepsilon_{i,t} \qquad \text{(Model 4.2)}$$

Where $\text{CR}_{i,t-1}$ is the proxy of customer relationships for bank i in period t-1.

More importantly, brands and customer relationships tend to be closely related to each other (Gupta and Zeithaml, 2006), and they may have joint effect on firm performance, as proposed by H_{4c}. Model 4.1 is extended by adding the customer relationship metric as an explanatory variable in order to test H_{4c}:

$$\text{ROA}_{i,t} = \beta_0 + \beta_1 \text{ADMA\%}_{i,t-1} + \beta_2 \text{IAA\%}_{i,t-1} + \beta_3 \text{LNAGE}_{i,t-1} + \beta_4 \text{LNB}_{i,t-1}$$
$$+ \beta_5 \text{CR}_{i,t-1} + \varepsilon_{i,t} \qquad \text{(Model 4.3)}$$

6.5.2.3 Hypothesis 5

Hypotheses 3 and 4 are proposed to investigate the individual effects of human capital and relational capital on bank performance respectively. As mentioned in section 5.3.3.3 of chapter five, some previous studies show that the combination of intangible elements tends to make greater contribution than they do separately (e.g., Nagar and Rajan, 2005; Reed et al., 2009, among others). Therefore, hypothesis 5 postulates that the combination of human capital and relational capital will have positive joint impacts on bank performance, and the following models are specified to test H_5:

$$\text{ROA}_{i,t} = \beta_0 + \beta_1 \text{LNCEOEX}_{i,t-1} + \beta_2 \text{LNCEOP}_{i,t-1} + \beta_3 \text{CEOED}_{i,t-1} + \beta_4 \text{LNSC}_{i,t-1}$$
$$+ \beta_5 \text{LNEPB}_{i,t-1} + \beta_6 \text{ADMA\%}_{i,t-1} + \beta_7 \text{IAA\%}_{i,t-1} + \beta_8 \text{LNAGE}_{i,t-1}$$
$$+ \beta_9 \text{LNB}_{i,t-1} + \beta_{10} \text{CR}_{i,t-1} + \varepsilon_{i,t} \qquad \text{(Model 5.1)}$$
$$\text{ROA}_{i,t} = \beta_0 + \beta_1 \text{CEOIN}_{i,t-1} + \beta_2 \text{CEOED}_{i,t-1} + \beta_3 \text{LNSC}_{i,t-1} + \beta_4 \text{LNEPB}_{i,t-1}$$
$$+ \beta_5 \text{ADMA\%}_{i,t-1} + \beta_6 \text{IAA\%}_{i,t-1} + \beta_7 \text{LNAGE}_{i,t-1} + \beta_8 \text{LNB}_{i,t-1}$$
$$+ \beta_9 \text{CR}_{i,t-1} + \varepsilon_{i,t} \qquad \text{(Model 5.2)}$$

It should be pointed out that there might be potential multicollinearity problems present in the above two models, as the combination of human capital and brand metrics has an overall significant effect on the customer relationship, as has been shown in section 6.4.2. Therefore, both Models 5.1 and 5.2 are revised by dropping CR% from the regressors:

$$ROA_{i,t} = \beta_0 + \beta_1 LNCEOEX_{i,t-1} + \beta_2\, LNCEOP_{i,t-1} + \beta_3\, CEOED_{i,t-1} + \beta_4 LNSC_{i,t-1}$$
$$+ \beta_5\, LNEPB_{i,t-1} + \beta_6 ADMA\%_{i,t-1} + \beta_7 IAA\%_{i,t-1} + \beta_8 LNAGE_{i,t-1}$$
$$+ \beta_9\, LNB_{i,t-1} + \varepsilon_{i,t} \qquad\qquad\qquad \text{(Model 5.3)}$$

$$ROA_{i,t} = \beta_0 + \beta_1 CEOIN_{i,t-1} + \beta_2\, CEOED_{i,t-1} + \beta_3 LNSC_{i,t-1} + \beta_4\, LNEPB_{i,t-1}$$
$$+ \beta_5 ADMA\%_{i,t-1} + \beta_6\, IAA\%_{i,t-1} + \beta_7 LNAGE_{i,t-1} + \beta_8 LNB_{i,t-1} + \varepsilon_{i,t}$$
$$\text{(Model 5.4)}$$

The models discussed so far only take account of the impacts of intangible elements. However, some other factors may also influence bank performance, including both country-specific characteristics such as geographical location and firm-specific characteristics such as bank size and risk (e.g., Beccalli, 2007; Cornett and Tehranian, 1992; Fiordelisi and Molyneux, 2010). As has been introduced in section 5.2.3.2 of chapter five, the final sample consists of 178 bank-year observations across 17 countries. Given the small size of the sample in the present study, it is difficult to control for country effects in the regression models. Therefore, only firm-specific characteristics are taken into consideration. In order to keep the number of regressors as low as possible, and considering previous literature and interview experience, the main control variables used in this study are as follows:

- Bank type (BTYPE);
- Bank size (LNASSETS);
- Year dummies (YD07, YD06).

The rationale for selecting these three control variables is based on the following considerations. Firstly, both the extant literature and the researcher's interview experience suggest that the impacts of intangible elements on bank performance vary across different types of banks (for detailed discussion, refer to section 5.2.3.1 of chapter five). As a result, it is desirable to control for bank type when investigating which factors determine bank performance. Secondly, many previous studies argue that bank size appears to be an important driver of bank performance (e.g., Delery and Doty, 1996; Fiordelisi and Molyneux, 2010; Frei et al., 1999; Richard and Johnson, 2001; Reed et al., 2006, 2009). In this study, bank size is measured by the natural logarithm of a bank's total assets, which is

commonly used in the literature. It should be pointed out that the effect of bank size on financial performance is ambiguous. For example, Fiordelisi and Molyneux (2010) show that bank asset size has a significantly positive effect on bank operating profits, whereas Frei et al. (1999) find no significant relations between bank assets and ROA. Finally, year dummies are also included as control variables, since bank performance may change along with different economic environments. Previous studies have found that bank performance tends to be inconsistent over time (e.g., Fiordelisi and Molyneux, 2010). During the study period, a global financial crisis occurred in 2007, and this appears to have a significant influence on the sample banks' financial performance, as has been shown in section 6.2.3. Therefore, the time effect is taken into consideration.

In controlling for the above factors, Models5.3 and 5.4 are then revised as follows:

$$\begin{aligned}
ROA_{i,t} = {} & \beta_0 + \beta_1 LNCEOEX_{i,t-1} + \beta_2\, LNCEOP_{i,t-1} + \beta_3\, CEOED_{i,t-1} + \beta_4 LNSC_{i,t-1} \\
& + \beta_5\, LNEPB_{i,t-1} + \beta_6 ADMA\%_{i,t-1} + \beta_7 IAA\%_{i,t-1} + \beta_8 LNAGE_{i,t-1} \\
& + \beta_9\, LNB_{i,t-1} + \beta_{10} BTYPE_{i,t-1} + \beta_{11} YD07_{i,t-1} + \beta_{12} YD06_{i,t-1} \\
& + \beta_{13} LNASSETS_{i,t-1} + \varepsilon_{i,t}
\end{aligned}$$

$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\text{(Model 5.5)}$$

$$\begin{aligned}
ROA_{i,t} = {} & \beta_0 + \beta_1 CEOIN_{i,t-1} + \beta_2\, CEOED_{i,t-1} + \beta_3 LNSC_{i,t-1} + \beta_4\, LNEPB_{i,t-1} \\
& + \beta_5 ADMA\%_{i,t-1} + \beta_6\, IAA\%_{i,t-1} + \beta_7 LNAGE_{i,t-1} + \beta_8 LNB_{i,t-1} \\
& + \beta_9 BTYPE_{i,t-1} + \beta_{10} YD07_{i,t-1} + \beta_{11} YD06_{i,t-1} + \beta_{12} LNASSETS_{i,t-1} + \varepsilon_{i,t}
\end{aligned}$$

$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\text{(Model 5.6)}$$

Where $BTYPE_{i,t-1}$ is a dummy variable that takes a value of "1" if bank *i* earns at least 50% of its net interest income from retail banking activities in period *t-1*, zero otherwise; YD07 and YD06 are year dummies; and $LNASSETS_{i,t-1}$ is the natural logarithm of total assets for bank *i* in period *t-1*.

6.5.3 Empirical results

Section 6.5.2 has introduced how various models were built to test hypotheses 3, 4, and 5. In this section, empirical results of those models are reported.

Recall that there are outliers present in the variable of customer relationships (CR%), as has been discussed in section 6.3.2. Moreover, the descriptive statistics for the financial performance variable shows that there are extreme values in ROA as well. As can be seen from Panel A of Table 6.3, ROA spreads over a quite wide range, with a minimum value of -4.2% and a maximum value of 2.105%. Although the extreme values in these variables

seem to be economically reasonable, the presence of outliers may bias the estimated OLS results. The potential influence of outliers appears to be even more serious in the current study because of the small sample size. In order to assess to what extant the empirical results are affected by these extreme observations in the values of dependent and independent variables, the following analyses are carried out. Firstly, the dependent variable ROA is winsorized at the 5% and 95% levels. Then OLS regressions are conducted based on the winsorized ROA and the original ROA respectively, and similar results are obtained[124]. Secondly, in order to further check the stability of results, for Models 3.5, 5.4, and 5.8, OLS regression technique is primarily employed, and then rank regression technique is applied. The comparisons of OLS and rank regression results will be discussed in section 6.5.4.

Table 6.11 reports the estimated OLS results for the models based on the original ROA. Specifically, Panel A presents the empirical results for models used to test Hypothesis 3; Panel B reports the results for models that are specified to test Hypothesis 4; and Panel C shows the findings from models that are constructed to test hypothesis 5. It should be noted that, for the purpose of comparison, Panel C of the table also presents the OLS regression results for two revised models that intend to check the multicollinearity problem in Models 5.5 and 5.6, and will also be referred to in section 6.5.4.

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[124] For brevity purposes, only the empirical results for regressions that are based on the original ROA are reported here, while models based on winsorized ROA are presented in Appendix 2. Overall, the signs of coefficients on all regressors remain the same after winsorization, with the exception of CEOs' past managerial experience (LNCEOP) in Model 3.4 and Model 5.7 and general and administrative expenditures (ADMA%) in Model 5.5. However, the significance of coefficients on some variables has changed. For example, the coefficient on ADMA% was insignificant in Model 5.1, 5.2, and 5.3 based on original ROA, but turns to be significant in these three models when using winsorized ROA.

Table 6.11: **Regressions of bank performance on intangible elements and control variables (dependent variable: ROA)**

Panel A: Regressions of bank performance on human capital variables

	Model 3.1	Model 3.2	Model 3.3	Model 3.4	Model 3.5
Intercept	**1.203***	**0.887***	**2.339***	**3.147***	**3.050***
	(.000)	(.003)	(.000)	(.000)	(.000)
LNCEOEX	0.057			0.121	
	(.502)			(.226)	
LNCEOP	-0.030			-0.014	
	(.659)			(.857)	
CEOIN		**0.015**			**0.014***
		(.019)			(.077)
CEOED	**-0.191***	**-0.175***		**-0.189***	**-0.125***
	(.001)	(.003)		(.004)	(.054)
LNSC			**-0.644**	**-0.706**	**-0.791***
			(.016)	(.012)	(.005)
LNEPB			-0.211	**-0.291***	**-0.324**
			(.105)	(.050)	(.049)
Adj. R^2	0.058	0.112	0.054	0.148	0.172
Sig. F	0.009***	0.000***	0.012**	0.001***	0.000***
N	146	137	126	104	103

Notes: *P*-values are in parentheses. *, **, and *** indicate two-tailed significance at 10%, 5%, and 1% respectively. The variables are as defined in sections 6.2.1 and 6.2.3.

Panel B: Regressions of bank performance on relational capital variables

	Model 4.1	Model 4.2	Model.4.3
Intercept	-0.173	**0.469***	-0.545
	(.835)	(.000)	(.532)
ADMA%	**0.745***		**0.790***
	(.066)		(.052)
IAA%	-0.051		-0.105
	(.560)		(.279)
LNAGE	-0.114		-0.089
	(.370)		(.486)
LNB	**0.141***		**0.157**
	(0.051)		(.031)
CR%		**0.010***	0.010
		(.070)	(.179)
Adj. R^2	0.016	0.013	0.023
Sig. F	0.207	0.070*	0.173
N	123	178	123

Notes: *P*-values are in parentheses. *, **, and *** indicate two-tailed significance at 10%, 5%, and 1% respectively. The variables are as defined in sections 6.2.2 and 6.2.3.

Panel C: Regressions of bank performance on human capital, relational capital, and control variables

	Model 5.1	Model 5.2	Model 5.3	Model 5.4	Model 5.5	Model 5.6	Model 5.7	Model 5.8
Intercept	1.658	1.253	**1.911***	1.493	**2.651***	**2.845****	0.870	1.276
	(.145)	(.291)	(.065)	(.169)	(.063)	(.036)	(.442)	(.281)
LNCEOEX	0.063		0.077		**0.251****		**0.287****	
	(.565)		(.467)		(.031)		(.015)	
LNCEOP	-0.055		-0.060		0.050		-0.022	
	(.542)		(.504)		(.627)		(.822)	
CEOIN		**0.014***		**0.015***		**0.023*****		**0.020****
		(.084)		(.073)		(.006)		(.020)
CEOED	**-0.193*****	**-0.121***	**-0.199*****	**-0.123***	**-0.177****	-0.095	**-0.159****	-0.067
	(.005)	(.063)	(.004)	(.059)	(.012)	(.163)	(.026)	(.328)
LNSC	**-0.693****	**-0.781****	**-0.730****	**-0.841*****	0.501	0.285	-0.265	-0.584
	(.034)	(0.024)	(.022)	(.009)	(.353)	(.592)	(.502)	(.132)
LNEPB	-0.254	-0.294	-0.257	**-0.296***	0.672	0.705	-0.213	**-0.336***
	(.117)	(.103)	(.110)	(.099)	(.151)	(.154)	(.215)	(.090)
ADMA%	0.559	0.502	0.503	0.439	-0.822	-1.173	0.662	0.385
	(.223)	(.280)	(.258)	(.324)	(.349)	(.164)	(.187)	(.450)
IAA%	-0.062	-0.103	-0.038	-0.090	0.011	0.015	0.087	0.076
	(.540)	(.429)	(.674)	(.480)	(.922)	(.910)	(.404)	(.567)
LNAGE	0.003	0.030	-0.003	0.029	-0.084	-0.057	-0.104	-0.055
	(.982)	(.835)	(0.983)	(.840)	(.538)	(.679)	(.457)	(.699)
LNB	0.164	**0.179***	0.154	**0.173***	**1.003****	**1.113*****	0.159	**0.178***
	(.103)	(.062)	(.118)	(.068)	(.022)	(.009)	(.161)	(.089)
CR%	0.004	0.004						
	(.592)	(.613)						
BTYPE					-0.092	-0.053	0.082	0.128
					(.677)	(.806)	(.694)	(.538)
LNASSETS					**-0.899****	**-0.983****		
					(.044)	(.024)		
YD07					**-0.865*****	**-0.852*****	**-0.917*****	**-0.927*****
					(.000)	(.000)	(.000)	(.000)
YD06					-0.045	-0.062	-0.070	-0.109
					(.832)	(.770)	(.665)	(.613)
Adj. R^2	0.135	0.167	0.141	0.174	0.343	0.356	0.313	0.317
Sig. F	0.008***	0.002***	0.005***	0.001***	0.000***	0.000***	0.000***	0.000***
N	104	103	104	103	83	83	83	83

Notes: *P*-values are in parentheses. *, **, and *** indicate two-tailed significance at 10%, 5%, and 1% respectively. The variables are as defined in sections 6.2.1, 6.2.2, and 6.2.3.

It can be seen from Panel A that all the models listed in the table are overall statistically significant, suggesting that top management HC or employee level HC alone can affect bank performance, and so do the combination of them. The adjusted R^2 for Model 3.3 is quite low (5.4%), suggesting that employee level HC alone can only explain 5.4% of the variations in the sample banks' financial performance. Likewise, the adjusted R^2 for Model 3.1 appears to be relatively low as well, only at 5.8%, indicating that top management level HC individually has a small influence on bank performance. However, the explanatory power shows a significant improvement when they are combined together, increasing to 14.8% in Model 3.4, confirming the resource integration hypothesis of the RBV. Moreover, when CEOs' industry-specific experience (CEOIN) is adopted as explanatory variable instead of CEOs' firm-specific experience (LNCEOEX) and past managerial experience (LNCEOP) that are used in Models 3.1 and 3.4, similar results have been obtained. Compared with Model 3.2 which investigates the individual impact of top management HC, the explanatory power for Model 3.5 increases by 6 percentage points, from 11.2% in Model 3.2 to 17.2% in Model 3.5. This further confirms that the combination of top management HC and employee level HC can better explain the level of bank performance than when they are viewed in isolation.

It is noted that the coefficient of CEOs' education level (CEOED) is statistically significant at the 1% level in Model 3.1, and remains significant in the other three models as well. However, the sign of the coefficient is opposite to the researcher's prediction, which assumes that managers with more advanced education background should be associated with better bank performance. This may have two possible interpretations. Firstly, although human capital has positive effects, it represents costs to firms as well (Hitt et al., 2001). Generally speaking, firms can be expected to have to pay higher salary to managers who have higher level of education than those who are less educated[125]. In Hitt et al.'s (2001) study, they find a curvilinear relationship between partners' human capital and performance of professional service firms. That is, the effect of human capital on firm performance is initially negative in the partners' tenure but turns positive at higher levels of tenure. In addition, this may be due to the education versus experience trade-off. That is, for managers at the same age, the more times they have spent on education, the less time they have had for obtaining relevant working experience. Therefore, it is not so surprising

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[125] The US Bureau of Labor Statistics data shows that the average weekly earnings for people with high level of education are higher than that for people with low level of education in 2010 (source: Bureau of Labor Statistics, Current Population Survey, available at: http://www.bls.gov/emp/ep_chart_001.htm).

to find a negative association between CEOED and bank performance versus a positive association between CEOIN and bank performance (row 5, Panel A of table 6.11).

Turning to the coefficients on the other explanatory variables, it is noted that, the coefficient on staff costs (LNSC) has an unexpected sign (negative) and appears to be statistically significant in all the models where it acts as a regressor. This is inconsistent with some previous studies that have been discussed in section 6.5.2.1 (e.g., Fey et al., 2000). Possible interpretation for this may be that, for the sample banks, high staff costs may represent a cost inefficiency rather than better employee level HC. Unexpected association is also found in the variable of service quality that is captured by the number of employees per branch (LNEPB), which tends to be negatively related to bank performance. This may be due to the ambiguous definition of the proxy. On the one hand, a large number of bank branch employees can shorten customer waiting time, and hence can be seen as an indicator of better service quality. On the other hand, it represents a high cost to banks as well.   It is remarkable that the coefficient of LNEPB is not significant in any reasonable level in Model 3.3, but becomes statistically significant when top management HC and employee level HC metrics are combined together as explanatory variables in Models 3.4 and 3.5. This suggests that service quality that is captured by employee number per branch can explain significantly banks' financial performance only when it is in conjunction with both employee level HC and top management level HC variables. One possible interpretation for this may be that only high quality of managers and employees can get the branch benefit.

An important finding from Panel A of Table 6.11 is that the coefficient of CEOIN is statistically significant in Models 3.2 and 3.5, whereas the coefficients of LNCEOEX and LNCEOP are not significant at any reasonable level at all (Models 3.1 and 3.4). This suggests that rather than CEOs' firm-specific experience and general managerial experience, CEOs' industry-specific experience appears to be an important factor in determining the sample banks' performance. Moreover, the explanatory power of Model 3.5 appears to be higher than that of Model 3.4, indicating that as proxies of top management HC, CEOs' industry-specific experience can better characterize the level of bank performance than CEOs' firm-specific experience and past managerial experience. This is in line with some interviewee's suggestions, as discussed in section 5.2.2.1 of chapter five.

Panel B of Table 6.11 reports the empirical results for Models 4.1 to 4.3. The F-statistics

for Models 4.1 and 4.3 are not significant at any reasonable level, suggesting that we cannot reach the conclusion that brand metrics can jointly explain the variations in the sample banks' financial performance, and so do the combination of brand and customer relationship metrics. The results of Model 4.2 shows that the customer relationship alone, as proxied by growth in customer loans and deposits, has a significant influence on ROA, even though the explanatory power of it is very low, at only 1.3%. For the coefficients on individual explanatory variables, as expected, general and administrative expenditures (ADMA%) and number of branches (LNB) appear to have significant and positive impacts on ROA, while the accounting number of goodwill and other intangible assets (IAA%) and bank age (LNAGE) have insignificant and negative coefficients, which tend to be opposite to the expectations.

Turning to the regressions of bank performance on the combination of human capital and relational capital metrics, as shown in Panel C of Table 6.11, the F-value for all the models are highly significant, suggesting that the explanatory variables in those models can jointly explain variations in ROA. Note that after using CEOs' industry-specific experience (CEOIN) instead of CEOs' firm-specific experience (LNCEOEX) and past managerial experience (LNCEOP), the explanatory power increases, from 13.5% in Model 5.1 up to 16.7% in Model 5.2. Similar findings are observed from Model 5.4 versus Model 5.3, as well as Model 5.6 versus Model 5.5. Additionally, the coefficient of CEOIN retains its statistical significance in all the specified models where it is used as an independent variable, whereas LNCEOEX and LNCEOP tend to be statistically insignificant in most instances[126]. These results further confirm that CEOs' industry-specific experience explain a larger proportion of the variation in banks' financial performance than do the combination of their firm-specific experience (LNCEOEX) and past managerial experience (LNCEOP) for the pooled sample. Therefore, discussions below will focus on Models 5.2, 5.4, and 5.6 where CEOIN is included rather than LNCEOEX and LNCEOP.

Panel C of Table 6.11 shows that the change in adjusted R^2 is substantial from 16.7% in column 3 to 35.6% in column 7. Note that when the customer relationship variable (CR%) that is captured by growth in customer loans and deposits is removed from the model, the adjusted R^2 rises slightly, from 16.7% in Model 5.2 to 17.4% in Model 5.4. It shows that the contribution of the customer relationship variable to the fit of the regression cannot

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[126] Only in Model 5.5, the coefficient of LNCEOEX is significant at the 5% level, but LNCEOP is not significant in any of the models.

offset the correction for the loss of degrees of freedom when adding it into the regressors (Greene, 2008:36). Further, it is noted that the adjusted R^2 for Model 5.4 (Panel C of Table 6.11) and Model 3.5 (Panel A of Table 6.11) are almost the same, indicating that the inclusion of brand metrics do not improve the fit of the regression to the sample data. By comparison, when control variables, such as year dummies, bank type and size, are added into the model, there is more than a doubling in the explanatory power, from 17.4% in Model 5.4 to 35.6% in Model 5.6.

With regard to the coefficients on individual independent variables, column 5 of Panel C shows that, consistent with the results of Model 3.5, CEOs' education level (CEOED), staff costs (LNSC), and the number of employees per branch (LNEPB) have significant and negative relationships with ROA, and their coefficients change very slightly. The coefficient on CEOs' industry-specific experience (CEOIN) remains significant and positive, compared with that in Model 3.5. On the other hand, except for branch number (LNB), the coefficients on other brand metrics, namely general and administrative expenditures (ADMA%), accounting number of intangible assets (IAA%), and bank age (LNAGE) are statistically insignificant, showing that there are no significant relationships between them and bank performance. Similar to the findings in Models 4.1 and 4.3, and as expected, branch number (LNB) has a significant positive impact on ROA, suggesting that banks with a larger number of branches are more likely to be the ones that have better financial performance. It should be noted that, previous empirical evidence on branch network-bank performance tends to be ambiguous, as branch expansion can increase cost for banks, and may lead to decrease in profitability (Hirtle and Stiroh, 2007; Hirtle, 2007). Hirtle and Stiroh (2007) examine how different emphases on retail banking intensity, such as the number of branches, affect risk and return in the U.S. They find that branch network has a significant and negative effect on bank ROE. In Hirtle's (2007) study, however, little relationship between branch network size and overall bank performance has been found in the U.S banking sector.

Finally, columns 6 and 7 of Panel C present the results for models that include control variables, namely bank type, year dummies, and bank size. It can be seen from column 7 that with the inclusion of control variables, the explanatory power increases dramatically, from 17.4% in Model 5.4 up to 35.6% in Model 5.6. This suggests that year dummies, bank size and bank type contribute largely to the fit of the regression into the sample data. In particular, the coefficient on YD07 is highly significant and negative, indicating that the

financial performance for the sample banks tends to be worse in 2008 than that in the years 2007 and 2006. It is an unsurprising result due to the financial crisis, as discussed before. However, inconsistent with Fiordelisi and Molyneux's (2010) finding, bank size (LNASSETS) appears to have a significant negative influence on bank financial performance in the current study. With regard to the control variable of bank type, it has a statistically insignificant coefficient, indicating that there may be no difference in the change of bank performance between the two groups of banks.

Moreover, with the exceptions of CEOs' industry-specific experience (CEOIN), CEOs' education level (CEOED), and branch number (LNB), the signs of coefficients on other intangible metrics have changed. Specifically, the coefficients on staff costs (LNSC) and the number of employees per branch (LNEPB), which were significant and negative in Model 5.4, are now statistically insignificant and positive, whereas the coefficients on three brand variables – general and administrative expenditures (ADMA%), accounting number of intangible assets (IAA%), and bank age (LNAGE) – remain insignificant, but the signs of them change to be opposite. These sensitivities may be due to omitted variables bias caused by the exclusion of the control variables in Model 5.4. On the other hand, it may also be due be potential problems within Model 5.6, such as multicollinearity. For example, bank size is likely to be related to bank branch network (Hirtle and Stiroh, 2007). Therefore, further robustness tests are conducted and the results will be discussed in the following section.

In summary, the above results shows that the combination of human capital for the overall workforce and the quality of service employees provided to customers, as well as top management human capital, can explain at least 17% the variation in bank financial performance (ROA) for the sample banks. Specifically, CEOs' industry-specific experience is likely to be positively associated with ROA, while their education level tends to affect ROA negatively. Staff costs and employee number per branch, have negative impacts on ROA. On the other hand, the overall effects of brand proxies on bank performance appear to be not statistically significant, although some individual variables, such as branch number (LNB), have significant coefficients. Moreover, when combining all the intangible metrics together, the significance of coefficients on human capital variables tends to be unchanged. It is remarkable that the effect of employee number per branch on ROA appears to be significant when top management human capital metric are included in the model, otherwise it has an insignificant coefficient. Another interesting finding is that

CEOs' industry-specific experience is likely to better explain the variation in financial performance for the sample banks than CEOs' firm-specific experience and past managerial experience.

6.5.4 Robustness tests

The first step of robustness test is to check if multicollinearity tends to be a serious problem in the specified models. Table 6.12 presents the Pearson correlations among dependent and independent variables in the above models. It can be seen that the correlations among the majority of the variables are relatively low, except for the control variable of bank size (LNASSETS). LNASSETS tends to be significantly correlated with many other variables, such as LNSC, LNEPB, ADMA%, IAA%, LNAGE, and LNB. Specifically, LNASSETS is highly correlated with LNB (0.876), indicating that bigger banks tend to have a larger-scale branch network than smaller banks. In order to further test whether there is a multicollinearity problem, additional statistical analyses, such as Tolerance statistics (TOL) and variance inflation factor (VIF) are conducted, and the results also suggest that the variable of LNASSETS is likely to correlate highly with some other regressors. For example, in Model 5.6, both LNASSETS and LNB have TOL values close to zero (at 0.016 and 0.030 respectively), and their VIF statistics are both more than the critical value of "10" (at 62.352 and 33.128 respectively)[127].

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[127] For other variables, none of the VIF statistics is above "10", and their TOL statistic analysis results suggest that the collinearity among them appears not to be serious (for brevity reasons, detailed results for other variables are not presented here).

Table 6.12: Pearson correlations among variables

	LNCEOEX	LNCEOP	CEOIN	CEOED	LNSC	LNEPB	ADMA%	IAA%	LNAGE	LNB	CS%	ROA%	BTYPE	YD07	YD06
LNCEOP	.004														
CEOIN	**.194***	**.303*****													
CEOED	.037	**-.217***	**-.453*****												
LNSC	**-.202***	-.091	.125	-.135											
LNEPB	-.149	.030	**-.278****	.021	-.147										
ADMA%	-.020	.018	**.213***	-.163	-.056	**-.285****									
IAA%	.130	**.404*****	-.077	.021	**-.196***	**.276****	-.065								
LNAGE	.050	.129	.086	-.077	**.406*****	**.282****	-.150	**.332*****							
LNB	.168	**.380*****	-.042	.142	.163	**.222****	**-.366*****	**.492*****	**.428*****						
CS%	**.359*****	-.003	.051	.021	**-.384*****	.038	-.156	**.210***	-.096	-.007					
ROA%	**.261****	.114	**.294*****	**-.198***	-.130	-.183	**.201***	.066	-.047	.103	.091				
BTYPE	-.025	-.002	-.062	.001	-.077	.068	**.301*****	.020	-.066	-.155	**-.221****	.047			
YD07	.078	.061	-.017	.035	.028	-.022	-.100	.138	-.002	.017	.149	**-.454*****	-.023		
YD06	-.083	-.084	-.083	.065	.004	-.008	-.024	-.033	-.018	-.036	-.083	.177	.021	**-.553*****	
LNASSETS	.015	**.292*****	-.118	.085	**.257****	**.544*****	**-.597*****	**.392*****	**.500*****	**.876*****	-.023	-.090	**-.219***	.042	-.024

Notes: *, **, and *** indicate two-tailed significance at 10%, 5%, and 1% respectively. The variables are as defined in section 6.2.

The above statistical analyses suggest that there may be serious multicollinearity problems existing in Models 5.5 and 5.6. This may be the possible reason why the estimated coefficients on some regressors are unstable and change from Model 5.4 to Model 5.6, as has been discussed in the previous section. Therefore, LNASSETS is excluded from the two models, and the revised models are as follows:

$$ROA_{i,t} = \beta_0 + \beta_1 LNCEOEX_{i,t-1} + \beta_2\ LNCEOP_{i,t-1} + \beta_3\ CEOED_{i,t-1} + \beta_4 LNSC_{i,t-1}$$
$$+ \beta_5\ LNEPB_{i,t-1} + \beta_6 ADMA\%_{i,t-1} + \beta_7 IAA\%_{i,t-1} + \beta_8 LNAGE_{i,t-1}$$
$$+ \beta_9\ LNB_{i,t-1} + \beta_{10} BTYPE_{i,t-1} + \beta_{11} YD07_{i,t-1} + \beta_{12} YD06_{i,t-1} + \varepsilon_{i,t}$$

(Model 5.7)

$$ROA_{i,t} = \beta_0 + \beta_1 CEOIN_{i,t-1} + \beta_2\ CEOED_{i,t-1} + \beta_3 LNSC_{i,t-1} + \beta_4\ LNEPB_{i,t-1}$$
$$+ \beta_5 ADMA\%_{i,t-1} + \beta_6\ IAA\%_{i,t-1} + \beta_7 LNAGE_{i,t-1} + \beta_8 LNB_{i,t-1}$$
$$+ \beta_9 BTYPE_{i,t-1} + \beta_{10} YD07_{i,t-1} + \beta_{11} YD06_{i,t-1} + \varepsilon_{i,t}$$ (Model 5.8)

Estimated results for Models 5.7 and 5.8 are reported in the last two columns of Panel C of Table 6.11 (see section 6.5.3). It can be seen that the exclusion of LNASSETS results in a slight decrease in the adjusted R^2, from 35.6% in Model 5.6 to 31.7% in Model 5.8. However, compared with Model 5.4, there is still a significant improvement in explanatory power. This may suggest that the increase in explanatory power is largely attributable to the inclusion of year dummies or bank type rather than bank size. Compared with Model 5.4, with the exceptions of accounting number of intangible assets (IAA%) and bank age (LNAGE), the signs of all other coefficients remain unchanged. The sign of the coefficient on IAA% that was negative in Model 5.4 tends to be positive in Model 5.8, while the sign of coefficient on LNAGE changes to be negative, which was positive in Model 5.4, although neither of them are statistically significant. Moreover, the coefficients on CEOs' industry-specific experience (CEOIN), employee number per branch (LNEPB), and branch number (LNB) continue to be significant in Model 5.8, indicating that the impacts of them on bank financial performance are robust.

In addition, Durbin-Watson (DW) tests are conducted for all the models that discussed above to check the autocorrelation problem. It is found that the DW statistics are generally close to or above "1.5", indicating that there is no serious autocorrelation present.

Finally, Models 3.5, 5.4 and 5.8 are re-estimated by running the following rank-based regressions:

$$Rank\_ROA_{i,t} = \beta_0 + \beta_1 Rank\_CEOIN_{i,t-1} + \beta_2 Rank\_CEOED_{i,t-1}$$

$$+ \beta_3 \text{Rank\_LNSC}_{i,t\text{-}1} + \beta_4 \text{Rank\_LNEPB}_{i,t\text{-}1} + \varepsilon_{i,t} \qquad \text{(Model 3.6)}$$

$$\text{Rank\_ROA}_{i,t} = \beta_0 + \beta_1 \text{Rank\_CEOIN}_{i,t\text{-}1} + \beta_2 \text{Rank\_CEOED}_{i,t\text{-}1}$$
$$+ \beta_3 \text{Rank\_LNSC}_{i,t\text{-}1} + \beta_4 \text{Rank\_LNEPB}_{i,t\text{-}1} + \beta_5 \text{Rank\_ADMA\%}_{i,t\text{-}1}$$
$$+ \beta_6 \text{Rank\_IAA\%}_{i,t\text{-}1} + \beta_7 \text{Rank\_LNAGE}_{i,t\text{-}1} + \beta_8 \text{Rank\_LNB}_{i,t\text{-}1}$$
$$+ \varepsilon_{i,t} \qquad \text{(Model 5.9)}$$

$$\text{Rank\_ROA}_{i,t} = \beta_0 + \beta_1 \text{Rank\_CEOIN}_{i,t\text{-}1} + \beta_2 \text{Rank\_CEOED}_{i,t\text{-}1}$$
$$+ \beta_3 \text{Rank\_LNSC}_{i,t\text{-}1} + \beta_4 \text{Rank\_LNEPB}_{i,t\text{-}1} + \beta_5 \text{Rank\_ADMA\%}_{i,t\text{-}1}$$
$$+ \beta_6 \text{Rank\_IAA\%}_{i,t\text{-}1} + \beta_7 \text{Rank\_LNAGE}_{i,t\text{-}1} + \beta_8 \text{Rank\_LNB}_{i,t\text{-}1}$$
$$+ \beta_9 \text{BTYPE}_{i,t\text{-}1} + \beta_{10} \text{YD07}_{i,t\text{-}1} + \beta_{11} \text{YD06}_{i,t\text{-}1} + \varepsilon_{i,t} \qquad \text{(Model 5.10)}$$

Table 6.13: Results of rank regressions for Models 3.6, 5.9 and 5.10

	OLS Model 3.5	Rank Model 3.6	OLS Model 5.4	Rank Model 5.9	OLS Model 5.8	Rank Model 5.10
Intercept	**3.050*****	**148.617*****	1.493	**108.224*****	1.276	**92.667*****
	(.000)	(.000)	(.169)	(.000)	(.281)	(.001)
CEOIN	**0.014***	0.104	**0.015***	0.110	**0.020****	0.181
	(.077)	(.374)	(.073)	(.353)	(.020)	(.103)
CEOED	**-0.125***	**-0.185***	**-0.123***	-0.182	-0.067	-0.010
	(.054)	(.097)	(.059)	(.107)	(.328)	(.924)
LNSC	**-0.791*****	**-0.370*****	**-0.841*****	**-0.330*****	-0.584	**-0.232****
	(.005)	(.000)	(.009)	(.001)	(.132)	(.025)
LNEPB	**-0.324****	**-0.272****	**-0.296***	-0.247	**-0.336***	-0.249
	(.049)	(.043)	(.099)	(.113)	(.090)	(.110)
ADMA%			0.439	**0.197***	0.385	0.181
			(.324)	(.071)	(.450)	(.109)
IAA%			-0.090	0.154	0.076	0.191
			(.480)	(.653)	(.567)	(.108)
LNAGE			0.029	0.030	-0.055	0.063
			(.840)	(.803)	(.699)	(.571)
LNB			**0.173***	0.125	**0.178***	0.002
			(.068)	(.524)	(.089)	(.993)
BTYPE					0.128	9.480
					(.538)	(.371)
YD07					**-0.927*****	**-64.994*****
					(.000)	(.000)
YD06					-0.109	**-18.659***
					(.613)	(.084)

Notes: *P*-values are in parentheses. *, **, and *** indicate two-tailed significance at 10%, 5%, and 1% respectively. The variables are as defined in section 6.2.

Table 6.13 reports the estimated results for Models 3.6, 5.9, and 5.10. For the purpose of comparison, estimated OLS results for Models 3.5, 5.4, and 5.8 are also listed. It can be seen that the estimated signs of the rank-based coefficients in Model 3.6 are similar to those of the OLS results in Model 3.5. In addition, with the exception of CEOs' industry-specific experience (CEOIN), the statistical significance of the coefficients on all other explanatory variables is also similar. The coefficient on CEOIN that is significant at 10% level in the OLS model, however, is not significant in the rank-based regression, suggesting that the estimated coefficient on CEOIN tends to be unreliable.

Comparing OLS Model 5.4 and the rank-based regression Model 5.9, it is found that the signs of the coefficients on explanatory variables appear to be unchanged, except for that of accounting number of intangible assets (IAA%). However, the coefficients on CEOs' industry-specific experience (CEOIN), CEOs' education level (CEOED), and branch number (LNB), which were significant in OLS regression (Model 5.4), are not significant in the rank-based regression (Model 5.9). On the contrary, the significance of the coefficient on staff costs (LNSC) retain unchanged, indicating that estimated negative association between staff costs and bank financial performance tends to be robust.

Likewise, comparing the results for Models 5.8 and 5.10, it is found that the signs of coefficients on the majority of variables remain the same, except for bank age (LNAGE). The coefficients on CEOIN, LNEPB, and LNB lose their significance in the rank-based regression, while dummy variable for year 2007 (YD07) is statistically significant in both OLS and rank-based regression.

The above results suggest that the estimated OLS regression results may not to be so robust. The positive relation between CEOs' firm-specific experience (CEOIN) and bank ROA tends to be not stable, as the significance of the coefficient on it is only found in OLS regression models. On the other hand, the estimated coefficient on staff costs (LNSC) appears to be robust. Because of the small sample size, the existence of outliers may impose a serious threat to the resulting estimates, and the finds that discussed in section 6.5.3 should be interpreted with caution.

6.6 Weaknesses of the quantitative study

Previous sections presented the empirical results of the quantitative study. It is apparent that the empirical results of the quantitative analysis only provide partial evidence to support the five hypotheses, and some estimated results appear not to be robust. This may be due to the weaknesses with model specification, intangible indicators used in the models, and the low level of data quality. This section highlights the main weaknesses of the quantitative method.

The first weakness of the quantitative study is related to sample size. As has been discussed in chapter five, there are a lot of missing values in the intangible variables used in the

quantitative analysis because of the low level of intangible disclosure in the public domain. In addition, the sample banks tended to disclose different pieces of information regarding the same intangible elements, and the lack of consistency in what they reported causes more data to be missing when combining different intangible variables together. As a result, the sample sizes for some models appear to be very small. For example, the number of observations for Model 2.5 is only 31, in which 9 independent variables are included. The small sample size may potential weaken the power of statistical tests and violate the underlying assumptions.

Secondly, the dependent variables used in the constructed models appear to be problematic. For hypotheses 1 and 2, the average number of loan and deposit growth rate is used to proxy customer relationships. However, this indicator may not reflect the real value of customer relationships in a bank, as the changes in customer loans and deposits may be influence by some other factors, such as economic growth or M&A activities. For hypotheses 3, 4 and 5, return on assets (ROA) is chosen to be the only performance measure. This indicator has its limitations, such as being historical in context and being sensitive to the choice of accounting methods. It would be better if future research could look at not only accounting-based performance measure but also market value measures of banks.

Thirdly, there are weaknesses with the choices of independent variables. In consideration of the small sample size, only three control variables are included in Models 5.5 to 5.8, namely bank type, bank size and year dummies (see section 6.5.2.3). However, previous literature finds that some traditional bank-specific variables (e.g., capital, credit risk, and financial leverage), industry-specific variables (e.g., industry concentration) and macroeconomic (e.g., inflation and GDP growth) variables are likely to have an impact on bank profitability or market value (e.g., Athanasoglou, 2008; Brissimis, 2008; Fiordelisi and Molyneux, 2010). Moreover, because of missing data problem, some indicators of intangible elements have to be eliminated from the constructed models, such as employee recruited and employee departures, although they are argued to be important factors in determining customer relationships or bank performance (e.g., Nagar and Rajan, 2005). The exclusion of those variables, therefore, may cause omitted variables problem in the applied models.

Fourthly, this study may suffer from potential endogeneity problem, that is, the potential

reverse causality present in the specified regression models, as has been discussed before. Although lagged models are used when investigating the intangibles-performance association, there is no guarantee that the lagged model can be free from the potential reverse causality. Therefore, the sensitivities in the results may suggest a potential misspecification problem in some formulated models. However, as Chenhall and Moers (2007: 192) argued, "at a practical level, it is unlikely that any single study is completely free of endogeneity issues and we therefore argue that the initial consideration should be sought in careful theory construction". As have been demonstrated in chapter five and the current chapter, all the hypotheses and models were developed on the basis of theoretical and empirical literature, as well as the researcher's interview experience, and they seemed to be reasonable.

Finally, apart form the problem with the indicator of customer relationships, proxies of other intangible elements may also be problematic in terms of capturing the nature of intangibles, as there are some unexpected relationships between them and bank performance observed. The weaknesses of those indicators will be further explored in the qualitative component of this thesis.

6.7 Discussions and conclusions

This chapter has two main objectives. Firstly, it discussed how various models were specified to test the hypotheses that were developed in chapter five. Secondly, it presented the empirical results for the testable models, and statistical analyses that were conducted to check the robustness of some main models.

Hypotheses 1 and 2 intended to explore the relationships between different elements of intangibles. Specifically, it was hypothesised that banks' customer relationships are affected by their human capital and brands. The hypotheses were tested by a set of regressions. At first, different brand metrics were used as regressors in three models whereby brand value (BVA%) acted as the only independent variable first; advertising and marketing expenditures (ADVA%) and bank age (LNAGE) were then added into the model; and finally branch number (LNB) was included. After that, the relationship between different levels of human capital and the customer relationship were examined by five models. The first model looked at the individual impact of top management HC on the customer relationship; the second model turned to testing if employee level HC influenced

the customer relationship; the third model investigated if the customer relationship was affected by the combination of two levels of human capital; the fourth model included a variable of service quality; and the fifth model combined human capital metrics and brand metrics as the explanatory variables.

The empirical results provided partial evidence in support of the two hypotheses. Overall, it was found that the combination of top management HC and employee level HC had a much higher explanatory power for explaining the variations in the banks' customer relationships that was proxied by growth in customer loans and deposits than the two levels of HC work individually. The empirical results showed, as expected, that high level of CEOs' firm-specific experience was likely to be associated with better customer relationships, either individually or in a collective setting. CEOs' past managerial experience exhibited a negative effect on the customer relationship, but such an effect was statistically significant only when human capital metrics were combined with the service quality variable. With regard to the employee level HC, contrary to the expectation, staff costs appeared to affect the customer relationship negatively, although such an impact tended to be not so stable. All the brand metrics, however, appeared to have no significant effects on customer relationships for the sample banks. The above results suggested that human capital that a bank had could affect its customer relationships. Specifically, CEOs' experiences as proxies of top management human capital tended to influence banks' customer relationships significantly. Their firm-specific managerial experience was likely to positively affect the customer relationship, while the managerial experience that they gained before entering the particular bank had a negative effect on the customer relationship. In addition, the findings showed that top management HC and employee level HC could affect the customer relationship both individually, and in a collective setting, and the latter increased the explanatory power substantially.

Hypotheses 3, 4, and 5 investigated whether or not different intangible elements affected bank financial performance (ROA). Among them, hypothesis 3 assumed that top management HC and employee level HC might affect ROA both individually and collectively, Hypothesis 4 aimed to check if there was a relationship between ROA and brands or/and the customer relationship, and Hypothesis 5 tested how the combination of human capital and relational capital impacted on ROA.

Similar to the finding of Hypotheses 1 and 2, it was found that the combination of different

intangible elements appeared to better explain the level of bank financial performance than when they were viewed in isolation, as shown by the adjusted R^2 for models used to test Hypotheses 3, 4, and 5. With reference to individual intangible elements, one important finding was that, as proxies of top management HC, CEOs' industry-specific experience was likely to better explain the variation in ROA than CEOs' firm-specific experience and past managerial experience, evident by both the significance of their coefficients and their contributions to improve the overall explanatory power for the models. It was found that CEOs' industry-specific experience appeared to have a significant positive influence on ROA wherever it acted as a regressor. On the other hand, CEOs' level of education tended to be negatively related to ROA, except for Model 5.6. In addition, the empirical results provided partial evidence on the negative association between staff costs and ROA, as well as the positive association between branch network and ROA.

It should be pointed out that part of the above empirical results appeared not to be so stable, as suggested by the robustness tests that were conducted to test the sensitivity of the main models. As discussed in previous sections, the statistically significant impacts of top management HC that were captured by CEOs' firm-specific and past managerial experiences (LNCEOEX and LNCEOP) on the customer relationship tended to be robust, while the estimated coefficient on staff costs (LNSC) in the regressions of customer relationships on LNSC appeared to be unstable. On the other hand, the regression of ROA on human capital and service quality variables seemed to be quite robust, except for the sensitivity of one explanatory variable – CEOs' industry-specific experience (CEOIN). However, when brand metrics and control variables were included as explanatory variable, the specified models were not robust anymore. It should be pointed out that the estimated positive relationship between CEOIN and ROA was only suggestive, as the coefficients on CEOIN that were statistically significant in all the OLS regressions turned to be insignificant in rank-based regression models.

