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Voluntary disclosure of intellectual capital in Chinese (mainland) companies

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ABSTRACT

This research examines the extent, quality, and determinants of intellectual capital (IC) disclosure in Chinese companies in order to obtain a comprehensive understanding with regard to the current status of IC disclosure in China, and further to provide some recommendations for IC reporting guidelines. A mixed methods approach, combining both qualitative and quantitative elements, was used. Specifically, the research evolved in three stages.

Firstly, an IC disclosure index was developed as an instrument for content analysis through a questionnaire survey and consultation with a panel of twenty Chinese IC experts. Secondly, two years annual reports of 100 top A-share Chinese firms were coded for data collection using a coding framework developed from the disclosure index. The collected data were then quantified and analyzed so as to determine the extent and quality of IC disclosure by Chinese firms. Finally, a series of hypothesis regarding the correlations between IC disclosure practices of Chinese firms and nine impact factors (or determinants) were deduced on the basis of prior literature and some relevant theories. Then the hypotheses were tested employing the empirical evidence obtained from the second stage through some statistical techniques, such as univariate analysis and multiple regression analysis.

Inconsistent with prior research, the results in this study indicate that the current level of IC disclosure in China was quite high in both extent and quality, and there was no significant information gap between the expectation of Chinese stakeholders and the actual practices of Chinese firms. It is contended that there are three factors motivating Chinese firms to report their IC actively: to reduce information asymmetry between the management of a company and various stakeholder groups; to discharge accountability to various stakeholders; and to signal organizational legitimacy and excellence to the market.

It was also found that all the impact factors other than ownership structure had a significant effect on the level of IC disclosure of Chinese firms in univariate analysis, while four out of nine factors comprising firm size, ownership concentration, board independence and stand-alone sustainability report had a significant impact on the level of IC disclosure in multiple regression analysis. It is believed that the findings in this research could have a number of implications for academics, investors, managers, regulators and policy makers.

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CHAPTER ONE

RESEARCH INTRODUCTION

1.1 Background

The transition of our society from an industrial economy to a knowledge economy has changed the process for wealth creation (Abhayawansa and Abeysekera, 2009; Chu et al., 2011). Intellectual capital (IC), in the forms of research and development (R&D), information technology, corporate image, customer relations, business collaborations, employee competences, etc., has replaced physical and financial capital as the most important value driver for modern enterprises. As Davey et al. (2009) indicate, "Intellectual capital is increasingly acknowledged as the most important asset for business performance and the foundation for market leadership and differentiation" (p. 401). Some researchers (e.g. Abeysekera, 2008; Ghosh and Wu, 2007; Wang, 2008) argue that IC is a key value creator for firms to achieve and maintain a competitive advantage. A prominent example for the importance of IC is the increasing gap between book value and market value of firms in the stock market, which is often referred to as hidden value. Although we cannot attribute the expanding disparities entirely to IC, it should take the biggest proportion for the hidden value.

Corresponding to the new knowledge-based economy, increasingly companies are realizing the importance of IC for their future financial success and therefore invest heavily in IC, such as information systems, distribution networks, employee training, etc. Moreover many companies, especially those public listed companies, have attempted to report their IC in corporate annual reports on a voluntary basis so as to highlight their superior quality to the market as well as attract potential investors. Voluntary disclosure of IC information is also considered to be an effective means for companies to reduce information asymmetry and improve relationships with various stakeholders (Yi and Davey, 2010).

Research in regard of IC disclosure is growing commensurate with this trend. These studies often investigate the status of IC disclosure in a particular country (usually cross-sectional) or in a specific industry through a survey of top listed companies on the stock exchange (e.g. Abeysekera and Guthrie, 2005; Brennan, 2001; Guthrie and Petty, 2000; Oliveras et al., 2008; Davey et al., 2009; Schneider and Samkin, 2008), or examine the associations between the level of IC disclosure and a variety of impact factors, such as industry, size, performance, etc., using some statistical techniques (e.g. Li et al., 2008; Oliveira et al., 2006; Singh and Van der Zahn, 2008; Whiting and Woodcock, 2011). It is noted that most prior studies focuses on

developed countries rather than developing countries. Hence researching IC disclosure in developing countries is needed in order to diversify the extant literature and make contributions to knowledge in the area. This research focusing on China, the largest developing country as well as one of the most dynamic economies in the world, was undertaken to address this need.

Since the implementation of "reform" and "open door" policy in 1978, China has experienced dramatic economic development over the last three decades. Knowledge (or IC) plays a crucial role for the boom of the Chinese economy. Science and technology are deemed to be the primary productivity by the Chinese central government and to develop science and technology was established as a fundamental and long-term state policy (Chinese central government, 1992). In the circumstances, numerous Chinese firms invested significantly in scientific and technological innovations which have shifted many of them from labour-intensive to knowledge-intensive.

Meanwhile, the Chinese stock market was established and developed in order to satisfy the increasing demands of companies for new funding channels other than commercial banks and governmental grants (Chinese Securities Regulatory Commission, 2008; Liu and Shrestha, 2008; Seddighi and Nian, 2004). In recent years, more and more Chinese firms were listed on the stock exchanges (Shanghai or Shenzhen). They compete one another by all means for funding opportunities in the market. Owing to the significance of IC, voluntary reporting of IC information in the annual report has become a critical means for them to signal their excellence, and consequently attract investment from both domestic and foreign investors. Yet research with respect to IC disclosure in the Chinese context is quite limited, with approximately two studies to date: Xiao (2008), and Yi and Davey (2010).

Xiao (2008) investigated the extent of IC disclosure of the top 50 firms listed on the Shanghai Stock Exchange in 2007 while Yi and Davey (2010) extended Xiao (2008) and examined both the extent and quality of IC disclosure by 49 dual-listed A and H share Chinese firms in 2006. Content analysis of corporate annual reports was adopted as the primary research method for both studies. The results from the studies indicate that Chinese companies did not attach significant importance to reporting their IC and therefore the current level of IC disclosure by Chinese firms was not high.

1.2 Problem statement

The two exploratory studies (Xiao, 2008; Yi and Davey, 2010) provide some insights regarding the current status of IC disclosure by Chinese firms. However they have some drawbacks. To begin with, both studies employed a relatively small sample size (50 and 49 companies respectively), which is problematic to generalize the IC reporting practice of Chinese firms. Secondly both studies use a single qualitative research method, namely content analysis, which is not sufficient to reflect the full landscape of IC disclosure in Chinese firms. Thirdly both studies only analyzed one-year corporate annual reports for data collection, which could not show the trend of IC disclosure by Chinese firms. Furthermore the two studies used the 2006 and 2007 annual reports as data source respectively, which is now becoming dated. It is expected that new developments will be evident. Finally both studies only investigated the level of IC disclosure, ignoring the factors which determine it. Given the weaknesses above, it is contended that a more comprehensive research into IC disclosure in the Chinese context is needed.