The sensitivities may be due to the limitations and problems within the quantitative analyses, as has been discussed in section 6.6. Firstly, the small sample size caused by low level of intangible disclosure and inconsistency of reported information may potentially weaken the power of statistical tests, violate the underlying assumptions, or worsen other problems such as multicollinearity. The influence of large value of outliers also tends to be serious owing to the small number of observations. Secondly, the dependent variables used in the quantitative analysis, namely average loan and deposit growth rate and return on

assets have inherent limitations. Thirdly, because of the small sample size, some bank-specific factors, industry-specific factors, macroeconomic factors, and other intangible indicators are not included, and this may cause omitted variables problem in the applied models. Fourthly, this study may suffer from potential endogeneity problem, that is, the potential reverse causality present in the specified regression models. Finally, proxies of intangible elements may not capture the nature of intangibles, and need to be assessed further in the qualitative study.

As the presented empirical results were subject to the above limitations, they should be interpreted with caution. However, the uncovered problems also present opportunities for another component of this study. Recall that this thesis is a mixed methods research, in which the combination of quantitative and qualitative approaches has the potential to overcome the limitations of adopting singular methods. Specifically, the quantitative study may raise some important questions waiting to be answered by the qualitative study. For example, do unexpected relationships result from misspecified models or the incorrect definition of variables? How can the constructed models be improved so as to better characterise bank performance? Is there any new variable that potentially affects bank performance but was omitted in the model?

The subsequent chapters will discuss the process of qualitative study and its empirical results, and show how the mixed methods provide novel insights into the problems revealed here.

Chapter Seven: Qualitative Data Collection and Data Analysis

7.1 Introduction

Previous chapters (chapters five and six) covered the quantitative study of this thesis, including the processes of quantitative data collection, variable identification, hypothesis development and model construction, as well as the empirical results of statistical analyses. As has been demonstrated in chapter four, mixed-methods research that combines both quantitative and qualitative approaches was adopted as the research methodology in this thesis. By reviewing relevant literature in the area of intangibles research, it was found that our knowledge regarding the interactions among intangible elements and the intangibles-performance association tended to be limited (see section 3.4 of chapter three). Moreover, the quantitative empirical study of this thesis showed that there might be some problems with the constructed models as well as the proxies of intangible elements used in those models, as some estimated relationships between intangible indicators and bank financial performance were contrary to the expectation and the adjusted R^2 appeared to be low for many models. Therefore, a qualitative approach, in particular interview-based case study, is valuable for exploring the way of modelling, measuring, and disclosing intangibles by getting into the real-life situation where the phenomenon is developed.

The objective of this chapter is to explain the procedures of qualitative data collection and data analysis, in particular how the interviews were conducted and how the interview data was processed by employing a grounded theory technique. As mentioned before, to observe gaps in the extant literature, the potential interviewees in this study included both bank managers and bank analysts in order to provide a more comprehensive picture of intangibles than previous research that focused on the internal management perspective only. Specifically, senior managers in UK financial institutions and analysts who specialise in the banking sector were targeted for interviews. The fieldwork was undertaken between June 2008 and September 2009, during which time the global financial crisis occurred. It should be noted that although the financial crisis created difficulties for the researcher to arrange interviews, it was helpful to the project in terms of showing variation in core concepts. Apart from the effect of the financial crisis, the researcher encountered great difficulties in getting access to targeted participants and conducting interviews with them. Ultimately, 11 interviews with senior managers in banks and other financial institutions

and 12 interviews with bank analysts were conducted either face-to-face or through telephone, and 18 of them were audio-recorded and transcribed for further data analysis with the permission of interviewees.

Interview questions were designed to be semi-structured, and the raw data, including transcripts and notes taken by the researcher were manually processed using the grounded theory data analysis techniques. Specifically, the procedure of data analysis included five stages: familiarization, reflection, open coding, axial coding, and selective coding, and theoretical sensitivity was a critical part of all of these stages. During the process of data analysis, considerable effort was put to reduce subjectivity and improve the validity of the study. It is worthwhile to point out that quantitative data and qualitative data were integrated in the above stages of data collection and data analysis. For example, the variables used in the quantitative study were helpful to formulate interview questions, to enhance the researcher's theoretical sensitivity, to identify codes, and to label concepts.

The rest of the chapter is organized as follows. Section 7.2 outlines the procedure of the interview data collection, including targeting potential interviewees, designing interview guides, getting access to interviewees, and conducting interviews. Section 7.3 illustrates how the interview data was analysed. Section 7.4 briefly discusses the potential limitations within the qualitative study, and after that, this chapter is ended by conclusions.

7.2 Procedure of qualitative data collection

Yin (2003) demonstrates that data for case studies can come from different sources of evidence, including documents, archival records, interviews, and so forth. In this study, in-depth interview is employed as the main approach to collect qualitative data, complemented with documents such as annual reports. Qualitative interviews provide opportunities for exploring understanding and meanings in depth (Arksey and Knight, 1999). Thus, it is very suitable for this study in which the researcher wants to get rich and detailed information about intangibles from practitioners' viewpoints. Qualitative interview questions can be either unstructured or semi-structured (Bryman, 2004). In this study, interview questions were designed to be semi-structured, as the researcher was looking at multiple cases, and semi-structured interview was more appropriate in terms of ensuring "cross-case comparability" (Bryman, 2004:324) than unstructured interview. The procedure of interview data collection followed interview instruments suggested by

previous researchers (e.g., Arksey and Knight, 1999; Bryman, 2004; Rubin and Rubin, 2005), including targeting potential interviewees, designing interview guides, getting access to interviewees, and conducting interviews. These four stages will be discussed in the following subsections.

7.2.1 Targeting potential interviewees

How to find the "right person" to be interviewed is an important issue in qualitative interview, as it determines whether you can obtain relative and valuable information. Rubin and Rubin (2005:64) argue that "interviewees should be experienced and knowledgeable in the area you are interviewing about". Experienced interviewees can make your interview results more convincing, and interviewees who are knowledgeable about the research problem have the potential to provide useful information that you need (Rubin and Rubin, 2005).   In this study, senior managers in UK financial institutions and bank analysts who cover banks in European countries were targeted for interviews based on several considerations.

Firstly, although many previous studies adopted interview-based case study or grounded theory approach to investigate how organizations measured, managed and reported intangibles, they tended to mainly focus on one type of interviewees – management inside the case organizations (e.g., Beattie and Thomson, 2010; Boedker, et al., 2005; Chaminade and Roberts, 2003; Johanson et al., 2001a). There has been a paucity of research examining the information users' perspective from outside the organizations with the exceptions of Campbell and Slack (2008) and Holland (2006), as has been discussed in section 3.3.3 of chapter three. Since the objective of this study is to explore not only how intangibles were understood, measured, and modelled in banks business practice, but also whether and how such information was disclosed, it is desirable to investigate intangibles from both inside managerial perceptions and outside information users' perceptions. Additionally, interviewing individuals from a variety of perspectives has the potential to enhance the credibility of findings (Parry, 1998; Rubin and Rubin, 2005). Therefore, two sets of interviewees, namely, senior managers in financial institutions and bank analysts, were selected in order to provide a comprehensive picture of intangible measurement, disclosure and modelling.

Secondly, Rubin and Rubin (2005) argue that it is not easy to figure out in advance how

much useful information that the interviewee can provide, so "the best you can do is choose a person who is in the appropriate position" (Rubin and Rubin, 2005:66). Senior level managers were considered to be those who have broad knowledge about organization's strategies, policies, and business practices, as well as being involved with different aspects of tangible and intangible resources management in their bank. They are likely to be involved with strategic choices on these matters. Thus, it is expected that they may have better ability to understand the research problem than low level management and employees[128]. Similarly, analysts who specialise in the banking sector were chosen to be another set of interviewees on the grounds that they were considered to be the experts who have specialist knowledge and understanding of bank valuation.

It should be noted that, because of some practical difficulties, such as time and financial constraints, interviews were conducted within the boundaries of the UK. As a result, the targeted interviewees of senior managers were restricted to banks and other financial institutions that are based in the UK or have branch offices here. As mentioned in chapter five, the quantitative data were collected from UK and other European banks. Thus there may appear to be a sample mismatch problem between the quantitative study and the qualitative study[129]. However, although the participating bank analysts were based in the UK, their analyses normally covered a large range of banks across Europe.

7.2.2 Designing interview guides

In semi-structured interview, an interview guide serves as a framework that ensures all particular sub-topics of interest have been covered and more detailed or thoughtful information can be obtained (Arksey and Knight, 1999). It is normally designed to be a list of questions that the interviewer intends to ask during the interview but from the interviewees' perspective (Bryman, 2004). Recall that there were four specific research questions that the researcher wanted to explore in the qualitative study. They were:

- RQ2: What may be the important intangibles for a bank?
- RQ3: How do they relate to bank performance?
- RQ4: How can these intangibles be measured?
- RQ5: How have these intangibles been reported?

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[128] In fact, the researcher learnt from her previous research experience (Chen, 2007) on interviewing with bank managers that senior managers were knowledgeable in terms of recognition and management of intangibles and helpful in providing valuable information.

[129] This problem will be discussed further in section 7.4.

Based on the above key questions and knowledge that was gained from previous research (e.g., Holland, 2004), two interview guides were prepared for interviews with bank managers and bank analysts, respectively. The interview guides served as a reminder of specifying research focuses and were used flexibly. The interview questions were designed to encourage participants to "reconstruct their experience and to explore their meaning" (Seidman, 1998:76). The researcher may therefore change the order of questions or pass over some individual questions according to interviewees' responses during actual interviews. After each interview, the researcher reviewed the interview process, and revised the interview guides based on gained information. For example, after having conducted five interviews with bank analysts, it was found that the financial crisis was argued to have important influence on the role of intangibles. Therefore, a question regarding how economic conditions affect the role of intangibles was then added to the interview guides. The rest of the questions were posed in the same order, and no questions were removed from the interview guides.

It is worthwhile to point out that the integration of the quantitative study and the qualitative study occurred during the process of designing interview guides. The variables adopted in the quantitative models (e.g., top management experience, cost of employees, training expenditures, marketing expenditures, and so on) were used to formulate additional interview questions in order to examine the extent to which these variables can capture the nature of intangible elements from managerial perspective. It should be noted that these questions were asked in the last ten minutes of each interview, for the purpose to avoid the dangers of imposing the researcher's own interests on the experience of the interviewees and narrowing their views (Seidman, 1998).

7.2.3 Getting access to interviewees

Senior managers in banks and other financial institutions and bank analysts were targeted to be potential participants in the in-depth interviews, and the initial contact with them started on June 2008. At first, interviews with bank analysts were arranged and conducted between August 2008 and July 2009, and then bank managers were approached for interviews from July 2009 to September 2009. During the process of establishing access and contacting potential interviewees, the researcher experienced great difficulties. Getting access to senior bank managers and bank analysts tended to be one of the most challenging

tasks in this study, because these senior personnel normally had very busy schedules and scarce free time. Besides, when the fieldwork was undertaken during the period of June 2008 to September 2009, the financial crisis occurred and created more difficulties for the researcher to arrange interviews[130].   Moreover, the area of study involves a large amount of sensitive and confidential information, and this caused problems in collecting interview data as well. In order to deal with these problems and gather as much information as possible, the following strategies were designed to identify appropriate participants, gain access, and arrange interviews with them.

The first step is to identify the names of financial analysts who have specific knowledge and experience in the banking sector. After searching UK banks' websites and other websites (e.g., FSA, BBA and CFA), it was found that only few banks provided information on their analyst coverage in the public domain (e.g., RBS and Alliance & Leicester). In this situation the researcher decided to seek help directly from UK banks. Letters with the signature of her supervisor were sent to different UK banks' investor relation managers to explore the possibility of obtaining lists of bank analysts covering these banks. In addition, several rating agencies (e.g., Fitch Rating) were also contacted to ask for their participation in this research. Fortunately, two banks kindly provided their analysts lists, and one of the lists contained detailed contact information for each analyst. Based on the above information, a list of sixty bank analysts were consulted, and their names and contact information (e.g., telephone number, postal address, and email address) were recorded.

The second step was then to make contact with those targeted interviewees. To begin with, formal letters with the signatures of the researcher's supervisors and herself were sent to the first 10 analysts[131] to ask for interview. The letter explained briefly the researcher's background, her research project, the main interview questions, the potential benefits from this research, and guarantee of confidentiality. If there was no response within two weeks time, a reminder was sent by email. After that, another 48 analysts were contacted in the same way group by group.   It is found that, before September 2008, about 40% to 50% analysts responded to the letter or first reminder email, and more than 25% of them showed

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[130] It should be noted that, although the financial crisis created difficulties in accessing the targeted interviewees, it was helpful to the research because managers and analysts could reflect on how intangibles played a role in bank performance and value under quite different circumstances. This showed variation in core concepts. For example, during the crisis there was a "flight to certainty" in valuation as analysts used known valuations (such as book value) and downplayed more subjective intangible components to value.

[131] The researcher checked the available lists of analysts for the four banks, and 10 of them who covered more than two banks were selected to be contacted at first.

willingness to participate in this project. For those who refused to be interviewed, main reasons appeared to be time constraints or lack of interest in this topic[132]. However, when the global financial crisis got into its most critical stage in September 2008, it became extremely difficult to gain access to bank analysts. Several second reminder emails could not even reach the analysts, as they had already left the company they had worked for. Many analysts did not respond to the first or second reminder, whilst some others were on a very busy schedule due to the financial crisis[133]. In order to arrange as many interviews as possible, each analyst was contacted three to five times by email or follow-up phone call if they did not respond or they did not directly refuse or offer to help.

Once the targeted bank analysts offered positive commitments to the researcher's request, the subsequent step was to arrange interviews with them. A list of more detailed interview questions (see Figure 7.1) were sent to all interviewees before each interview, so they can prepare for them in advance. Because of the area of study were particularly sensitive, it is important to reemphasize the guarantee of confidentiality to interviewees to encourage them to feel free to talk about their own views. Thus the researcher confirmed that all information gained from the interview would be only used for the particular research, and would be maintained confidential and anonymised. Only with the interviewee's agreement, the interview would be audio-recorded in order to provide effective transcription.

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[132] For example, an analyst said, "*I have not done any specific work on intangibles. I do not believe they are a material causal factor in performance at this point*."

[133] This appeared to be a common response from analyst after September 2008. For example, one analyst said, "*Whilst I would usually be happy to do such an interview, due to the sheer volume of newsflow and volatility in the markets at the present time, I will have to decline*". Another analyst asked me to contact him later as he was very busy due to the reason that "*the city is a world of pain now*".

Figure 7.1: Interview questions[134]

Interview questions with analysts

1. Do you take into consideration intangibles when you analyse a bank? If so how do you do this? If not, why?
2. Which intangibles do you consider as most important for banks during your analysing process? And why?
3. How do these intangibles relate to bank tangible and financial assets? And how do the different intangible elements relate to each other?
4. How do those intangibles relate to bank performance and value?
5. How do negative intangibles affect bank profits or value? For example, bank brand tarnished by some events, customer service failed in some way, or negative synergies on M&A, etc.
6. What information on intangibles do companies disclose in public or private channel?
7. What are the problems in disclosing that information to analysts? And is there any other information that you collect to help in analysing those intangibles? Where and how do you find them?
8. Can those intangibles be measured in numbers?
9. What impacts do some environmental factors, such as the financial crisis, accounting standard or special banking industry regulation have on the role of intangibles in bank value creation progress?

Interview questions with managers

1. Which intangibles do you think are most important in banking?
2. How do those intangibles relate to bank performance and value in practice?
3. Have the bank tried to measure those intangibles? If yes, how have they been measured? If not, what are the problems in developing a system for measuring them?
4. Have the indicators of those intangibles been reported outside the bank? If yes, which information has been disclosed and who are the main users of this information? If not, what are the main problems in the disclosure process?
5. What impacts do some environmental factors, such as financial crisis, accounting standard or special banking industry regulations have on the role of intangibles in bank value creation progress?

The above design of gaining access to interviewees appeared to work quite well. Ultimately, although under the circumstance of financial crisis, access to twelve interviews with bank analysts were established, and detailed and valuable case data was collected. Subsequently, interviews with eleven senior managers in banks and other financial institutions were arranged and conducted from July to September 2009.

Senior level managers in banks and other financial institutions were selected in the same way as analysts. The focus was on another set of interviewees, usually CEOs, CFOs or directors of retail or commercial banking. The rationale of doing so is due to the following considerations. Firstly, the case institutions were either major banks in the UK or financial institutions that had long-time experience in intangible management, and some of them were recommended by bank analysts who had been interviewed. Secondly, Corbin and

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[134] It should be noted that interview questions with analysts and managers were revised several times, and the listed questions were the final versions of them.

Strauss (1990) suggest that samples in grounded theory were better to be drawn in terms of identifying as much variation in types as possible. Grounded theory technique was employed in this study to analyse case data, and the researcher intended to examine different conditions under which the phenomenon occurred. Therefore, the case institutions were not just limited to traditional banks. Rather, they were extended to other financial institutions, such as home credit and insurance, in order to provide variation in types of market. Thirdly, as this study aims to investigate the role of intangibles in the banking business, with specific interest in retail and commercial services, the interviewees were chosen to be the top-level executives in these business dimensions who were expected to be knowledgeable and experienced in the area of study.

Initially, names and contact details of senior executives were identified from targeted organizations' websites. Then formal letters were sent to ask for interview, and were followed up by reminder emails. It is worth mentioning that, compared with what has been found in communication with bank analysts, the research topic is of particular interest to bank managers, and most of them were very forthcoming. However, the anxiety about confidentiality tended to be a serious barrier to access to bank managers. Because the issues of interest involve a lot of private information, such as bank business strategy or resources of competitive advantage, some senior managers felt uncomfortable to discuss[135]. Being fully aware of this problem, the researcher put effort to minimize such anxiety. Apart from reemphasizing the guarantee of confidentiality and anonymity, each targeted interviewee was given the promise that, the anonymous transcript of interview (if it was allowed to be recorded) or notes that the researcher took would be sent to the interviewee to check, and any information they did not like to be revealed would be removed. The anonymous case data would be used in this thesis only with the interviewee's agreement. Moreover, the researcher tried to attend financial organizations' seminars where she had the opportunity to meet the targeted interviewees and build contacts with them[136]. Such stages appeared to be effective, as among twenty-one targeted senior managers, eleven interviews were finally conducted, a success rate of 52%.

7.2.4 Conducting interviews

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[135] For example, access to one targeted organization failed due to this reason. The reply was as following: "…*Despite being a highly worthwhile cause and something we would be keen to get involved in….However, the information detailed, although not attributed to ourselves, would still reveal aspects of strategy that we do not wish to sit in the public domain, whether anonymity is existent or not….*"

[136] For example, in a seminar organized by an academic body and banks, the researcher met the target participant in interview B11, and successfully arranged interview with him after that.

There were in total twenty-three case interviews being conducted with bank analysts and senior managers. The majority of them were one-to-one interviews, with the exception of one interview in which two bank managers participated. The interviews lasted from fifteen minutes to one-hour and twenty minutes. Six interviews were carried out through telephone, and all others were face-to-face interviews conducted in the location of the case organizations. With the permission of interviewees, eighteen interviews were audio-recorded and transcribed for further data analysis. Table 7.1 provided a brief profile of the sample interviewees[137].

Generally, the process of conducting interview was designed to be as follows: preparation, introduction, asking questions, and conclusion, but with a large degree of flexibility. Notes were taken by the researcher during each interview, regardless of whether it was recorded or not. For non-recorded interviews, notes were the main source for data analysis; while for interviews that were allowed to be recorded, taking notes was also a useful way to capture the main points and to formulate follow-up questions.

Preparation of interviewees' background was the initial step to conduct a successful interview. Previous researchers suggest that it is important for interviewers to have some prior knowledge about interviewees and their circumstances (Arksey and Knight, 1999; Easterby-Smith, et al., 2008). Before each interview, the researcher tried to collect information about the interviewee and the case institution, and to search for issues that might be important or significant for them. This can help the researcher obtain trust from the interviewee (Easterby-Smith, et al., 2008).

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[137] It should be noted that some senior managers who were interviewed were not the initial ones that were targeted. On some occasions, the CEO or CFO in the targeted institutions agreed to participate in this project, but arranged another member of their senior management team to do the interview.

Table 7.1:   **Profile of sample interviewees**

Panel A. Interviews with bank analysts

Code	Interviewee coverage	Position of interviewee	Interview type	Time
A1	UK- based (Europe)	Managing director	Face-to-face	12th August 2008 12:00 – 13:15
A2	UK- based (Europe)	Bank Analyst	Face-to-face	13th August 2008 15:00 – 16:00
A3	UK- based (Europe)	Security Analyst	Face-to-face	18th August 2008 16:00 – 16:40
A4	UK- based (Europe)	Security Analyst	Telephone	10th September 2008 11:00 -11.30
A5	UK- based (Europe)	Partner	Telephone	6th November 2008 11:00 -11:22
A6	UK- based (Europe)	Security Analyst	Face-to-face	12th November 2008 16:00 - 16:55
A7	UK- based (Europe)	Security Analyst	Telephone	28th November 2008 14:00-14:15
A8	UK- based (Europe)	Head of research	Face-to-face	5th December 2008 11:00-12:00
A9	UK- based (Europe)	Director	Telephone	19th December 2008 15:30-15:53
A10	UK- based (Europe)	Co-Head of Equity Research	Telephone	7th January 2008 14:00-14:25
A11	UK- based (Europe)	Equity Analyst	Face-to-face	15th April 2009 11:00-12:00
A12	UK- based (Europe)	Senior Vice President	Face-to-face (Not recorded)	28th July 2009 15:15-16:00

Panel B. Interviews with senior managers in financial institutions

Code	Company type	Position of interviewee	Interview type	Time
B1	Home credit	Director Corporate Strategy	Face-to-face (Not recorded)	9th July 2009 13:35-14:30
B2	Bank	Group general manager	Face-to-face	17th July 2009 14:00 – 14:55
B3	Investment	Senior strategy manager	Face-to-face	27th July 2009 11:00 – 11:40
B4	Bank	Director of private banking	Face-to-face	29th July 2009 15:00 – 16:20
B5	Bank	Director of Retail Banking	Face-to-face	30th July 2009 13:30-14:30
B6	Bank	Senior managers (two interviewees)	Face-to-face (Not recorded)	31st July 2009 13:45-14:40
B7	Bank	CFO of Global Retail & Commercial Banking	Face-to-face (Not recorded)	31st July 2009 15:20 – 16:40
B8	Bank	CEO	Face-to-face	3rd August 2009 16:00-17:00
B9	Bank	Senior executive	Telephone (Not recorded)	6th August 2009 13:00 – 13:50
B10	Bank	Director of retail banking	Face-to-face	25th August 2009 9:30 – 10:15
B11	Financial Association	Executive Director	Face-to-face	14th September 2009 12:05-12:40

At the beginning of each interview, effort was made to build a trust and comfortable atmosphere throughout the interview. Normally, the interviews were opened by a brief introduction of the area of study, the purpose of this research, and how the information would be used. Additionally, the researcher emphasized that there was no right or wrong answer for each question, and the researcher was interested in the interviewees' own opinions and experience (Rubin and Rubin, 2005). It should be noted that, the researcher attempted to review each interview process during the early stage of data collection, and

this seemed to be very helpful in terms of improving her interview skills and exploring more deep and detailed information. For example, from reviewing the first interview with bank analyst, she found that the interviewee's understanding of the concept of "intangibles" appeared to be limited to "goodwill", and did not extend to other soft factors. Thus she considered that it might be necessary to introduce briefly the definition and categories of intangibles when conducting interviews with bank analysts. These were carefully introduced in a very brief form to avoid priming the interviewees. In the subsequent interviews, it was found that such an introduction was useful to help interviewees better understand the issues of interest, and to allow them to talk broadly.

During the interview, different types of questions were asked, such as main questions, follow-up questions, and probing questions (Bryman, 2004; Rubin and Rubin, 2005). An interview guide containing a list of main questions was used to make sure that the important issues could be thoroughly examined in each interview (Rubin and Rubin, 2005), and also to enhance the consistency cross interviews. The main questions were semi-structured. They were also designed to be broad enough, in order to encourage interviewees to talk freely and openly about their experiences, perceptions and understanding (Rubin and Rubin, 2005). The interview guide was used flexibly, as the researcher had to decide the number and the sequence of the main questions she asked depending on the duration of the interviews and the responses of the interviewees.

The second type of questions frequently used was follow-up question. The researcher's main role in the interview was to listen, to follow what the interviewee had said, and to explore more valuable information. Rubin and Rubin (2005:136) argue that "follow-up questions are crucial for obtaining depth and detail, and can help in obtaining more nuanced answers". During the process of each interview, follow-up questions were routinely asked to pursue new idea and to encourage the interviewee to elaborate important themes (Arksey and Knight, 1999; Bryman, 2004). The researcher experienced that on some occasions, such as when the participant did not prepare the main questions very well or when the interviewee appeared to be less conversable, follow-up questions were especially important in achieving a successful interview. Although follow-up questions generally cannot be prepared in advance, the researcher attempted to do a preliminary analysis of each case interview immediately after it was done, and then worked out some big ideas or initial "theoretical memo" (Strauss and Corbin, 1998) that were important and needed to be further explored. This was helpful to formulate follow-up questions in the

subsequent interviews with other interviewees.

Furthermore, in the interview process, the researcher tried to ask probing questions when there was incomplete idea or missing piece of information presented, or when the interviewee talked too briefly but the researcher wanted to get more descriptive story from him/her. In such situations, probing questions can elicit more details (Rubin and Rubin, 2005). For example, when an interviewee said that he had experienced some influences of economic factors on intangibles, question like "could you give me some examples about this" tended to be useful to encourage him to provide more detailed information. In addition, the researcher found that sometimes the interviewer's behaviours, such as listening carefully as well as showing interest and agreement to what the interviewee said, tended to be helpful to further probe the interviewee's answers.

The interviews were expected to be approximately one-hour in length, but the actual duration of them differed from interview to interview. All interviewees were informed that they could stop the interview at any point of time if they wanted. Several interviewees notified the researcher in advance that they could only share thirty or forty-five minutes with her. On some other occasions, the researcher had to decide to end the interview because there was a sign that the interviewee wanted to finish the conversation. Normally, at the end of each interview, the researcher asked additional questions, such as if there was any points that the interviewee thought she had missed, or if the interviewee could give any suggestions about this topic. With indicating the researcher's appreciation for the interviewee's time and help, the researcher tried to maintain further contact with the interviewee. Maintaining contact with interviewees after the interview was also important. Indeed, several interviewees provided further help to the researcher, such as sending some relevant documents to her.

Overall, the above procedure of data collection was effective, in that a large amount of novel and valuable case data was obtained. However, as mentioned before, the researcher encountered many difficulties during the qualitative data collection process. As a result, there were some potential limitations within the interview method, which will be discussed in a later section of this chapter (section 7.4). In the next section, the procedure of data analyses will be addressed.

7.3 Procedure of qualitative data analyses

As mentioned before, interview-based case study was employed as the research method in the qualitative study, and grounded theory data analysis technique was adopted to process the case data. Grounded theory is a methodology for generating theory from the data systematically obtained from social research (Glaser and Strauss, 1967). Parker and Roffey (1997) argue that grounded theory method can be applied to case studies. Grounded theory method "uses a systematic set of procedures to develop and inductively derive grounded theory about a phenomenon" (Strauss and Corbin, 1998:24), and combining this technique with case study has the potential to strengthen case analysis by searching for patterns from cross-case analysis (Parker and Roffey, 1997; Spicer, 1992). Moreover, the clearly specified operational procedures of grounded theory data analysis can enhance construct validity of a qualitative study (Pandit, 1996).

Therefore, in this study, a grounded theory data analysis technique was utilised to analyse interview transcripts and notes. All the case data was manually analysed due to the consideration that grounded theory is an "interpretive process" (Suddaby, 2006: 638) between the researcher and data. Suddaby (2006: 638) argues that "qualitative software programs can be used in organizing and coding data, but they are not suitable for the interpretation of data". In the interpretive process of data analysis, the researcher acted as an active element and her theoretical sensitivity tended to be very important. The researcher recognised that her experience and memory of the interviews was additional data and was likely to be important in the interview process.

Based on previous works of Beattie et al. (2001), Easterby-Smith et al. (2008), Holland (2001b), Locke (2001), Parker and Roffey (1997), and Strauss and Corbin (1998), the interview data was analysed through five stages: familiarisation, reflection, open coding, axial coding and selective coding. Theoretical sensitivity was a critical part of all of these stages. The following subsections will discuss theoretical sensitivity and prior theoretical constructs, and then describe the five stages of data processing in detail.

7.3.1 Theoretical sensitivity and prior theoretical constructs

Theoretical sensitivity refers to the researcher's capability to generate concepts from data and develop theory (Glaser, 1992). Parker and Roffey (1997) point out that enhancing theoretical sensitivity can help the researchers to challenge their existing assumptions and

knowledge structure and move from description to theoretical analysis. A researcher's theoretical sensitivity may come from his/her professional experience, personal experience, knowledge and skills (Glaser, 1992; Strauss and Corbin, 1998). In this study, the researcher developed her theoretical sensitivity in several ways.

Firstly, the researcher tried to build a strong theoretical framework and reviewed extended literature in the field of intangibles research. These prior knowledge and theoretical perspectives improved her ability to think about the interview data in theoretical terms. Secondly, effort was made to read books and previous research that utilised grounded theory method, and to learn skills such as how to ask questions and make comparisons during the coding process. This was useful to improve the researcher's theoretical sensitivity. Finally, the researcher's theoretical sensitivity was developed by finding problems and then solving them in the practice of analysing data. She discussed with her supervisors about the problems she encountered in the coding process, and this improved her ability to give conceptual meanings to the raw data and to generate categories and make connections of them.

It should be noted that there is a common misassumption that grounded theory researchers should enter the field without pre-existing theory and literature (Suddaby, 2006). One of the originators of grounded theory, Glaser (1992) suggests that grounded theory is for the discovery concepts and hypotheses from data not from extant theory, and therefore reviewing literature is not needed in the substantive area under study. Locke (2001) highlights that Glaser and Strauss's rejection of pre-conceived theories is due to the consideration that such theories may obstruct the development of theory. However, as Suddaby (2006) argues, the originators of grounded theory were never intended to encourage research to ignore existing empirical knowledge. Rather, the researchers should use the extant literature in an appropriate way.

In the current study, the researcher recognized that she entered the field with various prior theoretical perspectives. For instance, prior theoretical constructs such as ideas of financial intermediation and the role of knowledge (intellectual capital) in bank processes were important throughout the data collection, data processing, concept formation and interpretation processes. Prior to data collection, these theoretical constructs were used to define the prior level of theoretisation to be employed and to limit the scope of the phenomena investigated, as discussed in chapter three.

In the process of data analysis, these prior theoretical constructs were used to mediate the development of the similar patterned (analysts and bank managers) views of bank intangibles during the qualitative (grounded theory) processing of the case (interview plus archival) data. In addition, the variables or proxies adopted in the quantitative analyses of this thesis were useful to identify codes and label concepts during the qualitative data processing. They were the concepts derived from the extant literature (and include the above concepts) and can enhance the researcher's sensitivity to their appearance in the case data. As Strauss and Corbin (1998) suggest, concepts derived from the literature can be used as a source for making comparisons during the coding process.

Later, in chapters of empirical results discussions, these prior theoretical constructs were used to interpret the grounded theory themes emerging from this processing.

Therefore, it can be seen that these theoretical constructs were important means to enhance the researcher's theoretical sensitivity. It should be noted that during the above discussed processes, care was taken (via the constant comparison method) to avoid these prior constructs from determining the outcome of concept formation from the data.

The above is consistent with Locke (2001:121-123) who recommends that in the reporting of grounded theory, the extant literature can be used initially to establish the phenomena and problem area to be investigated. This can be followed by major results sections which contain a succinct summary of the case results set within key grounded theory themes or elements, and these can be discussed within relevant literature. Finally, the overall grounded theory can be discussed by integrating relevant existing literature into it.

7.3.2 Familiarization

As the initial stage of data analysis, familiarization with interview data started in the data collection process. The researcher tried to transcribe the interview immediately after each interview was conducted. Then the case interview transcripts or notes were read and reread. This was to ensure that the researcher was familiar with the details of each case. "Big ideas" or tentative broad concept categories were briefly noted for each interview in this stage, and were recorded in the code notes[138]. These written records served as reminders of

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[138] Code notes are one type of memos in grounded theory data analysis (Strauss and Corbin, 1998). Memos

what the researcher captured during the reading process, and also acted as data sources for further coding stages.

The researcher felt that it was necessary to start familiarization as soon as possible. This was not only useful to capture the researcher's observations with each case when her mind was still fresh, but also helpful to revise main questions and formulate follow up questions for further interviews.

7.3.3 Reflection

Familiarisation involves reading and rereading case data and becoming aware of the main points and details of each individual case. At the stage of reflection, the researcher tried to do some preliminary cross-case analyses. This process was carried out by comparing and critically evaluating individual case data with other cases and also previous literature. During this process, some important questions were asked, such as do the ideas in this case differ to other cases? Is it different to existing literature? Are there any new ideas emerging from the case data? By asking and answering these questions, similarities and differences among some important issues were grasped, and were recorded in theoretical memos. An embryonic model of the role of intangibles in the bank value creation process emerged based on the reflections of case data.

It should be noted that these early stages of familiarization and reflection happened before the formal coding stages of grounded theory approach. According to Strauss and Corbin (1998), grounded theory data analysis includes three steps of coding: open coding, axial coding, and selective coding. In this study, before the formal data process, familiarization and reflection of case data provided the opportunity of "learning on the job" (Holland, 2001b) for the researcher. This was done whilst the memory and experience of the interview were fresh in the researcher's mind. By learning on the job, skills like "constant comparison" (Glaser, 1992) were developed in these stages and played important roles in the subsequent coding process. Constant comparison was an important technique generally used in grounded theory data analysis (Goulding, 2002; Strauss and Corbin, 1998). It involves looking for similarities and differences, and thus allowing patterns and themes emerging from the raw data (Goulding, 2002). Corbin and Strauss (1990) state that making

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are "written records of analysis that may vary in types and form" (Strauss and Corbin, 1998:217). In this study, code notes, code cards, theoretical memos were three main forms of memos that had been used. They were written continuously through the entire data analysis stages.

comparisons can assist the researcher in guarding against bias and help to achieve greater precision and consistency. Moreover, memos that recorded the researcher's early thoughts, memories and reflections with the case data, such as code notes and theoretical memos, facilitated further systematic coding, and were continuously used throughout the entire process of data analysis.

7.3.4 Open coding

Open coding is the process of breaking down the interview transcripts or notes into distinct units of meaning (Goulding, 2002). During this process, codes emerge from raw data, and are given conceptual labels (Corbin and Strauss, 1990). These labelled phenomena are called "concepts" (Strauss and Corbin, 1998:103), which are the basis units of analysis in grounded theory (Corbin and Strauss, 1990).

In this study, subsequent to the stage of reflection, the researcher went through each case interview line-by-line. The transcripts and notes were read very carefully in order to find key words or phrases. These key words and phrases were underlined or highlighted in the texts, and names or labels were given to them. Then a code card was constructed, and the labelled code was written in it. Once the same concept was identified in other case interviews, it would be added to the earlier constructed code card, with the case number and page number being indicated. In addition, code notes were written in the right hand margin of the transcripts or notes, which recorded the researcher's comments and reflections. The following text is an example of how the researcher analysed the case interview during the open coding process:

> *"For <u>new customers</u> [**new customers**], we <u>know relatively little about them</u> [**limited knowledge of new customers**]. We <u>don't know</u> [**limited knowledge**] <u>how they will handle any changes in their income</u> [**customers' income level**], <u>their actual ability to repayment</u> [**customers' repayment ability**]. So <u>it is more risky to lend money to new customers</u> [**risky lending**]. Therefore, we usually <u>lend small amount of money to new customers, and don't expect to generate much profit from them</u> [**product design – low level of loan amount**]. By <u>lending small amount of money</u> [**low level of loan amount**], we can <u>see how they repay for the loans</u> [**monitoring lending activity**]. <u>If they could afford the repayment</u> [**customers' repayment history**], we would <u>consider lending more to them</u> [**product redesign – change loan amount**]. Step by step, <u>customers built up their reputation with us</u> [**valuable customer**], and <u>we built up relationship with them</u> [**customer relationship building**]. When <u>new customers establish themselves</u> [**customer relationships**], we then <u>could lend more money to them</u> [**sale increase**], and <u>generated more revenues</u> as well [**revenue increase**]."*   (Interview B1)

On the right hand margin of the above text, a code note was recorded:

> **Code notes B1.10 (p.4, para.3)**
> In this paragraph, the interviewee shows a process of how knowledge of customer contributes to their business. Based on the limited knowledge of a new customer → design products – low level of loan amount → monitor the lending activities → gain more knowledge of the customer → then build relationship with the customer → finally, increase sales and revenue.

It is worth mentioning that, the variables or proxies adopted in the quantitative analyses of this thesis were useful to identify codes and label concepts during the qualitative data processing. They were the concepts derived from the extant literature and can enhance the researcher's sensitivity to their appearance in the case data.

Moreover, it should be noted that the researcher experienced some difficulties during the early open coding process. Firstly, as Allan (2003) argues, such a line-by-line coding may lead to confusion. Breaking down the data into words or phrases sometimes made the researcher feel "lost with the minutia of data" (Allan, 2003:2). On some occasions, such as when an interviewee told a story about his working experience, it was more sensible to look at the whole sentence or paragraph to find the main meaning of it rather than to divide it into individual words or phrases. Secondly, at the early stage of labelling concepts, sometimes it was not very easy to name an incident, idea or event precisely. Therefore, "in vivo codes" were used, which were names "taken from the words of respondents themselves" (Strauss and Corbin, 1998:105). When the researcher continued with data coding, and made comparisons cross-cases, these codes might be re-named on a more abstract level.

During the above stage of line-by-line or paragraph-by-paragraph data processing, a large amount of codes emerged. By applying the technique of constant comparison across case interviews, concepts with similar characteristics were grouped to develop categories and subcategories, which are "higher in level and more abstract than the concepts they represent" (Corbin and Strauss, 1990:7). Grouping concepts into categories is important in data processing, as on the one hand, it reduces the number of codes that are identified in open coding (Strauss and Corbin, 1998), and on the other hand, it provides the foundation for developing theory (Corbin and Strauss, 1990).

Therefore, the next step of open coding involved reviewing code notes and theoretical memos that were written during previous data processing and examining constructed code

cards, as well as rereading transcripts or notes of case interviews to see how the identified concepts were used in each case. The purpose for doing so was to search for similarities and differences among concepts in order to generate more abstract categories and subcategories.

For example, in the example of case interview B1, the following three concepts related to financial institution customer feature emerged from the open coding process:

- **Customers' income level,**
- **Customers' repayment ability,**
- **Customers' repayment history**.

Then the researcher asked herself: what did these three concepts have in common? Could there be a higher order concept that explained the similarities or differences among them? It was found that the three concepts were all related to the knowledge about customers that the case institution had learnt. Therefore, a category of "**knowledge of customer**" was formed to cover these three concepts.

During the process of open coding, many empirical concepts emerged, and Table 7.2 provides some examples (24 concepts) of them. These micro concepts were then grouped into subcategories and categories. In this progress, pre-existing theoretical constructs such as intellectual capital literature were integrated into the researcher's thinking of theoretical categories (Locke, 2001). It can be seen from Table 7.2 that, these subcategories were classified into four main categories that correspond to the literature on intellectual capital[139]. These "intangibles" were identified as: "**top management human capital**", "**human capital at employee level**", "**structural capital**", and "**relational capital**". Once open codes were grouped into categories and subcategories, the researcher then stepped into the axial coding process[140].

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[139] As introduced in chapter two, this study followed the common classification of intellectual capital, in which intellectual capital includes three categories: human capital, structural capital, and relational capital. This pre-existing theoretical commitment affected the identification of the main categories.

[140] It should be noted that, although axial coding differs from open coding in terms of purpose and procedure, these two stages are not necessarily sequential analytic steps (Strauss and Corbin, 1998). Specifically, in this study, open coding and axial coding sometimes happened contemporaneously. For example, it can be seen from the example of code notes B1.10 that, during the process of identifying concepts and categories, the researcher also started to record her own thought regarding the relationships among those concepts and categories.

Table 7.2: Examples of concepts, subcategories, and categories

Case No. Page No.	Concepts	Subcategories	category
A1P4	Management skill of understanding market change Management skill of understanding customer needs Management ability to incentive employee	Management quality	Top management human capital
A6P3-4	Management skill of embodying the cost control culture Management incentive to grow business		
A7P4 & A8P9	Management creditability		
B4P19-21	Executives' industry-specific experience	Management experience	
A4P5	Executives' firm-specific experience		
B7P5& P10	Employee retention	Human capital resource at employee level	Human capital at employee level
B1P5-6 & B8P8	Employee loyalty		
B5P8 & A1P16 & A3P9 & A6P4	Employee engagement		
B1P3 & B5P7-8	Recruitment system (cost and ways of recruitment)	Human capital investment at employee level	
B1P3 & B5P8 & B8P8	Training investment		
B1P3,5 & B2P5 & B4P6 & A3P7 &A5P6,10 &A11 P9	Customer relationships	Relational capital resource	Relational capital
B1P7 & B4P8 & B6P5 & A1P15 & B11P3 & A10P4 & A11P9	Customer satisfaction		
B1P12 & B3P5 & B6P6	Customer recommendation		
B5P18 & P22-23	Customer engagement		
B4P10 & B7P8 & A2P6 & A1P4 & B11P3	Cross-selling		
B5P2 & B9P1	Brand awareness		
B8P16 & A4P4 & A8P7-8	Brand meaning - trust		
B4P12 & A1P17	Brand promise		
B7P3	Consistency of brand		
B4P12	Brand promotion expenditure	Relational capital investment	
B6P5 & A3P11 & B8P5	Marketing expenditures		
B7P4&P11	Global distribution network		
A3P4-5 & A10P9	Branch network		
B9P4	Branch location and appearance		
B5P7-8 &B7P7 & A4P6 & A11P6	Service quality		

7.3.5 Axial coding

Axial coding is the process of establishing linkages among categories and subcategories

(Strauss and Corbin, 1998). At this stage, data that was broken down into concepts and categories in open coding is put back together by making connections between them (Beattie et al., 2004). In addition, further development of categories and subcategories continuously takes place (Corbin and Strauss, 1990).

During early open coding, a number of concepts were identified, and were grouped to form different categories and subcategories. They were reviewed and changed as the case data and memos were reread and compared. Linkages were established among categories and subcategories to form conceptual order (Eaves, 2001). Technique of constant comparison was used in order to test the established relationships against data. Parker and Roffey (1997) suggest that, the purpose of identifying relationships between open codes in axial coding is to develop core codes "which eventually account for a substantial proportion of the variance in the research phenomenon" (Parker and Roffey, 1997:228). In this study, the research phenomenon was "intangibles". During the open coding process, micro concepts related to intangibles, such as management skills, employee engagement, customer relationships, and brand strengths etc., were categorised into four macro categories corresponding to conventional intellectual capital classification schemes, as introduced in the previous subsection. In axial coding, the linkages among concepts and categories related to the main phenomenon were identified, and a new large category was formed, namely "**interactions**". This macro category was further developed into three core codes: "**intra-category interactions**", "**cross-category interactions**" and "**network interactions**".

For instance, the following quotes were found in case interview B8:

> "*We look at the number of training dollars we invest per person, the number of training days [**training investment**], because training is very related to people's loyalty [**employee loyalty**].*"
> "*Normally, your ability to attract new customers [**customer relationships**] is a combination of your brand strength [**brand strength**] vs. the amount of your marketing spends [**marketing expenditures**]*".

From the above case data, two linkages were identified between different concepts. One is the relationship between "**training investment**" and "**employee loyalty**", and another was that "**brand strength**" and "**marketing expenditures**" influence "**customer relationships**". As the concepts of "**training investment**" and "**employee loyalty**" were under the same category of "**human capital at employee level**", while "**brand strength**", "**marketing expenditures**" and "**customer relationships**" were three concepts under the

same category of "**relational capital**", these two interactions were further grouped into a subcategory, which was named "**intra-category interactions**".

Likewise, another two subcategories, namely "**cross-category interactions**" and "**network interactions**" were developed. The former axial code combined interactions between concepts that belong to different categories out of four major categories, namely, "**top management human capital**", "**human capital at employee level**", "**structural capital**", and "**relational capital**". For example, in interview B10, the bank manager said that,

> *"So we actually had a very <u>structured communication programme</u> [**structured communication programme – structural capital**], which helped us to ensure our <u>staff have been very informed through the whole crisis</u> [**knowledgeable staff – human capital at employee level**]. They have been clear about our financial strength which then allows them to <u>deal with customers in the same way</u> [**service quality – relational capital**]."*

The researcher identified the linkage between "**structured communication programme**" and "**knowledgeable staff**". The former concept was grouped into the category of "**structural capital**", and the latter one belonged to "**human capital at employee level**", thus the identified linkage was categorised into "**cross-category interactions**". Similarly, the interaction between **"knowledgeable staff – human capital at employee level"** and "**service quality – relational capital**" fell into the category of "**cross-category interactions**" as well.

On the other hand, the category of "**network interactions**" was an aggregate of relationships between intangible concepts and other types of concepts, such as tangibles, financial assets or intermediation activities (e.g., lending, taking deposits, or risk control). For example, analyst A2 said that,

> *"So we know if two other things are equal, we prefer the bank with very strong brand rather than the bank which has very poor brand, because the bank with poor brand has to spend more money attracting deposit".*

It can be seen from the above sentence that there is a linkage between "**brand strength**" and "**cost of attracting deposits**", which was categorized into the axial code of "**network interactions**"

At the axial coding stage, the goal of analysis is to systematically develop and relate categories (Strauss and Corbin, 1998). By iteratively visiting and analysing case data and memos, concepts, subcategories and categories developed previously were connected and

organized, and new macro categories were developed. This step laid the foundation for building theory or model. By linking various categories together and investigating the connections between concepts and categories, theory started to emerge (Allan, 2003). Following axial coding, the final step of coding, namely, selective coding took place, which will be introduced in the next sub-section.

7.3.6 Selective coding

According to Parker and Roffey (1997), selective coding concerns the selection of the focal core code, which is the central phenomenon that emerged from the axial coding process. All other core codes are either directly or indirectly related to this focal core code, representing as context, conditions, actions, interactional strategies or outcomes (Parker and Roffey, 1997:228-229).

The first step in selective coding is to identify the focal core code (or focal category), which is the central category for theory integration (Parker and Roffey, 1997). The core category should be the central phenomenon of the research and appear frequently in the data, around which all other major categories or axial codes can be clearly linked together (Parker and Roffey, 1997; Strauss and Corbin, 1998). Once the core category is identified, by relating the other categories to it, explanatory frameworks can be developed and then potentially lead to the discovery of theory (Eaves, 2001).

In this study, the core category or the central phenomenon was the macro category of "**interactions**" developed in the axial coding process. Surrounding it, other major codes were grouped into two broad conceptual categories: "**conditions"** and "**consequences"**.

According to Strauss and Corbin (1998:130), conditions are "sets of events or happenings that create the situations, issues, and problems pertaining to a phenomenon and, to a certain extent, explain why and how persons or groups respond in certain way". In this study, the category of "conditions" was further developed into two subcategories: "causal conditions" and "contextual conditions". Causal conditions were those that produce the effects, while contextual conditions can contribute to the occurrence of the effects but cannot itself produce those effects (Dey, 1999:162).

For example, the following quotes indicate different conditions:

> *"I think <u>what has happened in the last eighteen months within the banking sector</u> [**financial crisis**] has undoubtedly emphasized the importance of <u>the brand elements of security and safety</u> [**brand elements of security and safety**]."*　　　(Interview B10)

> *"Consequently, I think, <u>because the business is quite homogeneous</u> [**homogeneity of banking business**], this kind of <u>perception of management</u> [**perception of management**] is quite important for differentiating between, you know, one has been perceived to be the best bank and the worst bank at any one time".*　　　(Interview A6)

The concept of "**financial crisis**" was grouped into a larger category, namely "**economic conditions**". It was one kind of "**causal conditions**" in which its change gave rise to the change of brand power.　On the other hand, the concept of "**homogeneity of banking business**" was under the category of "**industry characteristics**", which was the context of bank competitive market and was grouped into "**contextual conditions**".

On the other hand, "**consequences**" are the outcomes of the central interactions or actions. Straus and Corbin (1998) argue that whenever there is action/interaction, there are ranges of consequences. In this study, the consequences or outcomes of interactions were divided into two subcategories: "financial institution performance" and "information disclosure", which will be discussed in detail in later chapters.

Following Parker and Roffey's (1997:236) study, conditions and consequences were systematically linked to the core interactions, as shown by Figure 7.2.

<u>Figure 7.2:</u> The paradigm model of core category with examples of categories

Conditions

<u>Causal conditions</u>
= E.g. economic conditions and ongoing changes
<u>Contextual conditions</u>
= E.g. Homogeneity of banking business

→

Interactions

<u>Intra-category interactions</u>
= E.g. 1) training activities → employee loyalty;
2) Brand strength + marketing expenditure → customer relationship

<u>Cross-category interactions</u>
= E.g. structured communication programme → knowledgeable staff → service quality

<u>Network interactions</u>
= E.g. brand strength → cost of attracting deposits

→

Consequences

Financial institution <u>performance</u>

Information <u>disclosure</u>

It can be seen from the above paradigm model that, the central activity – interactions was placed at the centre of the flowchart. Concepts that appear to represent conditioning influences were linked from the left side of the central category, whist concepts representing the consequences of the interactions were placed to the right of it. In this way, those major concepts were closely linked to the central category, and a theoretical framework of modelling intangibles was represented.

Overall, the process of data analysis in this study included both informal and formal data processing. Before the formal data coding procedure suggested by ground theory scientists, familiarisation and reflection of case data were carried out. It should be noted that, the theory generation was a comparative, iterative and reflective process (Parker and Roffey, 1997). Case data was read and reread, and memos were continually written. Moreover, the three types of coding – open coding, axial coding, and selective coding were integrated together, and took place at the same time occasionally.

7.4 Limitations of the qualitative study

Collingridge and Gantt (2008) argue that fundamental issues related to the quality of qualitative research are reliability, validity, sampling, and generalizability. As has been discussed in section 4.7 of chapter four, considerable effort was made to enhance reliability and validity of the case study. However, many practical difficulties were faced in the process of qualitative data collection, and these imposed some constraints in this study (see section 7.2 of this chapter). Additionally, although grounded theory data analysis is argued to be a systematic data processing and theory generation technique (Parker and Roffey, 1997), there are threats to the validity and reliability within this method. As a result, this study has some limitations with its data collection and data processing.

The first problem refers to the sample selection in the data collection process. As mentioned before, the sample for the quantitative study of this thesis was drawn from banks in Europe, while the interviewees in the qualitative study were based in the UK due to constraints of time and finance. Thus, there may appear to be a sample mismatch problem with the mixed-methods research. Moreover, as has been discussed in section 7.2.3 of this chapter, access to targeted interviewees was also a problem in this research, especially during the period of financial crisis. As a result, on the one hand, this constrained the sample size of the case interview. On the other hand, the approached

interviewees to a large extent depended on the participants' willingness to help and may not reach the purpose of "maximum variation", which is considered to be one of the most appropriate sample selections for the general purpose of case study research (Parry, 1998).

Secondly, as the research topic involves a large amount of sensitive information, it created difficulties in collecting interview data. This not only limited the access to targeted participants, but also made interviewees very cautious about producing detailed and in-depth information. Moreover, some interviews could not be recorded due to the interviewees' anxiety about confidentiality. In such a situation, there were some points being lost when the interviewee spoke fast, as it was difficult for the researcher to take notes. In dealing with this problem, after the interview was completed, when short term memory was still fresh, the researcher immediately went to a nearby coffee shop or train station and wrote down whatever she could remember regarding the conversations.

Thirdly, this study shared a common problem with other qualitative research, that is, it was not free from being "impressionistic and subjective" (Bryman, 2004:284). McKinnon (1988) points out that potential bias that the researcher imposes can be present in the interview process and data analysis process. In this study, although effort was made to reduce bias, the researcher's experience, background knowledge, and also biases have played a role not only in the process of data collection, such as sample selection and interview question formulation, but also in the coding process which represented the researcher's thoughts about how data might be interpreted (Seale, 1999).

The fourth problem concerns the generalisation that can be drawn from this research. Qualitative research is often criticized for that the scope of findings is restricted (Bryman, 2004). The researcher recognized that it was difficult to generalize the findings of the case study to other settings. However, it is argued that the way of generalizing in a qualitative study is analytic generalization (or theoretical generalization) rather than statistical generalization (e.g., Seale, 1999; Yin, 2003). In this sense, the findings of this thesis aim to achieve analytical generalization based on "assertational logic" (Collingridge and Gantt, 2008:392), and hence provide a guide to understanding intangibles in other settings.

It is worthwhile to point out that, although the above problems impose threats to the validity and reliability of the qualitative study, employing mixed-methods is a useful solution to enhance the validity and reliability of the overall research (detailed discussions

refer to sections 4.7.1 and 4.7.2 of chapter four). As Seale (1999) indicates, combining with quantitative approach can help qualitative researchers establish the generalizability of their results.

7.5 Conclusions

This chapter has outlined the research method that was adopted in the qualitative component of this thesis, namely interview-based case study. At first, it explained the different stages of the interview data collection, including targeting potential interviews, designing interview guides, getting access to interviews, and conducting interviews. It also identified the difficulties that the researcher encountered during these stages. After that, it discussed how the case interview data was processed. Specifically, grounded theory data analysis technique was employed as it was considered to be a systematic and formal process of data analysis and theory generation (Parker and Roffey, 1997). The procedure of data processing in this study included five stages: familiarization, reflection, open coding, axial coding, and selective coding. It explained in detail how various analysing instruments, such as comparison and memos writing, were used during the coding process and how the model was generated from the raw data. Finally, this chapter summarised briefly the potential limitations with the case study method.

The following chapters will then present the empirical results of the qualitative study. Chapter eight will discuss the understanding of and modelling intangibles, while chapter nine will illustrate how intangibles were measured and reported. In addition, the integrated findings that were generated from the combination of quantitative and qualitative approaches will be also discussed in chapter eight and nine.

Chapter Eight: Understanding and Modelling Intangibles: Empirical Results from the Qualitative Study and Integration with the Quantitative Study

8.1 Introduction

Chapter six reported the empirical findings from the quantitative component of this thesis. This chapter and the next chapter (chapter nine) will discuss the results that were generated from the qualitative part of this thesis, in which the following specific research questions were explored:

- **RQ2:** What may be the important intangibles for a bank?
- **RQ3:** How do intangibles relate to bank performance?
- **RQ4:** How can intangibles be measured?
- **RQ5:** How have intangibles been reported?

As has been introduced in chapter seven, evidence was gathered from interviews with twelve bank analysts and eleven managers in the banks and other financial institutions in the UK. By employing a grounded theory technique, interview data was analysed through five stages: familiarisation, reflection, open coding, axial coding and selective coding. In order to make sense of the mass of interview data, empirical findings that are presented in this chapter and the next chapter will be analysed by relating them to the above specific questions. In particular, this chapter concerns **RQ2** and **RQ3**, while chapter nine will answer **RQ4** and **RQ5**. Additionally, by combining findings from the quantitative and qualitative approaches, another two specific questions will be explored in this chapter and the next chapter in relation to intangible modelling, measurement, and disclosure. They are:

- **RQ6:** What may be the problems and limitations with the quantitative models and data?
- **RQ7:** How can the quantitative models be improved?

Overall, it is found that managers and analysts appeared to have different understandings of intangibles in terms of definition, classification, the importance of intangibles in banking and the key intangible elements. Managers were more comfortable with the broad concept of intangibles and the three categories of them used in academic research than

analysts, as some analysts considered intangibles an accounting item on the balance sheet only. Almost all the managers were in favour of the importance of intangibles in creating competitive advantages for them, while most of the analysts prioritised the tangible or financial strengths over intangibles, especially in the financial crisis, although they acknowledged the importance of intangibles. An interesting finding is that most of the analysts claimed that even though they could not put intangible information in their formal reports, they took into consideration of intangibles privately when assessing a bank or making recommendations to clients. With regard to the key intangible elements, most of the analysts emphasized the importance of goodwill and top management human capital. On the other hand, managers expressed different views. Some of them argued that it was important to balance or combine different types of intangibles even though they might pay more attention to some elements of intangibles than others, while other managers discussed various intangible strengths they had developed historically or the critical ones in the financial crisis.

With regard to RQ3: how do intangibles relate to bank performance, a grounded theory model of intangibles was developed from the case data. It reveals that under certain conditions (causal conditions such as changes in the economic environment and changes in the banking sector, and contextual conditions such as industry characteristics, regulatory and standard setting, and M&A), intangibles integrate with other types of resources through three different levels, namely intra-category interactions, cross-category interactions and network interactions, and then affect institution performance and information disclosure. This model shows that the combination and integration of intangibles and tangibles provides the means to reduce transaction costs, to improve financial intermediation process and risk management, to make the bank deposit and loan portfolio more desirable, and to reduce information asymmetry. In such a process, the capability of top management in terms of searching for the appropriate and robust combination of intangibles and tangibles in response to environmental changes is crucial.

Besides the above qualitative evidence, this chapter also presents integrated evidence on modelling intangibles that was generated from connecting and comparing empirical results of the quantitative and qualitative studies. Firstly, evidence triangulation is achieved in some findings. Empirical results of both the quantitative and qualitative studies show that the combined effects intangibles on institution performance are more significant than they do individually, and top management human capital is important in terms of impacting

other types of intangibles and bank performance. Secondly, the grounded theory model of intangibles generated from the qualitative study offers some useful suggestions to improve the quantitative model construction for future research. For example, the brand metrics used in the quantitative study included both investment in brand (e.g., advertising and marketing expenditures) and brand resources (e.g., brand value). It is important to distinguish between intangible investment variables and intangible resource variables, suggesting by the intra-category interactions in the grounded theory model.

This chapter is structured as follows. Section 8.2 outlines how interviewees understood the concept of "intangibles" in practice, including the definition and classification of intangibles, the importance of intangibles, and the core intangible elements. Section 8.3 discusses the constructed grounded theory model that has been shown in section 7.3.6 of chapter seven, which illustrates the interactions among intangible elements as well as the conditions and consequences associated with them. After that, section 8.4 integrates the above discussed findings with quantitative empirical results in terms of triangulation of evidence, the limitations with quantitative modelling of intangibles and potential ways to improve it.   Finally, section 8.5 concludes this chapter.

8.2 Understanding intangibles

The case interview data revealed that general ideas regarding intangibles, including the understanding of the concept of it, the extent to which intangibles are important in the bank business model, and the core intangible elements, tended to be different from analysts' and managers' perspectives. It is evident that managers appeared to be more comfortable with the basic ideas related to intangibles than analysts, as the former group were those who were "managing" banks and the latter were doing bank "valuation". This section discusses their perceptions regarding the concept of intangibles, and answers the following specific research question (RQ2): "what may be the important intangibles for a bank?". Specifically, subsection 8.2.1 discussed issues related to the definition and classification of intangibles, subsection 8.2.2 illustrates how interviewees perceived   the importance of intangibles in the bank business model, and subsection 8.2.3 presents the discussion of what were the core intangibles from managers' and analysts' perspectives. Finally, subsection 8.2.4 provides summary and discussions of the understanding of intangibles.

8.2.1 The definition and classification of intangibles

As noted in section 7.2.4 of chapter seven, at the beginning of each interview, the researcher introduced briefly the area of interest and the definition and classification of intangibles from the perspective of academic research. It is found that many bank analysts appeared to treat intangibles as only an accounting item, that is, the accounting number of goodwill and other intangible assets on the balance sheet. As analyst A1 stated,

> *"That's a challenging topic. I mean most people, myself and my competitors, will generally think intangibles is a line on the balance sheet, which will be acquired intangibles and goodwill, that is, when you bought a bank or asset, its premium to book value. So I think we are lazy in that we wouldn't look at generally intangibles."*
>
> (Interview A1)

Similar views were also observed from interviews with analysts A2, A8, A9, and A10. For example, analyst A8 stressed that the concept of intangibles to some extent was seen as an accounting issue that banks had to use after an acquisition. Analyst A10 also mentioned that,

> *"[O]bviously for me, intangibles are largely the figures that I can see on the balance sheet, which is goodwill and acquired intangibles."* (Interview A10)

However, the narrow definition about intangibles given by analysts does not mean that they did not look at other non-financial intangible items, which was called "soft intangibles" or "soft factors" by some analysts. As analyst A2 explained, goodwill was indeed a financial measure of intangible assets.

> *"I think that's, first of all, on the balance sheet of the banks, they all have intangible elements, which just come from acquisition, so therefore, which is goodwill, what we're talking about here, that has been paid for the bank. That constitutes most of the intangibles. But that goodwill itself is a measure, [which] supposes to be a measure of the value of source of assets, intangible assets. And that includes franchise, brand value that we are mentioning, customer relationships, ...and human capital [that]is also extremely important. So therefore, we do look at them in that way."* (Interview A2)

On the other hand, managers interviewed tended to be sympathetic to the ideas associated with the term intangibles. They talked about intangibles from a broad concept, including not only the accounting number of goodwill and other intangible assets, but also other non-financial items. For instance, bank manager B7 described the concept of intangibles as follows[141]:

> *"I think intangibles include goodwill and other intangibles on the balance sheet, but more relate to business brand, customer value, etc. When I look at goodwill on the balance sheet at the end of the day, I think there is always something missing. Goodwill represents mainly purchase price during the merger process."* (Interview B7)

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[141] This is based on the notes that the researcher has taken during the interview rather than a direct quote.

Regarding the classification of intangibles, analysts tended to look at intangibles in two dimensions. One was the accounting term of goodwill and other intangibles on the balance sheet, and all other intangible elements were seen as "soft intangibles". Compared with analysts' view, managers in general were comfortable with the classification of intangibles adopted in this study, in which intangibles were classified into three categories, namely human capital, structural capital, and relational capital. However, most of the managers preferred to describe intangibles using their own dimensions. The classification schemata of intangibles for the case institutions followed the way of being easy in internal communication and management.

Some managers looked at intangible elements from various aspects of business operation on the basis of the balanced scorecard quadrants, which included financial, customer, employee, and operational (process) sections. For example, bank manager B6 talked about three types of intangibles based on their balanced scorecard, that is, customer section (e.g., brand health, reputation, etc.), process section (e.g., operation performance that tracks key projects), and employee section (e.g., employee engagement). In fact, the balanced scorecard appeared to be the most commonly used measurement and management instrument of intangibles for the case institutions, and will be further discussed in the next chapter (see section 9.2 of chapter nine). This is consistent with Fincham and Roslender's (2003) empirical study of intellectual capital management, in which they find that the balanced scorecard was widely mentioned in the majority of interviews with managers in knowledge-based companies.

Apart from the categories of intangibles based on the balanced scorecard quadrants, some managers classified intangible elements in their own ways. For instance, manager B3 discussed intangibles in four groups, which were 1) knowledge unit (e.g., brands, level of innovation, reputation, and customer loyalty); 2) employee unit (e.g., morale or satisfaction of staff; the quality of leadership; the quality of recruitment; the level of openness; and the level of challenge existing in the business); 3) operational unit (e.g., the effectiveness of getting disaster preparedness); and 4) technical unit (e.g., illiquidity premium).

Moreover, it is found that the classification schemata in the case institutions were to some extent ambiguous and flexible. The case institutions tended to classify intangibles in a simple way and to focus on managing intangible elements that were important to them. However, intangible items were numerous and emerged continuously from business

development, and some identified intangible elements appeared to be exclusive from their classification scheme. For example, quality of portfolio identified by manager B7 tended to be a financial intangible item rather than an element that fell into any of the three categories of intangibles.

Overall, it is found that managers were generally familiar with the ideas associated with the concept of intangibles, although slight differences were observed in terms of the classification of it. However, the view of intangibles from analysts' perspective tended to be narrow, as many of them focused on the accounting issue rather than the broad concept of intangibles.

8.2.2 The importance of intangibles in the bank business model

Previous literature has shown that intangibles are important sources of competitive advantage for business firms in most industries (García-Ayuso, 2003a). In the banking sector, where the business model is knowledge intensive, intangibles are found to be extremely important for wealth creation (e.g., Curado, 2008; El-Bannany, 2008; Mavridis, 2004).

In this study, the view that intangibles are key sources of competitive advantage for financial institutions that are successful was generally recognised by managers in the case institutions. Almost all the managers interviewed discussed the importance of intangibles for their business success. For example, manager B5 stated,

> "*So whether it is for banks or for this bank, I think there is a growing understanding, recognition that these intangibles play a very real part in banks' success. So if I talk about XXXX [bank name removed], we would certainly say these soft factors [are important].*" (Interview B5)

Manager B2 remarked that,

> "*I think you are looking at a very, very interesting area, because in my view, modern accountancy only captures a part of the value of the business…it measures lots of things, but actually does it measure the really important things? So what is a business? A business consists of fundamentally three groups of people: there is a group of people who work for us, and we need to meet their needs; there is a group of people who own us – our shareholders, and we need to meet their needs; and there is a group of people who use our products and services – our customers, and critically importantly, we need to meet their needs. So actually what the business consists of, really, is the relationship between these groups of people. And what accountancy measures is the money [that] changed hands. It doesn't measure the relationships between these people. So I actually think, if you say, what proportion of your business do the accounts tell you about? I don't know. My view will be 30%, probably?*" (Interview B2)

Manager B2 argued that intangibles might account for about 70 percent of their business. Such a statement emphasized the importance of intangibles to the case institution. Interestingly, in Curado's (2008) empirical study that investigates intellectual capital in the banking sector in Portugal, she found that on average 55% of the value of the bank is due to its intellectual capital, when she asked the perceptions of the interviewees (bank managers) regarding the percentage of the value of the bank due to knowledge management. Although the proportion of intangibles to the bank value might be only estimated by the interviewee, it showed that intangibles were considered to be very important in the case institution.

As discussed in section 2.3.2 of chapter two, all banks provide similar financial intermediation service and payment service, and bank products have the characteristics of being easy to copy and lack of adequate patent protection. As a result, competitive advantage that a bank gains from its tangible products may not last long (Watkins, 2000), and banks tend to heavily rely on their intangible resources, such as human capital and customer capital, to survive (Kamath, 2007). In this study, some managers expressed a similar view with the above arguments. For example, manager B7 argued that[142],

> "*You know banks have no product specialization. All products are normal for every bank. If we introduced a new product today, then after a few days, even tomorrow, all other banks would have the same product. So why do customers choose this bank and not that bank? It's something about the quality of the service, consistency of the service, the way we treat them, and that they can get the same answer from both telephone banking and from the branch.*" (Interview B7)

Manager B7 explained clearly the reason why some intangibles, such as service quality and customer satisfaction, were so important for their business success. He also discussed the difference between the banking industry and other kind of industries to further remark the importance of intangibles for the banking sector[143].

> "*There is a difference between banks and manufacturers. Not like manufacturers, banks provide an entire service; that's all about intangibles. Customers are buying things from banks because of how the management are working in that bank, and buying things because of the safety guide in the bank that protects their money, and buying things because of how we grow business and provide credit. That's intangibles.*" (Interview B7)

Similar views were observed in interviews with manager B8, who also argued that the reasons why intangibles like human capital were the main source of competitive advantage in the banking industry were that banks provide services rather than products and have no

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[142] This is based on the notes that the researcher has taken during the interview rather than a direct quote.
[143] This is based on the notes that the researcher has taken during the interview rather than a direct quote.

patents.

Although managers in general recognized that intangibles rather than tangible resources were the key sources of their competitive advantage, some of them argued that this did not mean tangible resources, such as products, were not important for them. On the contrary, tangible and financial resources constructed the foundation upon which intangibles could make an impact. As manager B5 stated,

> "*But you know, as long as you are there… with good products, then I think, I would say, if some of those intangibles that you've described have slight difference, [they will] make a big difference. So other things being equal – if the products are ok enough, then you play a brand card, and you can produce significant incremental revenue or profitability. What I don't think you can do is to allow intangibles to trade for pure products or services. So you know, there is always a hygiene you have to be at least this score, and then [you can] really play some of those intangibles to really get benefit. So customers wouldn't accept if it is a really poor mortgage but is very ethical. That wouldn't get you very far.*"* (Interview B5)

The above statement shows that tangibles were also important from managerial perspective. Holland (2011) points out that tangibles in banking included financial tangibles (assets and liabilities); financial products; intermediation and risk management mechanisms; and technology. Tangibles and intangibles were both jointly at the heart of the bank economic transformation process or business model. Tangibles provided an architecture which determined in part the nature and structure of intangibles. Some tangibles such as technology (say the internet or the payments system) could alter the need for intangibles such as customer satisfaction or brands. Intangibles typically exploit the concrete tangible and other tangibles (Holland, 2011).

From a resource-based view, competitive advantage is a result of employing strategic resources to the sustainable benefit of a company (Kristandl and Bontis, 2007), and such resources could be intangibles and tangibles. The RBV further suggests that the integration of different firm resources is more likely to contribute to firm superior performance (Reed et al., 2006). The evidence presented here shows that although tangible assets might not be regarded as the key resources for creating competitive advantage, they build up the foundation and enable intangible assets to have an impact on it and create value ultimately, as illustrated by Figure 8.1 [144]. This finding confirmed the importance of resource integration in the RBV theory (e.g., Clulow et al., 2003; Teece et al., 1997). Teece et al. (1997) stress that a firm's competitive advantage comes from competences that are based

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[144] The impacts of intangibles on tangibles will be discussed later in this chapter (see section 8.2.3.3).

on a collection of routines, skills, and complementary assets that are difficult to imitate.

Figure 8.1: Intangibles and tangibles in the case institutions
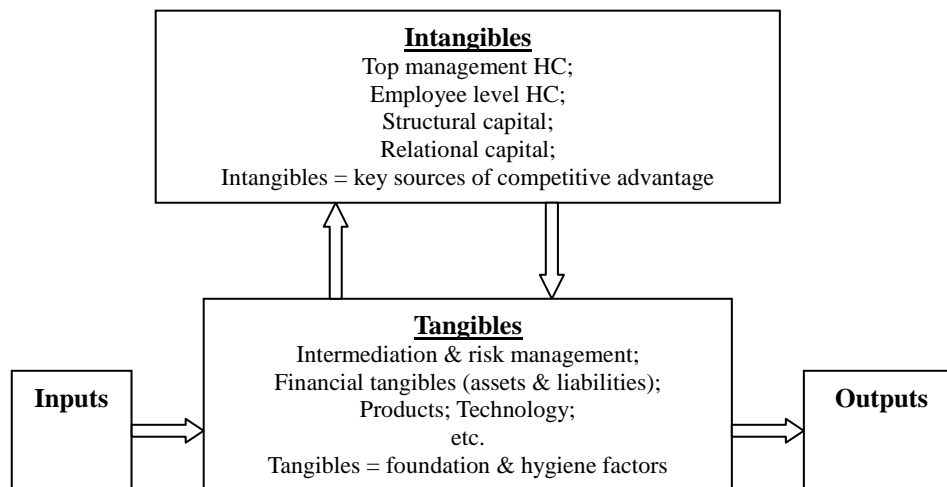
On the other hand, the views on the importance of intangibles from analysts' perspective appeared to be mixed. Firstly, several analysts had a similar view with managers, that is, intangibles were the main sources of competitive advantage (A1, A2, and A6). Analyst A1 argued that, "*banks are all about intangibles*". Analyst A6 stressed that intangibles could have long-term impacts on banks' business success.

> "*I'd like to break the banks down into four basic categories:…revenue, costs, bad debts, and other. What I want to say is that the kind of management, or culture, or intangibles in a broad sense can have a short-term impact on the costs. But in the long-term, it can have an impact on everything....*" (Interview A6)

He went on to say,

> "*So one of the things I'd like to do is to look at the change of return on assets over five years or ten years, and then to see which bank management is adding the most value. Now in the way that's tangible, but then I have to make – you have to assume that there are intangible elements driving [it].*" (Interview A6)

The above quotation shows that analyst A6 believed that intangibles were the fundamental driver of bank business success. Similar view was observed from analyst A2.

> "*I tend to think [that] there are important differences between banks, and [these differences] do ultimately drive success or failure of a bank. These differences do come down to people – human capital, decision making and so on, and also to, in retail area, the value of franchise, distribution network, and so on.*" (Interview A2)

Secondly, most of the analysts interviewed (A4, A5, A7, A8, A10, A11, and A12) stressed that although they acknowledged the significance of intangibles in wealth creation, they prioritised the tangible or financial strengths rather than intangibles in terms of creating

value for banks. For example, analyst A4 mentioned that he focused on the price-to-book value when he analysed a bank. Only when banks had the same price-to-book value, did he differentiate them by taking into account other issues such as strengths of brand, management team, or culture. Analyst A5 explained more clearly about the underlying model of bank valuation. He noted,

> "*I think at the moment, the most important thing is the tangible assets. You know, when I'm analysing a bank, ... 95% of my time is spent on analysing the tangibles, you know, analysing the balance sheet, the quality of the assets the banks have. And then, when I am thinking about my final conclusion, I would include in my final conclusion some analyses on the intangibles. So at the moment, it's all about the financial strength of your balance sheet. And then on the top of that, if you have a good customer franchise, a strong management team, then I think that's a bonus, but not the biggest factor.*"
>
> (Interview A5)

The case data shows that the prominent emphasis was placed on the tangible or financial resources rather than intangibles by most of the analysts. Admittedly, this is not a surprising finding as analysts were "technocratic and rules-driven in nature" (Campbell and Slack, 2008:4). However, some other factors may result in the relative importance of tangible and financial resources over intangibles.

The first factor is the financial crisis during which time most of the interviews with analysts were conducted. At that time, capital or liquidity problem tended to be a crucial issue for the majority of the financial institutions. As a result, analysts paid more attention to banks' financial strength of capital or liquidity. As analyst A7 remarked,

> "*[T]he valuation at the moment has a tendency to be kind of pessimistic ...because economy is slowing down,...Because you know, when you need capital, you need something you can sell easily. So I guess intangibles would be something that would be discounted much more heavily than anything else.*"   (Interview A7)

The second reason may be that one of the main roles of analysts is to assess a bank's value and develop forecasts using financial analysis. Their reports are generally based on numerical data. However, information on intangibles is largely presented in qualitative terms, and this to some extent limits the usefulness of such information. Analyst A2 pointed out that,

> "*As for the other [intangible] elements, the problem is although we know they are very important, it is hard to quantify them. So when analysts look at companies, we'd like to do a lot of analyses and that tend to be based on quantitative data and broad hard data. When we talk about intangibles by its nature, it's soft data. It's hard to assess the value of it.*"   (Interview A2)

Analyst A10 expressed a similar view. She said,

> "*I am really interested in it [intangibles] if I can see a monetary issue attached with it*

and a way to prove it. And those are very difficult." (Interview A10)

Apart from the above discussed views on the importance of intangibles, a few analysts mainly focused on accounting number of goodwill, but paid little attention to other intangibles (A3 and A9). Analyst A3 noted that he "*disregard it [intangibles] in a large part*". Analyst A9 mentioned that the impairment of intangibles (e.g., the impairment of goodwill during M&A and the impairment of IT investment) was important for bank valuation, but he tended to focus less on other types of intangibles.

Despite these different views on the extent to which intangibles are important for banks, most of the analysts interviewed acknowledged that they did consider intangibles when they assessed a bank. Although such information could not be put in their public reports that were formal explanations of their stock recommendation, analysts thought about intangibles privately when they made recommendations to clients. As analyst A5 stated,

> "*I can't put that [intangibles] into financial numbers. But I can, when I'm thinking about whether I recommend people should buy or sell the shares, I do take into account [intangibles]. I think those are important issues…*" (Interview A5)

Similarly, analyst A2 pointed out that information about intangibles that analysts could get was "*a little bit unsatisfactory*". As a result,

> "*[I]t's not regular and systematic to look at intangibles and track value of intangibles...it's not reliable to do that. But we will comment on that. We can't do chart, we can't do excel or spreadsheet on it. But we can comment [on it], such as Lloyds TSB has one of the best return on equity, one of the reasons for that is its franchise value is very strong, and it tends to get very good customer relationship management, cross-sell other products and so on…So we tend to say, yes, they have done that, [and] that got to be their strength. [It's] hard to quantify this,… but that's definitely something [in there].*" (Interview A2)

Analyst A6 explained that he could not include some information about intangibles, such as management quality, into his report, because "*if you write a report say this management is brilliant and fantastic, then everyone thinks you are ideal*". But when he communicated with his clients, "*the longer-term investors might spend some time asking about qualitative about management and that type of thing.*" Therefore, it is evident that there was a difference between analysts' public reports and their private thinking. Although they could not make judgements based on some intangibles in their analysts' reports, they were thinking about those all the time and communicating such information with their clients.

This is inconsistent with the findings of Campbell and Slack's (2008) study, in which they find that narrative reporting of the annual reports that contained information about

intangibles tended to be relatively unimportant or unhelpful to bank analysts. In this study, most of the analysts recognised the importance of intangibles in banks' business success. Additionally, the majority of the analysts interviewed had some ideas about the key intangible elements and how they played a role in creating competitive advantage. In the next subsection, managers and analysts' perceptions regarding what are the most important intangibles will be discussed.

8.2.3 Core intangibles

The previous subsection looked at how managers and analysts understood intangibles. It was apparent that intangibles were regarded as key advantage creating resources, while tangibles constructed the base for intangibles to act on. This subsection focuses on examining the critical intangibles. From a RBV point of view, on the one hand, it emphasizes the resource integration, as indicated before; on the other hand, the identification of core competitive advantage creating resources is also crucial. Fahy (2000) argue that management's strategic role is to identify key resources of sustainable competitive advantage, and then to develop, protect and deploy them.

In order to investigate the core competitive advantage creating resources, a specific research question (RQ2) – what may be the important intangibles for a bank – was designed to explore managers' and analysts' views on it. The interview data shows that the managers in the case institutions tended to pay more attention to intangible elements in which they had relative strengths compared with peers, but at the same time emphasized the importance of the combination of different intangible components. On the other hand, the majority of analysts argued that apart from goodwill, top management HC constituted the key focus in their bank valuation.

Managers B2, B6, B8, B10 and B1 emphasized the importance of balancing three intangible components. They demonstrated that the impacts of individual intangible elements were limited. Only when they were combined together, banks could achieve their business success. As manager B8 remarked,

> "I think it's a combination of all three. You need to do all three absolutely right. Human capital, if you get it wrong, then you lose; if you get structural capital wrong, you lose; if you get your relational capital wrong, you also lose. So you do need to do all three at the same time. But I don't believe in those companies that only focus on relational capital, because it is very nice to have very loyal customers, but if your business model is too expensive, you can't make money. In the long-term, you can't continue to give

your customers a great service, because you are just not efficient enough. So you have to do all three, clearly.” (Interview B8)

Managers in interview B6 expressed a similar view. One of them stated that he would not say which intangible metrics were the drivers of their business. By contrast, they had a variety of metrics for intangibles and tangibles in their balanced scorecard. Only when they got all those things right, they could achieve a high level of profitability. Likewise, manager B2 classified intangibles into three types of relationships, including relationships with customers, employees, and shareholders. He emphasized that all these relationships were important for their business success.

Although these managers highlighted the importance of combining different intangible elements, they mentioned that they paid more attention to some particular elements in which they had relative strengths compared with their peers. For example, manager B8 emphasized the importance of doing HS, SC and RC at the same time on the one hand, and pointed out that culture was the No.1 intangibles for their bank on the other hand. He accentuated the importance of culture as the culture in their bank was “unique” from peer group.   Manager B2, as noted before, highlighted that all three types of relationship were important intangibles for them, but he went on to say that they had an order of priority,

“*So what intangibles are most important? I think the quality of the relationships with our customers, our people and shareholders – probably in that order of priority, the level of trust that exists, because that in turn drives loyalty, which in turn drives return.*” (Interview B2)

It is found that almost all the case institutions have developed relative strengths in some intangible resources compared with competitors, and they tried to maintain and enhance these intangible strengths. Manager B5 stated that their brand was extremely important relative to other intangible factors, as the bank was “*one of the few banks that have genuine brand identity as well as a huge amount of awareness*”. Manager B7 talked about a story of how he identified the relative strength in intangibles and set a strategy of business development according to it[145].

“*I remembered the first day when I came into XXXX [bank name removed]. I have 17 years working experience in ZZZZ [bank name removed], and 3 years in XXXX. When I came to XXXX, I found that XXXX's customer system was not new, not as good as some other banks. But its brand was very strong. So I considered how can I grow our ranking in the market, say from 15th to 1st? The first level I think is people, distribution and brand.*” (Interview B7)

The relative importance of some intangible elements over others is not only due to the

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[145] This is based on the notes that the researcher has taken during the interview rather than a direct quote.

factor that the case institutions have developed specific strengths in them, but also determined by the economic or market environment. It is found that the 2007-2009 financial crisis made some intangible items, such as customer relationships, brands and human capital, extremely important for the case institutions. Managers B4, for example, mentioned that they paid more attention to maintaining customer relationships during the financial crisis. Manager B10 talked about the relative importance of brands in the financial crisis.

> *"I think what has happened in the last eighteen months within the banking sector [financial crisis] has undoubtedly emphasized the importance of the brand elements of security and safety."* (Interview B10)

Managers in interview B6 stated that their top management reputation was crucial in the financial crisis in terms of helping them convince investors and customers and leading them pass through the crisis. Manager B7 argued that all banks were in a game during the recession, and the one with the best employees would win the game.

The above findings that the critical intangibles in the case institutions were in response to the change of environment are consistent with the dynamic view of RBV. As has been discussed in section 2.3.1 of chapter two, the dynamic RBV point of view argues that firms should have the ability to manage their key advantage creating resources in response to external environmental changes. The evidence presented here shows that, apart from relying on intangible strengths that the case institutions developed historically, they were able to change their management focus on critical intangible items responding to the financial crisis, and sought to combine different resources in an appropriate way. How banks tried to develop robust combination of key resources for varying external circumstances will be further explored in later section of this chapter (see section 8.3).

Overall, it can be seen that the views on the core intangibles from managers' perception appeared to be slightly different. Some of them discussed the importance of balancing or combining different types of intangibles, and at the same time gave more weights to some intangible elements than others. Other managers emphasized the specific intangible strengths they had or the critical intangible elements in the financial crisis. Customer relationships, as a core intangible factor, were mentioned by many managers (B1, B2, B3, B4, B9, and B10). Human capital, either in top management level or employee level, was argued to be another important intangible element by manager B1, B6, B7, and B8. Managers B5, B7 and B10 highlighted the importance of brands, while manager B8 gave

priority to culture[146].

With regard to analysts' view on the core intangible items, most of them perceived that goodwill and top management human capital were the most important intangibles for banks.

The majority of analysts (A2, A3, A4, A5, A8, A9, A10, and A12) identified that goodwill on the balance sheet was the most important intangible element from valuation perspective. Goodwill, as an accounting number on the balance sheet, tended to be a significant factor in bank valuation method in which price-to-book ratio is generally used to valuate banks. In this sense, it is important to exclude goodwill in calculating book value of a bank. As analyst A4 noted,

> "*For bank valuation, it is quite important from the 'book perspective', because bank has been valued at the moment as price to tangible book. People want to know what the tangible book is. Therefore, they take out the intangibles on the balance sheet, specifically goodwill remaining on the balance sheet,…That's very important for bank valuation.*" (Interview A4)

Additionally, goodwill is also a deduction of capital. In this sense, it became an important factor in the financial crisis, as capital appeared to be critical for banks' survive at that time (A3, A5, A10). Analyst A3 argued that during the financial crisis, analysts and investors tended to discount all the non-capital items, such as goodwill.

It can be seen that the importance of goodwill, from analysts' perspective, was mainly discussed as an accounting term. In this instance, it was treated as a financial metric on the balance sheet rather than as an intangible element. However, several analysts considered that it was indeed a proxy or measure of intangible assets, such as customer relationships, brands, and branch networks (A2 and A10). As analyst A2 remarked,

> "*But that goodwill itself is a measure, [which] supposes to be a measure of the value of source of assets, intangible assets. And that includes franchise, brand value that we are mentioning, [and] customer relationships,...*" (Interview A2)

Apart from goodwill, top management human capital was argued to be another core intangible element by most of the analysts interviewed (A1, A3, A4, A5, A6, A7, and A8). Analyst A3 pointed out that investors were mainly concerned with tangible and financial resources in a bank, such as product range, geographic distribution, and capital. For intangibles, he said,

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[146] It should be noted that some managers identified more than one intangible element as the core intangibles for their bank.

> *"I guess the management is the only area what people think is valuable source of intangibles within a bank…"* (Interview A3)

Analyst A7 emphasized the importance of management quality and creditability in a bank from the agency theory perspective, and gave an example of how management decision making affected a bank's profitability. He illustrated that managers in a bank decided to raise money from private investors rather than from governments. Such a decision resulted in cost increasing, and in turn led to a destruction of shareholder value. Additionally, analyst A6 stated that top management skills could have an impact on other types of intangibles.

> *"So actually the management in terms of how [they] embody the cost control culture, how rapidly they want to grow the balance sheet, how risky they want to be with the balance sheet in terms of leverage, is by far away the most important thing. …You know, the idea from an analyst… is [that] the management will set the tone on the culture and a lot of other intangibles, and therefore they are the starting point for all of those."* (Interview A6)

The above finding is in line with Breton and Taffler's (2001) study. They explore the information set used by sell-side analysts in their stock recommendation decisions by using content analysis method, and find that apart from profit-based financial information, non-financial qualitative factors, in particular corporate management and strategy, were the most significant drivers of analyst judgement.

Although most of the analysts were favourable to the importance of top management human capital, some of them stressed that the relative importance of intangibles might vary with the different types of banking. For example, some argued that brands and customer relationships were very powerful in retail banking (A2, A7, and A10), while human capital such as professional skills and employee knowledge tended to be extremely important in wholesale and investment banking (A2). On the other hand, analyst A6 noted that the customer relationship was important in corporate banking and brands were important in investment banking, but either of them was less relevant in retail or commercial banking.

8.2.4 Summaries and discussions

The above subsections discussed several issues related to the concept of intangibles according to the interviewees' perspectives, including how they understood intangibles in terms of the definition and classification of it, the importance of intangibles to bank business success, as well as the core intangible elements, and answered the specific

research question (RQ2): what may be the important intangibles for a bank?

Overall, managers and analysts expressed different views on the above issues. The opinion gap between the two cohorts might be attributed to the following reasons. Firstly, the role of managers in a bank is to manage it, while the role of analysts is to value a bank. In this sense, the former tend to look at the whole process of bank value creation that involves both financial and non-financial elements, and the latter focus more on the consequence of value creation, such as performance-related items. Secondly, this could be explained by the information asymmetry existing in the market. For example, analysts paid more attention to top management HC compared with other types of intangibles, not only due to the reason that it was important for banks, but also because of the lack of accessibility to information about other intangibles (e.g., analyst A5). The information asymmetry problem will be further discussed in chapter nine.

As indicated in chapter two, this thesis examined intangibles based on the RBV theory. Fahy (2000) develops a resource-based model of sustainable competitive advantage (see Figure 8.2), in which there are different types of sources and capabilities and managers play an important role in identifying and deploying those key resources and capabilities.

Figure 8.2: **A resource-based model of sustainable competitive advantage**
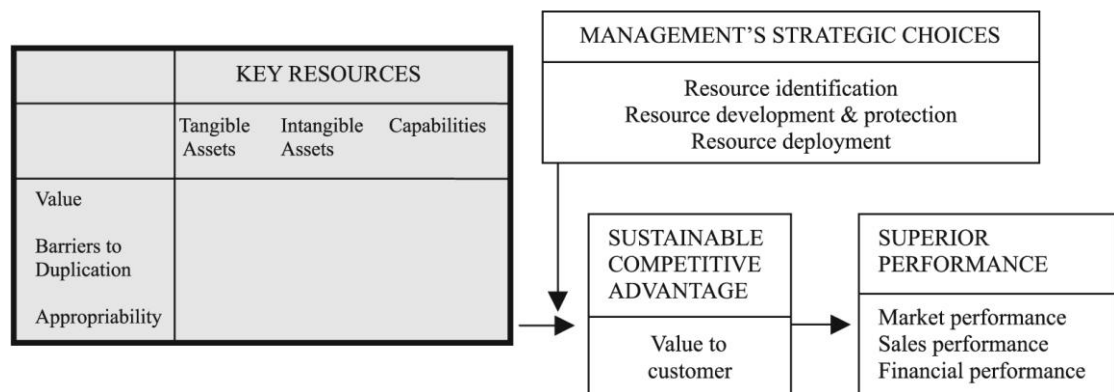
Source: Adapted from Fahy (2000) p. 100

Corresponding to the RBV theory, there were several interesting findings with regard to understanding intangibles that should be noted. Firstly, in line with previous studies (e.g., Clulow et al., 2003), intangibles rather than tangibles were identified to be key sources of competitive advantage. However, some managers and analysts interviewed argued that tangibles were also important in terms of building up the foundation upon which intangibles could make impacts. Therefore, there appears to be a two way relationship

between tangibles and intangibles in the bank value creation process. On the one hand, tangibles were the hygiene factors in a bank. Only with appropriate tangible base, intangibles could create competitive advantage for the bank. On the other hand, tangibles might be easy to identify and duplicate for competitors, and intangibles tended to be critical resources to make tangibles more effective and desirable, and hence to result in superior performance. This provides evidence on the resource integration hypothesis in the RBV theory.

Secondly, it is found that the relative importance of some intangible elements over others in the case banks was not only determined by their intangible strengths developed historically, but also affected by the change of economic environment. This can be explained from the dynamic RBV point of view, which emphasizes the importance of matching firm-specific resources to the market and environmental context (Sirmon et al., 2007).

Thirdly, both the conventional RBV model (e.g., Fahy 2000) and the dynamic RBV theory emphasize the important role of management. Fahy (2000) highlights that management's choice of key resources identification, development, and deployment is important for a firm, as can be seen from Figure 8.2. Sirmon et al. (2007) also stress that top management should be sensitive to the changes in the market and the environment, and develop strategies to match their resources and capabilities to those changes. In line with these, the case data revealed that the majority of analysts and some managers recognized the importance of top management human capital. How top management HC affected other types of intangibles and tangibles will be further explored in section 8.3.

8.3 A grounded theory model of intangibles

Section 8.2 discussed how managers and analysts understood the concept of intangibles, and answered RQ2: what may be the important intangibles for a bank? This section explores another specific research question (RQ3) – how do intangibles relate to bank performance – by presenting a grounded theory model of intangibles.

As described in section 7.3.6 of chapter seven, a grounded theory model of intangibles was generated from interview data (see Figure 7.2), and was presented as a paradigm model that linked categories of conditions and consequences with the core category – interactions.

This grounded theory model revealed that under certain causal or contextual conditions (see subsection 8.3.1), there were various interactions among intangible elements and interactions between intangibles and other types of resources or bank intermediation activities occurring (see subsection 8.3.2), and these interactions then affected bank performance and information disclosure (see subsection 8.3.3). In subsections 8.3.1 to 8.3.3, these categories or theoretical elements are discussed in detail with integrating related existing literature, in particular the RBV theory, and the overall grounded theory model is presented in subsection 8.3.4.

8.3.1 Conditions

From a grounded theory term, conditions in this study included causal and contextual conditions. The causal conditions that influenced the interactions were changes in the external environments, including changes in the economic environment (e.g., financial crisis) and in the banking industry (e.g., business globalization and technology development). Contextual conditions consisted of the industry context (e.g., industry characteristics and business segment characteristics), regulatory and standard setting, and special events such as merger or acquisition. Causal conditions that were mediated by contextual conditions continued to influence the role of intangibles in the value creation process of financial institutions. These conditions are discussed in the following subsections in detail.

8.3.1.1 Changes in the economic environment

Almost all the interviewees, both analysts and managers, discussed how the changes in economic environment influenced the role of intangibles in the financial institutions. Ongoing economic change, especially the world financial crisis in 2007-2009, not only influenced financial institution strategies' in making use of the interactions among intangibles, but also changed market perception with respect to understanding intangibles in the banking sector.