1.3 Research purpose and objectives

The purpose of this research is to obtain a more in-depth understanding in regard to the current status of IC disclosure in the Chinese context, and further to make some recommendations as to IC reporting guidelines applicable to the Chinese environment. To achieve this, this research has the following specific objectives:

- To construct an IC disclosure index from a stakeholder perspective, as an instrument to gauge the extent and quality of IC disclosure by Chinese firms
- To employ the developed index to analyze the 2008 and 2009 annual reports of top 100 Chinese A-share companies from various angles so as to identify the trend as well as the extent and quality of IC disclosure in Chinese firms
- To develop hypotheses with respect to the factors which determine IC disclosure practices of Chinese firms
- To test whether the hypotheses are supported or rejected using the 2009 empirical evidence

1.4 Research methodology and methods

A mixed methods approach combining both quantitative and qualitative elements was applied in this research. The quantitative elements include a questionnaire survey to gather opinions of a panel of Chinese IC experts on the importance of each IC attribute, and hypothesis development and testing with regard to the factors which impact IC disclosure practices of Chinese firms, while the qualitative elements comprise a consultation process with the selected panellists to validate the draft list of IC items, and content analysis of corporate annual reports to assess the extent and quality of IC disclosure in Chinese firms. The mixed methods methodology was considered to be appropriate in the current study because it enables the researcher to extend finding obtained by any single research method and consequently result in a holistic comprehension in regard to the status of IC disclosure in the Chinese context.

In order to achieve the research objectives, the present study was designed in three stages. Initially, an IC disclosure index was developed as an instrument for content analysis. During the process, twenty Chinese IC experts from six stakeholder groups were selected to establish a panel to validate the potential IC framework applicable to the Chinese environment, as well as determine the weighting of each IC attribute. Secondly, the two-year (2008 and 2009) annual reports of the sample companies were coded for data collection employing a coding framework developed from the disclosure index. The collected data were then quantified and analyzed so as to determine the level of IC disclosure by Chinese firms from both extent and quality. Finally, a series of hypotheses regarding the associations between IC disclosure practices of Chinese firms and nine impact factors were deduced on the basis of prior literature and some relevant theories. Then the hypotheses were tested using the empirical evidence attained from the second stage through some statistical techniques, such as univariate and multiple regression analysis. The detailed research methodology and methods are presented in Chapter 5.

1.5 Outline of the thesis

The thesis is composed of nine chapters as follows:

Chapter one: Research introduction

This chapter provides an overview of the current study comprising background, problem statement, research purposes and objectives, methodology and methods, outline of the thesis, and scope and limitations.

Chapter two: Review of the Chinese stock market

This chapter reviews the overall landscape of the Chinese stock market, such as the emergence, development, regulation, issuance of shares and the status of listed firms, as well as the size, challenges, future development of the market, so as to assist the readers obtain a general understanding in regard of the background of this research.

Chapter three: Literature review

In this chapter, the researcher conducts an extensive review of the extant literature in relation to IC measurement, management and reporting. But the focus is placed on the reporting.

Chapter four: Theoretical framework

This chapter provides a comprehensive theoretical framework for the current research through integrating four traditional theories in the area: agency theory, stakeholder theory, signalling theory and legitimacy theory. The developed framework suggests three motivations for companies in disclosing their IC voluntarily: to reduce information asymmetry; to discharge accountability to various stakeholders; and to signal organizational legitimacy and excellence (or superior quality) to society. In addition, the costs of voluntary IC disclosure are also depicted.

Chapter five: Research methodology and methods

This chapter details the research methodology and methods applied in this research. A mixed methods methodology combining both quantitative and qualitative methods was adopted, and a three-stage research design comprising development of an IC disclosure index, content analysis of corporate annual reports and hypothesis development and testing was conducted.

Chapter six: Development of the IC disclosure index

This chapter describes the process for the construction of an IC disclosure index, which was employed as an instrument for content analysis of annual reports of the sample companies. The constructed index consists of three elements: a list of IC items, weightings for the items, and criteria to assess the quality of IC disclosure.

Chapter seven: Results and discussion: extent and quality

This chapter reports on the results with respect to the extent and quality of IC disclosure by Chinese firms from various angles, such as attributes, categories, distributions in annual reports, the overall, industry type and listing status. Also the results are interpreted using the developed theoretical framework.

Chapter eight: Results and discussion: determinants

In this chapter, a process of hypotheses development and testing is involved in which it examines the correlations between IC disclosure practices of Chinese firms and a variety of impact factors (or determinants), such as industry type, company size, leverage, listing status, ownership structure, independent directors, stand-alone CSR report, profitability and auditor type, using both univariate and multiple regression analysis.

Chapter nine: Summary, recommendations and conclusion

This chapter reviews the thesis, makes recommendations as to the IC reporting framework applicable to the Chinese environment based upon the findings, as well as indicates the significance and future directions for this research.

1.6 Scope and Limitations

Scope

In this study, the researcher focuses on the IC disclosure by 100 top A-share listed firms according to market capitalization in Chinese mainland.[1] The sample covers a wide range of industrial sectors, such as finance, business services, utilities, energy, material and industrial/consumer goods. Therefore this research is a cross-sectional study. Two-year annual reports (2008 and 2009) of the sample companies were analyzed using a disclosure index to survey the extent and quality as well as the trend of IC disclosure in the Chinese

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[1]Not including Hong Kong, Macau and Taiwan. Thereafter in this thesis, China refers to Chinese mainland only.

context. From this point, this research is also a longitudinal study. During the course of content analysis of corporate annual reports, only voluntary disclosure of IC information was coded because disclosures made simply in response to accounting standards or rules cannot reflect the level of commitment held by a company towards reporting its IC (Guthrie et al., 1999).

Limitations

It is acknowledged that this research has some limitations. Firstly although the sample size in this research was larger compared with the two previous Chinese studies (Xiao, 2008; Yi and Davey, 2010), it still focused on large firms without small and medium sized enterprises (SMEs) involved, which was still insufficient to represent the overall state of IC disclosure in China. Furthermore the validity was not high while only employing two-subsequent-year annual reports to investigate the trend of IC disclosure. However, the researcher also compared the two years' findings (2008 and 2009) with a previous Chinese study using the 2006 dataset, which could address the problem to some extent. Thirdly subjectivity had been involved not only in the development of the IC disclosure index but also in the coding process of corporate annual reports, albeit the researcher had taken some measures to improve it.

In the next chapter, a review of the Chinese stock market is presented.

CHAPTER TWO

REVIEW OF THE CHINESE STOCK MARKET

2.1 Introduction

Since the Chinese government implemented economic reform in 1978, China's economy has undergone dramatic development over the past several decades. The Chinese stock market was established and developed during the period. In this chapter, the overall landscape of the market is reviewed in order to make readers obtain a general understanding with respect to the background of this research.[2] The Chapter is structured as follows.

Section 2.2 describes the reasons and the process regarding the emergence of the Chinese stock market. In addition two stock exchanges (Shanghai and Shenzhen) are introduced in this section. Next section 2.3 details the shareholding structure and the reporting framework of listed companies. Section 2.4 examines the size, challenges and future directions of the market. Finally, section 2.5 summarizes the chapter.