The majority of managers interviewed claimed that the financial crisis made some intangible elements more important than before (B1, B2, B3, B4, B7, B8, B9, and B10). In response to the change in the financial market, they tended to put more attention on the interactions between those intangibles and financial intermediation activities or risk

management.

As mentioned in the previous section, the customer relationship was argued to be a core intangible element for many case institutions. During the financial crisis, it became even more important. Failing banks in the crisis have often faced the problems with depositors scrambling to withdraw their funds or refusing to renew their maturing deposits (Caprio and Honohan, 2010). In this situation, the intangible of customer relationships was extremely critical for financial institutions in terms of maintaining and further increasing customer deposits. As manager B4 remarked,

> *"I think the things we have focused on most over the last two years, but specifically since TT [time information removed] when XXXX [bank name removed] became in problems, was customer contact, ...and that was central during the difficult times."*
>
> (Interview B4)

Managers B1 and B3 expressed similar views with B4. Manager B1 explained why customer relationships were so important in the financial crisis[147].

> *"The financial crisis makes established customer relationships more important for us, because new customers tend to be more risky than before. We don't know new customers a lot, they might have lost their job recently but we don't know. So lending money to new customer is far more risky at present, and existing customers are less risky and generate more revenue for us."*   (Interview B1)

Additionally, some managers highlighted the importance of customer emotional capital. They argued that customers' trust and confidence with a financial institution tended to be particularly significant in maintaining good customer relationships in the financial crisis (B2 and B11).

> *"Through the financial crisis, no banks actually run out of money; they run out of confidence. People stopped funding them, stopped lending to them, because they didn't trust them anymore."*   (Interview B2)

Brands, as another element of relational capital, were argued to become more important as well, as it was crucial in attracting new customers and retaining existing customers during the crisis. Manager B7 noted that their sustainable brand made customers confident to retain the established relationship with the bank. Manager B10 said,

> *"I think what has happened in the last eighteen months within the banking sector has undoubtedly emphasized the importance of the brand elements of security and safety."*
>
> (Interview B10)

Other intangible elements, such as employee level human capital and management

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[147]This is based on the notes that the researcher has taken during the interview rather than a direct quote.

reputation, were also highlighted to be more important in the financial crisis than in normal time (B1, B6, and B7). Managers in interview B6 noted that their conservative management reputation was challenged by investors and the market before the crisis. However, during the crisis, such a reputation became very important to increase the level of customers and investors confidence.

As has been shown in section 8.2, the relative importance of some intangibles over others was affected by environmental changes. The findings presented here provided further evidence to the influence of economic condition on intangibles. It was apparent that some specific intangible elements became extremely critical due to change in economic condition according to managers' perspective. As a result, more effort was put to exploit the interactions among intangibles and their impacts on lending and borrowing activities, as well as risk management during the financial crisis.

With regard to bank analysts' view on this, they generally recognised that the financial crisis changed the market perception on intangibles, but the picture of influences tended to be a mixed one among bank analysts. Some analysts (A4, A5, A8, A9, A11, and A12) perceived that the financial crisis drew public attention to some important intangible elements, such as brands and customer relationships. Others, however, argued that intangibles became less important in the financial crisis (A3, A6, A7, and A10).

Analysts A4, A8, A11, and A12 emphasized the importance of brand power in the financial crisis. Analyst A8 argued,

> "*So you know, certain banks have built the reputation around their name,…they have a name which has become actually quite trusted from the consumer perspective. So in this environment, having that intangible on the brand has been very very valuable indeed.*"
>
> (Interview A8)

The above quotation shows that the element of brand trust was a valuable intangible in the financial crisis. Tonkiss (2009) discusses the role of trust and confidence in the 2007-2009 financial crisis. He argues that trust relations have been historically crucial to the individual institution, financial market, and economic life. In this study, brand trust is considered an important brand element, consistent with some marketing researchers who suggest that brand trust is a part of "brand credibility" (Keller and Aaker, 1992) or "brand equity" (Ambler, 1997).

Likewise, analyst A4 pointed out that brand power was "*more a matter of confidence in the*

trust" during the financial crisis. He went on to note that such an element of brand trust was powerful in attracting deposits for banks. Analyst A11 also provided examples of how brand power helped banks to attract money during the crisis. Besides, analyst A5 stated that the financial crisis made customer relationships more important than before.

> *"[N]ow when all the consumers and general public are very nervous about their bank, I think it becomes more important than ever that you have a strong customer franchise. You've seen what happened to some of the smaller banks which have weak customer franchise and weak balance sheet [and] have to be nationalized."*   (Interview A5)

It can be seen from the above discussions that the financial crisis has changed public perception regarding intangibles. More attentions were put on some intangible elements than before. As analyst A8 highlighted,

> *"[T]he crash of Iceland really changes, you know, the rules of the game to some extent…So in that sense, you know, the brand issue has become something which customers haven't really thought about it before. Before when customers thought about brand, it was customer service,… 'Am I getting value on the best price or on the good interest rate?' You know, it wasn't: 'will I get my money back? Will this bank still be around?' So I think, you know, it has added a new dimension to customer relationships."*
> (Interview A8)

However, some other analysts expressed a contrary view with this. Analyst A10 argued that brands and customer relationships became less important in the crisis, and whether or not a bank could survive was the most important thing. Analyst A6 held a similar opinion. He pointed out that the only thing that matters during the crisis was how much capital a bank had. Analyst A7 explained more clearly,

> *"[W]hen you need capital, you need something you can sell easily. So I guess intangibles would be something that would be discounted much more heavily than anything else. So I mean, in practice, for our valuation right now, we completely ignore intangibles. At least I tend to ignore intangibles. Maybe when the market changes to [be on] a more booming side, then people would be much more willing to give some credit for intangibles."*   (Interview A7)

In summary, the majority of interviewees believed that changes in the external economic environment resulted in changes in the perception of intangibles (e.g., some specific intangibles became more or less important due to change in economic condition), and also influenced significantly the interaction process of intangibles and financial intermediation activities, although the overall view on such influences appeared to be mixed.

8.3.1.2 Changes in the banking industry

The case data reveals that changes in the banking industry tended to influence the elements

of intangibles and institutions' strategies for them. As has been discussed in section 2.2.3 of chapter two, banks nowadays face increasing competitions caused by dramatic changes such as deregulation, technology development, and business globalisation. Some interviewees argued that technology development and business globalisation could affect the role of intangibles in financial institutions.

Technology development has significantly changed the competitive environment in which banks operated. New technology created opportunities for them to reduce costs and deliver products and services in different channels, such as Internet banking or telephone banking. Manager B8 mentioned that the Internet provided an easy channel for them to manage customer relationships and brands. For example, they distributed survey to customers on the Internet to assess customers' perceptions of brands and customer satisfaction levels. Moreover, he said,

> "*For us, we are on the Internet, that means we are low cost; low costs means we can do customers a better deal. When I give customer a better deal, we have more loyalty and more customers come to me.*"   (Interview B8)

It can be seen that technology development can improve intangible management for case institutions. On the other hand, technology development also increased the competition that banks faced, such as having brought new competitors into the banking market (see section 2.2.3 of chapter two), and this to some extent affected bank intangibles negatively. Analyst A3 noted that for some commoditised bank products (e.g., large mortgages),

> "*[t]he majority of the market is run by intermediaries and receives very little trust in the banks themselves. People prefer to take independent advisors, and also with benefit that the independent advisor will select products from the entire market place rather than just a range.*"   (Interview A3)

The above statement shows that technology development provided more choices to customers for choosing bank products and services, and hence increased the difficulty of maintaining customer relationships for banks. Therefore, new technology offered not only opportunities but also challenges to banks. Banks have to change their strategies of intangible management in response to this.

Apart from technology development, business globalisation was also an important factor that drove the interactions among intangibles in the case institutions. Due to deregulation and technology development in the banking industry, case institutions are now operating cross countries. The globalisation of banking endowed some intangible elements with new meanings. For example, manager B7 stated that the consistency of the brand was very

important for them, and they took a variety of strategies to ensure that their brand power and brand awareness were consistent in different countries. Managers in interview B6 also noted that they focused on developing managers' international experience, and this was a very important intangible for an international bank.

8.3.1.3 Industry context

Subsections 8.3.1.1 and 8.3.1.2 discussed the causal conditions that influenced intangible elements and their interactions in the case institutions. As noted before, in grounded theory terms, conditions can be distinguished as causal or contextual conditions. Context or contextual conditions refer to the general conditions within which the interactions take place (Dey, 1999). There have been a variety of contextual conditions identified from the case data, and among them, the industry context that includes various industry characteristics and business segment characteristics were mentioned by most interviewees.

Firstly, some interviewees identified that the banking sector was a service sector that has different characteristics compared with other sectors. Service processes are normally instant and involve the customers (Johns, 1999). Miles and Tomlinson (2000:154) argue that, "the service sectors deal primarily with intangibles; their main products are largely 'immaterial'." In line with literature, some interviewees emphasized that intangibles were important in the banking industry on the grounds that banks provided services rather than products (B4, B7, and B8). For example, manager B4 said,

> "*I think we are in the service industry, the important thing everybody in the bank must realise or recognise [is] that our job is to provide good service. We need professional expertises and all that kind of stuff...*" (Interview B4)

The above statement shows that intangibles such as human capital was very important for banks in which good quality of services were demanded. Both managers B7 and B8 mentioned that banks provided entire services, and it was all about intangibles.

> "*There is a difference between banks and manufacturers. Not like manufacturers, banks provide an entire service; that's all about intangibles. Customers are buying things from banks because of how the management are working in that bank, and buying things because of the safety guard in the bank that protects their money, and buying things because of how we grow business and provide credit. That's intangibles.*"
> (Interview B7)[148]

It should be noted, however, that analyst A3 expressed a counter view with this. He argued that brand power was important in the manufacturing industry, but tended to be less

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[148] This is based on the notes that the researcher has taken during the interview rather than a direct quote.

valuable in the banking sector.

> *"If you take, for example, cars, people will pay more for Aston Martin than they will pay for Jaguar, even though they were both by Ford and both in the same platform, purely because the brand value of Aston Martin,... However, people would not pay any more for Northern Rock mortgage than they would [pay] for Lloyds TSB mortgage, because money is an ultimately fungible factor."* (Interview A3)

The second type of industry characteristics that influenced the role of intangibles was homogeneity of banking business (B7, B8, A1, and A6). As mentioned in section 2.3.2 of chapter two, bank products tend to be homogenous, that is, they are easy to copy and lack of adequate patent protection. Thus, competitive advantage that a bank gains from tangible products may not last long (Watkins, 2000). Evidence provided by the case data tended to support such argument. As has been addressed in section 8.2.2, most of the managers interviewed acknowledged that intangibles rather than tangibles were the key sources of competitive advantage in the banking sector. The following quotations further confirmed this.

> *"You know banks have no product specialization. All products are normal for every bank. If we introduced a new product today, then after a few days, even tomorrow, all other banks would have the same product. So why do customers choose this bank and not that bank? It's something about the quality of the service, consistency of the service, the way we treat them, and that they can get the same answer from both telephone banking and from the branch."* (Interview B7) [149]

> *"In the long term, the race in banking is only a race about people – the only race that exists. One of the reasons is [that] banking has no patents. If you work in the pharmaceuticals, they make a new drug, and for ten years, nobody can sell that drug except that company. Therefore, you have an intellectual property, which is actually protected. Now if I come up with a new product tomorrow, which is better than anybody else's product, the day after tomorrow, my competitors will have the same product. Therefore, the competition is not about technology; it is really, the competition in banking that is, about human capital only."* (Interview B8)

Moreover, analyst A6 pointed out that banks were homogeneous in terms of them trading in a narrower P/E range than all other sectors. Therefore, top management human capital tended to be important in differentiating banks.

> *"Consequently, I think, because the business is quite homogeneous, this kind of perception of management is quite important for differentiating between, you know, one has been perceived to be the best bank and the worst bank at any one time."*
> (Interview A6)

Analyst A1, on the other hand, argued that the homogeneity in products reduced the brand power in the banking sector, as brands did not give banks pricing power.

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[149] This is based on the notes that the researcher has taken during the interview rather than a direct quote.

Besides, customer inertia that existed in the banking sector also influenced some intangibles, especially the customer relationship. In the consumer behaviour literature, inertia is referred to as spurious loyalty, which is "the repeat purchase of the same brand passively without much thought" (White and Yanamandram, 2004:184). Previous literature suggests that there appears to be inherent customer inertia in the banking sector (e.g., Colgate and Lang, 2001; White and Yanamandram, 2004), that is, even if a customer is dissatisfied with his/her bank, he/she may not change banking in the next one year (Colgate and Danaher, 2000). Colgate and Lang (2001) find that there are mainly four switch barriers in retail banking, including relational investment, switching costs, service recovery, and attractiveness of alternatives. White and Yanamandram (2004) argue that customer inertia in financial services was determined by "the perception of similarity between financial institutions and the complexity, costs and time inherent in switching" (White and Yanamandram, 2004:183).

The case interviews reveal that customer inertia tended to be an important factor that influenced intangible management (B8, B11, A1, A3, and A4). Manager B11 identified that in the banking sector, where similar products and services were offered, customer appeared to be less willing to switch. Manager B8 noted that it was not easy to change banking for customers, because

> "[B]anking is where your salary comes into and your payment goes out, [and] there is more customer lethargy in banking that makes customer stay with you." (Interview B8)

The impact of customer inertia on intangible management could be two-sided. On the one hand, the inertia factor makes it easy to retain existing customers. As analyst A1 remarked,

> "I have seen recently a FT report on current account, …It suggests something like 70% of people are unhappy with their bank, but only 5% of people ever moved. Now that's a quite good situation for the banks, because you don't need to be particularly successful in building your human capital, building your brand, because your customers stay with you regardless of these." (Interview A1)

On the other hand, customer inertia creates a barrier for banks to attract new customers. Analyst A3 mentioned that as there was so much customer inertia in the UK banking sector, even if a bank provided very attractive current account offer, it was difficult for it to increase market share. He further argued that,

> "[T]here is almost no value within the bank from the customer relationship other than the inertia factor, and the inertia factor isn't anything – not something all give positive value to." (Interview A3)

Apart from the above discussed industry characteristics, characteristics of business

segments were suggested to also be contextual conditions that influenced intangibles in terms of the relative importance of different intangible elements, the interactions, and bank strategies in response to them (B1, B4, B9, A1, A2, A3, A6, and A11).

As discussed in section 8.2.3, core intangibles tended to vary in different business segments. For example, analyst A2 argued that human capital was very important in wholesale and investment banking, while the customer relationship was crucial in retail banking. Analyst A3 pointed out that brands were relatively important in wholesale and investment banking than that in retail or small business banking.

Moreover, the interactions among intangible elements or between intangibles and other types of resources and activities were likely to change along with different business segments. For instance, analyst A6 suggested that price tended to be the key factor that affected customer relationships in retail banking. However, in corporate or investment banking, customer choices could be affected by reputation.

> "*When I am looking for a mortgage, I don't care whether the bank is safe or not. I just look for the cheapest rate. Now I am sure if you are dealing with some sophisticated structured products…, then the reputation of the bank is on the line, and the reputation of the company is on the line. You will pay more to have Goldman Sachs advising,…just because you want their name,…*" (Interview A6)

The case institutions, therefore, had to set different strategies in response to the variation in the role of intangibles. Manager B4 talked about the relative importance of service quality in private banking compared with that in retail banking. He noted that, as a private banking manager, he preferred to allocate more budgets on human capital aspects, as they provided service to customers.

It can be seen that the characteristics of the banking industry and business segments tended to be important contextual conditions that significantly influenced the role of intangibles in the bank value creation process. As a result, the case institutions managed their intangibles in different ways responding to these conditions. The surrounding conditions within which the value creation story happened also included several other contexts, which will be discussed in the following subsections.

8.3.1.4 Regulatory and standard setting

The case data shows that the external regulatory climate appeared to be one of the

important conditional features that bore upon the role of intangibles. Some interviewees discussed the influence of the regulation, policy or accounting standard on intangibles, in particular government supporting policies during the financial crisis, Financial Service Authority (FSA) regulations, and accounting standard for intangible assets.

As noted in section 8.3.1.1, the 2007-2009 financial crisis influenced significantly the core intangibles and their interactions. Governments in different countries have taken a number of actions to support their banking systems, and these affected bank intangibles as well. The UK regulatory response[150] to the financial crisis in particular was mentioned by interviewees. Manager B4 opined,

> "*So in many respects, the government [having] stepped in to support the banking industry has certainly given the financial sector and the customers in financial sector a degree of confidence.*" (Interview B4)

It can be seen that government supporting actions during the financial crisis influenced relational capital aspects in terms of enhancing customer emotional capital and maintaining customer relationships. It should be noted that manager B7 expressed a different view. He argued that self-funding rather than government support could make customers more confident with the financial institution, as the former reflected the brand credibility.

Additionally, some regulations set by FSA were suggested to be contextual conditions as well, especially the principle of Treating Customer Fairly[151] (TCF). TCF as a guide for retail business influenced the interactions among human capital, structural capital and relational capital. Manager B5 mentioned that they had done a lot of work on the implementation of TCF, such as setting internal communication systems, collecting opinions and ideas from customer contact employees, and taking actions to improve service quality, and these strategies tended to affect positively customer relationships.

Moreover, accounting standard could influence some intangible elements. Obviously,

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[150] According to HM Treasury, the UK government has taken a set of actions to prevent collapse in the financial markets, such as The Credit Guarantee Scheme, Recapitalisation Programme, and The Asset Protection Scheme (Available at http://www.hm-treasury.gov.uk/fin_finstability_actions.htm, accessed on 2 February 2011). Additionally, the Financial Service Compensation Scheme (FSCS) tended to be an important factor affecting depositors' confidence. At the start of the banking crisis in 2007, the compensation limit for people who lose money if their financial institution goes bust was £31,700 per person, and this limit was raised to £50,000 later. In December 2010, the FSCS limit further increased to £85,000 (3 December 2010, BBC News).

[151] Treating Customers Fairly (TCF) is encapsulated by Principle 6 of the FSA's 11 Principles for Businesses. TCF aims to balance the customer's needs with the firm's needs, showing clearly what the firm and its services offer, as well as fees and levels of service (Speech by Sam Tymms, 19 May 2006, available at: http://www.fsa.gov.uk/pages/Library/Communication/Speeches/2006/0519_st.shtml, accessed on 2 February, 2011).

accounting treatment for intangible assets has direct influence on the value of goodwill and other intangible assets. For example, Financial Accounting Standard Board (FASB) issued a statement of FAS 141R (revised on December 2007), which changed the allocation of tangible and intangible assets in acquisitions activities (FASB, 2007). Analyst A10 noted that under the recent accounting changes, banks could now assign value to brands and branch offices, and she as an analyst paid attention to this as well. In addition, manager B9 argued that the influence of accounting standards and some other banking regulations could be either positive or negative in terms of affecting product innovation and design, as well as delivery channels.

8.3.1.5 Merger and acquisition

Special events for financial institutions, such as merger and acquisition (M&A), could lead to changes in institutions' strategies of intangibles. Schweiger and Very (2003) point out that intangibles tend to be one of the basic sources of synergy in M&A, including brand name extensions and the sharing of knowledge. Gupta and Roos (2001) suggest that it is important to identify core intangible elements and to explore the value creation potentials in the M&A context, as the interactions between intangible resources could create enhanced effects to value creation and competitive performance in this process. In this study, several interviewees discussed the influence of M&A activities on the interactions among intangibles (B3, B5, and B7).

Manager B7 discussed his experience about how employee retention affected customer retention during the process of M&A. Retention of key customer contact employees was very important for maintaining existing customers in both the buyer and target institutions. In addition, he pointed out that successful merger and acquisition could provide opportunities for them to increase cross-selling and gain value from franchise.

Manager B3 emphasized that employee emotional capital appeared to be crucial when they were going through integration. Therefore, "*the needs to measure these people type things are more important, and that has to be for a long term*". He further noted that the integration process was a combination of characteristics of two banks, and it was important to ensure that "*the right leaders are in place for the newly combined organization*".

It can be seen from the above discussions that, human capital tended to be the core

intangible in the M&A context, and the interactions between human capital and the customer relationship became even more critical during the process of integration. The special event of merger and acquisition, therefore, set the context in which the core intangibles and their interaction were formulated.

8.3.2 Interactions

As mentioned before, the core category in the grounded theory model of intangibles was the interaction. Under a set of conditional features, three levels of interactions constructed the process of value creation in the cases, which were intra-category interactions, cross-category interaction, and network interactions. This section focuses on illustrating these interactions with case data instances, and shows how different elements of intangibles interacted with each other, how they had impacts on tangibles, and how this led to better bank performance.

8.3.2.1 Intra-category interactions

Section 7.3.4 of chapter seven introduced that there were four main categories of intangibles identified from the case data in corresponding to intellectual capital literature, namely top management human capital, human capital at employee level, structural capital, and relational capital. The interactions between different concepts that were in the same category were grouped into "intra-category interactions". The rationale of dividing the class of human capital into two categories was due to the following considerations. Firstly, as noted in section 8.2.3 of this chapter, many interviewees argued that top management human capital tended to be the core intangible on the grounds that it could affect all other types of intangible elements. Therefore, top management human capital stood alone in order to better explore the interactions between it and other intangibles. Secondly, top management human capital and employee level human capital was separated in the quantitative data analyses (see chapters six and seven). For the purpose of better integrating two sets of data, it is better to explore the interactions in the qualitative study within a similar structure as for the quantitative data analysis.

Before discussing intra-category interactions, it is necessary to distinguish between inputs and outputs of intangible elements, as suggested by some interviewees (e.g., B2 and B3). The case data reveals that in practice, financial institutions were concerned about not only

the critical intangible resources that they had, but also the activities that could lead to the increase or decrease in these resources. Thus, they distinguished between inputs and outputs of critical intangibles, and paid attention to both of them. This is in line with previous literature (e.g., Meritum, 2002; Sánchez et al., 2000). Meritum (2002) suggests that different intangibles can be classified into intangible resources and intangible activities, according to their static or dynamic character. The former can be considered as assets in a broad sense, while the latter are activities that might give rise to new intangible resources or improve the value of existing ones. Sánchez et al. (2000) recommend that a distinction should be made between intangible resources and intangible activities or investments. They suggest that it is useful to assess both the cost of the intangible activities and the effects of such activities on performance indicators of intangibles.

In consideration of case data and also previous literature, some intangible investment indicators and intangible resource indicators were identified. For example, training investment could be seen as an employee level human capital investment, while employee satisfaction or loyalty was employee level human capital resources. Similarly, marketing expenditures and the branch network were identified to be relational capital investments, and brand awareness and the customer relationship were relational capital resources (see section 7.3.4 of chapter seven). The first level of interactions, therefore, basically involved the relationship between inputs and outputs of some intangible elements, that is, the effects of intangible investments on intangible resources.

> "*I think training is a big driver of satisfaction as well – developing their careers and they feel that company is investing in their future, so they got a lot of satisfaction there.*"
>
> (Interview B3)

The above quotation provides an example of the interaction between intangible investments and intangible resources, that is, training investment could have a positive impact on employee satisfaction. Along the same line, the level of employee loyalty that was another human capital resource at employee level could be leveraged through training investment as well. As manager B8 said,

> "*We look at the number of training dollars we invested per person, [or] the number of training days, because training is very related to people's loyalty.*" (Interview B8)

Manager B11 outlined the interaction of IT investment and structural capital resources such as flexibility of system.

> "*I think in terms of IT, again, it is a capital spend, and there is an expected anticipated return on that….You need to have certain IT to do what you do, and that needs to be upgraded. But it's about getting additional, I think, additional intangible benefits [that]*

are something around easy to use, flexibility, [or] certainly the future improved things of IT systems. So when we think about IT, you invest those and deliver [them] to a specific layout in a particular programme or project." (Interview B11)

It can be seen from the above statement that IT investment as an intangible activity was associated with certain intangible resources such as improved internal systems. Sánchez et al. (2000) also state that innovations that a firm has achieved represent a structural capital resource, which could be leveraged through intangible investment of innovation expenditures.

Additionally, the interactions between intangible investments or activities and intangible resources could be found in the category of relational capital. Manager B8 identified the interaction between marketing expenditures (relational capital investment) and the customer relationship (relational capital resource).

"We have models in our marketing department based on consideration [and] awareness. We can predict what customer's behaviour is going to be related to the level of marketing spend." (Interview B8)

Similar views were observed with some other interviewees. Analyst A11 argued that the brand power of a bank partly came from its marketing expenditures. Managers in interview B6 demonstrated that consistent marketing expenditures were helpful to maintain their brand power during the financial crisis.

Distribution channel or network, as discussed in section 5.2.2.2 of chapter five, was treated as a relational capital element. More precisely, it can be seen as an indicator of brand investment. Manager B7 argued that this brand investment could improve the accessibility of customer accounts and then affect the customer experience. Analyst A10, on the other hand, provided an example of how the negative intangible of brands might affect the customer relationship. He demonstrated that a bank tended to lose customers when it restructured the branch network.

Apart from the above intra-category interactions between intangible investments and intangible resources, the first level of interactions could also occur between different intangible resources in the same category. The case data reveals that some critical intangible resources could be affected by other intangible resources. Especially, the relationship between brands and customer relationships was mentioned by many interviewees (B7, B8, B9, B11, A7, A8, and A10).

For example, manager B8 stressed that a bank's ability to attract new customers was a combination of its brand strength and marketing expenditures. Similarly, manager B11 emphasized that "*the value of the brand is attracting customers*". Similar views were observed in interviews with some analysts. The following quotation shows that brand strength could affect customer relationships.

> "*[I]nvestors would often say, 'we like UBS and Credit Suisse, because they have private banking brand'. So people would choose to bank with them because they have the strength with their brand in private banking.*" (Analyst A10)

It should be noted that brands tended to be closely related to customer relationships, and these two elements to some extent overlapped from some interviewees' perspective. For instance, manager B8 argued that brands were usually about users' experience, while analyst A5 stated that brands could be seen as part of customer franchises.

Moreover, several interviewees discussed the impacts of some relational capital elements on cross-selling products (B7, B11, and A4). Cross-selling is considered an important factor of customer relationships in the extent literature (e.g., Reinartz et al., 2004). Flöstrand (2006) finds that cross-selling tends to be one of the frequently used indicators of relational capital by sell-side analysts. In this study, analyst A2 suggested that cross-selling products "*is not a precise measure of intangible value, but it gives some indications… how good its customer relationship management is*". In this sense, therefore, cross-selling products could be used as an indicator of the customer relationship. For instance, manager B11 identified that customer satisfaction could positively affect cross-selling products to customers.

> "*The correlation for customer satisfaction is, of course, that more satisfied customers typically buy more products or services from a provider.*" (Interview B11)

To sum up, the case data reveals that intra-category interactions, as the first level of interactions among intangible elements, were mainly represented to be the impacts of intangible investments on intangible resources in three macro categories: employee level human capital, structural capital and relational capital. Additionally, in the category of relational capital, brands tended to be closely related to customer capital. It can be seen that in order to explain the value creation process, it is important to understand what are the important intangible resources and the activities or investments that may affect those intangible resources.

8.3.2.2 Cross-category interactions

The previous subsection looked at the interaction between intangible elements that were classified into the same categories. More importantly, as Sánchez et al. (2000) argue, many critical intangibles might be affected at the same time by intangible resources and activities with any category of intangibles. The case data also reveals that a number of interactions occurred cross the four main categories, namely top management human capital, employee level human capital, structural capital, and relational capital. These interactions made up the group of cross-category interactions, which was the second level of interactions in the value creation process. Interactions at this level included how top management human capital affected other types of intangibles, how employee level human capital and relational capital affected each other, and how they combined with structural capital to contribute to the value creation process.

First of all, top management human capital tended to influence all other intangibles, as mentioned before. From the RBV point of view, management plays an important role in developing a match between the firm's resources and the success factors in the industry (Fahy, 2000). Therefore, the capability of top management to understand and develop the bank's key resources on the one hand is one of the intangibles the bank has; on the other hand, it significantly affects other advantage creating resources, both intangibles and tangibles. Consistent with this, many interviewees indicated that top management quality and decision making could have direct impacts on setting bank strategy, improving engagements of lower level managers and employees, enhancing organizational culture, building and protecting brands, and so forth. As analyst A4 argued, "*the bank in nowadays is nothing without [its] manager team running it*".

Likewise, manager B10 stressed that,

> "*[U]nderpinning all of these [intangibles], I suppose, again, something we've been working on is our leadership behaviour – working with senior leaders across our business to ensure that they are demonstrating the right behaviour, because that then helps us to shape the culture…then we follow this through to the way in which we deal with customers.*" (Interview B10)

Manager B10 pointed out that top management human capital was important in terms of shaping the organisational culture, and in turn affecting customer relational capital. Some other interviewees also emphasized the impact of top management human capital on financial institutions' culture (A1 and A6).

Top management human capital could affect relational capital both indirectly (as mentioned by manager B10) and directly. Analyst A4 illustrated that top management who got long-term working experience across different parts of the bank could enhance customers and investors' confidence within the bank. Manager B2 discussed how top management quality affected customers' and investors' emotional capital in the financial crisis. He said,

> *"Management quality, I think that is a really good example, and probably just now is a really good time for you to write your paper, because actually management quality has been the biggest destroyer of value in banks over the last year. Because we've seen poor management, we've seen lack of confidence in the bank because they haven't looked after their business in a strong way and in a proper way... It's not just the fact that we lost money in the loans; it's the confidence in the bank that has been lost as a result of poor management decisions. We've seen previous chief executive of corporate [banking] lost his job, and many people, customers trusted him. The fact is he lost his job, and then suddenly people lost confidence in the bank – we can't trust him, who can we trust?"*   (Interview B4)

Similarly, analyst A8 argued that the reputation of top management was closely related to the bank's name. As a result, the top management track records or creditability could directly affect the bank's brand.

Moreover, several interviewees used examples to show that top management decision-making could influence customer relationships with the bank, either positively or negatively (B2 and A6). Analyst A6 noted that bank management often tried to collect information about customers, such as customer satisfaction survey, but they did not understand clearly how to use it, and sometimes their decision-making might have negative impact on customer relationships.

> *"But the reality is that banks are reactive, they are not proactive. You know, they moved their call centres to India because this saved their money. And then they moved them back because the customers don't like it. Had they actually asked the customer in the first place: do you want to be spoken to by someone in banks with accent and you may be unfamiliar with? They wouldn't have done it. But that's how managers manage any company."*   (Interview A6)

The case interviewees appeared to be very much aware that top management human capital lay at the heart of cross-category interactions, as it influenced intangibles in other categories either directly or indirectly.

Cross-category interactions also consisted of the interactions among the other three categories, namely employee level human capital, structural capital and relational capital.

The case data shows that employee level human capital and relational capital tended to affect each other. On the one hand, front line employees or relationship managers who had direct contact with customers could obviously affect relational capital such as customer satisfaction or customer relationships (B1, B4, B5, B7 and B9). For example, manager B4 noted,

> *"[F]rom a real case study review, I'll say we were in part of the difficult situation, and it's interesting to see that if the relationship managers were assumed to be trustworthy…, the customers would be kept by that, really."* (Interview B4)

The above quotation shows that relationship managers were important in terms of retaining customers during the financial crisis. Manager B7 also illustrated this connection[152]:

> *"I have looked at customer complaints, and found that some complaints were about we did something wrong, but a lot of complaints were about changing relationship managers too often. Customers like to go to a branch and see the same talents there. So when some talents leave, it is difficult for new ones to get hand in, and customers will be unhappy with that."* (Interview B7)

On the other hand, relational capital could also affect employee level human capital. Manager B4 discussed the interaction between brands and employee engagement.

> *"Sometimes, brand profile in our market is more about colleagues and customers, because it makes colleagues feel good when they see a nice advert or they see the response to a high profile event."* (Interview B4)

The case institution recognized that brand strength could enhance employee emotional capital. Similar view was expressed by manager B7, who argued that a strong brand could make their employees proud of the bank.

In relational capital, not only the brand, but also the customer relationship could have an impact on employee level human capital. For example, manager B1 illustrated the interaction between the customer relationship and agent experience[153]:

> *"In the process of new customers becoming established customers, agents learn how to know customer better, and customers know more about our products and our services – they learn from agents how much they can afford as well. Thus these two – experienced agents and established customer relationships – work together to create profit for our company."* (Interview B1)

The case institutions also exploited the interactions between employee level human capital and structural capital. Indeed, structural capital provided the primary supports for

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[152] This is based on the notes that the researcher has taken during the interview rather than a direct quote.
[153] This is based on the notes that the researcher has taken during the interview rather than a direct quote.

enhancing other interactions. For example, it has been shown that employee retention or loyalty could significantly affect the customer relationship. Manager B1 further argued[154],

> *"We found that increasing commission was not the most important factor to retain agents. The most important thing is our support system for agents."*   (Interview B1)

It can be seen that manager B1 recognized that their structural capital of internal support system was important to retain experienced agents. Manager B10 noted that their structured communication programme helped them to improve knowledge of employees, and in turn allowing them to provide appropriate service to customers and meet customer demands.

Moreover, manager B7 provided an example of the interactions among structural capital, employee level human capital and relational capital, as shown in Figure 8.3.

Figure 8.3: An example of cross-category interactions
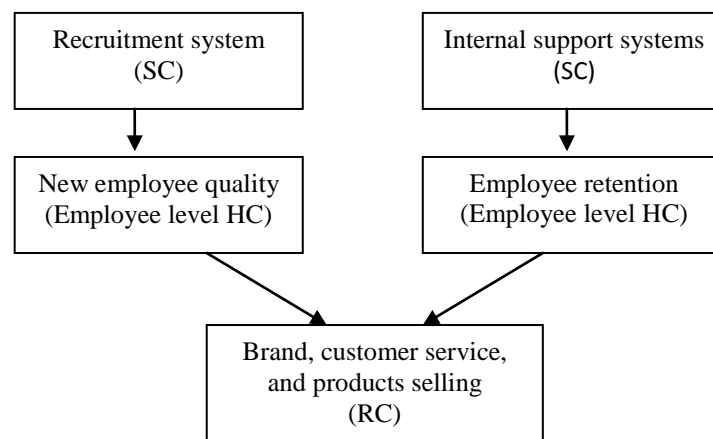
In fact, the interactions cross different categories of intangibles is complicated in terms of they normally being connected with each other at the same time, and could not create value in isolation. Manage B8 provided a helpful summary of this:

> *"So you have to do all three, clearly...Everybody wants to be nice to customers. If you ask any business: "do you want to be not nice to customers?" Everyone will say: "no, we want to be very nice to customers." Right? But the business model behind this is what really matters. For us, we are on the Internet, that means we are low costs; low costs means we can do customer a better deal. When I give customers a better deal, we have more [customer] loyalty and more customers come to me. Simple. This is what I try to show you, this is how our structural capital relates to relational capital, because if I didn't have the structural capital in place, I wouldn't be able to afford to give customer a good experience, right? And if I didn't have good people, they wouldn't invent the structural capital to do that."*   (Interview B8)

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[154] This is based on the notes that the researcher has taken during the interview rather than a direct quote.

Overall, the case institutions recognized that the cross-category interactions as a whole were extremely important. Through the lens of RBV, a firm's superior performance is more likely to be reached if its key resources are combined or integrated (Barney, 1991). Section 8.2.2 of this chapter has showed that the integration of intangibles and tangibles rather than intangibles alone contributed to bank business success. The evidence presented here further supports the importance of resource integration in the RBV theory. As noted in section 2.4 of chapter two, intangibles are not just a simple sum of human capital, structural capital and relational capital. Rather, it is the sum of those three components plus the interactions among them (Carson et al., 2004).

8.3.2.3 Network interactions – Intangibles, financial resources and intermediation

As the third level of interactions, network interactions involve the relationships between intangibles and tangible or financial resources, as well as financial intermediation and risk management activities. Recall that there was a two-way relationship between intangibles and tangibles identified from the case interviews (see Figure 8.1), and the foundation role of tangibles in the bank business model has been illustrated in section 8.2.2 of this chapter. In the final step of the value creation process, intangibles interacting with tangible or financial resources could improve the bank intermediation process and risk management. This subsection, therefore, focuses on the discussion of how intangibles made tangibles more effective, more desirable, and more meaningful.

As introduced in section 2.2 of chapter two, the basic bank intermediation activities involve accepting deposits and making loans directly to borrowers. During this process, banks spread deposits withdrawal risks and bad debt risks across their liability and asset portfolios (retail banking) or share and transfer risks in the market place (wholesale banking) (Holland, 2010). The case data reveals that intangibles could actively interact with other types of resources or financial intermediation activities in terms of attracting deposits, increasing loans and other products selling, reducing costs and controlling risk.

Firstly, some interviewees emphasized that intangibles played an important role in attracting deposits, especially in the financial crisis (A4, A7, A8, and A12). Analyst A7 highlighted,

"Is the brand important for the bank? I would say it is extremely important. One reason

why it is important is [that it represents] the ability of the bank to attract deposits. You know, the ability to attract deposits is extremely important to the bank, particularly in the current environment, where funding is one of the biggest challenges the banks face. And for attracting deposits, you need to have trust from customers; customers need to have a high degree of confidence. So a strong brand or a brand associated with security in safety is one that would be able to attract deposits.” (Interview A7)

The above quotation shows that brand strength in terms of security and safety was helpful to attract more deposits into the bank. This interaction between the brand and deposit taking activity tended to be extremely important when the economic environment changed. Similarly, analyst A4 illustrated that brand power was important in attracting deposits during the financial crisis.

“Brand, I think, is more a matter of confluence in the trust. For example, at the moment, Lloyds TSB, people perceive it to be a strong bank. If you are a person… or customers in the street – they got deposit, and they were thinking: ‘which bank will I put this in?’ You know, they were more [likely to] cross one side of the street and go to another side, as [they think:] ‘Lloyds probably will be, ok? because I trust the Lloyds brand, they consider to be a big bank.’ If on the other side of the street, you got someone like Bradford & Bingley, which is a small bank… In many people’s mind, I think, they worry about its name on the newspapers, and they know that it potentially has some problems at the moment, and they might not have much confidence when putting their deposits in that bank compared with putting [it] in Lloyds.” (Interview A4)

The above quotation shows that brand power could enhance customer emotional capital (e.g., trust and confidence) and then increased bank deposits. However, it should be pointed out that the examples illustrated by analyst A4 may also to some extent reflect the strategic wedge between large and small banks (DeYoung et al., 2004) that has been discussed in chapter 2. Large banks, in this case Lloyds TSB, tend to differentiate themselves through advertising and marketing expenditures so as to build their brand images. On the other hand, small banks (e.g., Bradford & Bingley) may pay more attention to exploit relationships with customers. In this sense, brand power is likely to be more important for large banks than for small banks.

Additionally, manager B5 mentioned that they got growth in both current accounts and saving accounts in the financial crisis. He explained that such a growth could be attributed to both intangibles (e.g., advertising and other brand promotion strategies, as well as customer satisfaction) and tangibles (e.g., product range).

Therefore, it can be seen that on the liability side of the balance sheet, the interactions among intangibles and tangibles could affect customer deposits. On the asset side of the

balance sheet, the case institutions exploited the impacts of intangibles on loans and other products selling as well.

As mentioned in subsection 8.3.2.1 of this chapter, intra-category interactions in relational capital provided more cross-selling opportunities for the case institutions. Logically, more cross-selling opportunities could then lead to the growths in loans and the selling of other products. Several interviewees emphasized that banks were keen to exploit these interactions between intangibles and lending activities (B3, A1, and A2).

Apart from cross-selling, other relational capital elements such as the brand could also directly influence lending. Analyst A11 noted,

> "*On the asset side of the balance sheet, you know, there may be some brand value. So for example, if you were looking for mortgage in the UK, you might phone up Halifax because you heard their brand….You may not phone up the number of other institutions that provide mortgages, because you haven't heard their brands. So there is possibly some value there.*" (Interview A11)

With regard to the cost control, some previous studies provided evidence that relational capital have the ability to lower costs (see section 2.4.5 of chapter two). For example, Storbacka et al. (1994) demonstrate that the cost of obtaining a new customer normally exceeds the cost of retaining an existing customer. The importance of intangibles in helping banks reduce costs was also mentioned by managers and analysts (B1, B2, B6, B8, A2, A6, and A11).

The impact of intangibles on costs is firstly represented as the lower cost of deposits. Analyst A2 stated that brand strength could help a bank to reduce the costs of attracting deposits.

> "*So we know if other things are equal, we prefer the bank with very strong brand rather than the bank which has very poor brand, because the bank with poor brand has to spend more money attracting deposits into its account than the bank with good brand.*" (Interview A2)

Analyst A11 expressed a similar view. He used an example to illustrate that a bank with brand strength was more likely to attract sustained deposits with the lower rate than its peers in the financial crisis.

Manager B1 and B6 discussed the impact of customer satisfaction or recommendation on lowering costs. Manager B1 stressed that "*recommendation by existing customers and agents is still a cheaper way to get new customer*" compared with other channels such as

Internet or telephone banking. Manager B8 explained the interactions between relational capital and cost control in more detail:

> *"If you look at… your cost per account (CPA), CPA for us is… the cost that it takes you to get a new customer. And what I do know is XXXX [bank name removed], because its brand is strong, [it] has one of the lowest cost per account in the business. So for us, the cost of getting one new customer is lower than many other banks. I am talking variable costs – so the costs you spend on your marketing, your operational costs, everything you do to get one new customer – for us that are much lower. Why? [Firstly,] because the brand is well known. Secondly, the users' experience is very good. I think usually brands are users' experience, not just about having a great power. And if you get that right, which I think we have done, it becomes a best thing for us."*
>
> (Interview B8)

Finally, intangibles were argued to be important in affecting risk management. Tonkiss (2009) argues that the financial crisis in 2007 represented that markets failed in their tasks of managing and distributing risk, and it involved a massive failure of trust and confidence. Customers or investors trust and confidence were indeed their emotional capital for financial institutions, which could be treated as part of intangibles (as discussed in section 2.4.6 of chapter two) and could have a significant impact on risk control. Once customers or investors lost their trust and confidence with a bank, deposits withdrawal risk tended to increase and this posed a significant threat to the bank's survival. As manager B2 stressed,

> *"Through the financial crisis, no banks actually run out of money; they run out of confidence. People stopped funding them, stopped lending to them, because they didn't trust them anymore."*
> (Interview B2)[155]

Holland (2010) points out that the knowledge problems with intermediation and risk at the board of directors and top management level tended to be one of the major factors that caused the bank failure and was deeply implicated in the crisis. The knowledge about intermediation activities and risk management that top management learnt from the market change and their experiences was an important intangible for the financial institutions. Analyst A6 noted,

> *"So actually the management in terms of how [they] embody the cost control culture, how rapidly they want to grow the balance sheet, how risky they want to be with the balance sheet in terms of leverage, is by far away the most important thing."*
>
> (Interview A6)

Analyst A6 argued that top management knowledge and skills were important in terms of affecting cost control and risk management. Manager B4 highlighted the importance of top management knowledge that they gained from industry specific experience. He illustrated that some board members or top management of failing banks in the financial crisis were

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[155] It should be noted that this quotation has been cited in subsection 8.3.1.1 of this chapter to illustrate how economic condition influenced the importance of specific intangibles.

short of specific managerial experience in the banking industry. As a result, they tended to lack knowledge about bank intermediation and risk, and focused too much on growth rather than risk management.

> "*What was, I think, was wrong was [that] he certainly lent a lot of money, and [that] was aggressive lending. I think there are two things there. One is he was encouraged by the board to do so to increase profits. But secondly, there was not a balanced or… there were only two or three bankers on the bank's main board, and lots of people who haven't [been] involved in banking at all. It's a very complex thing understanding the bank's balance sheet, what's the risk, what's the real risk.*"　　　　(Interview B4)

This is in line with Holland's (2010) argument that the board of directors and top management in failing banks prioritised their knowledge of general business strategy over knowledge of organization, risk, intermediation and special function in banking.

Apart from top management human capital, some other types of intangibles could also affect risk management. Manager B1 noted that employee level human capital, in particular experienced agents, had the ability to control bad debt risk.

> "*Because experienced agents know how to understand customers and make sure lend appropriate loan to them. They are better at making good relationship with existing customers and easier to find new valuable customers. They do better job than new agents, [and] help us control cost, control bad debt, and manage our customer base. So they can generate more profit than new agents.*"　　　　(Interview B1)

Previous literature shows that customer relationships can help firms transfer information and knowledge, and then provide opportunities for firms to create innovative products and increase sales (e.g., Reed et al., 2009; Gibbert et al., 2001). Analyst A2 stressed that banks could gain information and knowledge from customers by exploiting customer relationships, and in turn reducing cost and risk.

> "*I think the best example is Lloyds TSB, which we think has a strong customer relationship management system and culture. … Because most of their customers are current account based customers, … that gives you the basis for making decisions about whom you try to sell other products to, and you can understand how profitable you can get by customers and other things. So customer relationship management systems are very important in retail banks where cross-selling products to existing customers is extremely important and is much more profitable than trying to find a new customer, and much less risky as well.*"　　　　(Interview A2)

The evidence presented in this subsection illustrates how intangibles impacted tangibles, and supported the two-way relationship between them that was discussed in subsection 8.2.2 of this chapter. The case data reveals that tangibles acted as the hygiene factors and provided the foundation for the bank business model to work.　Simultaneously, intangibles interacted with tangible and financial resources during the process of network interactions, and influenced financial intermediation activities and risk management. They

provided the means to reduce transaction costs, make the intermediation process and risk management more effective, and also optimize the deposit or loan portfolio. Such a robust combination of intangibles and tangibles was more likely to result in superior bank performance and improved information transaction with the external market. The next section will discuss the consequences of those interactions.

8.3.3 Consequences

The previous section discussed the three levels of interactions that lie at the heart of the grounded theory model of intangibles. This section addresses the intended consequences or outcomes of those interactions. As mentioned before, the consequences of interactions were related to both bank performance and information disclosure in the external market. This section focuses on the former, that is, how the combination and interactions of intangibles and tangibles resulted in improved bank performance; while information outcome will be addressed in chapter nine. In fact, it can be seen from the discussions of network interactions that the interactions of intangible strengths and other types of resources could lead to the increase in deposits or loans and the reduction in cost and risk, and these could obviously result in better institution performance.

Improved performance could come from individual intangible strengths or the interactions of different resources. Firstly, it is found that some individual intangible resources could directly affect bank performance. For example, manager B11 argued that high level of leadership or management skills were able to deliver the expected programme outcomes. Analyst A1 noted that different management skills were key drivers to excess returns.

> *"People are willing to believe you can make excess returns in this area, you must be, because you have skills, risk management skills such as Barclays claims to have; or marketing skills, such as Capital One claims to have; or would be efficiency skills, you know, Bank of America will say they are very efficient, because they are big. So they can generate excess returns through having the same revenues as anyone else but because of the cost base."* (Interview A1)

Additionally, changes in top management human capital could have a direct impact on institutions' share prices. Analyst A5 mentioned that the change of CEO normally caused the institution's stock price to go up or down, depending on the market conditions. Analyst A6 and A10 also pointed out that the institution's share price would change significantly when there were major changes in the top management team. This argument is consistent with prior literature that provided empirical evidence on the market reaction to

organizations' top management change (e.g., Beatty and Zajac, 1987; Warner et al., 1988). For example, for a sample of 209 large corporations from 1979 to 1980, Beatty and Zajac (1987) find that announcements of CEO changes are typically associated with a reduction in the firm value.

Apart from top management HC, the direct association between individual intangible elements and bank performance can be found in relational capital as well. For example, managers in interview B6 suggested that intangibles related to customers were key factors for their business performance. If the customer recommendation score increased, it would improve the profitability of the case bank.

Secondly and more importantly, many interviewees emphasized the need for a clear bank strategy about the combined effects of intangible elements. For example, manager B10 said,

> "[I]t's the service-profit chain. If you haven't got a culture that results in strong staff engagement, where employees act as a passionate owner of that business and, as a consequence, deliver a better customer experience, which, in turn should deliver increasing profit, which obviously then follow through to, hopefully an increase in the bank's share price. So although it is a very old doctrine, the whole service-profit chain, I still think it's [as] important now as it ever has been, it is a very strong intangible within banking." (Interview B10)

The above quotation presents a value creation story in the case bank, which highlights the interactions among intangible elements and the consequence of them. Many interviewees expressed the similar view that the combined effects of different intangible resources and other types of resources were more important than individual intangible strengths (B4, B6, B8, B11, A1, A6, A11, and A12). In this manner, the three levels of interactions should be jointly managed and exploited, and then the financial institutions could expect a better performance. Corresponding to the RBV theory, it is the role for top management to develop a coherent strategy to search for the appropriate combination of different types of key resources in order to deliver superior performance. The case data shows that most of the managers interviewed were well aware of this. Analyst A12 stated that a bank's brand strength, financial strength, and strengths of reputation or management quality related to its share price.

Managers in interview B6 pointed out that only when things about customers, processes and peoples were all right, could they achieve a high level of profitability. They further

mentioned[156],

> "I'll say management experiences do certain deal in improving profit, but not alone. It is not just financial perspective that improves our performance. The culture of our bank, the brand health, and so on should work together. Management experiences won't do a big deal if other things are wrong."   (Interview B6)

Similar views were observed with manager B4 and analyst A6.

> "[W]e tried to balance sales, service, risk and people – colleagues. So the four things, if you try to get that balance right and you consistently focus on these four things – you don't push one above the other, you try to get that balance right, then hopefully your business is run in a fair way. So we went up on the basis [that] our sales were going up, and we were making sure our customer survey was good and our colleagues were happy with the environment they worked in, and we won't take an undue risk so that our external audience and internal audience were all looking favourable. Then you won't put your business in a risk. So I think [that] tying these four things together, and they are all going in the right direction, then I guess that answers your question.   Yes, there would be a direct correlation to the financial results and intangibles of good customer service, trust, and things like that."   (Interview B4)

> "I think it is very difficult to differentiate [banks] just based on one of that elements [intangibles], to say yeah, this bank's performance is better than that banks' because its recruitment policy has been better. I think it is very hard to do that. So you would just assume that the management [who] pays most attention to recruitment is probably going to be the one that does all the other things right as well."   (Interview A6)

The case data, therefore, provides a broader picture of the value creation story in the financial institutions. That is, subject to the changes in various external conditions, top management in the financial institutions could take advantage of their intangible strengths, exploit various interactions among them and other types of resources, and then achieve better performance in their profitability or share price.

It should be pointed out, however, that many interviewees realised that it was difficult to quantify the above discussed financial outcomes of intangibles. Managers in interview B6 mentioned that the impacts of intangibles on bank performance sometimes were indirect, and it was difficult to say, for example, how much profit the bank could generate from advertising expenses. But they believed that in the long term, banks could improve their profitability by brand building.

8.3.4 The overall grounded theory model of intangibles

Sections 8.3.1 to 8.3.3 discussed three major categories generated from the case data, that is, conditions, interactions, and consequences, and presented a grounded theory model of

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[156] This is based on the notes that the researcher has taken during the interview rather than a direct quote.

the value creation process in the case institutions, as shown in Figure 8.4.

Figure 8.4: The grounded theory model of intangibles
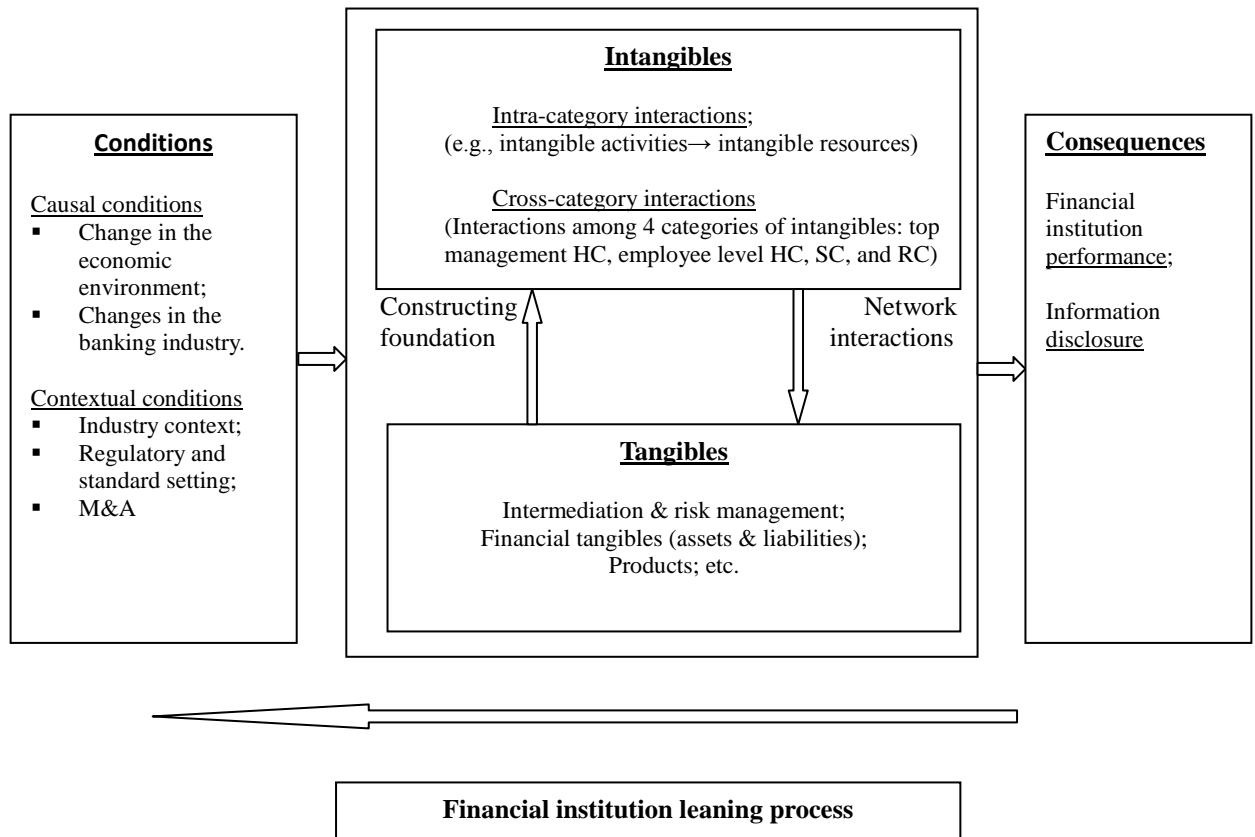
It can be seen from Figure 8.4 that, the combinations and interactions of intangibles and tangibles constructed the centre of the grounded theory model. Tangibles provided the foundation upon which intangibles, as the key sources of competitive advantage, could make impacts. The interactions among intangibles could be either intra-category interactions or cross-category interactions. The former occurred between intangibles in the same category, such as the impact of intangible activities on intangible resources. The latter were interactions among intangibles in different categories, namely top management HC, employee level HC, structural capital, and relational capital. Then intangibles affected tangibles through the process of network interactions, such as reducing transaction costs, improving the intermediation process and risk management. Such combinations and interactions of resources finally delivered better performance for the case institutions, as shown to be one of the consequences that were placed at the right of the flowchart. This is consistent with the RBV theory which argues that when the key resources in a firm are combined or integrated together, they are more likely to create competitive advantage for the firm (Barney, 1991).

All the above combinations and interactions of intangibles and tangibles were adjusted under certain conditions. Those conditions, as presented at the left side of the picture, included causal conditions (e.g., changes in the economic environment and in the banking industry) and contextual conditions (e.g., industry context, regulatory and standard setting, as well as special events such as M&A). From a dynamic RBV point of view, it is important that the combination or integration of advantage creating resources can respond to the changes in the external environment. It should be pointed out that top management and their strategic choice played important roles in identifying and developing key resources for the case institutions, and setting up coherent strategy to search for the appropriate combination of intangibles and tangibles in response to varying conditions.

Furthermore, it is found that the value creation process was an ongoing learning process for the case institutions, as shown at the bottom of the picture. Top management in the case institutions continued to learn from those interactions, and gained experience and knowledge such as adapting to conditional changes and dealing with customer service. Such experience or knowledge could help them to improve and better exploit this model of intangibles. Manager B10 discussed this leaning process in detail:

> "*We've experienced, and all banks have experienced an increasing number of customers who have had financial difficulties. The way that you deal with that will determine for a long period how these customers feel about you, what they tell their friends and family about you. And again, that's an intangible that can actually influence future profitability. So the way that we deal with customers now who are having financial difficulty, and whether you adopt a supporting approach or a short-term approach to recover for a year, and whatever, will have a lasting effect. We know from previous recessions and previous financial downturns that, customers do have a long memory in terms of the way that banks actually treated them and dealt with them when they were in trouble. And we learn from that, and again, as part of our culture, of supporting communities, supporting customers, we'll see the longer–term benefits of adopting that approach rather than simply looking to P/L.*"* (Interview B10)

These findings provided evidence in supporting the argument of dynamic capabilities, which suggests that resources and dynamic capabilities are closely interlinked in exploring firm competitive advantage (Barney et al., 2001; Teece, 2007). Teece (2007:1319) argues that "in fast-moving business environments open to global competition,… sustainable advantage requires more than the ownership of difficult-to-replicate (knowledge) assets. It also requires unique and difficult-to-replicate dynamic capabilities. These capabilities can be harnessed to continuously create, extend, upgrade, protect, and keep relevant the enterprise's unique asset base". The evidence presented here confirmed the importance of top management's dynamic capabilities to identify and develop key intangibles as well as

to set up a coherent strategy for combining and integrating intangibles and tangibles in response to the changes in the economic circumstances. According to Teece (2007), management should have the capability to sense and shape opportunities and threats, to seize opportunities, and to reconfigure the business enterprise's intangible and tangible assets. Manager B10's statement showed that top management could gain dynamic capabilities through the continuous learning process.

8.4 The integration of qualitative and quantitative approaches

As mentioned in section 4.3.2 of chapter four, the overall research question for this thesis is "how do intangibles affect bank performance?". In order to answer this question, both quantitative and qualitative approaches were employed. The former used statistical analysis to test the interactions among different intangible elements and the intangible-financial performance association (see chapters five and six), while the latter investigated these relationships through interviews with bank managers and analysts. These two studies were conducted almost at the same time, thus allowed the integration or combination to occur during the stages of data collection and data analysis, as well as in the discussion of the empirical results.

How the quantitative and qualitative approaches were integrated together during the data collection and data analysis stages has been discussed in chapters four, five, and seven. This section discusses how findings from the quantitative study and qualitative study connected and compared in terms of modelling intangibles.

Recall that the quantitative data was analysed following three steps. The first step was to investigate the relationships between different intangible elements in relational capital, the second step focused on relationships between human capital and relational capital, and the third step looked at relationships between intangibles and financial performance (see section 5.3.3 of chapter five). On the other hand, the grounded theory model developed from the qualitative interviews revealed that there were three levels of interactions among different resources in the case institutions, that is, intra-category interactions, cross-category interactions, and network interactions. It can be seen that the three steps of analyses in the quantitative study were corresponding to the three levels of interactions in the grounded theory model, showing that these two studies were framed based on similar ideas and structures. This allows the quantitative and qualitative approaches to be

conducted under an overall conceptual frame. By doing so, evidence generated from the two approaches was easier to compare and cross-check, and achieve the purposes of triangulation and complementarity.

The triangulation evidence mainly related to two aspects. Firstly, empirical results of the quantitative study showed that top management human capital tended to have impacts on other types of intangibles and bank performance. For example, CEOs' firm-specific managerial experience appeared to affect significantly customer relationships, and CEOs' industry-specific experience affect significantly financial performance for the sample banks (see sections 6.4.2 and 6.5.3 of chapter six). Likewise, the grounded theory model of intangibles in the qualitative study revealed that top management human capital and a coherent strategy could influence all other intangible components such as customer emotional capital and customer relationships, as discussed in section 8.3.2.2 of this chapter. Additionally, the model further showed that top management human capital could directly affect institutional performance (see section 8.3.3 of this chapter). It can be seen that findings from both approaches showed consistent evidence on the importance of top management human capital. Previous studies on the customer relationship mainly focused on the interaction between it and organizational level human capital (e.g., Maxham et al., 2008; Nagar and Rajan, 2005), but ignored the impact of top management human capital. This study, therefore, contributes to the literature by providing evidence on the interaction between top management human capital and the customer relationship.

Secondly, it was found from the quantitative study that the combination of top management HC, employee level HC and service quality had a much higher explanatory power for explaining the variations in banks' customer relationships than they working individually, and the combination of different intangible elements appeared to better explain the variation in banks financial performance than when they were viewed in isolation (see section 6.6 of chapter six). Similar findings were observed from the qualitative study, in which both managers and analysts emphasized the combined or balanced effects of intangibles on institution performance. Many interviewees perceived that the combined effects of intangible resources were more important, although they recognized that some critical intangible resources could influence directly the institutions' performance. These findings were in line with previous literature (e.g., Nagar and Rajan, 2005; Reed et al., 2006). For example, Nagar and Rajan (2005) find that different types of intangible elements joined together tended to better explain the changes in firm performance. The

evidence provided by both the qualitative and quantitative studies supported the importance of resource integration highlighted by the RBV theory (see section 8.3 of this chapter). These results provide novel insight into how the RBV may be tested more generally.

Therefore, it can be seen that the quantitative and qualitative studies were closely integrated with each other in terms of providing confirmation of some important findings. This enhanced the external validity of the overall research. Apart from the triangulation of results, the combination of the quantitative and qualitative approaches also has the potential to overcome the limitations of adopting a single method.

As discussed in chapter six, some empirical results of the quantitative study tended to be unstable, and there were some unexpected findings presented. For example, it was hypothesised that banks' customer relationships should be affected by their brands. However, findings from the quantitative analyses did not provide evidence to support the assumed relationships between proxies of brand strength and the customer relationship. In addition, brand metrics tended to have no significant impacts on banks' financial performance either. Therefore, several questions arose with regard to modelling intangibles: Did the unexpected results come from misspecified models or where the hypotheses invalid? How can the constructed models be improved so as to better characterise bank performance? The grounded theory model of intangibles presented a systematic interaction process of intangibles and other types of resources, and provided useful suggestions to improve the quantitative model construction in terms of model specification.

Firstly, in discussion of intra-category interactions (see section 8.3.2.1 of this chapter), the case data showed that it was important to distinguish between intangible investments and intangible resources, and it was evident that there appeared to be a causal relationship between intangible investments and intangible resources. In other words, the constructed quantitative models that were intended to assess the interactions should be concerned with the inputs and outputs of intangible elements. However, recall that in the models that were used to examine the relationships between brand metrics and the customer relationship (see section 6.3 of chapter six), both input metrics (e.g., advertising and marketing expenditures) and output metrics (e.g., brand value) were adopted as independent variables. Therefore, it would be interesting if future quantitative studies could examine the intra-categories interactions by looking at the impacts of intangible investments on intangible resources.

Moreover, the constructed models used to examine the intangibles-performance associations only included proxies of intangibles as independent variables. However, as discussed before, tangible and financial resources were also perceived by some managers and analysts to be important factors in the value creation process. Actually, they constructed the foundation upon which intangibles could make an impact. In this sense, the specified models used in this study may suffer from omitted variable problems. Therefore, it would be desirable to include variables of tangible or financial elements in the quantitative model. Future quantitative research may want to investigate all three levels of interactions by looking at the combined effects of intangible, tangible, and financial resources.

Indeed, with regard to the methodological issue in the RBV research, because it involves largely measuring intangible resources, either a quantitative approach or a qualitative approach has its distinct strengths and weaknesses. Barney et al. (2001) point out that using proxies to conduct large sample quantitative empirical investigations may be subject to concerns about construct validity, while investigating intangible resources via qualitative methods are not adept at generating empirical robust conclusions, although such techniques can facilitate rich depictions of organizational phenomena. Thus, they encourage scholars to conduct research incorporating multiple approaches in this area. In this sense, this thesis may provide a good example of how quantitative and qualitative approaches could be integrated fluently and demonstrate how to think about testing the RBV.

8.5 Conclusions

This chapter has three objectives. It firstly discussed how managers and analysts understood the concept of intangibles, and answered RQ2: what may be the important intangibles for a bank? Then it discussed findings from the qualitative study with regard to modelling intangibles, and presented a grounded theory model of the value creation process in the case institutions. The third specific research question (RQ3) – how do intangibles relate to bank performance – was explored within the discussion of the grounded theory model. Finally, this chapter integrated qualitative and quantitative studies in the discussion of empirical results, partly answering another two specific research questions (RQ6 and RQ7): what may be the problems and limitations with the quantitative models and data; and how can the quantitative models be improved?

With regard to understanding intangibles, the case data revealed that the views on some basic ideas related to the concept of intangibles from managers' and analysts' perspectives tended to be different. In general, managers appeared to provide a more comprehensive picture of intangibles than analysts in terms of understanding intangibles, including the definition and classification of intangibles, the importance of intangibles in the bank business model, as well as what were the core intangibles. Managers tended to define intangibles from a broader concept than analysts, as some analysts considered intangibles an accounting item on the balance sheet only. In addition, managers were more comfortable with the three categories of intangibles used in academic research, namely, human capital, structural capital and relational capital, although in practice their classification of intangible elements appeared to be slightly different from the academic literature.

As for the importance of intangibles in the bank business model, almost all the managers perceived that intangibles were key resources of competitive advantage for the case institutions. On the other hand, analysts' perception on this appeared to be different. Most of them stressed that although they acknowledged the significance of intangibles in wealth creation, they prioritised the tangible or financial strengths rather than intangibles. However, it should be pointed out that most of the analysts claimed that they did consider intangibles when they assessed a bank. Although such information could not be put in their public reports on the grounds that their reports had to be based on accurate analysis rather than personal judgements, analysts thought about intangibles privately when they made recommendations to clients. More importantly, the evidence presented here supported the importance of resources integration suggested by the RBV theory. It was apparent that there was a two-way relationship between intangibles and tangibles, and the latter set up the foundation for the overall business model in a bank.

When answering the question (RQ2) "what may be the important intangibles for a bank?", the majority of analysts argued that apart from goodwill, top management HC constituted the key focus in their bank valuation. Managers, however, showed different opinions on it. Some of them discussed the importance of balancing or combining different types of intangibles, and at the same time gave more weights to some intangible elements than others. Others emphasized the specific intangible strengths they had or the critical intangible elements in the financial crisis.

After the discussions of understanding intangibles, this chapter then outlined a grounded theory model of intangibles, which revealed that under certain conditions, there were various interactions among intangible elements and interactions between intangibles and other types of resources or bank intermediation activities occurring, and these interactions then affected institutional performance and information disclosure. In this model, the combination and integration of intangibles and tangibles provided the means to reduce transaction costs, to improve the financial intermediation process and risk management, to make the bank deposit and loan portfolio more desirable, and to reduce information asymmetry for transactions and services.

In grounded theory term, conditions could be distinguished between causal conditions and contextual conditions. Causal conditions included changes in the economic environment (e.g., financial crisis) and changes in the bank industry (e.g., technology development and business globalisation). Contextual conditions consisted of industry context (e.g., industry characteristics such as service sector, homogeneity of banking business and customer inertia, as well as business segment characteristics), regulatory and standard setting, and special event of merger or acquisition. Causal conditions that were mediated by contextual conditions continued to influence the role of intangibles in the value creation process of financial institutions.

Under the above conditions, the case data showed that there were three levels of interactions that constructed the process of value creation, which were intra-category interactions, cross-category interactions, and network interactions. Intra-category interactions consisted of the interactions between intangible investments and intangible resources in the same category, and also relationships among some intangibles resources in the class of relational capital, such as the impact of the brand on the customer relationship.

Cross-category interactions, as the second level of interactions, involved how top management human capital and coherent strategy affected other types of intangibles, how employee level human capital and relational capital affected each other, and how they combined with structural capital to contribute to the value creation process. It is important to note that the interactions cross different categories of intangibles were normally connected with each other at the same time, and could not create value in isolation.

Network interactions were the final step of the value creation process. In this stage, intangibles interacted with tangible or financial resources, and then influenced the intermediation activities and risk management. The case data revealed that the network interactions could help to improve the financial intermediation process, such as attracting deposits, increasing loans and other products selling, as well as reducing costs. In addition, they could influence risk management, such as reducing deposit withdrawal risk and bad debt risk.

The case data further revealed that these three level interactions were joint and interacted simultaneously, and these led to institution performance. In such a process, top management played an important role in searching for the appropriate and robust combination of intangibles and tangibles, and then were expected to deliver superior bank performance. On the other hand, they could also gain dynamic capabilities through the ongoing learning process.

Finally, the above findings from the qualitative study were connected and compared with empirical results of the quantitative study. On the one hand, findings from the two approaches achieved triangulation in some empirical evidence. For example, both of them suggested that top management human capital tended to have impacts on other types of intangibles and bank performance. Moreover, findings from both approaches showed that the combined or balanced effects of intangibles on institution performance were more significant than they worked individually.

On the other hand, the combination of quantitative and qualitative approaches also has the potential to overcome the limitations of adopting a single method. Chapter six showed that some empirical results of the quantitative study tended to be unstable, and there were some unexpected findings presented. The grounded theory model of intangibles discussed in this chapter provided some useful suggestions to improve the quantitative model construction for future research. For instance, it is important to distinguish between intangible investment variables and intangible resource variables, so as to examine the interactions in a more logical and systematic way. In addition, it would be desirable to include variables of tangible or financial elements in future quantitative research.

This chapter has discussed the findings of the qualitative study with regard to the understanding of and modelling intangibles. In the next chapter, empirical results of the

qualitative study in relation to intangible measurement and disclosure will be addressed, and the integration of quantitative and qualitative approaches will be further discussed.

Chapter Nine: Measuring and Reporting Intangibles: Empirical Results from the Qualitative Study and Integration with the Quantitative Study

9.1 Introduction

The previous chapter discussed findings from the qualitative study in terms of understanding and modelling intangibles, corresponding to two specific research questions: 1) what may be the important intangibles for a bank? and 2) how do intangibles relate to bank performance? In addition, findings from the qualitative study were preliminary compared and connected with quantitative results in terms of how to model the interactions between intangibles and bank performance. Apart from understanding and modelling intangibles, the qualitative approach also tried to explore how intangibles were measured and disclosed from managers' and analysts' perspectives. This chapter, therefore, intends to answer the following specific research questions:

- **RQ4:** How can intangibles be measured?
- **RQ5:** How have intangibles been reported?

For RQ4, findings from the qualitative study show that the reasons why the case institutions sought to measure their intangibles were mainly due to internal management purposes, such as helping formulate business strategy, translating strategy into action, and tracking effects from actions. However, the practices of intangible measurement appeared to differ from institution to institution, although all of them have developed measures for their core intangibles. The case institutions could be grouped into three classes according to their experience in intangible measurement and management. With the exception of group one that appeared to be most advanced in measuring intangibles, intangibles in most of the case institutions were largely measured in qualitative terms because of some difficulties or disincentives of measuring intangibles. In addition, the case institutions appeared not to make formal use of an explicit linkage between intangibles and financial performance in a systematic way, although many managers believed that there were links between intangible factors and outcomes. On the other hand, it is found that analysts were looking for quantitative information about intangibles and quantified data on the intangibles-performance association. Therefore, it is evident that there was a communication gap between managers and analysts.

With regard to RQ5, it is found that the case institutions were encouraged to report intangible information for the purposes of external communication (e.g., improving the image and reputation of the bank) and/or internal management (e.g., enhancing employee and customer emotional capital and recruiting new employees). However, they also had some disincentives that prevented them from reporting much intangible information, such as being anxious of losing competitive advantage, concerns regarding the reliability and auditability of intangible measures that they used, and lack of comparability and consistency. As a result, the disclosed information about intangibles tended to be limited and there appeared to be a problem of information manipulation. Analysts had to collect intangible information from both publicly available resources and private communication channels (e.g., private meeting with bank managers and managers' track records), and the latter appeared to be more effective.

Moreover, findings from the qualitative and quantitative studies are integrated further to explore another two specific questions in relation to intangible measurement and disclosure, which are:

- **RQ6:** What may be the problems and limitations with the quantitative models and data?
- **RQ7:** How can the quantitative models be improved?

The previous chapter has discussed the integrated evidence on improving model specification. This chapter presents more evidence on how the integration of quantitative and qualitative approaches achieved complementarity. Specifically, the qualitative study investigated the weaknesses of the proxies of intangibles used in the quantitative models, and explored the problems with intangible disclosure that have been shown in the quantitative study. More importantly, it provides the means to exploit the possible way of improving the definition and specification of existing intangible indicators and to search for new measures of intangibles. For example, it is found that some indicators used in the quantitative analysis were also important intangible measures in business practice (e.g., education level, experience, training expenses or training time), but the case institutions tended to measure an intangible element in more detail and from different dimensions. Managers suggested that some indicators could be improved by giving more precise definitions (e.g., advertising and marketing expenditures could be separated to be brand-related and product-related expenditures) or by adjusting for other factors (e.g.,

average loan and deposit growth rate could be adjusted by market condition). Moreover, the qualitative study further explored the communication gap between managers and analysts regarding intangible measures and disclosed information, offered useful suggestion to bank managers and policy makers.

The remainder of this chapter is organized as follows. Section 9.2 covers issues about intangible measurement, including the incentives and disincentives that the case institutions had to measure intangibles, the practices of intangible measurement in the case institutions, and analysts' views on intangible measurement. In section 9.3, findings from the quantitative and qualitative studies are integrated by discussing the potential problems with proxies of intangibles used in the quantitative study from the interviewees' perspectives. Section 9.4 addresses issues regarding intangible disclosure, including the incentives and disincentives of reporting intangibles, as well as the communication channels of intangible information. After that, the quantitative study and qualitative interview data are further integrated in section 9.5 to explore the problems with undertaking a quantitative study in the area of intangibles research. Section 9.5 also discusses the policy implications and suggestions for further research. Finally, this chapter ends with conclusions.

9.2 Measuring intangibles

Given the importance of intangibles in the value creation process (see section 8.2.2 of chapter eight), it is not surprising to find that the case institutions have developed their measurement systems to measure or value various dimensions of intangibles in their business practices. This section concerns issues related to intangible measurement, including why the case institutions wanted to measure intangibles, what difficulties they have encountered, how they measured different components of intangibles, and analysts' perception about intangible measurement.

9.2.1 Why or why not measure intangibles

Previous literature shows that there are various purposes or motivations to measure intangibles, as discussed in section 3.2.1 of chapter three. Generally speaking, the reasons why organizations want to measure intangibles could be twofold, that is, for internal management purposes and/or for external communication purposes (Marr et al., 2003). The

case data shows similar evidence in this regard.

With regard to the internal management purposes, Robson (2004) states that the usual justification for organization measurement activities is that the more that is measured, the more that will be managed and then be improved. Similar argument has been observed in the case interviews. Several managers believed that if intangible elements could not be measured, they would not be managed (B5, B6, and B8).

> "[W]ith intangibles, I'm afraid if it's not measured well, it won't be managed. So it's important, I think, maybe for all of us, to think more about how we build confidence about how we are going to measure them, how we are going to track them, and how we are going to demonstrate by evidence in financial terms, in performance terms."
>
> (Interview B5)

It is found that the majority of managers wanted to measure intangibles mainly due to internal management purposes, which could be further classified into three reasons.

The first internal purpose of measuring intangibles was related to management decision-making, including helping formulate business strategy, translating strategy into action, and tracking effects from actions, so as to improve business performance. As manager B8 stressed,

> "I can manage anything relatively simply, because you can measure it – you see the measurements and you can make a decision relatively [easily]".   (Interview B8)

Similarly, manager B10 mentioned,

> "What we want to use [intangible] research to do is to identify how we can continually improve…So we want to use the research to build a longer-term competitive advantage, and that comes through intangibles…"   (Interview B10)

Manager B2 pointed out that they had a balanced scorecard in place to measure intangibles, and this was how they managed their business. As a senior manager, he monitored the important metrics, either financial or non-financial, on the balanced scorecard in his day to day work, and made judgements based on those metrics. Manager B3 stated that they looked at the key intangible elements that they could actually measure, and then tried to understand the outcomes of those intangibles. So they could take actions to "increase that or decrease that".

Manager B9 used an example to explain how their measurement of relational capital served the purpose of making decisions and improving profitability.

> "What the new management team did was to do lots of customer research, and to find out what things customers really need. We simplified our products, because we found

that customers preferred simple products. We changed our products and services according to customer preference, and thus increased our profitability."

<div align="right">(Interview B9)[157]</div>

It can be seen that for internal management purposes, measuring intangibles tended to be closely related to organization strategy and management decision-making. This is well identified by previous literature[158] (e.g., Andriessen, 2004; Hunter et al., 2005; Marr et al., 2003). Apart from this, there were another two kinds of internal purposes for measuring intangibles that emerged from the case data.

The second internal purpose of measuring intangibles was related to special events, such as M&A. Manager B3 pointed out that the need to measure human capital, especially employee emotional capital, became extremely important during the event of merger and acquisition.

> "*For the people set of things, obviously, we are going into integration – we are merging with ZZZZ [bank name removed]. So from a morale point of view, understanding exactly how people are feeling at this time, checking their morale as now we're going through some painful integration [are important]. And on the other side, combining with the fact that people in the general world probably feel blue at the moment because they haven't been paid right or that sort of thing, I think, you know, the need to measure these people type of things are more important, and that has to be for a long term.*"   (Interview B3)

This statement was consistent with Marr et al. (2003) who identify that one of the reasons why organizations seek to measure intangibles is to assist in diversification and expansion decisions.

Thirdly, as Marr et al. (2003) find, organizations might use intangible measurement as a basis for compensation. Manager B4 mentioned that their customer survey was closely related to their compensation management.

> "*So we carry out this survey [customer survey] quarterly,…and it's a part of our bonus actually. It depends on how we perform it, from myself down to individuals, the bonus is affected by the outcome of that survey.*"   (Interview B4)

As regards the external purposes, previous literature suggests that firms measure intangibles maybe due to the motivations of improving external reporting, reducing information asymmetry, increasing the ability to raise capital, or statutory and transactional issues (e.g., Andriessen, 2004; Marr et al., 2003). In this study, it is found that statutory or regulatory requirement appeared to be the main external factor that motivated managers to value or measure intangibles for the case institutions.

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[157] This is based on the notes that the researcher has taken during the interview rather than a direct quote.
[158] Detailed discussion refers to section 3.2.1 of chapter three.

Manager B1 pointed out that although experienced agents and established customer relationships had been long recognized as the most valuable intangibles in the company, they had not been valued until 2004.

> "*We started to value these intangibles for regulatory purpose in 2004. We believe that agents and customers are core drivers of our profitability, so we want to show the regulator – the Competition commission[159] – how these intangibles generate profits for us.*" (Interview B1)[160]

Manager B3 stressed that, as an insurance company, the industry regulations forced them to measure some intangibles. For example, he mentioned that they had to predict and value customer loyalty in order to calculate their profit, "*that's part of accounting*".

Overall, it can be seen that internal management purposes tended to be the main reasons why the case institutions sought to measure intangibles. For two of the case institutions that operated in the home credit or insurance industry, they were also encouraged to value or measure some intangible elements by external regulatory bodies. All the case institutions have well-developed metrics in some key intangible dimensions, and some of them have their measurement framework of intangibles in place. However, the case data reveals that there were some problems and difficulties with intangible measurement, and these seemed to hinder some managers from developing quantitative metrics of intangibles.

Manager B11 noted that "*intangibles by the very nature are subjective*", and this made it difficult to measure them. As a result, in the case institutions, a significant proportion of the intangible measures were in qualitative terms rather than in quantitative numbers. For example, manager B5 mentioned that they could "*describably measure some aspects [of intangibles]*", but lack detailed quantitative measurement. Manager B10 said,

> "*It's difficult, actually, to do objective or quantitative research around leadership, and to measure the impact that [it] actually has.*" (Interview B10)

Furthermore, the case interviews show that apart from the nature of intangibles, the danger existing in the process of quantifying intangible elements might also discourage the development of quantitative measures of intangibles. Mouritsen (2004:257) states that "measurement often refers to correspondence between a phenomenon (such as intellectual

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[159] The Competition Commission (CC) is an independent public body which conducts in-depth inquiries into mergers, markets and the regulation of the major regulated industries, ensuring healthy competition between companies in the UK for the benefit of companies, customers and the economy (Available at http://www.competition-commission.org.uk/about_us/index.htm, accessed on 12 Feb 2011).

[160] This is based on the notes that the researcher has taken during the interview rather than a direct quote.

capital) and its expression, so that measurement captures the value(s) or inherent dimensions of the phenomenon". In the process of establishing a relation between the phenomenon and its expression, there may be a danger that our perception of it does not capture the real nature of the phenomenon, especially for intangibles that by the nature are subjective and complicated.

For example, manager B2 argued,

> "[T]here is a risk in trying to turn things into numbers, because then people focus on the parts that they can measure – they focus on it because they can measure it, not because it's necessarily the most important thing." (Interview B2)

He then used an example to illustrate how an inappropriate measure of intangibles led to impairment of internal management.

> "So I'll give you an example. We recently introduced software to our call centres that listens to every telephone call, and it codes it according to empathy, tone of voice, and used words. So it tries to quantify how good that telephone conversation was. So for example, if there is a long period [of] silence, it identifies there is a signal of stress, and so it rates that as a worse conversation. And so each conversation gets a score. It sounds fantastic. But it causes what people do is they are focusing on trying to get a better score rather than focusing on the customer. And I think it is a little micro example how actually some intangibles are probably best left intangible. Because if you quantified them, it wouldn't actually represent exactly what it is, and would send you down to the wrong path. So we got people in the call centre trying not to say "branch" too often, because if they say the word "branch", then the computer thinks that they tell the customer they have to go into a branch and marks them down. So they are thinking about the words they're using, rather than focusing on the customer and using their intuition to guide them." (Interview B2)

Because of the above problems with intangible measurement, some managers (B1, B2, and B5) claimed that it was preferable to describe some intangibles in a qualitative or narrative way. Manager B1 noted that there was no need to quantify intangibles in their daily running of the business, although they had some measures in place. Manager B5 said that they "*don't have difficulty… in accepting the uncertainty or perhaps the lack of detailed measurement*" with some intangible elements.

However, others expressed different views. For instance, managers in interview B6 argued that owing to the problem of subjectivity in qualitative measurement, they tended to focus more on quantitative metrics that they could use. Moreover, most of the analysts interviewed appeared to be more concerned with quantitative metrics of intangibles. Analyst A4 mentioned that he only took into consideration intangibles that the company

could quantify, and *"can't do much with"* other intangibles that had not been quantified. Similarly, analyst A10 said,

> *"...I am really interested in it [intangible element] if I can see a monetary issue attached with it and a way to prove it. And those are very difficult…You know, my job is to tell you how much a company is worth under certain parameters and certain scenario."* (Interview A10)

Therefore, there appears to be a paradox in measuring intangibles in a quantitative way. On the one hand, the inherent subjectivity makes intangible measurement more difficult and risky. On the other hand, there is an increasing need of quantitative intangible metrics from both organizations and the capital market, or more precisely the analysts. In such a situation, some researchers suggest that it is better to integrate indicators with narratives together (e.g., Mouritsen, 2004). As identified in chapter eight, intangibles include both activities and resources, quantitative indicators themselves can "only assess aspects of the status of activities because this is what they can describe" (Mouritsen and Larsen, 2005:387). Therefore, in order to tell the whole story of intangibles, it is better to combine quantitative indicators and qualitative explanations together. As Mouritsen (2004) argues, narratives and numbers are related and inseparable, thus "IC is the intermingling of words and practices and indicators, mobilised to (if stated optimistically) reflexively develop the ability of an entity to do something for other" (Mouritsen, 2004:265). In such a situation, using mixed-methods could help the researcher to assess the correspondence between an intangible element and its quantitative indicators, and this will be discussed later (see section 9.3 of this chapter).

In this study, it is found that the case institutions have actually developed different measurement systems of intangibles. The next subsection, therefore, will discuss how the case institutions measured their intangible resources.

9.2.2 How to measure intangibles

The previous subsection discussed the reasons why the case institutions intended to measure or value intangibles and the factors that discouraged them from doing so. It is found that all the case institutions have developed measures for key intangible activities and resources. Moreover, managers in some case institutions discussed the measurement

framework they used. On the other hand, analysts expressed their views on how intangibles could be measured. This subsection, therefore, focuses on answering the specific research question – how can intangibles be measured – from both managers' and analysts' perspectives.

9.2.2.1 Intangible measurement in the case institutions

The practice of intangible measurement appeared to differ from institution to institution. The case institutions could be grouped into three classes according to their experience in measuring intangibles (see Figure 9.1). Firstly, the bank in which manager B8 worked seemed to be the most advanced one in the sample, as it has developed quantitative metrics for most of the key intangible elements across all categories of intangibles, and also started to conduct internal statistical analysis to examine the interactions among intangibles. The second group of banks have a mature measurement framework in place. They have developed quantitative metrics for some intangible elements, but a number of intangible measures were still in qualitative terms. This group consists of the financial institutions where managers B2 (B6)[161], B3, B5, and B10 worked. Finally, managers B1, B4, and B7 (B9)[162] did not discuss systematically their measurement systems. Rather, they just talked about some intangible metrics and the measurement tools they used. Therefore, they were grouped into the third class due to limited information about their intangible measurements.

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[161] Manager B2 and managers in interview B6 worked in the same bank but with different positions.
[162] Managers B7 and B9 worked in the same bank but in different business segments.

Figure 9.1: Intangible measurements in the case institutions

Group 3 (B1, B4, B7(B9))	Group 2 (B2(B6), B3, B5, B10)	Group 1 (B8)
▪ Understand well intangibles; ▪ Some key intangibles are measured.	▪ Some key intangibles are measured; ▪ A mature measurement framework (BSC) in place.	▪ Most of key intangibles are measured; ▪ Statistical analysis was conducted to examine the interactions.

The process of exploiting intangible measurement and management
Understanding → Measuring (narrative + numbers) → Managing (interactions)

There was an impression that the case bank B8 was more advanced in measuring and managing intangibles than others, as they had well-developed measures that covered various dimensions of intangibles. Manager B8 argued,

> "*I think they [intangibles] are not intangibles at some level, because there are a lot of things you can measure in all of these three [human capital, structural capital, and relational capital]. We at XXXX [bank name removed] particularly manage lots of those things on a very regular basis. So for example, our brand – brand is often used as an intangible. You can measure a lot of things in brand. You can measure loyalty; you can measure consideration; you can measure awareness, both on a standardised basis as well as comparing with other brands in the market. You can manage customer satisfaction. You can look at your attraction rates; you can look at the efficiency of your customer experience you created. So there are actually huge numbers of measures that all support the brand. And therefore, I don't believe it is intangible.*"   (Interview B8)

Manager B8 acknowledged that they had developed a large number of quantitative intangible measures, and this made many intangible elements no longer intangible, *"because they showed up as real metrics"*. He provided some examples of intangible metrics used in their bank (see Table 9.1).

Table 9.1: Examples of intangible metrics in bank B8

	Examples of intangible metrics
Relational capital	▪ Net promoter score (customer loyalty index); ▪ The number of customers left; ▪ The number of customers received; ▪ The number of customers came back; ▪ The number of customers reduced their spend on credit card; ▪ The number of customers increased their spend on credit card; ▪ Brand loyalty; ▪ Brand consideration; ▪ Brand awareness.
Employee human capital	▪ Attrition statistics (the number of employee left each month); ◊ Regrettable attrition & non-regrettable attrition. ▪ Training expenses per employee; ▪ The number of training days.
Structural capital (operational capital)	▪ The effectiveness of operations (cost-to-income ratio); ▪ How often do organization routines fail; ▪ System availability.

Moreover, manager B8 stated that internal statistical analysis had been performed in their bank to investigate the interactions between some intangible elements and to predict the outcomes of them. For example, they had constructed models to predict how customer behaviour was related to the level of marketing spend. He stressed that they "*do have people who have spent a lot of time during last decade building econometric models to predict the value of the brand*".

It should be pointed out that there is a clear difference between intangible valuation and measurement, as argued by some researchers (e.g., Andriessen, 2004). Andriessen (2004) identifies that the former requires an implicit or explicit criterion that reflects the usefulness or desirability of the object to be valued, and the latter is the process of assigning scaled numbers to items. In this study, four of the case institutions mentioned that they had built econometric models to value intangibles (B1, B3, B5 and B8). In institution B1, econometric model was applied to value their experienced agents and estimated customer relationships. Such information was mainly used for regulatory purpose and for assisting top management decision-making. Besides, manager B1 noted that they also utilized straightforward financial and non-financial indicators to measure

some intangible elements, and to communicate with low level employees.

> "*We use indications like agents retention ratio, spans of control, and so on. In branch level, we also use indicators like how many new customers we got, and compare with existing customers. These indicators are more practical in the front line than cash flow valuation. Because our employees can easily understand those indicators rather than complicated economic model, so we prefer to show these indicators to our employees.*"
> (Interview B1)[163]

As for the institutions in the second group, they appeared to well understand and identify the critical intangible elements, and developed their measurement and management systems for them, although quite a number of metrics were not presented in quantitative terms. Recall that section 3.2.3 of chapter three outlined some available measurement models used in business practice, such as the Balanced Scorecard, Skandia Navigator, the Intangible Assets Monitor, and Intellectual Capital Index. In this study, it is found that for those case institutions where a measurement framework for intangibles has been developed, the model they used was the Balanced Scorecard (BSC).

The Balanced Scorecard is argued to have advantages of creating insight into the value drivers of a firm and measuring performance in a balanced way (Andriessen, 2004). In this study, some managers discussed the benefits of utilizing the BSC in their business practice. Manager B3 stressed that the BSC was "*probably the best practice*" for them. Manager B2 argued that although the BSC was not perfect, it tried to "*capture more value of the business*", and was helpful in terms of taking more balanced view of how the bank's performance was supposed to be. So the BSC was "*not just a narrow financial measure*" (Interview B2). Furthermore, several managers pointed out that this framework could be applied to different dimensions of the organization (B2, B5, and B6), and was flexible in depth depending on who were the audiences (B5).

With regard to the detailed structures of the BSC framework, the case data shows that although the measures included in the BSC varied from bank to bank, it was generally constituted by four quadrants: financial, customers, employees, and process. Figure 9.2 gives an example of the BSC framework used in bank B2 (B6).

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[163] This is based on the notes that the researcher has taken during the interview rather than a direct quote.

Figure 9.2: The BSC framework and examples of metrics in bank B2 (B6)[164]

Financial	**Customers**
▪ Revenue;	▪ Customer recommendation;
▪ Costs;	▪ Brand health;
▪ Ratios.	▪ Reputation;
	▪ The number of products per customer.
Employees	**Process**
▪ Employee retention;	▪ The number of customers;
▪ Employee departure;	▪ Customer types;
▪ Employee engagement.	▪ Operational performance.

It can be seen that the BSC contained both financial performance measures and non-financial measures for intangibles. The case institutions continuously monitored and modified the indicators in order to ensure that all the key metrics were included in the framework. However, there was a common limitation with the BSC used in the case institutions.

As has been introduced in section 3.2.3.1 of chapter three, the BSC was initially designed by Kaplan and Norton (1992) to develop financial and non-financial indicators in four perspectives (Financial, customer, learning and growth, and internal business process). Then it was gradually developed to communicate with firm strategy and to allow firms to link all the measures of tangibles and intangibles together through a cause-and-effect logic (Kaplan and Norton, 1996, 2001c). Kaplan and Norton (2001c:69) argue that "each measure of a balanced scorecard becomes embedded in a chain of cause-and-effect logic that connects the desired outcomes from the strategy with the drivers that will lead to the strategic outcomes". As indicated, intangibles and tangibles are always interacted together to form the value creation chain for a bank (see section 8.3 of chapter eight). Thus, the BSC should be an appropriate technique for intangible measurement on the grounds that all tangible and intangible measures included in it are expected to be elements in a value creation chain. However, the implementation of BSC in the case institutions seemed to

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[164] Manager B2 and managers in interview B6 worked in the same bank.

have some problems. It is found that some case institutions that applied the BSC made little formal use of the above suggested causal business model. For example, when being asked the question "have you tried to link different intangible elements together", manager B2 said,

"Not scientifically. And I think it could be done…But we are not at that stage yet. We at the moment look at them in distinct quadrants." (Interview B2)

According to Davis and Albright (2004), if the causal linkages between non-financial measures and financial measures in the BSC were sound, firms could be expected to improve the selected financial performance measures by focusing on improving leading indicator measures. However, the case data shows that the linkage between intangible measures and performance measures appeared to be more hypothetical rather than mathematically proved in some case institutions. As manager B2 noted,

"[T]here is a link between intangibles and, I guess, financial performance, but it's not a mathematical link". (Interview B2)

Likewise, both manager B5 and B8 pointed out that it was difficult to measure the financial outcomes of intangibles for them, especially in a quantitative term. The above findings are in line with Ittner et al. (2004), who have conducted a study to investigate strategic performance measurement in US financial services firms. They find that for the firms that claimed to use the BSC framework, 76.9% of them paid little or no reliance on the causal business model that linked the performance drivers and outcomes together.