2.2 Emergence of the stock market

China's economic reform paved the way for the emergence of the Chinese stock market (CSRC, 2008; Zhang et al., 2008). During the early 1980s, the Chinese government began to reform the state financial sector in order to fit in with the new economic situation. Some commercial banks[3] were established to replace the state planning budgetary system[4] as the main channels for Chinese enterprises to raise capital. It is apparent that borrowing from those commercial banks would generate high transaction costs for enterprises. Chinese enterprises, particularly those state-owned enterprises (SOEs), realized that they needed to diversity their funding channels rather than solely borrowing from the commercial banks or relying on the governmental grants or interest-free loans (CSRC, 2008; Seddighi and Nian, 2004). Meanwhile, the income of domestic residents grew rapidly commensurate with country's rapid economic growth. However, they had to deposit their money in banks for minor interest rates owing to the shortage of investment channels (Liu and Shrestha, 2008; Yi and Davey, 2010). Some of them had attempted to seek new investment opportunities for higher rate of returns. Furthermore, the Chinese government attempted to attract capital

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[2] Since this research focused on voluntary IC disclosure of top listed (A-share) companies in the stock market.
[3] Including Bank of China, China Construction Bank, Industrial and Commercial Bank of China, and Agricultural Bank of China
[4] In which funds and capital were centrally administered and allocated to enterprises.

infusion in the state-owned enterprises so as to restructure the firms as well as improve the performance of them (Seddighi and Nian, 2004; Zhang and Zhao, 2004). Under these circumstances, the Chinese stock market started to develop.

In the beginning, some informal stock markets, mainly initiated by small state-owned and collectively-owned enterprises in urban areas, were founded around the country. In January 1985, the first public offering of standardised corporate equity was launched by Shanghai Yanzhong Industrial. Subsequently two over-the-counter markets appeared in Shanghai and Shenyang in 1986. Until November 1990, the first stock exchange was established in Shanghai with the approval of the Chinese government. In December 1990, the second stock exchange, namely the Shenzhen stock exchange, started to operate. Since then, a formal stock market has been formed in (mainland) China. In recent years, the Chinese stock market has grown rapidly to be the largest emerging market in the world (Ding and Graham, 2007; Zhang et al., 2008).

Chinese stock exchanges

At present, there are actually three stock exchanges in China. Two of them – the Shanghai stock exchange (SHSE) and the Shenzhen stock exchange (SZSE) – are in the Chinese mainland. Another one is Hong Kong Stock Exchanges and Clearing Limited (the full name of the Hong Kong stock exchange) located in Hong Kong. In general, Chinese (domestic) stock exchanges refer to the Shanghai and the Shenzhen stock exchange other than the Hong Kong stock exchange because Hong Kong is independent in economy although it has been a special administrative region of China since 1997. As a matter of fact, the Hong Kong stock market is defined as a developed market, whereas the Chinese stock market is regarded as an emerging market (Li, 2007).

The Shanghai stock exchange was established on 26 November 1990 and The Shenzhen stock exchange was on 1 December 1990. Both of them open from Monday to Friday. There are two trading sessions for each exchange in terms of the Chinese local time (GMT + 08:00). The morning session begins at 9:30 and ends at 11:30 while the afternoon session opens at 1:00 and closes at 3:00.

Both exchanges provide sites and facilities for securities trading. The SHSE adopts a computerised trading system according to the principle of price priority and time priority

while the SZSE primarily uses a market trading system based on modern computerised and telecommunications technology. The computerised trading system can match the closest offer and bid automatically and achieve a capacity of 80,000 deals per second. The market trading system provides concentrated bidding that usually matches offer and bid deal by deal. With the assistance of information technology (IT), investors usually employ intangible (paperless) methods for securities trading in the two stock exchanges and trading information can be instantly delivered to all the related parties.

In recent years, the two stock exchanges developed rapidly in both size and quality. The SHSE mainly focuses on large corporations. Until December 2010, there were a total of 894 companies listed on the SHSE with a total market capitalization of 17.9 trillion yuan[5]. The SZSE is concerned with not only large firms but also small and medium sized firms (SMEs). It set up a small and medium enterprise board in 2004 and a growth enterprise board in 2009 that allowed the SMEs with huge potential to raise funds in the capital market. The launch of both boards facilitates the construction of a multi-tiered capital market in China. At the end of 2010, a total of 1169 firms, including 485 firms on the main board, 531 firms on the small and medium enterprise board, and 153 firms on the growth enterprise board, are listed on the SZSE with a total capitalization of 8.64 trillion yuan.

2.3 Chinese listed companies

There are some unique features for Chinese listed companies, the most outstanding of which include the shareholding structure and the corresponding financial reporting framework. Both features are depicted as follow.

2.3.1 Shareholding structure

The shareholding structure of Chinese listed firms is heterogeneous. It is characterized by two general classifications of shares. The first classification includes circulation (or tradable) shares and non-circulation (or non-tradable) shares. Only circulation shares can be traded at stock exchanges under the regulation of the CSRC. [6] The second classification consists of domestic shares and foreign shares (refer to figure 2.1).

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[5]The unit of Chinese currency, one New Zealand dollar is approximately equal to five yuan.
[6]In 2005, the CSRC launched the non-tradable share reform in which non-circulation shares would be converted into circulation shares gradually. However, after the reform, only a limited number of converted shares are available to investors (Cheng et al., 2009).

The domestic shares, namely A-shares, can be further classified into three classes including state-owned shares, institutional (or legal person) shares and public shares, each of which accounts for one-third of the total approximately. The state-owned and the institutional shares are non-circulation shares that cannot be traded on stock exchanges. But the institutional shares can be traded amongst institutions through Securities Trading Quotation System (an over-the-counter market). The public shares, so-called circulation A-shares, can be traded at both the Shanghai and the Shenzhen stock exchange. A-shares denominated by RMB (Renminbi, namely the Chinese currency), are subscribed and traded in RMB. These were available only to domestic investors until December 2002 when the Chinese government launched the Qualified Foreign Institutional investor (QFII) programme that allows licensed foreign institutional investors to trade A-shares on the secondary market.

Foreign shares are composed of B-shares, H-shares, N-shares, L-shares and S-shares, all of which are circulation shares and primarily available for foreign investors rather than domestic investors.[7] B-shares are ordinary shares denominated in RMB but subscribed for and traded in either US dollars on the Shanghai stock exchange or Hong Kong dollars on the Shenzhen stock exchange. In February 2001, the Chinese government through the CSRC released the B-shares market in which individual domestic investors with legal foreign currency accounts were allowed to own and trade B-shares (Liu and Liu, 2007). According to Lu et al. (2007) and Hung (2009), the opening of the B-share market to domestic investors and the limited opening of the A-share market to foreign investors enhance market efficiency significantly.

H-shares refer to shares issued by Chinese mainland companies but listed and traded on the Hong Kong stock exchange. Since the Chinese government authorized Chinese firms to be listed on the Hong Kong stock exchange in July, 1993, there have been 165 mainland firms issuing H-shares at present.[8] The other three types of foreign shares comprising N-shares, L-shares and S-shares also refer to shares issued by mainland firms, but listed and traded on the New York, the London and the Singapore stock exchange respectively. There are very limited Chinese firms issuing N/L/S shares currently. The majority of overseas listed companies issue H-shares, which indicates the significance of H-shares for Chinese firms in

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[7]Since May 2006, the Chinese government, through the Qualified Domestic Institutional investors (QDII) programme, has allowed licensed domestic institutional investors to invest in overseas markets.
[8]By the end of 2010

attracting foreign investment (Cai et al., 2011). Figure 2.1 provides a summary for the classification of Chinese shares.