With regard to the third group, there was no clear evidence on whether or not they had a mature measurement framework in place. Managers in those institutions only discussed some intangible measures they used. For instance, manager B7 mentioned that they tended to measure some events (e.g., a negative event of intangible change such as customer complaint), and also quantified the cost of those events (e.g., the cost of customer complaint). He highlighted that they measured some intangibles, but not directly and not too much.

Overall, the case data reveals that practices of intangible measurement and management appeared to vary from institution to institution. Some of them utilized both performance measurement techniques and econometric methods for different purposes, and others

tended to focus on the former. The BSC was the most commonly used measurement framework in the case institutions, although indicators of performance drivers and outcomes differed for different institutions. However, either the BSC users (e.g., B2) or the econometric methods users (e.g., B8) appeared not to make formal use of the causal linkage between intangibles and financial performance in a mathematical or quantitative way, although they have discussed the intangibles-performance association descriptively.

Although the differentiation existed in the intangible measurement systems, there were some common grounds among the case institutions. Employee surveys and customer surveys (or customer research) were important tools to measure intangibles for the majority of the case institutions. For example, manager B4 discussed in detail how they measured intangibles using surveys.

> "*We still do surveys. We probably, since the last time we spoke, we have become more sophisticated in the way [that] we do our surveys. We actually try to make it more user-friendly, and so we can get more information. So we do email surveys, and we adopt questions to what we think is important and how we treat our customer. Treat customer fairly is a very important thing to us. We ask specific questions to capture that information. We also get free format to tell customers to put their comments on things about how satisfied they are with their relationship, is it working for them, is the service right, or 'if you have complaint, do you feel being treated fairly', that kind of things. So we capture as much as [we can], and we break it down to actual individual relationship managers. We break it down to officers, so we can understand the culture in the office; we break it down to regions, and we can understand regional culture. And then we pinpoint to individual relationship managers, so we understand who is showing the right attributes, and who is requiring coaching. So we carry out this survey quarterly. And we do use the information, we publish the information, and it's a part of our bonus actually. It depends on how we perform it, from myself down to individuals, the bonus is affected by the outcome of that survey.*"

> "*[W]ith colleagues we do a quarterly survey as well, and that is about 'do we provide good service, do we treat customers fairly, do you get the right support to treat customer fairly', that kind of stuff. We change the questions on the quarterly basis to make sure that people are not ticking the same box. We try to get to understand the same issues, but we ask questions differently. So we try to make sure that we are getting appropriate answers really, and we are addressing the right things. And again, we publish the results. We publish what we need to do, to assess with any aspects seriously.*"
> (Interview B4)

The above statements show that customer and employee surveys contained a large amount of information. Customer surveys were used not only to measure intangibles related to customers, such as customer satisfaction, engagement or relationships, but also to measure some brand metrics (e.g., B10). Employee surveys were commonly utilized to measure employee engagement and work performance, as well as to assist compensation

management. Besides, employee surveys were also helpful in measuring leadership behaviours, as suggested by manager B10.

The above quotations also show that intangible metrics that the case institution used tended to be dynamic rather than static, in order to capture more and better information regarding customers and employees. This was observed in interviews with other managers as well. Manager B5 argued that there were always no perfect measures of intangibles, so they tried to measure an intangible element from different aspects. The grounded theory model of intangibles showed that the value creation process was an ongoing learning process for the case institutions (detailed discussion refers to section 8.3.3 of chapter eight). Intangible measurement as the correspondence between banks (bank value creation process and their intangible elements) and the proposed expression (Mouritsen, 2004) was also a learning process for the case institutions. They continuously amended existing measures and developed new measures, in order to improve the degree to which measures of intangibles could reflect inherent dimensions and properties of those intangible factors. The evidence presented here further reveals that the case institutions had the learning capability, which was indeed a structural capital that helped them to learn continuously during the process of measuring intangibles, and to improve their intangible measurement and management consequently.

9.2.2.2 Analyst views on intangible measurement

The previous subsection described how intangibles were measured in the case institutions in the view of managers. In addition to this, bank analysts discussed how intangibles could be measured from their perspective, and what metrics they were interested in.

As mentioned before, analysts tended to be more concerned about quantitative metrics of intangibles than qualitative measures, and they were interested in the linkage between intangibles and financial performance due to bank valuation purpose. Therefore, some analysts (A6, A7, A8, and A10) suggested that one way to measure intangibles might be to look at their financial outcomes. Analyst A7 argued,

> "[P]erhaps the easiest way to measure intangibles would be to look at the return on the invested capital for particular banks. And you know, if you believe [that] on the level-playing field, return on the invested capital should be equal cross banks, then you can work out that how much intangible assets you need to ascribe to various banks,…

> *So that's a way to reverse what the implied intangible assets are for particular banks based on what their returns are."* (Interview A7)

Similarly, when asking the question if intangibles could be measured in numbers, analyst A6 suggested,

> *"I think it can be seen in the numbers looking back with [it]. You can see it in the fastest earning growth; you can see it in the better return on assets. So looking back with [it], you can say, right, that management is doing the better job, and then you can go to ask why the management is doing a better job."* (Interview A6)

Analyst A8 illustrated that brands could be measured by looking at the financial return they made,

> *"...the value of the brand is the surplus return you can make based on your cost of capital, etc. ...if you are trying to say, you know, you can measure that [brands], I mean it still comes down in some sense to the returns – financial return that it has been made."* (Interview A8)

The above statements show that analysts paid close attention to the linkage between intangibles and bank financial performance. In other words, there is a need for more information on measuring the contribution or outcomes of intangibles in the financial market. However, as discussed in subsection 9.2.2.1, interviews with managers revealed that the case institutions did not make formal use of the causal linkage between intangibles and financial performance in a quantitative way. Therefore, there appears to be a gap between the information that analysts required and the information financial institutions provided in terms of intangible measurement, and this to some extent reduces the usefulness of intangible information for analysts and other investors. As analyst A1 addressed,

> *"Financial market pays little attention [to some intangibles] ...I think that's because it is not everybody [who] knows that it is actually important. If your staffs are treating customer poorly, and the staffs in the branch next door [to you] are treating customers well, over time, that bank will do better than you if other things have been equal. We do understand that, but there is no way of mapping those data or those pieces of information to financial performance over any reliable time. So the market tends to ignore it."* (Analyst A1)

Apart from the outcomes of intangibles, changes of some intangibles also attracted analysts' attention. It is found that special events of intangible changes were the focus of measurement in the case institution B7 (see subsection 9.2.2.1). Similar view was observed in interviews with some other analysts. They pointed out that they were particular interested in significant changes of some intangible elements. For example, several analysts mentioned that when there was a major change of senior management in a bank,

its share price would move accordingly (A3, A4, A5, A6, and A10). Analyst A1 stressed that they looked at intangibles when there were significant changes happening.

> "*So we look at things when there is a big shift. This is important for us. If your brand [changed] – I think it is an issue for Alliance & Leicester, for example. Possibly one of the reasons that the bank has been sold to Santander is [that] Alliance & Leicester's [brand power] has gone, in some people's mind, from being a high quality brand to a risky brand.*" (Interview A1)

Likewise, analyst A10 stated that she was not really interested in information about some intangibles, such as results of employee surveys or customer surveys that banks disclosed, because it was difficult to compare such information among different banks. However, she would pay attention to them when there was a significant change.

It can be seen that, therefore, there was a demand for measuring changes of intangibles from analysts' perspective. Moreover, analysts A1 and A2 argued that it was important to develop "warning indicators" of intangibles.

Previous literature found that there was a problem with information about intangibles in the public domain, that is, only positive information may be presented (e.g., Backhuijs et al., 1999; Van der Meer-Kooistra and Zijlstra, 2001), as mentioned in section 3.3.1 of chapter three. As a result, analysts paid more attention to "warning indicators" that reflected negative information about intangibles rather than indicators for positive intangibles. As analyst A2 said,

> "*[A]lthough managers think that [it] is highly important to measure their success, we probably don't tend to look at that. The equity market doesn't really take that too much into account.*"

> "*I can see how certain measures would be useful, if only as a warning indicator of any problem… I think if one can think of, within that balanced scorecard, you have traffic light systems as well, say green, amber, and red... That could be a big project. But it could just be certain indicators against the targets – certain indicators are flashing in red, because we are warning [that] one thing might be different, say staff turnover. So if staff has moved too frequently, that might indicate, especially [if] there is big jump in that rate, that's a problem, obviously could be firm just downside and couldn't rent a lot of people, but may also indicate some other issues or something [that are] not quite right.*" (Interview A2)

Analyst A1 expressed a similar view. When being asked the opinion regarding information about employee satisfaction, he noted,

> "*We would only consider those things if they showed very high level of dissatisfaction.*

> *Financial market pays very little attention [to employee satisfaction]. If the employee is going on strike, that's potentially important."* (Interview A1)

It should be noted that the importance of warning indicator were also recognized by some case institutions as well. Manager B1 mentioned that employee surveys were much more important as warning signs for them, as they told the institution what they needed to improve.

In sum, according to analysts' opinion, intangibles were in general difficult to quantify, with the exception of goodwill and other intangibles that have been capitalized on the balance sheet. Most of them, therefore, tended to look at intangibles through their impacts on bank financial performance. Put differently, they thought that intangibles could be measured by investigating their outcomes or contributions. In addition, they suggested it would be helpful if information about certain intangible changes and warning indicators of intangibles could be available.

9.2.3 Summaries and discussions

The previous sections (sections 9.2.1 and 9.2.2) discussed managers' and analysts' views on measuring intangibles. The case data reveals that there appeared to be several gaps between managers (information providers) and analysts (information users) regarding intangible measurement.

As indicated before, the role of intangibles should be understood within the whole value creation process in a bank. Put differently, intangible elements are not just objects. Rather, they are linked resources or activities from the RBV point of view (see section 2.4.1 of chapter two).   The value creation chain and the role of intangible elements within it were further explored in a grounded theory model of intangibles that was generated from the case data (see section 8.3 of chapter eight). Therefore, measures of intangibles are expected to reflect the inherent dimensions and properties of value creation factors or intangible elements. However, as intangibles have a high subjective, socially constructed dimension, measuring them in a quantitative way is not only difficult but also risky, and hence it is difficult to measure the outcomes of intangibles. It is found that the case institutions were generally advanced in measuring their key intangibles, and some of them have developed systematic measurement frameworks. Nevertheless, many intangibles were still measured

in qualitative terms rather than in quantitative numbers. Moreover, most of the case institutions were in the process of describing distinct intangible elements, but paid little attention to measuring the outcomes of them. On the other hand, there was an increasing need for quantitative information about intangibles and the linkage between them and institution financial performance from the analysts' perspective. These kinds of information were valuable for them to explain or predict the value creation process (VC process) and crucial factors that created superior financial performance in banks. Such a situation is illustrated by Figure 9.3[165].

Figure 9.3: **The processes of intangible measurement from managers' and analysts' perspectives**
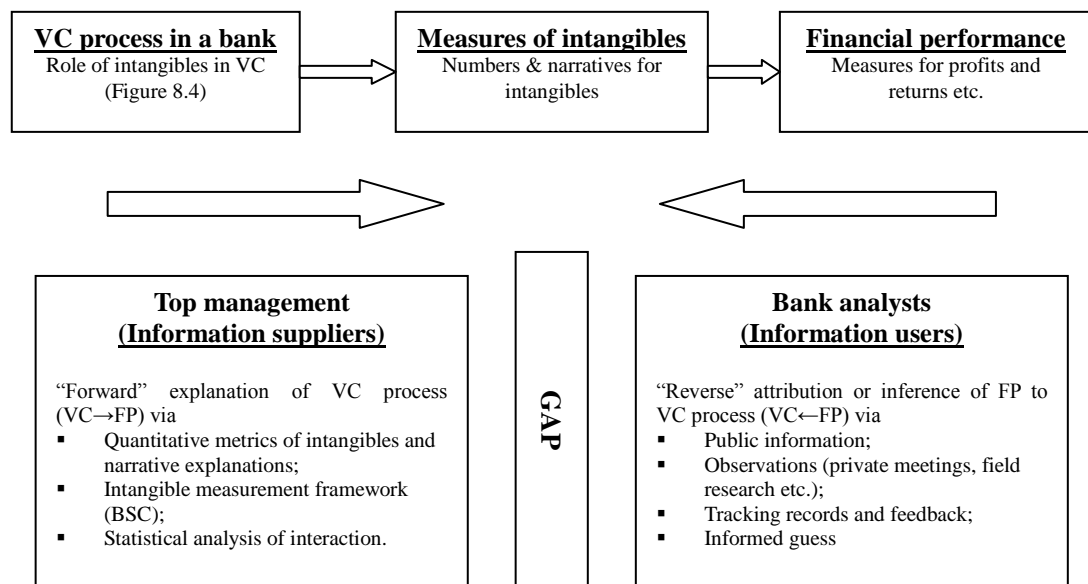
The upper part of Figure 9.3 shows that there was a value creation (VC) process in the case banks, in which intangibles played an important role (see Figure 8.4). Measures of intangibles, including numbers and narratives, were expected to make this VC process visible, and then to be linked to bank financial performance (FP). It can be seen from the bottom part of Figure 9.3 that there appeared to be two complementary processes in terms of how intangibles can be measures from managers' and analysts' perspectives. Managers in the case institutions tended to provide "forward" explanation of VC process by using information about intangibles. Although most of them were not in the stage of matching intangible measures with the value creation story, some case institutions were aware of the importance of improving the degree to which the proposed measures could explain the bank value creation process. Actually, from group 3 to group 1 (see Figure 9.1 in section

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[165] How bank analysts got information about intangibles will be discussed in a later section of this chapter (see section 9.4.2).

9.2.2.1), the case data showed how banks tried to find ways to make the VC process visual via intangible information. Comparing analysts' views on measuring intangibles with management practice, it is found that the former had the tendency to look at this through a "reverse" attribution or inference of financial performance to intangible measures. They sought to explain or predict the VC process by using intangible information and their experience over periods of time, and suggested that intangibles could be measured through linking to their financial outcomes.

The different nature of these two processes, therefore, led to gaps in the purposes of measuring intangibles, information on intangible metrics, and understanding and confidence about the VC process between managers and analysts. In such a situation, the VC process or the developed grounded theory model of intangibles may provide a useful means to reduce gaps and to improve the correspondence between the phenomena and proposed intangible measures. By putting intangible metrics into the model, it is possible to assess if they could reflect the story chain. Thus, the definition and the specification of existing measures can be improved and new measures can be searched for. This provided a good example of how quantitative and qualitative approaches could be connected or combined to provide a new way for improving intangible measurement and management. The following section (section 9.3) will discuss in detail how mixed-methods research provides the means to assess the weaknesses or strengths of existing intangible proxies.

Apart from the above discussed gaps between managers' and analysts' perspectives, it was observed that the case institutions were keen to provide indicators of positive intangibles to the external financial market, while analysts preferred information on changes of intangibles or warning indicators of them, which was to some extent limited in the public domain. The different interests between these two parties will be further explored in section 9.4 of this chapter.

9.3 The integration of qualitative and quantitative approaches: measuring intangibles

Previous sections presented empirical results of the qualitative study about intangible measurement from managers' and analysts' perspectives, and answered the question of "how can intangibles be measured?". This section focuses on the integration of findings from the qualitative and quantitative studies by discussing interviewees' views on

intangible proxies used in the quantitative models, and explores two specific research questions, that is, what may be the problems with the quantitative variables, and how these variables can be improved.

As indicated before, the combination or integration of qualitative and quantitative approaches within the single study provides a new philosophy to assess the role of intangibles in terms of how to model, measure, and report them. In section 8.4 of chapter eight, findings from the qualitative and quantitative studies with regard to modelling intangibles were compared and connected, and to a certain degree achieved triangulation and complementary. This section further provides evidence that the qualitative interview data can complement the quantitative study by exploring the weaknesses or strengths of the proxies or variables used in the statistical analyses. Specifically, the variables adopted in the quantitative models were used to formulate additional interview questions in order to investigate the extent to which these variables can capture the nature of intangible elements regarding practitioners' views (see section 7.2.2 of chapter seven).

Recall that some quantitative empirical results appeared not to be stable, and there were unexpected relationships between some intangible elements and bank performance presented (see chapter six). This may be due to limitations within the quantitative analysis, such as the small sample size and missing data problems discussed in chapter five, and misspecified model discussed in section 8.4 of chapter eight. Besides, by discussing the variables or proxies used in the quantitative models with some interviewees, it is found that problems with the intangible metrics or proxies utilized in the quantitative study may also cause the unexpected results. In the following subsections, limitations with indicators or proxies of intangibles, and suggestions for future research based on qualitative interview data will be discussed.

9.3.1 Proxies of top management human capital

Proxies of top management human capital used in the quantitative models included CEO's education level and experiences (firm-specific experience, past managerial experience, and industry-specific experience). The evidence presented in section 6.5.3 of chapter six showed that CEO's industry-specific experience had a significantly positive impact on banks' financial performance. With regard to participants' views, although some interviewees emphasized the importance of top management industry-specific experience

(e.g., B4 and A12), as discussed in section 5.2.2.1 of chapter five, most of them stressed that this indicator was not noise-free in many respects.

Manager B1 argued that an executive director who had long term industry-specific experience did not necessarily mean that he/she was good at his/her job or he/she was good in different environments. Therefore, he thought that this indicator was far away from the nature of intangibles. Manager B2 stressed that wisdom or common knowledge was more important than industry-specific experience.

> *"I will say this [Executive experience] is a weak indicator,… I mean, I don't have very much experience in banking. I would say that is a good thing, because it makes me look at things without prejudice. It's not experience, [it's] wisdom, maybe. But you can have a lot of experience and very little wisdom, or you can have little experience and quite a lot of wisdom. But experience itself – just because you've been there a long time doesn't mean you are very good."* (Interview B2)

On the other hand, some other participants recognized the importance of industry-specific experience, but criticised the use of it as an indicator of top management HC. They expressed their views on what should be the appropriate measures of top management HC.

Manager B3, for example, emphasized the "balanced experience" for the board.

> *"I think in terms of experience, you don't want the board are entirely, you know, long serving, or the board are entirely new…so according to the measure, I think you need some people [who] have been in the industry for years, been on the board for a large number of years, and know how to operate. But you need sort of elements of 'fresh ideas'. So it's not a simple measure. It's relevant, but it's not a simple measure, you know, long experience or short one is good."* (Interview B3)

Manager B5 suggested that measurement of leadership or top management quality should include metrics of non-executive directors as well.

> *"I suppose I would equally recognize that making sure that there is knowledge and strength in the board group within non-executive directors is important. Because otherwise, I think there is obviously a risk that management don't get enough oversight….I think through oversight you will change leadership behaviour."* (Interview B5)

Managers in interview B6 expressed a similar view with manager B5. They pointed out that their board members had strong background and experience in the banking industry. In addition, they stressed that experiences of independent board should also be taken into consideration, as it related to corporate governance and tended to be an important intangible.

Manager B10 accentuated that it was important to measure top management emotional capital.

> *"Good leaders, obviously benefit from learning through experience. So a good leader is the one [who] will have been able to adapt, to be flexible, and learn from either mistakes they have made or things they have done or they have seen from others. So in that respect, a good leader is far more likely to have learned from experience…they don't need to be in the organization for that long, I mean, you can buy in intellect, you can buy in knowledge, you can buy in experience, these are commodities now. What you can't buy in is the intangibles, which are just the sort of EQ that person has – their emotional intelligence, their ability to understand and relate to others."* (Interview B10)

It can be seen that although industry-specific experience might be a relative measure of top management HC, and was proved to have a positive impact on bank performance by the quantitative analyses, it appeared to have its limitations and not fully capture the knowledge and skills that executives have. As indicated before, top management and the coherent strategy that they developed and implemented for the bank were crucial in the grounded theory model (see section 8.3 of chapter eight). Consequently, it is critical to define and measure correctly top management knowledge and quality. The case data shows that it was important to measure top management quality from various aspects and beyond education level or experience, such as their emotional capital and so forth. The case institutions have put huge effort to this. Manager B10 discussed how they tried to measure top management or leadership from four different aspects through employee surveys.

> *"It's difficult, actually, to do objective or quantitative research around leadership, and to measure the impact that actually has. Although through our staff engagement surveys we do, there is, within that, undoubtedly a measure related to leadership behaviour that I mentioned earlier. So we do actually look for building that [measure of leadership behaviour] into both the employee engagement research we do, as well as into the balanced scorecard we've got. So behaviours are a key part of our people's balanced scorecard. So they are measured against the four things I talked about earlier: passionate owner, energising, execution, and collaboration. Our staffs actually monitor how they are behaving, and that forms part of the overall performance measurement framework."* (Interview B10)

Moreover, the quantitative study in this thesis looked at only executives. It would be interesting if future research could take into account of measures of other board members, such as non-executive directors' experience or education, as suggested by some interviewees.

9.3.2 Proxies of employee level human capital

As addressed in section 5.2.2.1 of chapter five, staff costs, training investment, the number of employee recruited and the number of employee departures[166] was chosen to be proxies of employee level HC in the quantitative study. It was hypothesized that staff costs and training investment should have positive effects on either the customer relationship or bank performance. However, findings from the quantitative analyses showed that staff costs appeared to influence either the customer relationship or bank performance negatively. Although training investment tended to be positively related to the customer relationship, the coefficient was not statistically significant (see sections 6.4 and 6.5 of chapter six). Some interviewees expressed their views on the suitability of using these indicators to proxy employee level HC, and to some extent explained the reason why those unexpected results were present.

Staff costs were argued to be the compensation for invested time and knowledge inputs (Public, 1998), and to be related to employee satisfaction (Fey et al., 2000; Fiordelesi and Molyneux, 2007). As a result, higher staff costs should be associated with better customer relationships and bank performance. In line with this argument, manager B11 stated that staff costs, as a cost to human resource, determined the quality of employees, because "*higher skilled staff demand higher wage*".

However, some other interviewees expressed different views. Manager B9 argued that employee salary was more about market pay, and had no correlation with employee satisfaction. Manager B5 pointed out that there was a trade-off in staff costs, as higher staff costs could be related to higher level of employee satisfaction, but might also imply cost inefficiency. Similar view was observed in interview with analyst A3, who noted that although a happy employee would be likely to give customers better service, banks had to confront the cost inefficiency at the same time. In addition, analyst A1 mentioned that a high level of staff costs might increase risk for a bank, as too much incentives that employees had would encourage them to give priority to customers rather than the bank.

Some interviewees suggested that staff costs could be an indicator of employee level HC, but should be adjusted for other factors, such as the structure of incentive scheme or compensation management. Manager B3 suggested that compensation should be

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[166] The numbers of employees recruited and employee departures, however, were not included in the quantitative models due to missing data problem, as mentioned in section 5.3.1.1 of chapter five.

performance-based, and increase in compensation was more important than the amount of staff costs.

> *"I think it [staff costs] is a relative thing. Something about cost or salary is about how you manage that salary, [and] how you manage giving people pay right in line with positive feedback they earned. When you take people in, you actually always take people in with a little bit higher room to increase their salary. So I think the average increase people get every year is almost more important than the actual amount of earning sometimes."* (Interview B3)

According to analyst A11, the structure of incentive scheme was very important. He pointed out that the incentive scheme should be based on long-term assessment rather than short-term. For example, staff who provided loan services to customers should be paid based on the money they collected back rather than lending, because "there is a lot of gyration mismatch within banks, typically borrowing short and lending long", and a correct incentive scheme could help the bank to reduce risk.

With regard to training investment, some participants claimed that it was an important driver of employee satisfaction (B3, B4, and B5). As manager B3 said,

> *"I think training is a big driver of satisfaction as well – developing their careers and they feel that company is investing in their future, so they got a lot of satisfaction there. It is a big driver. It's a leading measure of employee satisfaction; it's a driver of employee satisfaction."* (Interview B3)

On the other hand, others argued that there were limitations within this indicator. Manager B9 stressed that although training investment was a relevant indicator of employee satisfaction, it should be treated with caution[167].

> *"Sometimes companies may spend lots of time on training, but it's totally a waste of time. So I think a good training programme is more important than training expenses or training time. A good training programme can help employees become knowledge employees, and then create more value for the company."* (Interview B9)

Manager B10 emphasized that training activity in the bank did not just refer to training courses. More importantly, it involved "learning by doing".

> *"Rather than limiting it to simply training, I would describe it more accurately as developing an employee. Because I think we all tend to think of training as being taken away and put into a classroom to have, you know, a training course. I think people are far keener, employees are far keener to feel [that] they've been provided with challenges and development opportunities. And that can come through having the opportunities to work on projects or assignments, take them out of their comfort zone, expose them to new or different areas, and give them opportunities to learn and develop new knowledge, create new networks with other employees in the organization. Or if we look at it from a branch staff perspective, [that can come through] giving the chance to take on more challenging tasks, and feel there is progression – may not be through a promotion, but*

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[167] This is based on the notes that the researcher has taken during the interview rather than a direct quote.

they are developing in the role. Most of that tends to be done on the job rather than in the classroom. And yes, undoubtedly, staffs who feel they are getting that challenge, getting that development, and getting support will undoubtedly be more satisfied and more engaged than someone who feels their development is neglected." (Interview B10)

From the above discussions, it is evident that although staff costs and training investment were relevant in measuring employee level HC, they tended to have many limitations. This may to some extent interpret the unexpected relationships between them and the customer relationship or bank performance that was found in the quantitative study.

As for the numbers of employee recruited and departure, managers B4 and B5 argued that they were very important indicators in their business practice. It is also apparent that the case institutions learnt over time how to define and improve these measures in order to better reflect employee turnover or retention (e.g., B2 and B8). Manager B2 argued that employee departure was an ambiguous indicator depending on which kinds of employees left. He said that, "*if your best employees were leaving, it's a problem; if your weakest employees were leaving, it's not*". Manager B8 demonstrated that the number of employees leaving was distinguished between "regrettable attrition" and "non-regrettable attrition" in the bank, and the former captured the real human capital resources that they wanted to maintain.

Overall, it can be seen that proxies of employee level HC used in the quantitative models were considered to be relatively weak indicators from some interviewees' perspective. This might partly interpret why the quantitative analyses did not provide evidence to support the assumed relationship between employee level HC and either the customer relationship or financial performance. The case interviews also illustrated how the definition and the specification of existing measures could be improved. For example, the indicator of employee departure could be further identified in a more detailed way, such as separated into regrettable attrition and non-regrettable attrition.

9.3.3 Proxies of relational capital and service quality

As introduced in sections 5.2.2.2 and 5.2.2.3 of chapter five, in the quantitative study, two elements of relational capital were investigated, namely the brand and the customer relationship. Five indicators were used to proxy the brand, including advertising and marketing expenditures, brand value, bank age, the accounting number of goodwill, and branch network. The customer relationship was measured by the average number of loan

and deposit growth rate. In addition, the number of employees per branch was used as an indicator of service quality. Participants in the qualitative interviews were asked to talk about their opinions in relation to those indicators[168].

The accounting number of goodwill on the balance sheet was used as a proxy of brands in the quantitative study. However, it was argued to be an imperfect measure (e.g., B2, B9, and A2). For example, analyst A2 recognized that goodwill was a measure of intangible assets, including not only brand value, but also value of franchise, customer relationships and other intangibles. On the other hand, he argued that the value of goodwill could not necessarily provide an accurate guide to the real value of intangibles, as it depended on market conditions and the amount of deals that banks had done.

Advertising and marketing expenditures appeared to be a weak indicator of brands from some interviewees' perception (B2, B4, and A12). Analyst A12 remarked that advertising and marketing expenditures were not a major reason whether or not the bank had a good brand. Manager B10, on the other hand, held the point that it could be an appropriate indicator if "*observed over a long period of time*". He demonstrated that a bank's marketing expenses would have an impact on customer perception of the bank over 10 to 15 years time.

Some other participants suggested that it was important to discriminate brand-related advertising from product-related advertising (B3, B5, B10 and A2). As manager B3 noted,

> "*I think there are different types of marketing spends. Some of that is much around brand, and some of that is very much [around] product marketing. So I think you might want to look at how much people actually spend on their brand*".   (Interview B3)

Similarly, analyst A2 stressed that there were two types of marketing expenditures, namely below-the-line and above-the-line. He explained that the former was more general corporate image building which involved brand promotion activities, while the latter was more about products differentiation, although it was very difficult to achieve this in financial services, especially in retail banking.

As for brand rating or ranking, manager B5 thought that it was an important indicator of

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[168] In order to deal with missing data problem, some alternative variables have to be used rather than the above introduced indicators (see section 5.3.1.1 of chapter five). For example, general and administrative expenditure was used instead of advertising/marketing expenditure, and the total number of goodwill and other intangible assets was used instead of goodwill, but discussions with participants still focused on the indicators of advertising/marketing expenditure and goodwill.

brands.

> "*[W]e are very pleased with some of the sustainable ability statistics we've got, [and] we are very proud of many awards we've got. So I do think having comparative or contrasting ranking measures are very important, very important.*"   (Interview B5)

However, some other participants (B2, A3, and A12) expressed different views. Manager B2 argued that brand rating did not matter. Rather, customers' perception of brands was a strong indicator. Similarly, analyst A12 stated that customer's personal experience with a bank was more important than brand rating or ranking.

Bank age, as a proxy of brands, was supposed to positively influence the customer relationship and bank performance, because a bank that has operated for longer time should enjoy better reputation than a younger bank (Dick, 2006). Manager B4 and analyst A7 expressed similar views with the above statement. According to them, a bank that had been established for hundreds of years could make customers more confident with the bank. On the other hand, manager B3 argued that the age of bank was an ambiguous indicator, as its effects could be two-sides.

> "*Number of years, I think, depends on what sort of brands, what type of brands you are after. So if you want the brand for reliability or trust-worthiness, then the [number of] years is relevant. But if you want a brand for innovation and customer centricity, the brand is really built up around customers, and I think the number of years is almost unworthy, you know, the new brand is probably seen to be better.*"   (Interview B3)

The above argument might be a possible interpretation why there was no significant relationship between bank age and either the customer relationship or bank performance being found in the quantitative data analysis (see sections 6.3.2 and 6.5.3 of chapter six).

With regard to the branch network, manager B7 argued that it could be an important indicator of intangibles (detailed discussion refers to section 5.2.2.2 of chapter five). In fact, the number of branches that a bank had was found to be positively related to its performance in the quantitative study (see section 6.5.3 of chapter six). However, some other interviewees seemed to disagree with this, as other factors might work jointly with this indicator. Analyst A12 stressed that the number of branches was not a good indicator, because the size of individual branches could affect customer relationships simultaneously. Managers in interview B6 argued[169],

> "*[B]ecause you can have a huge number of branches, but many of them are inefficient. I think the quality of location and what kinds of people work in there are more important than the number of branches…So whether or not a bank has a large number of*

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[169] This is based on the notes that the researcher has taken during the interview rather than a direct quote.

branches doesn't matter, and the quality of its branch network is the real thing."

(Interview B6)

According to manager B6, the location of branches and the quality of branch employees were more important than the number of branches. Manager B9 also mentioned that the branch network as an intangible was more related to branch location, branch appearance and the function of the branch.

Likewise, the number of employees per branch, which was used as a proxy of service quality, was argued to be an ambiguous indicator due to similar reasons. Managers in interview B6 remarked that the quality of service that the branch employee delivered depended more on the quality of employees rather than the number of employees. Manager B5 expressed a similar view.

> *"What I'm debating is, is it the number or the quality, or maybe both? And I think it's much about the quality of the branch staff rather than the number of them. Because if you get the training right, the recruitment right, and you then put the right framework in terms of objectives, measures, sales servicing KPIs, then I think you have the better chance to deliver a strong customer engagement model."* (Interview B5)

Moreover, analyst A12 argued that the number of employees per branch did not "*tell enough information*", because on the one hand, this number might indicate a better customer service; on the other hand, it might also show that the bank was inefficient in terms of human resource management.

Average number of loan and deposit growth rate was used to proxy customer relationships in the quantitative study, and was also perceived to be an important indicator by analyst A12. Nevertheless, manager B5 pointed out the problems with this metric.

> *"I guess the question for me would be about the sensitivity of those numbers. Because they are some very very big numbers and don't change quickly. So you know, from one year to the next, some of those really wouldn't change in percentage terms very much. But I suppose that [it] depends on what scale you prepare to measure the difference. The results, I guess, has a problem, which we've seen at the moment, of what are the market effects. So today, for example, people have, you know, a flow of equity into cash, so cash deposits are high. As soon as the stock market improves, and economic confidence improves, all the cash will go away and back to equities. So there are some very big effects I suppose in the market context as well."* (Interview B3)

It can be seen from the above quotation that the loans/deposits growth rate tended to be a problematic proxy of the customer relationship, as it was influenced by other factors (e.g., market conditions) and might not capture fully the relationships between customers and the bank.

9.3.4 Summaries and discussions

The previous subsections discussed interviewees' views on some intangible indicators used in the quantitative study of this thesis. It is further evident that the qualitative and quantitative components in this thesis were explicitly related to each other, and hence findings from the two studies produced a more comprehensive picture regarding intangible measurement than using singular methods. The qualitative study provided the means to analyse the weaknesses or strengths that the quantitative variables had. It revealed that there was much noise within those variables, and this might to some extent explain why many unexpected results were present in the quantitative analysis. More importantly, it illustrated how the qualitative study could help to improve the definition and specification of existing indicators of intangibles and to search for possible new measures.

The case data showed that the case institutions recognized the limitations and problems with these metrics, and also put effort to modify and improve them. They tried to measure an intangible element from different aspects or in more detail. Table 9.2 provides some examples of what indicators the case institutions thought were important or they actually used in their internal management.

It can be seen that some of the indicators utilized in the quantitative study were also used in business practice, such as education level, firm-specific experience, training expenses per employee or training time. However, comparing with those indicators used in the quantitative models, intangible elements were measured in more detail and from different aspects in the case institutions. For example, the customer relationship was measured through looking at both the total number of customers and the number of active customers, and the latter seemed to better reflect the relationship between valuable customers and the bank.

Table 9.2: Examples of intangible metrics used in the case institutions

	Examples of intangible metrics	Case interview
Customer set	Customer recommendation	B2(6), B4
	Customer satisfaction	B2(6), B4, B7(9)
	Customer loyalty index (Net promoter score)	B3, B8
	The number of customers that left	B7, B8
	The number of customers received	B8
	The number of customers that came back	B8
	The number of active customers	B5
	The number of customers	B2[170], B5
	The length of time customers stay with the bank	B5
	The number of products per customer (cross-selling)	B2, B4, B5
	The number of customers reducing (or increasing) spend on credit card	B8
	The length of time employees take the customer call	B6
	The number of customers each employee deals with	B4
Brand set	Brand loyalty	B8
	Brand consideration	B8
	Brand awareness	B8
Human capital set	Employee engagement index	B2(6), B3, B4, B8
	Attrition statistics (regrettable & non-regrettable attrition)	B2, B8
	Education level	B7
	Firm-specific experience	B7
	Training expenses per employee	B8
	Training time (hours/days)	B7, B8
Process set	The effectiveness of operations (cost-to-income ratio)	B8
	How often do organization routines fail	B8
	System availability	B2, B8
	The number of improvement ideas (innovation)	B3

Several suggestions for future research emerge from the discussions presented in the previous sections.

Firstly, as discussed before, measures of intangibles reflect the perceived degree of correspondence between the role of intangibles in the bank value creation process and their expression. In this sense, by assessing existing intangible measures within the value

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[170] It should be pointed out that in bank B2, the number of customers was grouped into process set rather than into customer set.

creation process, it is possible to improve the definition and the specification of them. The current study shed light on this, and illustrated how the combination of qualitative and quantitative approaches could provide a useful means to do so. Therefore, it is desirable to undertake more mixed methods research to investigate intangible measurement in terms of the weaknesses and strengths of existing indicators and searching for potential new indicators.

Secondly, the case interviews revealed that some indicators used in the quantitative study of this thesis were also important intangible measures in business practice, although they were argued to have limitations in capturing fully the nature of intangible elements. These variables could be improved by incorporating other relative factors. For example, more measures of top management human capital, such as experiences of non-executive directors, should be taken into consideration together with executive directors' experiences.

Thirdly, some indicators tended to be ambiguous in terms of their definition and specification. Those metrics could be defined more clearly in future research in order to better explain the bank value creation process. For instance, an employee leaving the bank does not always constitute a negative indicator of human resource, as it depends on whether or not the bank wants him/her to remain. Therefore, in order to specify this indicator, employee departure could be separated into regrettable and non-regrettable attrition. Similarly, advertising and marketing expenditures could be distinguished between brand-related expenditure and product-related expenditure, and the former was likely to be more relevant to measure brands. Number of branches could be further classified according to their size.

Fourthly, it was found that the usefulness of some indicators tended to be influenced by other factors. This is corresponding to the developed grounded theory model of bank value creation (see section 8.3 of chapter eight), in which the interactions were influenced by various conditions. Therefore, future research could consider more factors (e.g., market conditions or time effect) in order to improve the specified models. For example, it would be interesting to look at the long-term effect of advertising and marketing expenditures on bank performance (e.g., 3 or 5 years of observation time) rather than the one-year lag used in the current quantitative study. Moreover, it would be interesting if more research could be undertaken to investigate how to measure some important intangible elements, such as management and employee emotional capital or structural capital in terms of compensation

system and recruitment system.

Finally, it is found that accounting indicators, either financial or non-financial measures, tended to have inherent limitations as proxies of intangibles. As manager B1[171] argued,

> *"These are proxies based on accounting measures. We also use some of these indicators. These indicators or proxies are available in public. But I think they have some limitations...I think those accounting indicators are not forward-looking, and not suitable for measuring intangibles. They suffer from some fundamental problems."*
>
> (Interview B1)

Therefore, some case institutions measured intangibles based on both econometric method and accounting paradigm in order to serve different purposes. This might be a useful way to communicate with the external market, as analysts generally value banks from the financial perspective. Future research, therefore, could look at intangible measurement through both conventional accounting and financial perspectives.

9.4 Reporting intangibles

The previous section discussed issues related to intangible measurement, and answered RQ4: how can intangibles be measured? This section focuses on exploring the question of "how have intangibles been disclosed in the case institutions?" by looking at why or why not the case institutions wanted to disclose information on intangibles, and what channels they used to disclose.

9.4.1 Why or why not report intangibles

Chapter eight introduced the grounded theory model of intangibles in which conditions, interactions and consequences were linked together to show the value creation process in a bank. The consequences in the grounded theory model referred to how the value creation process was related to external markets that included the financial market and information market. In the financial market, the case institutions' performances were improved through intra-category, cross-category, and network interactions. At the meantime, the process of interactions provided an important means to communicate with participants in the market for information, such as analysts and other investors. From the data collection process in the quantitative study, however, it was found that the level of intangible disclosure in European banks appeared to be quite low. As a result, the quantitative analysis in this thesis

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[171] This is based on the notes that the researcher has taken during the interview rather than a direct quote.

suffered heavily from missing data problems (see section 5.3.1.1 of chapter five). In the qualitative study, the researcher tried to further explore problems with intangible disclosure from managers' and analysts' perspectives. The interview data reveals that on the one hand, the case institutions had incentives to make the value creation story visible to information market participants; on the other hand, they were discouraged from disclosing some information about intangibles. These incentives and disincentives will be discussed next.

9.4.1.1 Incentives and purposes of reporting intangibles

Previous literature has identified a variety of external and internal incentives to report information about intangibles, as discussed in section 3.3.1 of chapter three. Evidence about disclosure incentives that was obtained from interviews with managers could be also classified into external communication incentives and internal management incentives.

With regard to external communication incentive, Beattie and Thomson (2010) point out that voluntary disclosure of intangibles and other information can reduce information asymmetry between inside managers and outside shareholders, and increase the transparency to capital markets. In this study, manager B2 stated that disclosing more intangible information could provide external shareholders or investors a wider picture of the bank, and help them better understand the bank's long-term vision.

> "*I personally think it will be better if we could disclose more of what people could classify the soft indicators, because it does give more of our picture…You know, state it simply, accountancy tells you how much money a company makes…[But] the point of business is not to make money. The point of business is to somehow make contribution, I believe, to our world, and a side effect is to make money. But what else does it make? Does it make customers happy? Does it give our people, worthwhile and fulfilling jobs? Does it make the world a more sustainable or less sustainable place? And an interesting question sometimes I ask is, "would people want us to exist?" …And that's a good test of intangibility. You might need it, because it does have something you just got to do. But would you want it?*"
> (Interview B2)

The above statement was in line with some previous authors who argue that intangible disclosure is useful in terms of communicating with shareholders to visualise and support the long-term vision of the company (e.g., Backhuijs et al., 1999) and enhancing the image and reputation of it (Guthrie et al., 2007).

As for internal incentives, some researchers argue that reporting more intangible information can help the company to create trustworthiness with employees and other important stakeholders (e.g., Van der Meer-Kooistra and Zijlstra, 2001). Similar views

were observed in the case interviews. Manager B7 stressed that intangible disclosure was a useful tool to enhance employee and customer emotional capital. He said that they disclosed their employee or customer survey results when the market condition was not good, as the high survey scores could make the bank more trustworthy to customers and employees. Besides, manager B3 noted that positive results of an employee survey could help the bank to attract new employees.

> "*I guess if it [employee satisfaction score] was really positive, we would [disclose it]. You can report them, and it helps you do recruitment, you know, if you came out with a good score.*" (Interview B3)

This is in line with Bismuth and Tojo's (2008) study, in which they find that one of the main benefits of intangible reports is to enhance employee motivation and thus to improve employee recruitment and retention.

9.4.1.2 Disincentives and difficulties of reporting intangibles

Although both banks and investors may enjoy some benefits through intangible disclosure, as mentioned in the previous subsection, it is found that the case institutions appeared to be unwilling to report too much information about their intangibles due to some drawbacks and difficulties with intangible disclosure. This subsection, therefore, discusses the disincentives of reporting intangibles and the difficulties that the case institutions encountered in the process of reporting them.

As discussed in chapter two, intangibles were often at the heart of competitive advantage from the RBV point of view. As a result, one of the most important disincentives of reporting intangibles is that companies prefer to keep their intangibles under wraps in order to maintain competitive advantage (see section 3.3.1 of chapter three). Some managers interviewed held the similar opinions with the above statement (B1, B6, B9, and B11). For example, manager B1 said that some detailed information about intangibles they did not want to share, such as the differences between their experienced and new agents, as these kinds of information were "*commercially sensitive*" and "*could give competitors valuable information*" about their business model. Similarly, managers in interview B6 mentioned[172],

> "*We disclose some of them [intangible information], such as brand health and employee engagement, but not all information. We don't want competitors to know how we run our business. If you disclosed all this information precisely, you might lose your*

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[172] This is based on the notes that the researcher has taken during the interview rather than a direct quote.

competitive advantage in the market."   (Interview B6)

Manager B10 expressed a similar view. He argued that if the banks disclosed all financial and non-financial information, they were "*rather demonstrating their business model*". He pointed out,

> "*[Y]ou're giving away commercially sensitive data, which means that you are telling your competitors what works to deliver the performance that you were driving or what doesn't work. You are giving your competitive advantage to your peers. So I think there is something quite difficult in that. Physically publishing data might not be an issue, but the consequence of publishing that data could be quite significant. So I would say this is internal management information measures rather than necessarily external publication.*"   (Interview B10)

The second disincentive or difficulty of reporting intangibles was related to reliability and auditability of intangible measures. From discussions in subsection 9.2.2.1, it can be seen that there were many problems with intangible measures in business practice, and the case institutions were still in the stage of exploring and modifying intangible measurement. Therefore, as manager B9 mentioned, it was very hard to disclose information about intangibles due to the noise in the intangible metrics.   Manager B2 explained more clearly why they did not disclose some intangible information:

> "*[B]ecause of the governance that [is] around the disclosure. First of all, anything we disclose externally has to go through very very regular disclosure process. Because it is information that people will buy or sell our shares on the basis of [it]. So it has to be auditable. We have to be able to evidence that it is objective, that it is representative. The second thing is once we disclose something once, people will ask for [it] always, say "what is it now, what is that now?" And you know, the number of profits doesn't change in terms of money and so on, but at the end of the day, there is much more subjectivity in those [intangible] measures. One year we measure this, and someone discovered a better way of measuring employee engagement, then we change the question, change the score. And you don't get the same comparability over time.*"   (Interview B2)

This is in line with previous research, which argues that internal measures of intangibles are often not yet tested in terms of their reliability, and firms may run the risk of exposing the company to external criticism if they disclose such information (e.g., Carroll and Tansey, 2000).

Moreover, as we know, intangible measurements tended to vary from institution to institution (see section 9.2.2.1 of this chapter). As a result, lack of comparability in terms of intangible metrics also discouraged the case institutions from reporting intangibles. Manager B9 pointed out that it was difficult to disclose information about intangibles as

they were not comparable between different banks. He said[173],

> "*If all banks measured the same thing in the same way, then the disclosure of that information would be useful. Otherwise, I don't think it would make sense.*"
>
> (Interview B9)

Manager B8 expressed a similar view.

> "*I think another thing about intangibles is [that] they are not absolute. So how you measure your intangible will have an impact on what the result is, because it's intangible. Therefore, I would be doubtful if it makes sense to...let me go another way, when you look at numbers, there is a great set of accounting principles, and you can analyse every bank by the same principle – you look at the numbers, everything is the same. When you look at intangibles, how I manage my brand, and how I ask customers questions about my brand will have an impact on the outcome. Therefore, it is very difficult to say that my brand is better than ZZZZ's [bank name removed] brand. Why? Because ZZZZ measures it in a different way...Therefore, because there is no standard, you can't compare... That's the problem. Financial numbers are binary – it's black or white; it's zero or one; while intangibles are grey – any type of number between zero and one. That's why it is much more difficult, I think, and also much more dangerous to report it. Because somebody else will look at intangibles differently, and what I claim to be a good number, they will come back to say it's a bad number.*"   (Interview B8)

Apart from the above discussed disincentives or difficulties of intangible disclosure, manipulation of information appeared to be also a drawback of reporting intangibles, that is, only positive information about intangibles could be disclosed. As manager B4 argued,

> "*I think, my honest view is, everybody would lie about how good or bad they are. Certainly in the banking industry, and in the private banking industry, nobody would say they are not good. So I honestly don't believe that. If your intangible is below an acceptable level, you'll never hear about that in any way.*"   (Interview B4)

The problem of information manipulation has been already noticed by some previous researchers (see section 3.3.1 of chapter three). For example, Van der Meer-Kooistra and Zijlstra (2001) stressed that firms may decide to only publish certain intangible indicators based on their own discretion in order to present a more favourable picture of their business. This problem was highlighted by many bank analysts as well, and will be discussed later in this section.

The above discussions focused on why managers in the case institutions were willing or unwilling to report information about intangibles. Bank analysts interviewed also discussed problems with intangible disclosure from information users' perspective.

First of all, many analysts recognized that they had limited access to information about intangibles in the public domain. For example, analyst A5 mentioned that they got very

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[173] This is based on the notes that the researcher has taken during the interview rather than a direct quote.

poor information about some intangibles, such as brands or information related to employees. Similarly, when asked whether or not intangible measures were available in public, analyst A2 remarked,

> "[F]or the most part, they [banks] keep all to themselves. I can tell you for sure [that] these things [intangibles] get measured all the time… Banks themselves are very keen to get that information and to see how they are progressing compared with their competitors. That's true, but they don't always share us with these."   (Interview A2)

Even for information that was available in public, some analysts tended to doubt the reliability of them due to the problem of information manipulation (A1, A2, A5, A6, and A10). As mentioned in section 9.2, warning indicators or some negative intangibles were considered important by analysts. However, banks tended to only report positive information about intangibles. As analyst A1 pointed out, "*companies will never tell you when they are uncomfortable with some things*". Analyst A6 argued that banks had a tendency of being "*overlarge with evidence of their brilliance*". Similarly, analyst A2 criticized,

> "[W]e think [that] the bank tends to tell things when there is good news maybe. So they tell us their employee satisfaction rating remains extremely strong, you know, whatever they've measured, and they want to tell us good things.   That's the problems we have, you know, because that information is not requested in mandatory account. Therefore it is up to the bank who chooses what they want to tell us."   (Interview A2)

Owing to the manipulation of information, the usefulness of intangible information was reduced. Analyst A2 noted that although he thought intangibles were important, it was difficult for him to get reliable information that he could use. Additionally, the usefulness of intangible information was also lowered by problems of comparability or consistency of intangible information. For example, analyst A10 remarked that she was not really interested in some kinds of information about intangibles, such as employee or customer survey results,

> "[B]ecause it is very difficult to compare one with another – there isn't one company doing all the surveys… So you're not sure if it is level-playing field… they [banks] don't tend to be honest to you. Their disclosure is not consistent. So they tend to give you once, but they don't tend to give you again."   (Interview A10)

Analyst A2 argued,

> "[I]f you had comparison between the banks in terms of, for example, what customers thought about their brands, from extremely good to no good, then UK banks will, when you do that, tend to be all bunched together. If you have that type of analysis, then it's very valuable, because that's what we can use."   (Interview A2)

In summary, because of the problems with intangible disclosure, such as sensitivity, reliability, auditability, and comparability of intangible information, as well as information

manipulation, the case institutions tended to be unwilling or found it difficult to disclose much information about intangibles, and analysts perceived that some intangible information was not useful. Besides, it was apparent that there was a gap between managers' and analysts' perspectives. Although many analysts doubted the usefulness of intangible disclosures, they recognized the importance of intangibles and acknowledged that there was a need for standardized, reliable and comparable intangible information, as showed in the above quotation of interview A2. However, some managers interviewed (B1 and B5) argued that they did not perceive that there was a demand for intangible information from the market. Manager B1 explained that one of the reasons why they did not share much information about intangibles with the public was that they "*did not see much demands of analysts*". Manager B5 mentioned that although they always supplied sustainability reports that contained some intangible information, they were uncertain about whether or not there was really a demand for it from the market, except rating agencies.

9.4.2 Communication channels of intangible information

As shown in section 3.3.2 of chapter three, the overall level of intangible disclosure appeared to be quite low across the world. With regard to the European banks, from the data collection process of the quantitative study, it was evident that information about intangibles was very limited in public domain sources. Therefore, during the qualitative interviews, the researcher tried to explore the communication channels of intangible information between the case institutions and the information market.

In a study of how UK fund managers acquired information about intangibles, Holland (2006) finds that the financial report in the public domain and the private meetings combined together to form complementary channels and a joint information content that was unavailable from either source alone for the fund managers. Similar findings were observed in this study that the communication channels included public domain sources and private dialogue, and the latter appeared to be more important than the former for the analysts.

Manager B2 introduced that they reported part of the intangible indicators in the annual report, such as brand health and employee engagement, but a large number of intangible measures were only presented in their internal management reports which were produced

weekly. Managers in interview B6 mentioned that they did not disclose too much information about intangibles in the public domain. However, they kept communicating with investors and customers privately and individually.

Analysts interviewed also discussed how they sought to exploit relevant information from different sources in order to develop their valuation capability. Analyst A10 mentioned that most of the intangible information she collected from public domain sources, such as annual reports and independent reports of brand survey (e.g., Interbrand). Analyst A9 demonstrated that he tried to collect as much information as possible from public sources.

> "*When I analyse a bank, I'm looking at everything, really….what I depend on is the banks' regulatory filings …such as the annual reports etc., but also based on anything I can get my hand on. For example, I mean in the credit crunch, I spent a lot of time reading credit rating agencies' reports…*"   (Interview A9)

Some other analysts emphasized that a large part of information about intangibles that they acquired were from private channels (A6, A8, and A12). Analyst A8 pointed out that analysts normally collected information about intangibles that was not presented in the annual report through "*a number of different touch points*". He illustrated that one of the ways was to spend time on management in the bank, such as looking at their track record or meeting with them. Similarly, analyst A12 noted that private meetings with bank managers and managers' track records helped him to get useful information about intangibles. Analyst A6 introduced that investors and analysts would like to meet the CEO or CFO in the bank, and they also tried to have private meetings with other managers. Therefore, private meetings with managers appeared to be an important channel that banks used to communicate intangible information with the market. This is in line with Holland (2006), who argued that private relationship sources of information provided novel insight into many intangible factors.

9.5 The integration of qualitative and quantitative approaches: reporting intangibles

As indicated before, the qualitative and quantitative studies were connected in discussions of findings with regard to modelling and measuring intangibles, and this helped to achieve triangulation or complementary in better explaining some unexpected results (see section 8.4 of chapter eight and section 9.3 of this chapter). It was found that misspecified models and noises within the proxies of intangibles used in the quantitative analyses reduced the effectivity of the quantitative study. Discussions in section 9.4 showed that problems and

limitations were also presented in the process of reporting intangibles. This not only placed barriers to make the bank value creation process visible to analysts, but also obstructed undertaking effective quantitative studies in this area.

As noted in section 5.3.1 of chapter five, limitations of data quality that were caused by problems with intangible disclosure, such as missing data and unstandardized data, appeared to pose significant threats to the validity of the quantitative study. It was shown in the quantitative study that intangible information was disclosed in an inconsistent or unstandardized way and was not comparable among banks. As a result, it was difficult to conduct quantitative studies based on the current set of publicly available data. For example, it can be seen from Table 6.2 that data for variables of relational capital was available for 98 or more banks, but only 41 banks reported all the elements (see section 6.2.2 of chapter six). This showed that banks in the sample seemed to report different elements of relational capital. Therefore, lack of consistency in reporting makes it difficult to undertake a quantitative study in this area. Even for banks who reported the same element of intangibles, due to the absence of standards, the indicators were not defined or measured in a standardized manner across banks and countries (for detailed discussion, refer to section 5.3.1.2 of chapter five).

The qualitative interviews further explored the challenges of reporting intangibles regarding interviewees' perception (see section 9.4), and those problems and difficulties that banks encountered during the process of intangible disclosure prevented a large portion of intangible information from being made publicly available. It was observed that although the case institutions had some incentives (e.g., increasing transparency or enhancing employee and customer emotional capital) to report intangibles, they appeared to be concerned more with the disadvantage of intangible disclosure, such as giving away confidential information or exposing the bank to external criticism. Moreover, lack of a disclosure standard or strong governance pressure was emphasized to prevent the case institutions from reporting much information on intangibles, and also caused the problem of inconsistency in disclosure. On the other hand, since intangible resources played important roles in the bank value creation process, as discussed in chapter eight, there was an increasing demand for more information about intangibles from analysts and investors. In this situation, analysts sought to explore intangible information through private channels, such as meeting with bank managers, and complemented by informed guesses based on their experiences and feedbacks (see Figure 9.3).

It can be seen that, therefore, the combination of qualitative and quantitative methods in this thesis produced greater findings than the sum of parts (Woolley, 2009). The latter showed problems or limitations with intangible disclosure, while the former explored why those happened.

Apart from identifying problems and difficulties, more importantly, the qualitative study was helpful in searching for ways to improve intangible disclosure, either for policy makers or academic researchers.

As mentioned before, there appeared to be gaps in information content and disclosure, understanding and confidence regarding intangibles and the bank value creation process between managers (information suppliers) and analysts (information users). Given the crucial role of intangibles in the value creation chain, it is important to make such information less invisible and hence reduce the information asymmetry between these two parties. As lack of a disclosure standard or strong governance pressure was identified to be one of the major barriers, policy makers such as accounting professions should consider developing relevant standards in this area.

In Beattie and Thomson's (2010) study of intellectual capital reporting, several questions are raised, such as whether meaningful and effective regulation is desirable, and at what level should it operate. They argue that there is an opportunity to "investigate whether a set of industry-specific standardised metrics can be developed and their disclosure regulated" (Beattie and Thomson, 2010:140). In this study, it was observed that there appeared to be needs for industry-specific reporting standards or guidelines from both internal managers' and external analysts' perspectives. Appropriate standards could encourage banks to disclose more and consistent intangible metrics, and provide reliable and comparable information to analysts for bank valuation. In addition, the problem of information manipulation could be reduced, as banks have to report both positive and negative information regarding their intangibles. Table 9.2 may provide some examples here. Moreover, this will also provide opportunities for researchers to further investigate the role of intangibles in the value creation process using quantitative techniques. It should be noted that, as information about intangibles is often related to banks' competitive advantage, policy makers should consider carefully the risk of giving away the secrets of the banks' business models.

In fact, a variety of guidelines for reporting intangibles were already developed, as mentioned in section 3.3.1 of chapter three. However, these guidelines were not applied universally across the world, and this resulted in the variation in the level of intangible disclosure among countries. During the process of the quantitative data collection, it was found that in some countries, such as Spain, intangible disclosure appeared to be far ahead of other countries[174]. For example, Bankinter, which is a listed banking group in Spain, has begun publishing its intellectual capital data since early 2000s. In its annual report, a number of intangible indicators were disclosed, which were arranged in three blocks of information, namely human capital, structural capital, and relational capital (see appendix 3). It can be seen that each important intangible element was measured from different aspects in order to fully capture the information related to it. For example, there were more than 10 indicators for training activities, covering not only purely training investment or time, but also types of training actions. Branch networks were measured in a detailed way according to their types, including non-specialised and foreign branches, virtual branches, agents, and management centres. The intellectual capital model in Bankinter may give a good example of what information about intangible should be reported and how they could be reported.

With regard to suggestions for further research, this study offers an example of how the integration of quantitative statistical analysis and qualitative interviews could provide a useful means to investigate intangibles owing to their special nature. It would be interesting to extend the research by exploring other stakeholders' perceptions, such as auditors, government, investors or customers. Additionally, future research could consider employing some other methods, such as survey or advanced statistical techniques, or utilizing better databases to assess existing intangible measures and to search for new metrics.

9.6 Conclusions

This chapter has covered three main points. Firstly, it explored issues related to intangible measurement, such as why or why not the case institutions wanted to measure intangibles, how intangibles were measured in the case institutions, and the analysts' views on

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[174] It should be noted that not all Spanish banks provided good information about intangibles. There is still an issue of information inconsistency in information contents and level of disclosure in Spanish banking sector.

intangible measurement. Secondly, it presented findings regarding both managers' and analysts' views in relation to intangible disclosure, including the incentives of reporting intangibles, the disincentives of reporting them or difficulties that prevented intangible disclosure, as well as the communication channels for information on intangibles. Thirdly, this chapter integrated the quantitative and qualitative studies in terms of intangible measurement and disclosure. Specifically, the qualitative component of this thesis explored the problems with intangible metrics used in the quantitative study and also the problems with intangible disclosure, which constrained effective quantitative research in this area.

With regard to intangible measurement, evidence presented in this chapter supported the following findings. Firstly, for the incentives of measuring intangibles, managers interviewed discussed three internal purposes and one external purpose. The internal purposes were related to management decision-making, merger or acquisition, and/or compensation management, while the main external factor that encouraged the case institutions to measure or value intangibles was statutory or regulatory requirement. On the other hand, the subjective nature of intangibles and potential risk in the process of quantifying intangible elements appeared to discourage the case institutions from measuring intangibles in a quantitative way.

Secondly, the specific research question (RQ4) of "how the intangibles could be measured" was explored from both managers' and analysts' views. It was found that practices of intangible measurement appeared to vary from institution to institution. Some of them utilized both performance measurement techniques and econometric methods for different purposes, and others tended to focus on the former. The BSC was the most commonly used measurement framework in the case institutions, although indicators of performance drivers and outcomes differed for different institutions. However, either the BSC users (e.g., B2) or the econometric methods users (e.g., B8) appeared not to make formal use of the causal linkage between intangibles and financial performance in a mathematical or quantitative way. Although the differentiation existed in the intangible measurement systems, there were some common grounds among the case institutions. Employee surveys and customer surveys (or customer research) were important tools to measure intangibles for most of the case institutions. In addition, analysts interviewed discussed what intangible metrics they were interested in. Some of them suggested that one way to measure intangibles might be to look at their financial outcomes. Besides, changes of some intangible elements (e.g., senior management or brands) and warning indicators attracted

many analysts' attention.

Comparing analysts' views on measuring intangibles with management practice, it was found that there appeared to be gaps between information providers and information users regarding intangible measurement. On the one hand, the case institutions paid little attention to the linkage between intangible indicators and financial performance measures. On the other hand, there was an increasing need for measuring the outcomes of intangibles from the analysts' perspective. Moreover, the case institutions were keen to provide indicators of positive intangibles to the external financial market, while analysts preferred information on changes in intangibles or warning indicators of them.

As for issues related to intangible disclosure, the specific research question (RQ5) of "how have intangibles been disclosed" was explored by investigating interviewees' views. It was found that although the case institutions were encouraged to report more information on intangibles for the purposes of external communication and internal management, a large proportion of intangibles remained undisclosed due to some disincentives or difficulties in reporting them, including sensitivity, reliability, auditability, and comparability of intangible information, as well as information manipulation. As a result, the case institutions did not report much information about intangibles, and analysts perceived that some disclosed intangible information was not useful. In such a situation, intangible information was communicated through two kinds of channels, that is, public domain sources (e.g., bank annual reports and other independent reports) and private dialogue (e.g., meetings with bank managers), and the latter appeared to be even more important for the analysts.

In addition to discussions of intangible measurement and disclosure, this chapter integrated the quantitative study and qualitative interview data in order to further explore another two questions – what may be the problems with the quantitative model and data; and how can the quantitative models be improved? Proxies used in the quantitative models were discussed with some interviewees. It was found that there was much noise within those variables, and this might to some extent explain why many unexpected results were present in the quantitative analysis. Based on findings from two approaches, several suggestions for future research emerged. For example, some indicators tended to be ambiguous in measuring relative intangibles (e.g., employee departure, advertising and marketing

expenditures, and number of branches), and they should be defined more clearly in future research. Moreover, future research could consider more factors (e.g., market conditions or time effect) in order to improve the specified models. It would be interesting to look at the long-term effect of advertising and marketing expenditures on bank performance (e.g., 3 or 5 year's time) rather than the one-year lag used in the current quantitative study.

The qualitative interview also further explored the problems with intangible disclosure, and recommendations for policy makers in this regard were aroused. The evidence presented in both the quantitative and qualitative studies showed that lack of consistency in reporting makes it was difficult to undertake quantitative studies in this area. Even for banks who reported the same element of intangibles, due to the absence of standards or guidelines, the indicators were not defined or measured in a standardized manner across banks and countries. Therefore, it would be desirable if industry-specific reporting standards or guidelines could be applied in order to encourage banks to disclose more consistent, reliable, and comparable intangible metrics to the market.

Chapter Ten: Discussion and Conclusions

10.1 Introduction

This thesis is an empirical study that investigates the role of intangibles in the bank business model. As noted in chapter four, a qualitative dominant concurrent mixed methods research that combines the quantitative and qualitative methods is adopted in this thesis to explore the research objective. Specifically, the quantitative component of this thesis examines the relationships among proxies of different intangible elements and between them and bank financial performance for a sample of 63 banks across 17 countries in Europe from 2005 to 2007. On the other hand, the qualitative study assesses intangible measurement, disclosure, and modelling by conducting semi-structured interviews with 11 bank managers and 12 bank analysts in the UK.

By using quantitative statistical analysis and qualitative interview-based case study, this thesis aims to explore the central research question: ***how do intangibles affect bank performance?*** This central question is broken into seven specific research questions:

- **RQ1:** what are the relationships among different intangible elements and bank performance?
- **RQ2:** What may be the important intangibles for a bank?
- **RQ3:** How do intangibles relate to bank performance?
- **RQ4:** How can intangibles be measured?
- **RQ5:** How have intangibles been reported?
- **RQ6:** What may be the problems and limitations with the quantitative models and data?
- **RQ7:** How can the quantitative models be improved?

In particular, RQ1 and RQ3 aim to assess the interactions among different intangible elements and the intangibles-performance association by using quantitative and qualitative approaches respectively. RQ2 is concerned with understanding the key sources of bank competitive advantage. RQ4 and RQ5 intend to explore issues related to intangible measurement and disclosure. RQ6 and RQ7 are joint questions that are answered by the integration and combination of quantitative and qualitative approaches. By answering these questions, this thesis provides a comprehensive picture of intangibles in terms of how they are measured, reported and modelled within the context of the banking sector.

This chapter concludes this thesis. It is organized as follows. Section 10.2 presents a summary of the empirical results in light of the research questions. Section 10.3 discusses the practical recommendations and policy implications of the main research findings. Section 10.4 highlights the contribution of this study. Section 10.5 outlines the limitations of this thesis. Finally, section 10.6 offers suggestions for future research and concludes this chapter.

10.2 Summary of empirical results

This section summarizes the empirical results that were generated from the quantitative and qualitative studies and presented in chapters six, eight and nine. Bearing in mind that this thesis is a mixed methods study in which the quantitative and qualitative methods are integrated with each other and thereby produce findings that "are greater than the sum of parts" (Woolley, 2009:7), the results presented in this section include not only findings generated from the quantitative and qualitative studies separately, but also the integrated findings that were obtained from the combination of the two approaches.

As has been noted in chapter four, the quantitative and qualitative studies were conducted approximately at the same time, and this allowed the integration of the two approaches to occur at all stages of the project. For example, during the data collection process, the quantitative variables were used to formulate interview questions, and the interview experience that the researcher gained helped her identify proxies of intangible elements used in the quantitative method (e.g., CEOs' industry specific experience). During the data analysis process, the development of hypotheses in the quantitative study was guided not only by the previous literature but also by the qualitative interviews. Thus the quantitative data analysis was undertaken in three steps analyses (see section 5.3.3 of chapter five), corresponding to the three levels of interactions in the grounded theory model generated from the qualitative study (see section 7.3 of chapter seven). In addition, the variables used in the quantitative study facilitated the qualitative data analysis in effective coding. The two studies were always in a linking process rather than separate. Therefore, apart from the separate findings generated from either a quantitative study or a qualitative study, more importantly, this thesis produces integrated results by mixing the two methods.

In order to make the discussion of results clear and easy to follow, this section discusses the main findings corresponding to the seven specific research questions. Firstly, section

10.2.1 discusses results of the qualitative study in relation to how interviewees understood the concept of intangibles and the key sources of bank competitive advantage (RQ2). Section 10.2.2 provides discussions of the findings on the relationships among different intangible elements and between them and bank performance that were generated from either the quantitative study (RQ1) or the qualitative study (RQ3). Subsequently, sections 10.2.3 and 10.2.4 present findings from the qualitative study on intangible measurement (RQ4) and intangible disclosure (RQ5) respectively. Finally, the research findings in relation to RQ6 and RQ7 that were gathered from the integration of the quantitative and qualitative studies are presented in section 10.2.5.

10.2.1 Findings on the understanding of intangibles

The empirical results of the qualitative study showed that managers and analysts interviewed presented different views on the general ideas related to intangibles, such as the definition of intangibles, the importance of intangibles to bank business success, and the key intangible elements or indicators.

As has been addressed in chapter two, the concept of intangibles is defined from the RBV point of view, and includes all strategic firm resources that are non-physical, non-financial, and are not included in financial statements (Kristandl and Bontis, 2007). It is classified into three components, namely, human capital, structural capital, and relational capital. Managers interviewed were more likely to be comfortable with the ideas associated with the term intangibles than analysts. Managers perceived intangibles to be a broad concept that included not only the accounting number of goodwill and other intangible assets on the balance sheet but also other non-financial items, while many analysts appeared to focus mainly on the former when they talked about the term intangibles. Although managers were sympathetic with the three components of intangibles that were widely accepted in academic research, they tended to describe intangibles using their own classification schemata that followed the way of being easy in internal communication and management (e.g., four quadrants used in the Balanced Scorecard).

With regard to the importance of intangibles to bank business success, almost all the managers interviewed presented the view that intangibles rather than tangibles were key sources of competitive advantage for their institutions, which is consistent with previous literature that has been discussed in chapter two (e.g., Clulow et al., 2003; Galbreath, 2005;

among others). On the other hand, although tangible and financial assets were not considered as key resources for creating competitive advantage from a managerial perspective, they constructed the foundation upon which intangibles could make impacts and create value ultimately (see Figure 8.1). This evidence supports the suggestion of the RBV theory that a firm's resources are more likely to create sustainable competitive advantage when they are combined or integrated (e.g., Barney, 1991; Reed et al., 2006; Teece et al., 1997).

The views on the importance of intangibles from analysts' perspective, however, appeared to differ from managers'. Prior literature provided contradictory evidence on the importance of intangibles to capital market actors. Some empirical studies found that analysts or fund managers valued intangibles when they made recommendations or management decisions (e.g., García-Meca et al., 2005; Holland, 2006), while others demonstrated that capital market actors were lacking of interest in information on intangibles (e.g., Campbell and Slack, 2008; Catasús and Gröjer, 2003; Eccles and Mavrinac, 1995). The evidence presented in this study showed that although analysts acknowledged the significance of intangibles in wealth creation, they prioritized the tangible or financial strengths rather than intangibles in contributing to superior bank performance. This may be due to the reason that many interviews with analysts were conducted at the time when the 2007-2009 financial crisis got into its most critical stage (see section 7.2.3 of chapter seven), and the analysts interviewed were aware of the importance of financial capital for banks in the crisis. Another possible explanation for this is, as Flöstrand (2006) argues, that the inherent difference between intangibles and conventional assets makes the former difficult to be included in the equity valuation process. Compared with tangible or financial assets, intangibles have two special characteristics, namely partial excludability and non-marketability (Lev, 2005)[175], and it is meaningless to value a less than full control and non-marketable asset from an equity valuation perspective (Flöstrand, 2006). However, it is interesting to note that there was a difference between bank analysts' public reports and their private thinking. Findings of this thesis revealed that even if analysts could not put information about intangibles in their public reports, they thought about it privately and commented on it when they communicated with their clients.

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[175] This is cited by Flöstrand, P. (2006) from Lev, B. (2005), "Intangible assets: measures and concepts", in Kempf-Leonard, K. (Eds.), Encyclopedia of Social Measurement, Vol. 2, Elsevier, Amsterdam, pp. 299-305.

With regard to the key intangible elements, interviews with managers showed that most of the case institutions had relative strengths in some intangibles over other, although such strengths appeared to vary from bank to bank. However, managers' views regarding the intangible strengths tended to be slightly different. Some of them highlighted the importance of balancing or combining different types of intangibles, although at the same time they paid more attention to the intangible elements in which they had relative strengths compared with rivals. Others emphasized the specific intangible strengths they had or the critical intangible items in the financial crisis. It should be pointed out that apart from intangible strengths that have been developed historically, some specific intangible elements (e.g., customer relationships, brands, and human capital) became relatively important due to the change of economic environment, in particular the financial crisis. This finding provides evidence on the dynamic view of RBV, which argues that firms have the ability to manage their key advantage creating resources in response to the external environment changes.

On the other hand, analysts interviewed presented different views on the key intangible elements compared with managerial perspective. The majority of analysts interviewed indicated that goodwill on the balance sheet and top management human capital were the most important intangible elements for banks. Previous empirical studies that looked at which types of intangibles capital market actors were interested in offered various answers. Holland and Doran (1998) observe that top management quality is an important intangible item for fund managers. Similarly, Breton and Taffler (2001) find that apart from profit-based financial information, corporate management and strategy are the most significant drivers of analyst judgment. Flöstrand (2006) investigates the use of indicators of intellectual capital by sell-side analysts, and finds that the majority of IC indicators refer to relational capital. García-Meca et al. (2005) examines the information about intangibles that are disclosed by Spanish companies to financial analysts, and shows that the most frequently disclosed IC items and used in financial analysts' valuation process are coherent and creditability of strategy, alliances, or leadership. It is interesting to note that some analysts interviewed demonstrated that the relative importance of intangibles varied along with bank types. For example, brands and customer relationships were argued to be powerful in retail banking, while professional skills and employee knowledge tended to be important in wholesale and investment banking.

In summary, it is observed that managers and analysts had different understanding of intangibles in terms of the relative importance of intangibles compared with other types of resources and the most important intangible elements. The relative importance of one set of intangibles over others or intangibles over financial resources and tangibles may depend on the distance from intangibles and on the external circumstances. For example, bank managers are closer to bank intangibles than analysts, and thus they may understand the importance of intangibles deeper than analysts. One of the possible reasons that most of the bank analysts interviewed considered goodwill and top management quality the most important intangibles may be that they had better access to these two types of intangibles compared with other intangible elements. As has been mentioned in chapter three, previous interview-based case studies on intangibles focused mainly on managerial perspective but ignored the views of capital market actors. This thesis shed a light on the investigation of the different views on the importance of intangibles between managers' and analysts' perspectives. It would be interesting if future research could look in more detail at the reasons why such distinctions exist.

10.2.2 Findings on modelling intangibles

The previous section summarized findings related to RQ2 that were generated from the qualitative part of this thesis. This section discusses findings of the quantitative and qualitative studies in relation to RQ1 and RQ3. As mentioned before, RQ1 and RQ3 intend to investigate how intangibles can be modelled. The former is answered by the quantitative study, and the latter is explored by the qualitative approach. Therefore, evidence on modelling intangibles generated from the two approaches is discussed separately in this section. Specifically, subsection 10.2.2.1 provides a summary of quantitative evidence on the relationships among intangible elements and between them and bank performance, and subsection 10.2.2.2 presents findings of qualitative study on how intangibles can be modelled from managers' and analysts' perspectives. The integrated evidence on modelling intangibles will be discussed later in section 10.2.5 of this chapter.

10.2.2.1 Findings of the quantitative study on modelling intangibles

As have been discussed in chapters five and six, the quantitative study examined the relationships among intangible elements and between them and bank performance through three steps. It firstly tested the relationship between proxies of brands and the customer

relationship. Then the impacts of different levels of human capital on the customer relationship were assessed. Finally, it tested the relationship between intangibles and bank financial performance. At the first step, however, there was no significant relationship found between brand strength and the customer relationship as captured by growth in customer deposits and loans (see section 6.3.2 of chapter six).

At the second step, the relationships between different levels of human capital and the customer relationship were examined by five models. At first, it looked at the individual impacts of top management HC and employee level HC on banks' customer relationships. Then the joint effect of the two levels of human capital on the customer relationship was assessed. After that, service quality that was proxied by the number of employees per branch was added to the regressors. Finally, brand metrics were included to assess if the combination of human capital and brand metrics can jointly affect customer relationships. It was found that the top management level HC alone had no significant effect on the sample banks' customer relationships. However, when combining with employee level HC and service quality metrics, its impact appeared to be statistically significant. Moreover, the combination of top management HC, employee level HC, and service quality had a much higher explanatory power for explaining the variations in the sample banks' customer relationships than individual effects of the two levels of human capital. The empirical results suggested, as expected, that CEOs' firm-specific experience had a significant positive and robust impact on the sample banks' customer relationships. On the other hand, contrary to the expectations, CEOs' past managerial experience and staff costs appeared to affect customer relationships negatively, although their impacts tended to be unstable[176].

The third step assessed the impacts of human capital and relational capital on bank financial performance by testing three hypotheses. Hypothesis 3 investigated the impacts of top management HC and employee level HC on the sample banks' ROA, either individually or collectively. Hypothesis 4 examined the relationship between relational capital and ROA. Hypothesis 5 tested whether or not the combination of human capital and relational capital affects ROA. It was found that, as has been discussed in section 6.5 of

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[176] The impact of CEOs' past managerial experience on customer relationships was statistically significant only when human capital metrics were combined with service quality metrics, while staff cost had a significant negative effect on customer relationships in most of the models, except in model 2.5 where brand metrics were added to be regressors (see Table 6.6 and section 6.4.2 of chapter six). Moreover, the results of rank regression models showed that the estimated relationship between staff cost and growth in customer loans and deposits tended to be unstable (see Table 6.10 and section 6.4.3 of chapter six).

chapter six, top management HC, employee level HC, and service quality jointed together could effectively explain ROA for the sample banks, while the overall effect of brand metrics on bank ROA appeared to be not statistically significant. Moreover, the empirical results indicated that the combination of different intangible elements tended to better explain the level of banks' ROA than they did individually, as shown by the increasing value of adjusted R^2 for the specified models. These findings provided further evidence on the resources integration hypothesis of the RBV.

Specifically, CEOs' industry-specific experience was likely to be positively associated with ROA, while their education level tended to affect ROA negatively[177]. Additionally, the empirical results provided partial evidence[178] on the negative relationship between staff costs and ROA that was contrary to the expectation and also inconsistent with previous studies (e.g., Fey et al., 2000), and the positive association between branch number and ROA that was consistent with suggestions by prior literature (Dick, 2008). However, it should be noted that, there appeared to be significant limitations with the quantitative variables and data, as has been discussed in chapter five. Although the proxies of intangibles used in the quantitative study were suggested by previous literature, they might not fit well with the concepts of intangibles that they intended to measure. For example, staff costs were used to proxy employee level human capital and were expected to affect bank performance positively. However, high level of staff costs might also indicate cost inefficiency, and this may be the reason why the unexpected relationship between it and ROA was found in the quantitative analysis. Moreover, problems with data quality, such as the existence of massive missing data and the small sample size (see section 5.3.1 of chapter five), may also reduce the statistical power of the quantitative analysis and make some results unstable[179]. The limitations with the quantitative study will be further discussed in section 10.5 of this chapter.

As mentioned before, the proxy identification in the quantitative study was guided by not only the extant literature but also the researcher's interview experience. For example,

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[177] The negative relationship between CEOs' education level and ROA was statistically significant in almost all the specified models, with the exception of Model 5.6 in which control variables were added into the model and CEOIN was used to be a proxy of top management HC.

[178] The coefficients on staff cost were statistically significant in most of the specified models, but became insignificant when control variables were included into the model (Models 5.5 to 5.8). The coefficients on branch number were not statistically significant in Models 5.1, 5.3, and 5.7.

[179] For example, the estimated positive relationship between CEOs' industry-specific experience (CEOIN) and banks' ROA was only suggestive, as the coefficients on CEOIN that were statistically significant in all the OLS regression models turned to be insignificant in rank-based regression models used to test the robustness of the specified models.

previous studies normally used firm-specific experience to proxy management quality, but paid little attention to industry-specific experience. Based on the researcher's interview experience, industry-experience was also adopted to be one of the proxies of top management human capital (see section 5.2.2.1 of chapter five). It was interesting to find that as proxies of top management HC, CEOs' industry-specific experience appeared to be a better explanatory variable for the sample banks' ROA than CEOs' firm-specific experience and past managerial experience, evidenced by the significance of their coefficients and their contributions to improve the overall explanatory power for the models (see Table 6.11 and section 6.5.3 of chapter six).

Overall, it can be seen that the quantitative part of this thesis provided partial evidence on the interactions among intangible elements of human capital and relational capital as well as the relationship between them and bank financial performance. However, there were some unexpected and unstable results presented. This raised questions regarding model specification and variables used in the statistical analysis, which were further explored by the qualitative component of this thesis. How the integration of two approaches has the potential to solve those problems will be discussed in section 10.2.5.

10.2.2.2 Findings of the qualitative study on modelling intangibles

The previous subsection summarized the quantitative empirical results on the interactions among human capital and relational capital, as well as the relationship between them and bank performance. The qualitative study also provided evidence on modelling intangibles by exploring RQ3 from bank managers' and analysts' perspectives. As has been discussed in chapter eight, qualitative data collected from interviews with bank senior managers and bank analysts was coded by employing grounded theory techniques, and a grounded theory model of the role of intangibles in the bank value creation process was developed.

As has been demonstrated in section 8.3 of chapter eight, in the grounded theory of intangibles, two categories, namely conditions and consequences, were linked to the core category of interactions, presenting a theoretical framework of modelling intangibles in the case institutions. The centre of the grounded theory model was constructed by three levels of interactions among different intangible elements and between intangibles and tangibles (see Figure 8.4). Intangibles identified from the case data were divided into four main categories, corresponding to the intellectual capital literature, that is, top management

human capital, employee level human capital, structural capital, and relational capital (see section 7.3.4 of chapter seven). The first level of interactions, namely intra-category interactions, referred to the relationships between different concepts that were grouped in the same category. As has been discussed in section 8.3.2.1 of chapter eight, it basically involved the relationships between intangible investments and intangible resources, such as the effects of training investment on employee satisfaction, of IT investment on improved internal system, and of marketing expenditures on brand power. Besides, intra-category interactions also consisted of relationships between different intangible resources in the same category. For example, many interviewees, both managers and analysts, emphasized that brands tended to be closely related to the customer relationship.

Cross-category interactions, as the second level of interactions in the value creation process, revealed how different intangible elements were interacted with each other across the four macro categories, as has been demonstrated in section 8.3.2.2 of chapter eight. Many managers and analysts interviewed demonstrated that top management human capital appeared to lie at the heart of cross-category interactions, as it could influence many other types of intangibles (e.g., organizational culture, engagement of lower level managers and employees, customer relationships, and bank brands). This finding is consistent with the RBV theory that argues that a firm's management plays an important role in the process of developing a match between the firm's resources and the success factors in the industry (Fahy, 2000). In addition, cross-category interactions involved how employee level human capital and relational capital interacted with each other, and how they combined with structural capital to contribute to the bank value creation process. More importantly, the case data showed that the interactions cross various categories of intangibles were complicated, as they were normally connected with each other at the same time and could not create value in isolation. This finding is in line with the evidence presented by the quantitative study that have been mentioned before, and further supports the importance of resource integration as outlined in the RBV theory.

The third level of interactions, namely network interaction, consisted of the interactions among intangibles, tangible or financial resources, and financial intermediation and risk management activities. There was a two-way relationship between intangibles and tangibles. Tangibles constructed the foundation upon which intangibles could make impacts (see section 8.2.2 of chapter eight), while intangibles could affect tangible or financial assets, and improve the financial intermediation process and risk management

(see section 8.3.2.3 of chapter eight). On the liability side of the balance sheet, intangibles, such as brand strength and customer emotional capital, played a critical role in attracting deposits, especially in the financial crisis. On the asset side of the balance sheet, relational capital could influence lending activity and the selling of other products. Moreover, in line with prior research (e.g., Holland, 2010, Storbacka et al., 1994; Tonkiss, 2009), the case interviews provided evidence on the importance of intangibles in reducing transaction costs and improving risk management, such as reducing deposit withdrawal risk, and controlling bad debt risk.

The above discussed interactions lay at the heart of the grounded theory model. They were joined and interacted simultaneously, and delivered two outcomes or consequences to the external markets, that is, institutional performance and information disclosure[180]. The case interviews revealed that most of the managers were well aware that the three levels of interactions should be jointly managed and exploited, and then boosted the effectiveness of financial intermediation and risk management.

Furthermore, the empirical results showed that the interactions of intangibles and tangibles were adjusted under certain conditions. Those conditions, as has been discussed in section 8.3.1 of chapter eight, were distinguished as causal conditions and contextual conditions. The former included changes in the economic environment (e.g., financial crisis) and changes in the banking industry (e.g., technology development and business globalisation), and the latter comprised industry context (e.g., service sector, homogeneity of banking business, customer inertia, and business segment characteristics), regulatory and standard setting, and special event of merger and acquisition.

From a dynamic RBV point of view, it is important that the integration of advantage creating resources can respond to the changes in the external environment (e.g., Sirmon et al., 2007). The empirical results of case interviews indicated that the changes in the external economic environment, especially the financial crisis, resulted in changes in managerial and public perceptions of intangibles. Some specific intangible elements, such as customer emotional capital and their relationships with banks, became extremely critical in the financial crisis. Additionally, the case banks altered the way that they defined and managed intangibles in response to technology development and business globalisation that occurred in the banking sector. Apart from these causal conditions, intangible

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[180] Information outcomes will be summarized later in the chapter.

management in the case institutions were influenced by contextual conditions as well. For instance, customer inertia was argued to be an important factor that affected customer relationship management. In the event of merger and acquisition, human capital tended to be the core intangible element, and the interaction between human capital and the customer relationship became even more crucial for the case banks.

The evidence provided by the case data revealed that causal conditions that were mediated by contextual conditions continued to influence the role of intangibles in the bank value creation process. The value creation process was an ongoing learning process for the case institutions. Top management in the case institutions continued to learn from the interactions of intangibles and tangibles, and gained experience and knowledge on identifying and developing key sources of competitive advantage and setting up coherent strategy to search for the appropriate combination of intangibles and tangibles in response to conditional changes. The empirical results provided evidence in supporting Teece's (2007) argument for dynamic capability. According to Teece (2007), sustainable competitive advantage requires not only knowledge assets, but also managers' "dynamic capabilities" that enable them to sense and shape opportunities and threats that the organizations face, and to reconfigure their intangibles and tangibles. Similarly, Holland (2010) also emphasizes the importance of top management capabilities. He argues that problems with top management that lacked knowledge to "deal adequately with the new issues that arose in relation to their new business models" (Holland, 2010:101) were at the heart of failing banks' problems in the 2007-2009 financial crisis.

The grounded theory model of intangibles developed from the qualitative data revealed the dynamic value creation process in the case institutions, in which intangibles, tangibles, and financial resources were integrated together and actively responded to the changing circumstances. The narrative story of intangibles combining with the statistical relationships between intangibles and bank financial performance found in the qualitative study provided a comprehensive picture of how intangibles can be modelled in banks. How the two types of evidence were integrated to achieve triangulation and complementarity will be discussed later in section 10.2.5.

10.2.3 Findings on measuring intangibles

As mentioned before, RQ4 is concerned with how intangibles have been measured in the

case institutions. This section provides a summary of key findings related to RQ4 from bank managers' and analysts' perspectives. The qualitative study also explores the strengths and weaknesses of intangible indicators used in the quantitative method, and this will be discussed in section 10.2.5.

Managers interviewed discussed the reasons why intangibles were measured in their institutions. Previous literature suggests that purposes of intangible measurement tend to be twofold: internal management purposes and/or external communication purposes (e.g., Marr et al., 2004), as has been discussed in section 3.2.1 of chapter three. The case data showed that internal management purposes appeared to be the main reasons why the case institutions sought to measure intangibles. It was found that the motivations of intangible measurement in the case institutions were closely related to management decision-making, such as helping formulate business strategy, translating strategy into action, and tracking effects from actions. Besides, intangible measurement was found to serve as a basis of compensation and to assist in diversification and expansion decisions in the special event of M&A, as has been discussed in section 9.2.1 of chapter nine.

With regard to the measurement system, it was found that all the case institutions have developed measures for key intangible activities and resources. However, the practice of intangible measurement appeared to differ from institution to institution. According to their experiences in measuring intangibles, the case institutions can be grouped into three classes. As can be seen in Figure 9.1, for the institution in the most advanced group, most of the key intangibles were measured in quantitative terms, and statistical analysis was used internally to examine the interactions among intangibles. The second group of banks had a mature measurement framework in place, and the Balanced Scorecard (BSC) was the most commonly used one. Although they appeared to well understand and identify the critical intangibles, a large body of intangible metrics were presented as qualitative descriptions rather than quantitative metrics. The case institutions in the third group, however, merely discussed some intangible metrics instead of measurement systems, and provided limited information regarding their intangible measurement[181].

It can be seen that, with the exception of group one, intangibles in most of the case

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[181] It should be noted that, the above measurements of intangibles were mainly used internally by the case institutions for their management decision-making. Intangible-related information that the case institutions reported externally was very limited, as will be discussed later in section 10.2.4.

institutions were largely measured in qualitative terms. Many managers have talked about several difficulties or disincentives that prevented them from developing quantitative metrics of intangibles. At first, intangibles by nature were subjective this made it difficult to quantify them. Moreover, some managers argued that it was risky to measure intangibles in a quantitative way, because there was a danger that the quantitative numbers might not capture appropriately the inherent dimensions of intangibles, and hence failed to facilitate management decision-making.

Furthermore, interview data with managers revealed that there was another common problem with intangible measurement for the case institutions, that is, they did not make formal use of an explicit linkage between intangibles and financial performance in a systematic way, although many managers explained the narrative link between qualitative intangible factors and outcomes. Section 10.2.2.2 presented a grounded theory model of intangibles that explored the value creation process in the case institutions and the role of intangibles within it. Measures of intangibles, therefore, were expected to reflect the inherent dimensions and properties of the value creation factors or intangible elements. However, the majority of case institutions were in the process of describing distinct intangible elements, and little attention was paid to measure the outcomes of intangibles. For the case institutions that measured their key resources under the framework of the BSC, they made little use of the causal business model suggested by the BSC that links the measures of intangible and tangible resources with strategic outcomes (Kaplan and Norton, 1996, 2001c), as has been discussed in section 9.2.2.1 of chapter nine. Even in the case institution that was in the most advanced group, the linkage between intangible measures and performance measures has not been fully explored, and appeared to be hypothetical rather than mathematically proved. Similar observation has been reported by Ittner et al. (2004), who show that for firms in the US financial sector that claimed to use the BSC framework, more than 75 percent of them paid little or even no reliance on the business model that links the performance drivers and outcomes together.

On the other hand, the case interviews showed that there was increasing demands for quantitative information about intangibles and quantified data on the intangibles-performance association from bank analysts' perspective. Many analysts expressed the view that they were more concerned with quantitative metrics of intangibles rather than narrative descriptions of them, and were interested in the relationships between intangibles and bank performance if they could be statistically proved. From the bank

valuation perspective, these kinds of information were particularly valuable for them to understand the value creation process in banks and crucial factors that created superior bank performance.

Therefore, it can be seen that there was a communication gap between sell-side analysts who are considered one of the primary users of accounting information and one of the most influential capital market actors (Schipper, 1991) and managers who act as providers of intangible information. One of the reasons for this information asymmetry may be due to the two complementary processes of measuring intangibles from managers' and analysts' perspectives, as can be seen from Figure 9.3 (see section 9.2.3 of chapter nine). Managers in the case institutions tended to provide forward sequences of value creation processes and future looking explanation of the value creation process by using information about intangibles, while analysts looked at intangibles through a reverse attribution or inference of financial performance to intangibles. Given the fact that the former did not reach the stage of fully matching intangible measures with their value creation story, the latter had to use not only intangible information but also their experiences over time to explain the value creation process or to predict bank value. Moreover, managers appeared to be reluctant to report detailed information about intangibles, and this seemed to even deepen the communication gap between them and analysts. In the next section, findings of qualitative study in relation to intangible disclosure will be discussed, including incentives or disincentives of reporting intangibles that managers have and the communication channels of intangible information.

10.2.4 Findings on reporting intangibles

The grounded theory model of intangibles that has been discussed in chapter eight demonstrated that the interactions of intangibles and tangibles led to two consequences, namely the financial performance in the capital market and the intangible disclosure in the information market. The former has been discussed in section 10.2.2.2 where the summary of the grounded theory model was presented. This section summarizes findings in relation to the latter consequence, which is explored by RQ5, that is, how have intangibles been disclosed in the case institutions?

Evidence provided by the case interviews showed that the case institutions were encouraged to disclose information on intangibles for the external communication purpose

and/or internal management purpose. In line with prior research (e.g., Backhuijs et al., 1999; Beattie and Thomson, 2010; Guthrie et al., 2007), this study showed that disclosing more intangible information was helpful for managers to facilitate the communication of the bank's long-term vision with shareholders and to enhance the image and reputation of the bank. As for the internal management purpose, the empirical results showed that intangible disclosure appeared to be a useful tool to enhance employee and customer emotional capital, and helped the case institutions to improve employee recruitment.