Figure 2.1 Classifications of Chinese shares
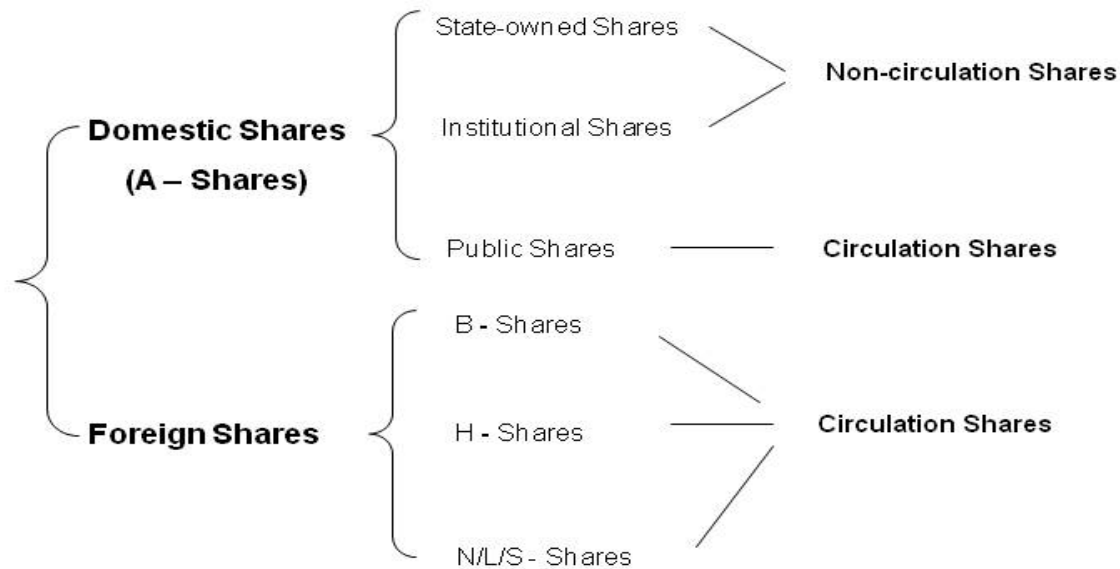
Source: Yi and Davey (2010, p. 328)

Varied classes of shares are entitled by law to the equal rights (e.g. voting, dividend and cash flow claims) and bear the same obligations (Balsara et al., 2007; Bao and Chow, 1999; Cheng et al., 2009). Nevertheless the pricing of them may be distinct. In accordance with Chen et al., (2001) and Tian (2007), there is a significant premium of A-share prices over B-share prices for the same company although it has been reduced after the release of the B-share market. Seddighi and Nian (2004) also state that A-shares issued by a listed company on the Shanghai stock exchange are usually traded at three times the price-earning ratio of the corresponding B-shares, and four times the ratio on the Shenzhen stock exchange.

Chinese firms are not allowed to be listed on both the Shanghai and the Shenzhen stock exchange simultaneously. But they can be dual-listed on either of the domestic exchanges and foreign stock exchanges.[9] That is, a Chinese listed firm can issue both A- and H/N/L/S-shares (e.g. A+H/A+N/A+L/A+S). In reality, the majority of the dual-listed firms issue A-shares and H-shares (A+H) because of very limited Chinese firms being listed on other foreign stock

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[9]In addition Chinese companies can issue both A- and B-shares simultaneously on the same domestic exchange (Shanghai or Shenzhen), also called dual-listing. But in this research, dual-listed companies only refer to those listed on two stock exchanges (usually a domestic stock exchange and a foreign stock exchange).

exchanges. By the end of 2010, there were 69 dual-list A and H share firms in China. Most of them are large corporations according to market capitalization as well as top performers in their sectors, and even in the national economy.

The segmented shareholding structure of listed companies is a unique feature of the Chinese stock market. This research focused on 100 top A-share listed companies (including 36 dual-listed A and H-share companies) in terms of market capitalization to examine the extent, quality, and determinants of IC disclosure in the Chinese context. The reasons for the sample selection are described in Chapter 5 (p. 89).

2.3.2 Financial reporting framework

Since 1993, the CSRC had issued many regulations regarding financial reporting issues of listed firms, such as the content and the format of prospectus, interim reports and annual reports. According to the regulations, annual reports of listed firms should be prepared within 120 days after the end of a financial year (31, December of each calendar year). And the annual report should be prepared in accordance with relevant accounting standards in terms of the shareholding structure.

As for firms issuing A-shares, annul reports should be prepared under the Chinese generally accepted accounting principles (GAAP) and audited by mostly local CPA (certified public accountants) firms. And they should be released in the designated journals by the CSRC. If a firm issues B-shares as well, the annual report should be also prepared according to the International Accounting Standards (IAS) and audited primarily by the big 4 international accounting firms[10] for the purpose of international comparison and international credibility recognition (Liu and Liu, 2007). The firm should publish the English version of its annual report under the IAS for oversea investors. It is required by the CSRC that firms issuing both A- and B-shares should reconcile accounting information under the two accounting standards (Chinese GAAP and IAS). But the reconciliation information is only released to A-share investors rather than B-share investors. Annual reports of firms issuing H-shares or other foreign shares should be prepared in accordance with the IAS[11] and audited by the big 4 firms as well. The firms usually release their annual reports through journals or newspapers in the region where they are listed.

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[10]Including Deloitte & Touch, Ernst & Yong, KPMG and PriceWaterhouseCoopers
[11]The Hong Kong GAAP has fully harmonized with the IAS since 2005.

There are some significant differences with respect to financial reporting between the Chinese GAAP and the IAS although the Chinese authorities have attempted to eliminate the differences as much as possible in recent years (Grant Thornton Hong Kong, 2004; Liu and Liu, 2007). For instance, there is a more restrictive policy on measuring inventory, investment, estimating bad debt expense, and depreciation expense under the Chinese GAAP (Bao and Chow, 1999; Liu and Liu, 2007). According to Bao and Chow (1999), three causes are accountable for the differences: different accounting regulations; policy intervention by the Chinese government; and differences in professional judgments between domestic auditors and international auditors.

For the reporting of IC information, there are no any existing requirements in China. Therefore, Chinese companies usually report this type of information in their annual reports on a voluntary basis.

2.4 Size, challenges and future development

In less than two decades, the Chinese stock market has undergone fundamental changes that have taken some developed markets many decades to achieve (CSRC, 2008). Now it has been the largest in Asia after Japan as well as the largest emerging capital market in the world. By the end of 2010, there were totally 2063 companies listed on the Shanghai and the Shenzhen stock exchange, including 1955 A-share companies, 108 B-share companies, 86 companies issuing both A-share and B-share, and 69 companies issuing both A-share and H-share. The total shares issued by listed companies were 3.32 trillion, and the total raised capital was RMB 54.56 trillion in 2010. Among the total shares, there were a total of 2.56 trillion tradable shares.

Meanwhile in 2010, the total market capitalization of Chinese listed firms amounted to RMB 26.54 trillion, which is equivalent to 67% of GDP[12]. However, the capitalization of tradable shares was RMB 19.31 trillion, merely 49% of GDP. Despite the tremendous growth in recent years, the Chinese stock market still lack the depth and maturity compared with the major developed markets in the world (Balsara et al., 2007). For example, the market capitalization of US listed firms over GDP was around 300-400 percent. Moreover, weak rule of laws, inadequate institutions, lack of training for fund managers, under-development of

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[12]The total GDP of China was RMB 39.798 trillion in 2010.

sophistication of ordinary investors as well as the inappropriate governmental interventions, etc., are limiting future development of the market (Zhang et al., 2008).

To address the barriers, the CSRC (2008, pp. 286-293) following *Opinions of the State Council on Promoting the Reform, Opening and Steady Growth of Capital Markets* [13] promulgated the following development strategies:

- Maintain a fine balance between the government and the markets, strengthen legal and regulatory framework, and build fair, transparent and efficient markets
- Create a fully multi-layered stock market to meet diverse needs
- Improve the quality of listed firms
- Encourage competition to foster a more globally competitive financial service industry in China
- Open up gradually and build up globally competitive capital markets
- Improve capital markets' culture and foster an environment suited to the sustainable development of capital markets.

These strategies are considered to be practical and feasible, and they are expected to solve the legacy structural problems and facilitate further development of the market.

2.5 Chapter summary

The Chinese economic reform facilitates the emergence and the development of the stock market. Firstly, enterprises called for new sources of financing due to the reform of the financial sector. Moreover individuals demanded new investment channels for higher returns rather than merely saving money in banks for minor interest rates. In addition the Chinese government need fund infusion in the SOEs in order to improve the performance of the firms. As a result, the Chinese stock market started to develop. In the early 1990s, two stock exchanges were launched to provide sites and facilities for securities trading in Shanghai and Shenzhen. A formal stock market was established since then.

The shareholding structure of Chinese listed companies is heterogeneous and segmented. A listed firm can issue domestic shares (A-shares) mainly available to domestic investors and (or) foreign shares (B-/H-/N-/L-/S-shares) primarily available to foreign investors. And a

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[13]Released by the State Council in January 2004 as high-level guidelines for further reform and development of the capital markets

company can be dual-listed on a domestic stock exchange and a foreign stock exchange. The majority of dual-listed firms issue both A- and H-shares. There are different financial reporting frameworks corresponding to various shares. For firms issuing A-shares, they should prepare their financial reports in accordance with the Chinese GAAP, and the reports should be audited principally by Chinese accounting firms. However, for firms (also) issuing foreign shares, their annual reports should be prepared under the IAS (as well) and audited primarily by the big 4 international accounting firms. For the IC reporting, there is no existing regulation in China. In recent years, the Chinese stock market developed rapidly in both size and quality although there are some challenges existing. The CSRC had promulgated a series of development strategies to cope with the challenges. It is expected that the strategies can further facilitate the development of the market.

In the next chapter, a comprehensive literature review relevant to this research is conducted.

CHAPTER THREE
LITERATURE REVIEW

3.1 Introduction

Intellectual capital has been increasingly recognized as an important driver for corporate growth, productivity gains, profitability and value creation in the current knowledge-based economy (Li et al., 2008; Singh and Kansal, 2011; Tayles et al., 2007). The research and published literature with respect to management, measurement and reporting of IC are growing commensurate with this trend (Guthrie et al., 2001; Marr et al., 2003; Yi and Davey, 2010). In this chapter, the researcher conducts a comprehensive literature review regarding the extant IC literature, in particular those disclosure studies. The structure of this chapter is organized as follows.

Section 3.2 reviews the origin, the definition and the growing importance of intellectual capital. The drivers and the most commonly known IC measurement models are explored in the following section. Section 3.4 presents the initiatives and some influential frameworks for IC reporting in three "waves", in particular the DATI guideline and the MERITUM project. Section 3.5 examines the prior research regarding IC disclosure in various contexts. And finally section 3.6 summarizes the chapter.

3.2 What is intellectual capital?
3.2.1 The origin of intellectual capital

It is often argued that the concept of intellectual capital was developed by visionary companies, such as Skandia and Dow Chemical, which initiated strong practitioner-driven movements towards instruments and approaches for managing, measuring and reporting intellectual capital in the middle of the 1990s (Edvinsson and Malone, 1997; Marr, 2005; Schneider, 2006). However, the concept had been mentioned in the form of human capital as early as 1836 by a British classical economist Nassau William Senior. He states that labor (human capital) is a significant production factor for manufactories (Senior, 1850). Subsequently, the concept was further developed by many other economists in a long stream of publications (e.g. Arrow, 1973; Hayek, 1937; Nelson and Winter, 1982; Penrose, 1959; Stonier, 1983), mostly highlighting the importance of knowledge capital as a production element and the behavioral difference between knowledge assets and traditional economic assets. The New Growth Theory developed by Paul Romer (1986, 1994), an economist from

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Stanford University, is seen as the pinnacle regarding the concept during the period. He argues that the economic growth is based on knowledge and knowledge is a superior factor that directs the use of physical capital, technological innovation and labor competence.

Some thoughts drawn from economics were used in the field of strategic management to construct its own theories that further developed the concept of intellectual capital, for instance, the development of the Resource-based Theory in the 1980s (Wernerfelt, 1984) and the Knowledge-based Theory in the 1990s (Grant, 1996). It is emphasized in those theories that many forms of knowledge resources, such as patents, copyrights, and brands, which are intangible in nature, scarce and not substitutable, could bring and sustain a competitive advantage for firms, and therefore firms should focus on the strategic importance of these knowledge resources while devising and implementing the corporate strategy (Barney, 1991; Conner, 1991; Grant, 1996; Halawi et al., 2005; Wernerfelt, 1984). Although the terminology intellectual capital was rarely used in the strategic management literature, the concept referred to is the same.

Simultaneously there were also initiatives in the field of accounting (e.g. Accounting Principles Board, 1970; Konrad Group, 1988; Brooking, 1996; Mouritsen, 1998) with attempts to develop approaches to account for intellectual capital since the 1970s. The purpose was to provide a complete picture of corporate performance in the knowledge economy, where intangible assets became principal assets of companies, yet in which traditional accounting principles would prevent recognition of such assets stringently (Cordazzo, 2007; Marr, 2005; Sonnier et al, 2007). The initiatives focus on the development of new reporting mechanisms that enable non-financial, qualitative elements of intangible assets to be measured alongside of conventional, quantifiable, financial data (Guthrie et al, 1999; Roos et al, 1997).

To summarize, the concept of intellectual capital can be bound up with the field of economics, strategic management and accounting. From a more specific perspective, according to Roos et al. (1997), the concept of intellectual capital derives from the development of corporate strategy focusing on the strategic importance of knowledge (capital) as a superior production factor for value creation of companies, and the production of measurement tools that attempt to offer a better image of corporate performance with non-financial, narrative and balanced information in regard to intangible assets. The argument is demonstrated in Figure 3.1 below.