Despite the benefits enjoyed by bank managers and investors through intangible disclosure, the case institutions appeared to be unwilling to report too much information about intangibles in consideration of the drawbacks of intangible disclosure. Interviewees discussed the following disincentives of reporting intangibles and the difficulties that the case institutions encountered in the process of reporting them. Firstly, consistent with findings from prior research (e.g., Backhuijs et al., 1999; Holland, 2003; Williams, 2001; among others), some managers acknowledged that intangibles were key resources of competitive advantage, and information about them was commercially sensitive to the case institutions. Disclosing this kind of information might result in losing competitive advantage in the market. Secondly, Carroll and Tansey (2000) argue that the reliability of internally used intangible measures is often not tested, and this makes the firm under the risk of being criticised if it reports such information externally. Similar findings were observed from interviews with managers. Some of them expressed concerns regarding the reliability and auditability of intangible measures that they used, and noted that this prevented these metrics from being reported externally. Thirdly, the case interviews showed that intangible measurement varied from institution to institution, and lack of comparability made it difficult to report information on intangibles and reduced the usefulness of information about intangibles to bank analysts. Furthermore, as a well-know drawback of intangible disclosure (Van der Meer-Kooistra and Zijlstra, 2001), manipulation of information to a large extent reduced the utility of intangible information that has been disclosed. This problem was highlighted by both managers and bank analysts. On the one hand, banks preferred to disclose positive information about intangibles in order to present a more favourable picture of their business. On the other hand, analysts found that it was difficult for them to get reliable information about intangibles to assist them in their bank valuation because of the existence of information manipulation. Many analysts claimed that they were more interested in some particular intangible measures, such as warning indicators that contained negative information about intangibles.

With regard to the communication channels of intangible disclosure, the case data revealed that public domain resources and private dialogue jointly together provided the information content of intangibles to analysts, and the latter appeared to be most important. It was found that although analysts tried to collect as much information as possible regarding intangibles from publicly available resources, private meetings with bank managers and managers' track records were more effective channels for them to obtain useful information about some intangible factors. Similarly finding has been reported by Holland (2006a), who argues that the combination of financial report in the public domain and the private meetings form complementary channels of intangible disclosure.

10.2.5 Integration of findings from quantitative and qualitative approaches

Previous sections summarized key findings generated from either quantitative approach or qualitative approach. More importantly, the adoption of mixed methods research allowed findings from the two approaches to be connected and compared, and this was used to explore RQ6 and RQ7.

As has been discussed in section 8.3 of chapter eight, the grounded theory model of intangibles generated from the qualitative study revealed that top management human capital and a coherent strategy could influence other types of intangibles, such as customer relationships, and also directly affected bank performance. The quantitative study provided evidence in line with this finding. Specifically, it was found that CEOs' firm-specific managerial experience appeared to affect significantly customer relationships, and CEOs' industry-specific experience had a significant positive impact on bank ROA. Moreover, as mentioned before, both the quantitative and qualitative studies provided evidence to support the importance of resource integration in the RBV theory. The case data in the qualitative study revealed that the combined or balanced effect of intangibles on bank performance was extremely important, and findings from the quantitative study showed that the combination of different intangible elements appeared to better explain the variation in bank ROA than they were viewed individually. Therefore, it can be seen that the combination of quantitative and qualitative studies can corroborate evidence with each other, and thus enhances the external validity of the overall research.

Besides evidence triangulation, the integration of quantitative and qualitative studies has

complementary strength and can overcome weaknesses that singular methods have. As has been discussed in chapter six, there were unexpected results presented and some findings tended to be unstable in the quantitative study. On the one hand, this reflected the limitations within the quantitative design, such as problems with model specification, intangible proxies and data quality. On the other hand, the uncovered problems provided opportunities for further research to the qualitative component of this study. The qualitative study can facilitate the quantitative study in terms of explaining and understanding the unexpected or unstable results, and thus improving the specified models and variables used in the quantitative analysis.

With regard to model specification, the grounded theory model generated from the qualitative study presented a systematic interaction process of intangibles and other types of resources, and provided useful suggestions to improve the quantitative model construction. For example, it was hypothesised that a bank's customer relationships should be affected by its brand. However, there was no significant relationship between brand metrics and the proxy of customer relationships found in the quantitative study. One of the possible interpretations provided by the qualitative study for this may be the non-differentiation of input factors and output factors. As has been pointed out in section 8.3.2.1 of chapter eight, it was important to distinguish between intangible investments (or input factors) and intangible resources (or output factors), and the former tended to affect the latter through the process of intra-category interactions. However, the specified models that were used to examine the brand-customer relationship association in the quantitative analysis contained both input metrics (e.g., advertising and marketing expenditures) and output metrics (e.g., brand value) as independent variables. Therefore, it may be an interesting avenue for future quantitative research on intangibles to distinguish between intangible investments and intangibles resources clearly in the investigation of intra-category interactions. Moreover, the grounded theory model showed that superior bank performance was attributed to the combination of intangibles and tangibles. In the quantitative study, however, only intangible elements were taken into consideration. Therefore, the specified models may suffer from omitted variable problems because of ignoring the effect of tangible and financial resources.

Apart from the limitations of model specification, the unexpected or unstable results may owe to the problems with the proxies of intangibles used in the quantitative analysis. As have been discussed in section 9.3 of chapter nine, the weaknesses and strengths of the

quantitative variables were further explored by the qualitative interviews. More importantly, the qualitative study provided the means to exploit the way of improving the definition and specification of existing intangible indicators and to search for new measures of intangibles. The problems with quantitative variables and the possible ways to improve them are summarized below.

Firstly, it was found that some indicators used in the quantitative study were also important intangible measures in the case institutions' business practices, such as education level, experience, training expenses per employee or training time. However, some managers interviewed argued that these indicators had limitations in capturing fully the nature of intangible elements. In practice, the case institutions measured an intangible element through a more detailed way and from various dimensions. For example, despite the recognition of the importance of CEOs' industry-specific experience, some managers argued that it was better to measure top management quality from different aspects, such as taking their emotional capital into account. Moreover, some other managers suggested that the measurement of top management quality should include not only executives' experience and education but also metrics of non-executive directors. Another example is training investment. Although it was commonly used in the case institutions and was claimed to be a relevant indicator of employee level HC, it has inherent limitations. Training activities in the case banks referred to not just time or expenses that have been spent on training courses, but more importantly, it involved "learning by doing", which was not captured by the indicators used in the quantitative study.

Secondly, some indicators used in the quantitative study were argued to be ambiguous in terms of their definition and specification. For example, following previous literature (e.g., Pulic, 1998; Fiordelisi and Molyneux, 2007), staff costs were considered an indicator of employee level HC, and was expected to affect positively the customer relationship and bank performance. However, findings from the quantitative analysis showed that it had a negative correlation with either the customer relationship or bank performance. Some interviewees pointed out that there was a trade-off in staff costs, that is, a higher level of staff costs can be related to higher level of employee satisfaction, but may also imply cost inefficiency or increased risk for a bank.

The case data offered some suggestions to improve this kind of variables. With regard to staff costs, it can be a meaningful indicator of employee level HC, but should be adjusted

with other factors, such as the structure of incentive scheme. Moreover, those metrics can be improved by giving more precise definitions that have been applied in the case institutions. For instance, advertising and marketing expenditures were used as one of the proxies of brand strength. However, there was no significant relationship between it and bank performance found in the quantitative study. In the qualitative study, some managers argued that advertising and marketing expenditures tended to be a weak indicator of brand strength. They suggested that this indicator should be defined more precisely, that is, be further distinguished between brand-related expenditure and product-related expenditure, and the former was likely to be more relevant to measure brand strength. Similarly, an employee leaving the bank was not always a negative indicator of human resource, as it depended on whether or not the bank wanted to retain him/her. Therefore, employee departure was separated into regrettable and non-regrettable attrition in some case institutions' internal intangible measurement system, and the latter tended to better explain the loss of human resources than the indicator of employee departure.

Moreover, it was found from the case interviews that the utility and usefulness of some indicators tended to be influenced by other factors, such as market conditions and time effects. For example, the average number of loan and deposit growth rate was used to proxy for the customer relationship in the quantitative study. However, as highlighted by a bank manager, this metric appeared to be affected significantly by market conditions, and might not correctly reflect the relationship between customers and the bank. Another manager suggested that advertising and marketing expenditures could be an appropriate indicator of brand only if it was observed over a long period of time. This is corresponding to the grounded theory model of the intangibles, which revealed that the role of intangibles was subjected to various conditions. Therefore, it is possible to improve the specified models by taking into account more conditional factors, such as looking at the long-term effect of adverting/marketing expenditures on bank performance rather than the one-year lag used in the present quantitative study.

It can be seen from the above discussions that the combination of quantitative and qualitative approaches provides a useful means to improve the definition and the specification of the existing intangible measures by assessing them within the value creation process in the bank. Furthermore, the qualitative study explores the problems with intangible disclosure that have been shown in the quantitative study, as discussed below.

As has been demonstrated in section 5.3.1 of chapter five, the researcher observed many problems with intangible disclosure during the process of quantitative data collection and analysis. Specifically, there were massive missing values present in the intangible indicators, and the intangible elements that the sample banks have reported appeared to be different. For example, for variables of relational capital, some banks disclosed information about their advertising and marketing expenditures but did not provide information regarding their branch network, and some others the opposite. Even for banks who reported the same element of intangibles, the indicators they used were not defined or measured in a standard manner. As a result, the disclosed intangible information appeared to be inconsistent and non-comparable between banks.

The qualitative study further investigated why these problems with intangible disclosure were present. The interview data revealed that despite the benefits that banks and capital markets could enjoy from intangible disclosure, such as increasing transparency or enhancing employee and customer emotional capital, there were some disadvantages and difficulties that prevented large amounts of information about intangibles from being made publicly available. Managers in many of the case institutions were unwilling to make known much intangible information to the public due to the fear of giving away confidential information or exposing the bank to external criticism. Even though some managers wanted to report their intangibles, the absence of standards and governance on intangible measurement and disclosure made them feel it is difficult to do so, and also reduced the usefulness of the available intangible information to the capital market actors.

Findings from this thesis, therefore, to some extent explained the paradox that exists in the valuation of intangibles by the capital market, that is, despite the importance of intangibles in the firm value creation process and the increasing demand for intangible information from the capital market, analysts or investors do not appear to value such information efficiently (Bukh, 2003; García-Ayuso, 2003b; Johanson, 2003). The case data revealed that there was a communication gap between information suppliers (managers) and information users (analysts) with regard to intangible measures. The information content provided by managers might not meet analysts' needs. Analysts did not appear to see much value in intangible measures unless they could be linked to bank performance and fitted into analysts' valuation models. However, it was found that most of the case institutions were still at the stage of describing distinct intangible elements, and paid little attention to formally or explicitly linking intangible metrics with their performance.

Therefore, analysts might not be confident with using intangible indicators to understand the bank value creation process and hence predict bank value. This finding supports Bukh's (2003) argument that "for intellectual capital disclosure to be perceived as relevant from a capital market perspective, the information should be disclosed as an integral part of a framework illuminating the value creation processes of the firm" (Bukh, 2003:54). Similarly, Johanson (2003) highlights that one of the reasons why capital market actors feel ambivalent about using certain indicators of intangibles is due to knowledge problems that capital market actors failed to understand the importance of a certain human capital investment.

In addition, the case data showed that there were problems with the validity, reliability and comparability of intangibles indicators, and this tended to be another reason why analysts valued intangibles inefficiently. As Johanson (2003) argues, even if capital market actors do understand the connection between the indicators and the vision of the firm, they might have uncertainty problems, that is, they do not know if they can rely on the indicators with respect to validity and reliability. Similar statements have been observed in this study. Many bank analysts noted that, because of lack of standard and governance on intangible disclosure, the disclosed information about intangibles tended to be inconsistent and incomparable, and made them feel it is difficult to use such information in their formal reports of bank valuation.

10.3 Practice recommendations and policy implications

The previous sections have discussed key findings of this thesis in relation to intangible measurement, disclosure, and modelling. These findings have several implications, and recommendations for bank managers, policy makers, and analysts are discussed next.

This thesis showed that intangibles should be understood and measured within the value creation model in a bank, as has been discussed in section 9.2 of chapter nine. Therefore, instead of just developing individual metrics or indicators of intangible elements, bank managers should turn their attention to matching intangible indicators with bank strategy and performance. The case institutions were divided into three groups with regard to their intangible measurement (see Figure 9.1), and this may offer suggestions for improving intangible measurement and management in financial institutions. At first, they may just understand the importance of intangibles to their institutions, and then start to measure

different intangible elements using indicators and/or narrative descriptions and to frame their measurement framework of intangibles. At the advanced stage, the measurement system they use should reflect the interactions among intangibles, tangibles, and performance metrics, and ultimately, a value creation model is expected to be clearly visible. It is found that most of the case institutions seem to be at the second stage. Therefore, more effort should be devoted to locate intangible measures into the value creation model.

Moreover, findings from both the quantitative and qualitative studies of this thesis suggests that the combination or integration of various intangible elements was more likely to contribute to bank performance than they do individually, although at the same time, many managers interviewed emphasized that they tended to pay more attention to some intangible elements where they had relative strengths compared with rivals. This has implication for bank managers in the processes of setting bank strategies and decision making. In an attempt to improve performance, bank managers might prefer to make good use of their current intangible strengths. However, they should not just focus on the increase or decrease in an individual intangible element, as its individual power to increase profitability is very limited. Rather, they may want to look at other resources, either intangible or tangible, which have interactions or connections with this one. As has been discussed in section 3.4.2.3 of chapter three, there is a dearth of research on the allocation of funds for intangibles. Murthy and Mouritsen (2011) argues that on the one hand, intellectual capital is a resource; on the other hand, it is also an expensive investment that managers have to consider as part of organizational processes such as financial planning and budgeting. This thesis suggests that in the process of developing an intangible element, managers should also be concerned with the investment and allocation of other resources in order to search for the appropriate combination of those resources that contribute efficiently to financial performance.

Moreover, the grounded theory model of intangibles developed from the qualitative study also showed that the bank value creation process and the role of key factors in it were adapted to the internal and external environmental changes. The value creation process, therefore, should be an ongoing learning process for banks. Holland (2009, 2010) has emphasized that the capability of financial institutions, especially the top management, in terms of market-based learning and knowledge creation is crucial for their business success. This thesis further suggests that bank managers should be able to effectively manage their

resources in response to the changing context, such as the economic environment, regulatory and political setting, and competitive market. Put differently, they should have the capability to be aware of the internal and external changes and then indentify key drivers of competitive advantage and exploit their interactions with other resources in the dynamic environment.

For policy makers, this thesis has implications with respect to intangible disclosure. The quantitative study in this thesis showed that publicly disclosed information about intangibles was very limited in terms of the amount of indicators and the quality of data. Further, the qualitative study found that there was a communication gap between managers (information suppliers) and analysts (information users) regarding intangible disclosure, and the information provided by the former seemed not much appreciated by the latter in terms of information content. It also revealed that lack of disclosure standards and strong governance pressure tended to be major barriers that prevented intangible information from being reported. In order to make intangible information less invisible and hence reduce the information asymmetry between banks and capital markets, policy makers should consider issuing a set of industry-specific reporting standards or guidelines, which appear to be the demand from both bank managers' and analysts' perspectives. Appropriate standards could encourage banks to disclose reliable, timely, and consistent information about intangibles to the capital market, reduce the problem of information manipulation, and also provide opportunities for academics to further investigate the role of intangibles. However, it should be noted that intangibles are often at the heart of banks' competitive advantage, and policy makers should consider carefully the risk of giving away the secrets of banks' business models when formulating the relevant standards.

When considering what types of information about intangibles should be reported and how they could be reported, this thesis found that analysts tended to appreciate quantitative indicators rather than qualitative information. In addition, analysts wanted not only the intangible measures, but also their interactions and outcomes. Therefore, it would be useful if guidelines for intangible measurement and disclosure were developed to encourage managers to provide more and detailed intangible indicators and make the linkages between them and financial outcomes clearly visible. In this sense, the intellectual capital model in Bankinter offers an example of how intangibles could be measured and reported (see Appendix 3). In their report, each important intangible element was measured from different aspects using a number of indicators.

For analysts, the crucial role of intangibles in the bank value creation process makes it important for them to take account of intangibles in their decision-making. It is suggested that for the purpose of efficient bank valuation, analysts should try to collect information related to intangibles. Even though the disclosed information may not satisfy their needs, it might be helpful to improve their understanding of the contribution of intangibles to the bank value creation process.

10.4 Contributions of this thesis

This thesis adopts a mixed methods research approach that explores the role of intangibles in the European banking sector. As have been noted in chapters one and four, mixed methods research, as a methodology, has attracted increasing attention in social science research since the 1980s. It has been applied widely in many disciplines, such as sociology, education, evaluation, and health science (Creswell, 2009; Molina-Azor ń, 2011). Although the use of mixed methods has not been so popular in the fields of management, finance and accounting, there is a growing acceptance that more research that combines quantitative and qualitative approaches is desirable (Buchanan and Bryman, 2007; Cassell and Lee, 2011; Cassell et al., 2006). This thesis contributes to the methodological development in accounting and management research in terms of providing a practical example of how the combination of quantitative and qualitative approaches can offer a more comprehensive picture of the phenomenon than singular methods.

Integration is an important indicator that distinguishes mixed methods research from other monomethod studies, which reflects the extent to which researchers have exploited the potential of a mixed methods approach (O'Cathain et al., 2007). However, as has been discussed in section 4.5.3 of chapter four, despite the popular application of mixed methods research in social science, there is a problem that quantitative and qualitative data and findings appear not to be substantially integrated in many studies that use multiple methods (Bryman, 2007; Woolley, 2009). Woolley (2009) identifies that one of the main factors that currently prevent integration from being carried out in mixed method studies is the absence of exemplars. This thesis makes a contribution in this regard. It provides an example of how the quantitative and qualitative data can be integrated at all stages of the project in order to achieve maximum integration in a concurrent mixed method research. At the early stage of designing the project, the rationales of using mix-method research

were explained clearly (see section 4.3.2 of chapter four), and the central research question was divided into seven specific questions to be answered by not only singular methods but also the integration of the two approaches (section 4.4 of chapter four). During the data collection process, the qualitative interviews assisted the quantitative study in the way of identifying and understanding proxies of intangibles (see section 5.2.2 of chapter five), while the variables used in the quantitative study were useful to formulate interview questions and design the interview guide (see section 7.2.2 of chapter seven). At the stage of analyzing data, interview experience helped the researcher to develop hypotheses tested in the quantitative study (see section 5.3.3 of chapter five), and quantitative variables were used to help the qualitative data analysis in terms of enhancing the researcher's theoretical sensitivity, identifying codes, and labeling concepts (see section 7.3.1 of chapter seven). Finally, at the stage of reporting the empirical results, findings from the quantitative and qualitative approaches were connected and compared. On the one hand, it achieves evidence triangulation and enhances the validity of the overall project. On the other hand, it overcomes some limitations of using singular methods, and takes the advantage of complementarity (see section 8.4 of chapter eight and sections 9.3 and 9.5 of chapter nine).

This thesis also contributes to methodological development of management research in terms of exploring the potential of the qualitative approach in the mixed methods research. Cassell and Lee (2011) argue that there is a concern regarding the role of qualitative research in the use of mixed methods research in management studies, that is, "quantitative research is privileged over qualitative research which is only used for subsidiary purpose" (Cassell and Lee, 2011:3). Similarly, after reviewing recent published management research articles that used mixed method, Bazeley (2008) finds that the most common way of using qualitative data is to quantify it for the purpose of statistical analysis according to a priori coding scheme, but little or even no further reference can be found to the qualitative material. In such a situation, Cassell and Lee (2011) suggest that far more development is needed within mixed methods design. In this thesis, the qualitative and quantitative data was collected separately but always in a linking process. The former is in the dominant position in which the qualitative study is not just a means to simply confirm or elaborate quantitative findings, but more importantly, it explores deeply the problems with intangible measurement, disclosure, and modelling that arose from the quantitative study, and also searches for the possible ways of improving quantitative research. In this sense, this thesis offers an example of how to maximize the potential power that the qualitative approach has to investigate a complicated social phenomenon in a mixed

methods research.

Apart from the contributions to the development of mixed methods research, this thesis contributes to other literature, especially the intangible literature and the banking literature.

This thesis contributes to the intangible literature and improves our understanding of the role of intangibles in the value creation story in several ways. Firstly, it presents empirical evidence on not only the intangibles-performance association, but also the interactions among various intangible elements to which the extant literature has paid little attention. Secondly, there is a dearth of research on the relationship between brands and the customer relationships, as has been discussed in section 3.4 of chapter three, and research on the value-relevance of human capital information tends to be limited to the top management (Abhayawansa and Guthrie, 2010). This thesis contributes to the extant knowledge of intangibles by investigating the impacts of brand metrics on the customer relationship and the impacts of employee level HC on bank performance. Moreover, previous research on intangible measurement, management, and disclosure that used interview-based case study tended to focus on the organizational management perspective. Only a few studies have investigated the view of analysts or fund managers (e.g., Holland, 2006). This thesis makes a contribution in this regard by interviewing both bank managers and analysts. Therefore, it can be seen that this thesis draws a more comprehensive picture of intangibles than previous studies.

Besides, this thesis makes a contribution to the banking literature by providing a grounded theory model that improves our understanding of the bank business model. As has been discussed in chapter two, deregulation, technological development, and globalisation have dramatically changed the competitive environment in the banking industry. Up until the middle of 2007, the banking industry was believed to be a "profitable, fast growing, dynamic and highly innovative" sector, and was expected to continue to "finance investment and stimulate economic growth" (Wilson et al., 2010:154). However, the 2007-2009 financial crisis that has impacted severely the global banking industry and many other sectors led academics and policy-makers to re-examine the performance and safety of financial institutions (Wilson et al., 2010). Holland (2010) argues that some failing banks in the crisis tended to overvalue the innovation in new products and inter bank trading for competitive advantage creating and "over exploit their reputations for strict valuation, for close monitoring of securities and for working in the interests of

ultimate investors" (Holland, 2010:101). Holland (2010) further argues that "it is not the form of bank alone that is essential to effective and safe banks" (Holland, 2010:102). Rather, governments, regulators, bankers, shareholders and auditors should be continuously informed by robust, knowledge-based models of banks, products, and markets. Therefore, there is a requirement for more research on the investigation of the bank business model in the changing environment in order to make the model visible to bank stakeholders. This thesis, therefore, contributes to the banking literature by revealing a knowledge-based bank business model, which is helpful to facilitate bank managers, regulators, and capital market actors in better understanding the bank value creation process and designing relevant regulatory blueprint to make bank intangibles public. The grounded theory model developed in this study reveals that although intangibles appear to be the key drivers of competitive advantage, the interactions of intangibles and tangibles rather than intangibles alone provide the means to improve the financial and information intermediation processes as well as bank risk management, and in turn improving bank performance. The interactions of intangibles and tangibles consist of three different levels, that is, intra-category interactions (e.g., the impacts of intangible investment on intangible resources), cross-category interactions (e.g., the interactions among HC, SC, and RC), and network interactions (e.g., the relationships between intangibles and tangible/financial resources), and superior performance can be expected if bank managers have the capability to exploit effectively these interactions. It also shows that such a business model appears to be an ongoing learning process, in which the interactions are adapted in response to the environmental changes.

10.5 Limitations of this thesis

The previous section discussed the potential contributions that this thesis makes to the extant literature and knowledge. However, like other studies, this research may suffer from several limitations.

Firstly, despite the benefits that mixed methods researchers can take, this approach is a challenge in that it requires more work and financial resources, and takes more time than singular methods (Molina-Azor ń, 2011). The practical difficulties to a large extent limited the current research in terms of sample planning. As have been noted in section 4.8.2 of chapter four and sections 7.2 and 7.4 of chapter seven, the quantitative and qualitative studies are not fully matched in their samples. The quantitative data was collected from

banks across 17 countries in Europe. However, the qualitative interviews were conducted within boundaries of the UK due to time and financial constraints. As a result, the group of senior managers interviewed are limited to those who work in banks and other financial institutions that are based in the UK or have branch offices there. In addition, because of the problems with access to targeted interviewees, such as the influence of the financial crisis and the sensitivity of the research topic, the approached interviewees depend largely on the participants' willingness to help and may not achieve the purpose of maximum variation.

Secondly, for the qualitative component of this study, the fact that the research topic involves sensitive information not only makes it difficult to get access to targeted interviewees, but also makes participants very cautious about providing detailed and in-depth information. Some interviews were not recorded due to the participants' anxiety about confidentiality, and further data analysis for those has to rely on the notes taken by the researcher. Although actions were taken in dealing with this problem, such as writing down whatever the researcher remembered as soon as possible after each interview, some points were still lost in such a situation. This may reduce the reliability of the qualitative study.

Thirdly, the qualitative part of this thesis shares some common problems with other qualitative research. Prior literature argues that qualitative research may have potential bias imposed by the researcher in the processes of conducting interviews and analysing data (e.g., McKinnon, 1988; Bryman, 2004). The researcher in the current study recognizes that this study is not free from subjectivity, and her experience, knowledge background, and bias may influence the research processes, such as sample selection, formulation of interview questions, and data coding. In order to reduce the bias, the researcher tried to be as thorough and consistent as possible at the stages of data collection and data analysis. For example, interviews were carefully transcribed (if recorded) and the transcripts or notes were checked with interviewees so as to ensure that the collected raw data is unbiased and represent the interviewees' views accurately; and data was coded following a consistent and systematic coding procedure and interpretation was discussed with supervisors[182]. Moreover, as any other qualitative case study, this research suffers from the problem of generalisation. The findings of this study are restricted to the case institutions, and are

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[182] How the researcher has tried to improve the reliability and validity of the qualitative study refer to section 4.7 of chapter seven.

difficult to be generalized to other settings. However, the empirical results presented in this thesis may provide a guide to understanding the role of intangibles in other settings and achieve analytical (or theoretical) generalization (e.g., Seale, 1999; Yin, 2003).

Fourthly, for the quantitative part of this thesis, as has been discussed in chapter five, the level of intangible disclosure was very low and the quality of data appeared to be poor as well. Not only was much information on intangibles often not reported, but also banks provided inconsistent information in their publicly available reports (see section 5.2.1 of chapter five). Because of these data availability problems, the sample size of this study tends to be small and reduce the efficiency of the statistical analysis (see chapter six). The constraint of data availability also causes limitations with intangible proxies and the specified models used in the quantitative approach. Although the proxies of intangibles used in this study are guided by both the extant literature and the qualitative interview experience, they may be challenged by the extent to which they can capture the nature of the intangible elements.

Additionally, the low level of information disclosure reduces the quality of quantitative data (see section 5.3.1 of chapter five). As a result, this study suffers heavily from missing data problem. Because of the small number of observations, some intangible proxies (e.g., employee recruited and departure) and potential control variables (e.g., country-specific factors and macroeconomic factors) have to be excluded from the specified models, and this may cause the problems of omitted variables. Some other metrics, such as advertising and marketing expenditures, have to be replaced by alternation variables. The existence of missing data, therefore, reduces significantly the statistical power of the quantitative analysis. Apart from the problem of missing data, many indicators used to proxy intangibles are not defined or measured in a standardized manner across banks and countries, and this also imposes a threat to the validity of this study. Therefore, the quantitative empirical results presented in the thesis must be interpreted with extreme caution.

Another limitation of the quantitative approach is related to the dependent variables used in the quantitative models. Firstly, there was only one type of measure for the customer relationship when testing the interactions between it and other intangible elements, that is, the average deposits and loans growth rate. However, increase in customer deposits and loans may not attribute to good customer relationships. Other factors, such as GDP growth

or M&A activities that banks have taken, may also influence growth of customer deposits and loans. Secondly, performance measure used in this study also has its limitations. As has been discussed in section 6.5.1 of chapter six, ROA is chosen as the dependent variable in analysing the intangibles-performance association. Despite the explicit rationales of using ROA to measure bank performance, this variable has its limitations, such as being historical in context and being sensitive to the choice of accounting methods (Ellinger et al., 2002). However, given the restriction of time and the relevant weight of quantitative part in the mixed methods study, the researcher does not use other performance indicators. It would be better if additional performance measures could be considered in future research.

10.6 Suggestions for future research

Previous sections discussed the contribution that this thesis makes and some limitations that it has. This section outlines several avenues for future research and concludes this thesis.

This thesis is an exploratory study that investigates the role of intangibles in the banking sector using mixed methods. It sheds the light on how the combination of quantitative and qualitative approaches can better explore the complicated social phenomenon. Mixed methods research has attracted increasing attention in social science studies. Management and accounting research seems to fall behind some other disciplines in this regard, such as education. Molina-Azor ń (2011) examines the prevalence, characteristics, and added value of mixed methods articles published in two management fields, and finds that the prevalence rate of four management journals is lower than those found by other scholars in mathematics education research journals. Given the advantages that mixed methods research can take, more research that combines and integrates quantitative and qualitative methods in different ways should be undertaken in the fields of accounting and management research.

Specifically, future qualitative research may want to extend the present study in three aspects. As mentioned in section 10.2.1, the qualitative part of this study reveals that managers' and analysts' views on the understanding of intangibles tended to differ in terms of the relative importance of one set of intangibles over others or intangibles over tangible and financial resources. The researcher assumes that this depends on distance from intangibles and changing environment. It would be interesting if future work could be

devoted to explain such a distinction. In addition, findings of the qualitative study show that the case institutions were different in their intangible measurement practice. Some of them appeared to be more advanced than others in measuring and managing intangibles. This provides an avenue for future research to explore the reasons why the difference in bank practice of intangible measurement exists. Moreover, the qualitative approach of this thesis investigates the views of bank senior managers and bank analysts on the role of intangibles. The former is intangible information suppliers, and the latter are important information users in the capital market. However, there are many other stakeholders who may also be involved in supplying or using information related to intangibles, such as middle level managers and employees in the bank, auditors, regulators, customers, and investors. Therefore, future interview-based research could extend the present study by investigating the perspectives of other groups of participants.

Besides, as mentioned before, the qualitative components of this study has the purpose of searching for potential ways that can improve quantitative intangibles research. It offers several suggestions for future quantitative research with respect to intangibles metrics and the specified models.

Firstly, the qualitative study assesses the indicators used in the quantitative study by discussing their weaknesses and strengths with managers and analysts. It is found that some indicators, such as employee departure and advertising and marketing expenditures, tend to be ambiguous in their definition or specification. This thesis further suggests that they may be defined more clearly or specified in more detail. For example, the former could be separated into regrettable and non-regrettable attrition, and the latter could be distinguished between brand-related expenditure and product-related expenditure. Therefore, future quantitative research could utilize better defined and specified indicators if available. The qualitative study also provides suggestions to improve other indicators. For instance, it would be better if management quality could include not only measures of executive directors but also those of other members on the board, and the deposits and loans growth rate used as a proxy of the customer relationship should adjusted for factors of market conditions (e.g., economic growth).

Secondly, this thesis provides suggestions of improving the model construction for future quantitative research. The grounded theory model generated from the qualitative study reveals that the intangibles have to interact with other resources in order to produce

superior performance. Although tangible or financial resources may not be advantage creating factors, they provide the foundation upon which the intangibles can make impacts on bank performance. Therefore, it would be interesting if future quantitative research could explore the joint impacts of intangible and tangible variables on firm performance. The grounded theory model also suggests that the future research should distinguish between intangible investment and intangibles resources clearly in the specified models, and more conditional factors should be taken into consideration as well.

Last but not least, future quantitative research on the intangibles-performance association may want to use additional performance measures other than ROA, such as market-based variables. As mentioned before, one of the limitations with the quantitative study is that it only uses ROA as the dependent variable in the specified models in consideration of time constraint and the qualitative dominant research design. It would be interesting if future research can extend the present quantitative study by using both accounting-based and market-based performance measures.

Appendices

Appendix 1: Definitions, measurements and sources of variables used in the quantitative analysis

Variables	Code	Measurement	Sources
1. proxies of Top management Human Capital			
CEO's firm-specific experience	CEOEX	This indicator measures CEO's firm-specific managerial experience in the specific bank. It is defined as the total number of years the CEO has been a member of the board in the bank. For those banks in which the CEO is not a member of the board, the total number of years the CEO has been a in the bank is used to measure his/her firm-specific experience.	*BoardEX* database, bank websites, and other websites (e.g., *Businessweek.com* and *Wikipedia.org*).
CEO's past managerial experience	CEOP	This indicator measures CEO's general managerial experience before he/she came into the specific bank. It is defined as the total number of years the CEO has been an executive member of a board in other companies before he/she came into the bank.	*BoardEX* database, bank websites, and other websites (e.g., *Businessweek.com* and *Wikipedia.org*).
CEO's industry-specific experience	CEOIN	This indicator measures CEO's industry-specific experience. It is defined as the total number of years the CEO has been working in the banking industry.	*BoardEX* database, bank websites, and other websites (e.g., *Businessweek.com* and *Wikipedia.org*).
CEO's level of education	CEOED	This indicator measures CEO's level of education, and is rated by: undergraduate = 2, postgraduate or master = 3, MBA = 4, PhD = 5, others = 1. If the CEO has got two degrees at the same level, then plus 1.	*BoardEX* database, bank websites, and other websites (e.g., *Businessweek.com* and *Wikipedia.org*).
Average firm-specific experiences of other executive directors on the board	OEDEX	This indicator measures firm-specific managerial experiences of other executive directors on the bank's board. It is defined as the total number of years all other executive directors have been members of the board divided by the number of other executive directors on the board.	*BoardEX* database, bank websites, and other websites (e.g., *Businessweek.com* and *Wikipedia.org*).
Average past managerial experiences of other executive directors on the board	OEDP	This indicator measures other executive directors' general managerial experiences before they came into the specific bank. It is defined as the total number of years all other executive directors have been executive members of boards in other companies before they came into the specific bank divided by the number of other executive directors on the board.	*BoardEX* database, bank websites, and other websites (e.g., *Businessweek.com* and *Wikipedia.org*).

Average industry-specific experiences of other executive directors on the board	OEDIN	This indicator measures other executive directors' industry-specific experience. It is defined as the total number of years all other executive directors have been working in the banking industry divided by the number of other executive directors on the board.	*BoardEX* database, bank websites, and other websites (e.g., *Businessweek.com* and *Wikipedia.org*).
Average education level of other executive directors on the board	OEDED	This indicator measures other executive directors' level of education. It is defined as the total education level of all other executive directors (rated by: undergraduate = 2, postgraduate or master = 3, MBA = 4, PhD = 5, others = 1. If he/she has got two degrees at the same level, then plus 1) divided by the number of other executive directors on the board.	*BoardEX* database, bank websites, and other websites (e.g., *Businessweek.com* and *Wikipedia.org*).
2. Proxies of employee level human capital			
Average staff costs	SC	The total staff costs (in ten thousand euros) over the number of employees for the bank.	Banks' annual reports and corporate (social) responsibility reports.
Average training hours per employee	TH	The total number of training hours over the number of employees for the bank.	Banks' annual reports and corporate (social) responsibility reports.
Average training expenses per employee	TE	The total expenses on staff training (in euros) over the number of employees.	Banks' annual reports and corporate (social) responsibility reports.
3. Proxy of service quality			
The number of employees per branch	EPB	The number of employees over the number of branches for the bank.	Banks' annual reports, corporate (social) responsibility reports, and presentations.
4. Proxies of brands			
Goodwill and other intangible assets	IAA	The accounting number of goodwill and other intangible assets on the balance sheet over total assets at the end of the fiscal year for the bank.	Banks' annual reports.
Advertising and marketing expenditures	ADVA	The total number of advertising and marketing expenditures over total assets at the end of the fiscal year for the bank.	Banks' annual reports.
Administrative expenses	ADMA	The total number of general and administrative expenses (exclusive of staff costs) over total assets at the end of fiscal year for the bank.	Banks' annual reports.
Bank age	AGE	The number of years since the beginning of the bank's operation.	Bank websites.

Branch number	B	The number of branches for the bank.	Banks' annual reports, corporate (social) responsibility reports, and presentations.
Brand value	BVA	The brand value of the bank over its total assets at the end of the fiscal year.	*Brand Finance* reports
Brand rating	BR	Based on rating provided by Brand Finance in which banks were rated from AAA to C, each rating was given a score, from "1" for the rating of C up to "22" for the rating of AAA.	*Brand Finance* reports
5. Proxy of customer relationships			
The customer loans/deposits growth rate	CR	The average value of borrowers' relationship (BR) and depositors' relationship (DR). Particularly, BR and DR are calculated as: $$BR = \frac{L_{B,t} - L_{B,t-1}}{L_{B,t-1}} \times 100,$$ and $$DR = \frac{D_{B,t} - D_{B,t-1}}{D_{B,t-1}} \times 100$$ Where $L_{B,t}, L_{B,t-1}$ is the total amount of loans to customers in a bank's balance sheet at the end of year *t* and *t-1* respectively, and $D_{B,t}, D_{B,t-1}$ is the total amount of deposits to customers in the bank's balance sheet at the end of year *t* and *t-1* respectively.	Banks' annual reports
6. Control variables			
Firm size	LNASSETS	Natural log of the book value of a bank's total assets at the end of its financial year.	Banks' annual reports.
Bank type	BTYPE	A dummy variable that takes a value of "1" if a bank earns at least 50% of its net interest income from retail banking activities, zero otherwise.	Banks' annual reports.
Year	YD	Year dummies for the three years from 2005 to 2007.	

Appendix 2: Regressions of bank performance on intangible elements and control variables (dependent variable: winsorized: ROA)

This table presents estimated results for regression models 3.1 to 3.5, 4.1 to 4.3, and 5.1 to 5.8, based on winsorized ROA and winsorized CR%. Compared with results for corresponding models based on original ROA and CR% that have been listed in Table 6.11, section 6.5.3 of chapter six, the different sign or significance of coefficients on explanatory variables are in italic.

Panel A: Regressions of bank performance on human capital variables

	Model 3.1	Model 3.2	Model 3.3	Model 3.4	Model 3.5
Intercept	1.091***	0.906***	2.146***	2.789***	2.861***
	(.000)	(.000)	(.000)	(.000)	(.000)
LNCEOEX	0.059			0.120	
	(.418)			(.140)	
LNCEOP	-0.014			*0.007*	
	(.810)			(.907)	
CEOIN		0.012**			0.011*
		(.031)			(.090)
CEOED	-0.156***	-0.148***		-0.148***	-0.097*
	(.002)	(.003)		(.005)	(.068)
LNSC			-0.581***	-0.687***	-0.769***
			(.007)	(.003)	(.001)
LNEPB			-0.164	-0.218*	-0.265**
			(.115)	(.071)	(.049)
Adj. R^2	0.054	0.105	0.064	0.172	0.188
Sig. F	0.012**	0.000***	0.006***	0.000***	0.000***
N	146	137	126	104	103

Notes: *P*-values are in parentheses. *, **, and *** indicate two-tailed significance at 10%, 5%, and 1% respectively.

Panel B: Regressions of bank performance on relational capital variables

	Model 4.1	Model 4.2	Model.4.3
Intercept	-0.026	0.385***	-0.828
	(.968)	(.000)	(.239)
ADMA%	0.890***		0.948***
	(.006)		(.003)
IAA%	-0.038		-0.111
	(.590)		(.131)
LNAGE	-0.100		-0.047
	(.318)		(.636)
LNB	0.105*		0.138**
	(0.066)		(.015)
CR%		0.018***	*0.023***
		(.004)	(.007)
Adj. R^2	0.044	0.040	0.095
Sig. F	0.053*	0.004***	0.005***
N	123	178	123

Notes: *P*-values are in parentheses. *, **, and *** indicate two-tailed significance at 10%, 5%, and 1% respectively.

Panel C: Regressions of bank performance on human capital, relational capital, and control variables

	Model 5.1	Model 5.2	Model 5.3	Model 5.4	Model 5.5	Model 5.6	Model 5.7	Model 5.8
Intercept	0.687	0.658	**1.640***	1.407	1.082	1.572	0.372	0.916
	(.497)	(.526)	(.050)	(.110)	(.309)	(.134)	(.656)	(.310)
LNCEOEX	0.041		0.085		**0.299***		**0.313***	
	(.640)		(.319)		(.001)		(.000)	
LNCEOP	-0.007		-0.022		0.067		*0.038*	
	(.928)		(.762)		(.390)		(.602)	
CEOIN		*0.010*		**0.011***		**0.018***		**0.016****
		(.116)		(.093)		(.007)		(.012)
CEOED	**-0.136****	**-0.090***	**-0.151***	**-0.095***	**-0.098***	-0.039	**-0.090***	-0.027
	(.014)	(.087)	(.006)	(.071)	(.064)	(.468)	(.084)	(.607)
LNSC	**-0.526***	**-0.600****	**-0.671****	**-0.751***	0.247	0.025	-0.058	-0.388
	(.051)	(0.035)	(.010)	(.004)	(.543)	(.952)	(.841)	(.188)
LNEPB	-0.141	-0.197	-0.168	*-0.223*	0.289	0.236	-0.064	*-0.199*
	(.276)	(.175)	(.196)	(.125)	(.410)	(.538)	(.613)	(.186)
ADMA%	*0.795***	*0.728***	*0.621***	0.579	*0.179*	-0.087	0.771	0.565
	(.034)	(.055)	(.086)	(.110)	(.786)	(.895)	(.039)	(.148)
IAA%	-0.093	-0.079	-0.037	-0.051	0.054	0.087	0.085	0.112
	(.250)	(.447)	(.612)	(.619)	(.505)	(.397)	(.270)	(.266)
LNAGE	0.006	0.005	-0.020	0.001	-0.127	-0.092	-0.135	-0.092
	(.959)	(.968)	(0.864)	(.993)	(.220)	(.389)	(.193)	(.396)
LNB	*0.161***	**0.164****	0.122	**0.143***	*0.428*	*0.520*	0.091	0.129
	(.052)	(.036)	(.126)	(.063)	(.187)	(.115)	(.275)	(.105)
CR%	0.016	0.013						
	(.106)	(.185)						
BTYPE					-0.006	-0.038	0.063	0.112
					(.972)	(.829)	(.680)	(.479)
LNASSETS					*-0.359*	*-0.411*		
					(.282)	(.221)		
YD07					**-0.787***	**-0.774***	**-0.808***	**-0.806***
					(.000)	(.000)	(.000)	(.000)
YD06					-0.082	-0.111	-0.092	-0.131
					(.609)	(.501)	(.567)	(.427)
Adj. R^2	0.189	0.206	0.175	0.199	0.411	0.375	0.410	0.370
Sig. F	0.001***	0.000***	0.001***	0.000***	0.000***	0.000***	0.000***	0.000***
N	104	103	104	103	83	83	83	83

Notes: *P*-values are in parentheses. *, **, and *** indicate two-tailed significance at 10%, 5%, and 1% respectively.

Appendix 3: Examples of BankInter IC report

Human Capital

Indicator	2006	2007	2008
Descriptive indicators			
No. of employees	3,981	4,530	4,483
Average age (years)	36.50	35.95	36.71
Experience			
Average length of service (years)	10.27	9.56	10.25
Average length of service (years) as % of 40 years (professional lifetime)	25.68	23.90	25.63
Diversity			
Breakdown by sex			
Male (%)	53.10	51.79	51.09
Female (%)	46.90	48.21	48.91
Graduates (%)	71.94	72.56	73.44
Employees with advanced English language skills (%)	39.56	35.41	35.76
Number of nationalities represented	23	28	25
Number of different qualifications	95	89	91
% of workforce holding the 3 most common degrees* at Bankinter	42.68	42.94	44.23
*3 most frequent degrees: Economics and Business Studies. Business Administration & Management. Law			
Ability and development			
Employees who received training (%)	100.00	100.00	95.48
Average number of training hours per employee as % of 350 (average post-grad. course load)	16	18	16
Average number of training hours per employee	56.91	62.17	56.17
Average number of training hours per employee trained	56.45	58.66	58.83
Investment in training as % of total payroll	3	3	2
Investment in training per employee (euros)	1,027	1,257	733
Investment in training per employee trained (euros)	1,019	1,186	768
Employees with access to Virtual Classroom from their workstation (%)	100	100	100
Training actions in Virtual Classroom as % of total different training actions	18.50	17.09	4.41
Number of different training initiatives	400	474	431
Average no. of courses per employee	8	9	9
Total no. of courses taught	1,121	1,384	1,294
Index of application of training in the job performed (%)	100.00	100.00	100.00

Structural capital

Indicator	2006	2007	2008
Management and strategic management			
% of hierarchical levels involved in preparing the Group's strategic plans	33	29	31
% of employees who know the Bank's objectives	100	100	100
Management information available to all employees (%)	96.45	96.61	97.00
Delayering and transparency			
Number of people participating in 360° evaluation	3,874	4,165	4,456
Average number of evaluators per employee evaluated (applications sent / total headcount evaluated)	11	11	12
Average number of persons evaluating each Management Committee member			
(applications sent / Management Committee members)	75.80	81.00	74.00
Flexibility (%)			
Internal job rotation	34.46	29.95	26.87
% of employees who have logged on remotely (%)	38.46	35.70	35.78
No. of remote log-ons	104,546	141,443	146,303
Time logged on remotely per user (min.)	10,757	11,963	10,009
Employees accessing the internet daily from the Bank's platform	61.97	69.65	62.25
Employee suggestions implemented (per thousand)	24.91	75.71	54.91
Technology & process quality			
% of employees with intranet access	100	100	100
No. of employees contributing to development and maintenance of intranet content	104	146	152
% of employees with access to email	100	100	100
MIPs at central host / employees	0.88	0.97	1.07
Daily email traffic (daily average in a 7-day week)	336,690	375,536	NA
Number of quality projects and initiatives carried out	141	96	0
Number of prize-winning quality projects and initiatives	10	10	0
% of branches with internet stations & telephones connected to the Telephone Banking platform	100	100	100

Relational Capital

Indicator	2006	2007	2008
Customer Relations			
No. of non-specialised and foreign branches	332	360	372
Number of Virtual Branches	527	552	407
Number of Bankinter Agents	1,003	996	920
Number of SME Management Centres	124	161	145
Number of Business Management Centres	50	51	51
Number of Private Banking Centres	41	47	51
Employees per Branch or Management Centre	7.28	7.32	7.24
Staff directly involved in the business (%)	74.13	74.83	75.46
New active customers (%)	14.46	12.57	10.80
Annual growth in Average Total Assets (%)	17.51	11.24	7.24
New active customers per employee	24	21	19
Quality and customer satisfaction			
% of financial incidents resolved in 48 hours	81.81	70.6	50.02
Number of complaints to Ombudsman per active customer	7.55	7.56	8.99
No, of complaints processed by Bank of Spain per active customer	1.78	1.50	1.55
Multi-channel banking development			
Transactions through channels other than Branch Network as % of total Bank transactions	68.67	68.84	67.86
New customers attracted through channels other than Branch Network as % of total new customers	47.19	39.10	42.45

Source: BankInter 2008 Annual Report (page 50-61).

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