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Figure 3.1 Conceptual roots of intellectual capital
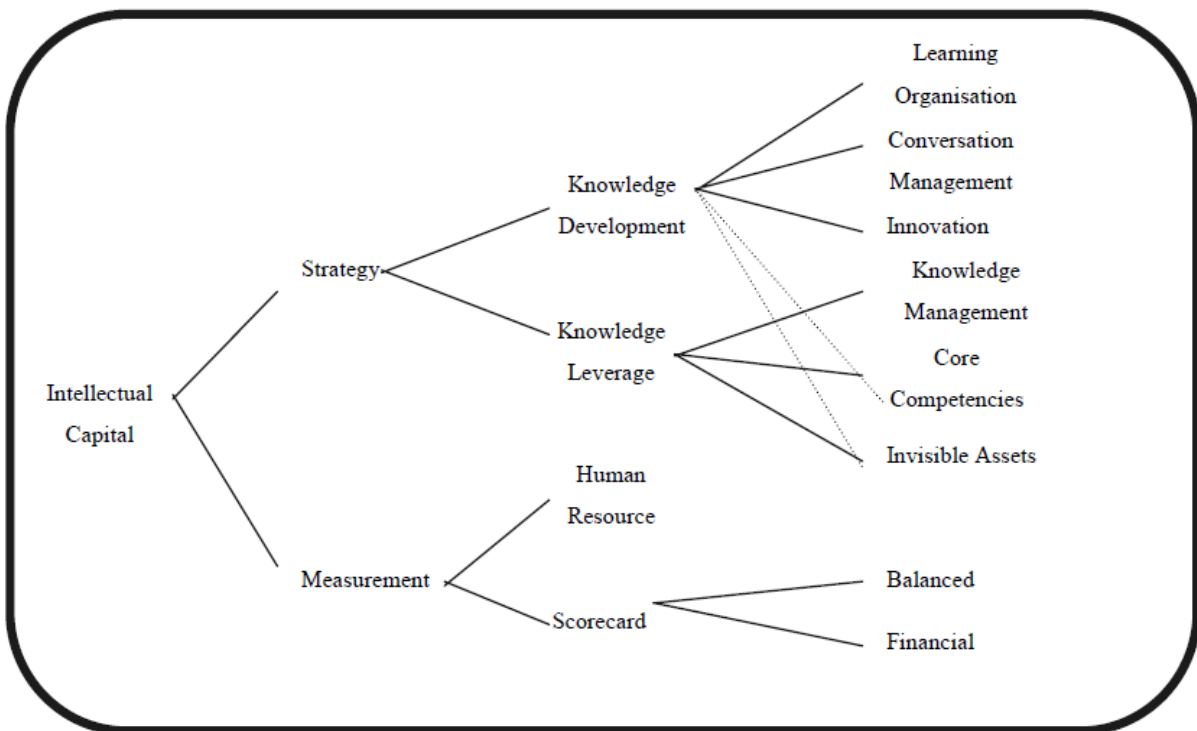
3.2.2 The definition of intellectual capital

The term "intellectual capital" is often used as a synonym for "intangibles", "intangible assets", or "knowledge resources" (Kaufman and Schneider, 2004; Petty and Guthrie, 2000). There is no general consensus regarding the definition of intellectual capital with academic researchers developing various definitions. A number of influential definitions proposed by scholars or visionary organizations are summarized in Table 3.1.

Table 3.1 Definitions of intellectual capital

Authors	Intellectual capital…
Stewart (1997)	…is defined as intellectual material - knowledge, information, intellectual property and experience- that could be used to create wealth for organizations.
Sveiby (1997)	…consists of invisible assets of an organization, which include: internal structure, external structure, and employee competence.
Bueno-Campos (1998)	…is seen as basic competences of intangible character that could achieve and maintain competitive advantages for firms.
Union Fenosa (1999)	…represents a set of intangible values that can enhance corporate capability for future value creation.
Sullivan (1999)	…is knowledge that can be converted into profits. It consists of two elements: human capital and intellectual assets.
Sharma et al. (2007)	…refers to the knowledge, skills and technologies applied to create a competitive edge for an organization.

Drawing on the definitions above, intellectual capital was defined in this research as intangible or knowledge assets which can create value for firms as well as achieve and maintain a competitive edge for them (Yi and Davey, 2010).

As to what constitutes intellectual capital, there are also varied views ranging from two to five elements, for instance, two elements (human capital and intellectual assets, see Sullivan, 1999), three elements (customers, internal business process, learning and growth, see Kaplan and Norton, 1992; internal structure, external structure and human competence, see Sveiby, 1997; knowledge, skills and technologies, see Sharma et al., 2007), four elements (knowledge, information, intellectual property and experience, see Brooking, 1996; structure and human capital, thinking and non-thinking assets, see Roos et al., 1997; knowledge, information, intellectual property and experience, see Stewart, 1997), and five elements (human capital, technological capital, organizational capital, business capital, and social capital, see CIC, 2003).

However the three-element framework comprising internal structure, external structure and human competence (refer to Figure 3.2 for the conceptualization of the framework) developed by Sveiby (1997) is more influential amongst those frameworks since it has been employed by many scholars in their research (e.g. Guthrie and Petty, 2000; Brennan, 2001; Goh and Lim, 2004; Ensslin and De Carvalho, 2007; Oliveras et al., 2008; Guthrie et al., 2009; Yi and Davey, 2010; Whiting and Woodcock, 2011). Moreover the framework is considered to be very useful for the research with respect to IC disclosure in a national context in the light of the previous studies.

For the purpose of this research, the three-element framework was applied as a foundation for the construction of an IC disclosure index, which was employed as an instrument to examine the extent and quality of IC disclosure in Chinese firms. In the following, the three elements are described in detail.

Firstly, internal structure, also called internal capital, refers to the knowledge embedded in the organizational structure, processes, procedures, routines, systems and culture, which is created by employees or brought in, but which stays in the organization when employees go home after work (Guthrie *et al*., 1999; Pablos, 2002; Wong and Gardner, 2005). As for the second component, external structure (the so-called external capital) refers to the knowledge embedded in the relationships external to the organization, such as suppliers, customers, business partners, etc (Bontis, 1998; Pablos, 2002). It includes such items as brand and reputation, customer satisfaction, distribution channels, business or research collaborations, licensing agreements, and so forth. The last component, namely employee competence (or human capital), refers to the individual's knowledge such as qualification, skills, values and experience within an organization, which goes home with employees after work (Guthrie et al., 1999; Pablos, 2002).

Figure 3.2 Conceptualisation of intellectual capital

	Internal Structure	External Structure	Employee Competence
Essence	Organizational routines	Market relationships	Human intellect
Scope	Internal organizational links	External organizational links	Internal within employee node
Parameters	Efficiency accessibility	Longevity volume	Volume appropriateness
Codification Difficulty	Medium	Highest	High
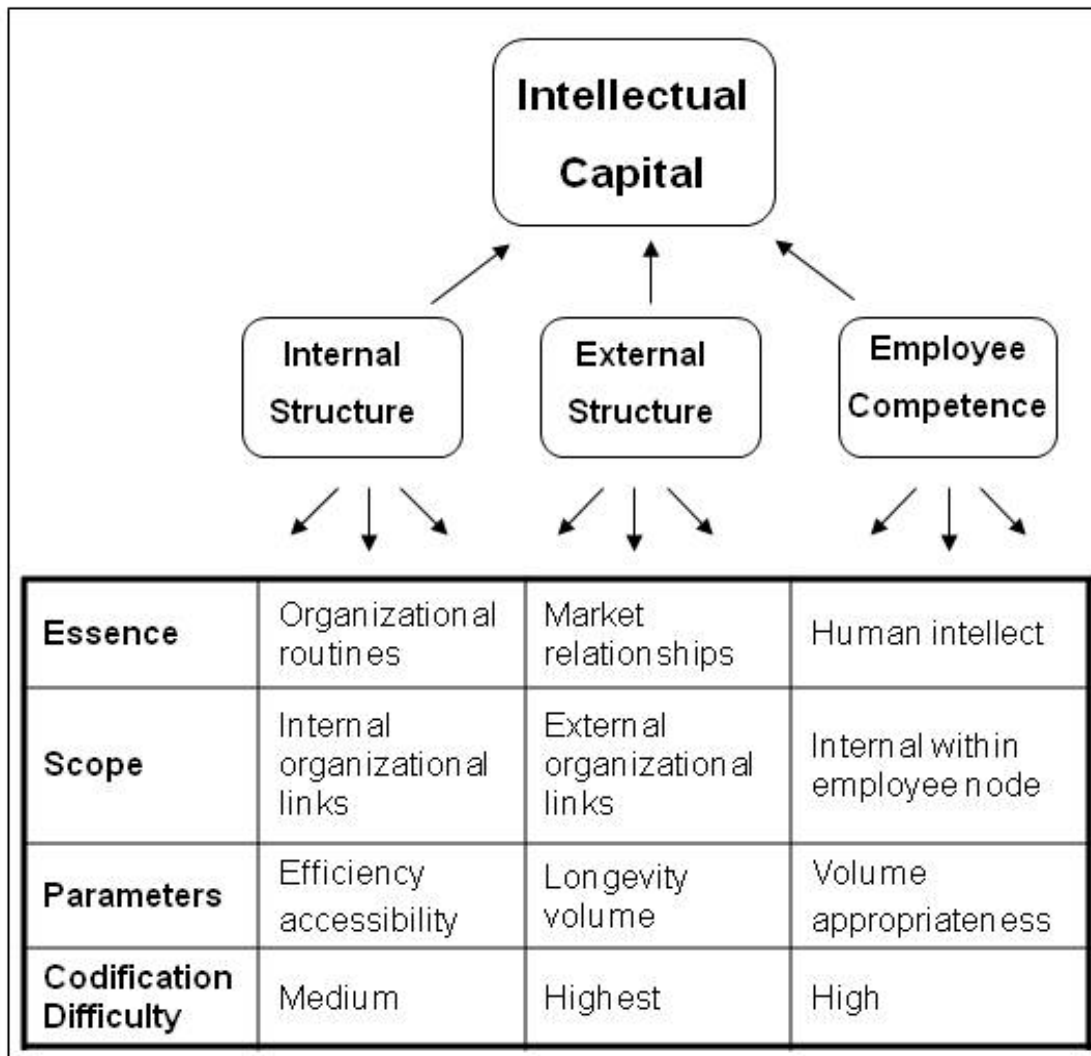
Source: Adapted from Bontis (1998, p. 66)

3.2.3 The growing importance of intellectual capital

Due to the transition of our society from the industrial age to the information age, the focus on tangible assets has diminished commensurate with an increased emphasis on intangible assets. It is often argued that most of the value of an organization (approximately 65-70 percent, on average) is now represented by intangible assets, efforts and resources (Sáez et al., 2007; Guthrie et al., 1999). According to White (2007), intellectual capital is the largest categories of intangibles that can be used to create value for organizations and various stakeholders. There is a growing acknowledgement that IC is a key contributor for firms to secure a sustainable competitive advantage (Bismuth and Tojo, 2008; Stewart, 1997). As a concept, IC often comes with a set of firm strategies to assist managers to better manage

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their companies, and consequently achieve a better performance in the market (Guthrie et al., 1999; Roos et al., 1998).

At the national level, there are also an increasing number of countries recognizing the growing importance of IC in sustaining economic growth. The European Union, for instance, suggests its member countries invest a minimum of three percent of their GDP into R&D (research and development) initiatives so as to grow their intellectual capital and become more competitive in the knowledge-based economy (Sáez et al., 2007). The US, as another example, had invested in intangibles (e.g. R&D, education, and software) approximately 12 per cent of its GDP by the late 1990s (Corrado et al., 2006). In China, the Chinese government also attaches significant importance on IC. It promulgated many policies to encourage companies to invest in R&D activities. A study conducted by Zhao and Lin (2007) reports that approximately 3% of the Chinese GDP was invested in R&D and education in the early 2000s (2000-2003).

After reviewing the origin, the definition and the growing importance of IC, the drivers and models for IC measurement are described in the following section.

3.3 Intellectual capital measurement

Since the early 1990s, a growing number of companies have attempt to measure their IC so as to better manage it. According to Marr et al. (2003), five drivers are accountable for this trend. Firstly measuring IC is very helpful for companies to formulate appropriate corporate strategies since IC has been recognized as one of the unique resources that could bring firms a competitive advantage and better performance. Furthermore IC measurement can assist firms to evaluate the execution of their strategies through developing a set of IC performance indicators.

The third driver for IC measurement is to properly assess the value of intangible assets when firms attempt to develop, diversify or expand their business through a variety of inter-organizational links, such as strategic alliances, joint ventures, mergers and acquisitions (Lev, 2001; Markides and Williamson, 1994). This could result in a relatively fair transaction price for all the parties involving in the transaction, and further leverage the intangibles to make the involved parties complement one another and strengthen the competency as a whole (Montgomery and Wernerfelt, 1988).

The fourth driver is to establish a more effective compensation system for companies while the traditional compensation system focusing on financial measures tends to encourage short-term thinking, which might lead to opportunistic behaviours. The final driver for IC measurement (and reporting) is to improve the communication between the firm and its stakeholders as IC-related information is increasingly required by various stakeholders.

3.3.1 Influential models for intellectual capital measurement

The above drivers provide some theoretical perspectives explaining why companies should measure their IC. Accordingly, various academics and practitioners have developed numerous models for intellectual capital measurement. In the following section, the most well-known ones including market-to-book ratio, Tobin's Q, EVA^{TM}, the Balanced Scorecard, the Skandia Navigator Scheme, and the Intangible Asset Monitor, are reviewed.

Market-to-book ratio

The market-to-book ratio of listed companies has been increasing dramatically in global stock markets since 1990s (Larsen et al., 1999). The huge gap between the market value and the book value of a company, also called "the hidden value", is recognized as a measure of intellectual capital by some researchers (e.g. Luthy, 1998; Standfield, 1998; Stewart, 1997). This model seems sensible because IC represents the hidden value of a firm to some extent, which is not appeared on the balance sheet. However Wall et al. (2004) and Wong and Gardner (2005) argue that there are some other factors which also contribute to the gap other than intellectual capital, such as corporate growth, depreciation policies, deregulation, media and political influences and rumours.

Brennan (2001) and Whiting and Miller (2008) point out three drawbacks of the model. To begin with, the value of the unrealized tangible assets on a company's balance sheet may influence "the hidden value"; furthermore, since the share price usually fluctuates on a daily basis, the model is not very reliable from time to time; and finally the model is an aggregated measure of IC and thus difficult to recognize the value of any individual IC components and the interaction between them.

Tobin's Q (ratio)

Tobin's Q is another recognized model for IC measurement by some researchers (e.g. Luthy, 1998; Stewart, 1997; Levy and Duffey, 2007). It was initially developed by James Tobin (1969), a Nobel Prize winner of economics, as a method to help firms predict investment decisions independent of macroeconomic conditions, such as interest rates. It is a ratio comparing a company's market value (share price times the number of shares) with the replacement cost of the assets (Shaikh, 2004). The ratio can be calculated in terms of the following formula (Luthy, 1998; Tobin, 1969):

Q = Market Value / Asset Value (replacement cost of total assets)

= (Equity Market Value + Liabilities Book Value) / (Equity Book Value + Liabilities Book Value)

According to Luthy (1998), a positive Q ratio (Q > 1) can be ascribed to the value of intellectual capital that is not captured by the conventional accounting framework, and thus can be a measure of IC. Moreover, Roos et al. (1998) claim that using Tobin's Q to measure IC could neutralize the impact of different depreciation policies, which often vary from firm to firm and country to country. From this point, it is better than the market-to-book ratio which is often affected significantly by various depreciation policies. However as with the market-to-book ratio, Tobin's Q is not a direct measure of IC. It can be only applied to compare the rough value of IC between companies.

Economic value added (EVA)

Economic value added (EVA^{TM}) is another often mentioned model relating to IC measurement. It was introduced by Stern Stewart as an instrument to assess how a company add or lose its value in operation through incorporating a variety of principles in capital budgeting, financial planning, goal setting, shareholder communication and incentive compensation (Bontis et al., 1999; Chen et al, 2004; Stewart, 1994; Levy and Duffey, 2007). Bontis et al. (1999) define EVA as "the difference between net sales and the sum of operating expenses, taxes and capital charges where capital charges are calculated as the weighted average cost of capital (of both equity and debt) multiplied by the total capital invested." (p. 395). It can be presented as the following equation:

EVA = Net Sales – Operating Expenses – Taxes – Capital Charges

In terms of the above formula, EVA can be regarded as the net result of all managerial activities in a company (Strassman, 1999). Bontis et al. (1999) state that EVA provides "a common language and benchmark for managers to discuss value-creation (and because) it is blessed with widespread acceptance in the financial community, can increase the legitimacy of a company in the eyes of financial markets, as a valuable measure of corporate value-creation or destruction over a given period" (p. 394).

Some researchers have suggested that EVA can be applied as a surrogate measure for the stock of intellectual capital if it can be assumed that effective management of IC increases EVA (Bontis, 2001; Levy and Duffey, 2007). However, Chen et al. (2004) point out two weaknesses of EVA as a measure of IC. Initially, EVA does not provide specific measures for IC components and often leaves managers without clear instructions on its implementation; in addition, the foundation of EVA is a financial measurement system that focuses on evaluating financial indices rather than IC-related indices.

It should be noted that EVA along with other two models (Market-to-book ratio and Tobin Q) are not direct measures of IC. Rather they are considered to be early responses of companies to the lack of valuable information in regard to intellectual resources from the conventional accounting framework (Van den Berg, 2007). In the following, several more advanced models, which can be directly used to measure IC, are described.

The Balanced Scorecard (BSC)

After several years multiple case studies, Kaplan and Norton developed a multi-dimensional measurement (and reporting) model for corporate performance called the "Balanced Scorecard" in the early 1990s. The model encourages firms to monitor their performance not only from the financial perspective, but also from some non-financial perspectives, such as customer, internal business process, and learning and growth. The four key perspectives are described as follows (Horngren et al., 2011):

- Financial perspective: this perspective gauges the profitability of an organization.
- Customer perspective: this perspective identifies targeted customer and market segments and assesses the organization's success in these segments.

- Internal business process perspective: this perspective focuses on internal operations that further both the customer perspective by creating value for customers and the financial perspective by increasing shareholder value.

- Learning and growth perspective: this perspective identifies the capabilities the organization must excel at to achieve superior internal processes that create value for customers and shareholders. From this point, the four perspectives are interrelated one another through a cause-and-effect chain, eventually leading to financial results (namely create value for shareholders).

Based upon the four perspectives, a number of measures were developed in order to offer a more robust analysis of corporate performance (Bontis et al., 1999; Chen et al., 2004). Those measures are summarized in Table 3.2.

Table 3.2 The BSC measures

Perspectives	Measures
Financial perspective	*Income measures*: operating profit, gross margin percentage *Revenue and cost measures*: revenue growth, revenues from new products, cost reductions in key areas *Income and investment measures*: economic value added, return on investment
Customer perspective	Market share, customer satisfaction, customer-retention percentage, time taken to fulfil customers' requests, number of customer complaints
Internal-business-process perspective	*Innovation process*: Operating capabilities, number of new products or services, new-product development times and number of new patents *Operational process*: yield, defect rates, time taken to deliver product to customers, percentage of on-time deliveries, average time taken to respond to orders, set-up time, manufacturing downtime *Post-sales service process*: time taken to replace or repair defective products, hours of customer training for using the product
Learning-and-growth perspective	*Employee measures*: employee education and skill levels, employee-satisfaction ratings, employee turnover rates, percentage of employee suggestions implemented, percentage of compensation based on individual and team incentives *Technology measures*: information system availability, percentage of processes with advanced controls

Source: Horngren (2011, p. 601)

From the table, it can be found that the BSC combines both financial and non-financial measures from four perspectives in a coherent system to evaluate both short-run and long-run performance of a company, which widen the performance management lens (Bontis et all., 1999; Chen et al., 2004; Horngren, 2011). Moreover, three perspectives other than the financial perspective provide a set of specific measures that are related to intellectual capital. From this sense, the BSC can be employed as a model for IC measurement although it may not cover all the IC components. Also firms should align the BSC to corporate strategy, especially in designing performance measures, so that it can facilitate the implementation of corporate strategy, and ultimately achieve financial success. However the BSC is not particularly designed for IC measurement (and reporting), and its primary focus is still on the financial perspective.

Skandia Navigator Scheme (SNS)

In the 1990s, a practitioner-created concept regarding IC measurement enjoyed very rapid popularity amongst organizations (Bontis et al., 1999; Chen et al., 2004). This new wave of interest was sparked by a number of companies, such as Skandia (a Swedish financial services company), Ramboll (a Danish consulting company), the Canadian Imperial Bank of Commerce, and the American Dow Chemical company (Bontis et al., 1999; Chen et al., 2004; Edvinsson and Malone, 1997; Schneider, 2006). Amongst these companies, Skandia was considered the leader because it was the first large company to make a truly coherent effort to measure intellectual capital whereas other firms rely extensively on its developed framework (namely Skandia Navigator Scheme) (Bontis, 2001; Mouritsen et al., 2001).

The Skandia Navigator Scheme, developed by Leif Edvinsson (the former director of intellectual capital in Skandia), is deemed to be a dynamic and holistic IC measurement (and reporting) model (Chen et al., 2004). It was designed to synthesise both financial and non-financial information into one report through "measuring hidden dynamic factors that underlie 'the visible company of building and products'" (Bontis, 2001, p.44). In the scheme, intellectual capital is classified into two categories: human capital and structure capital. In accordance with Skandia (1994), human capital refers to the knowledge and competences of employees within a company to provide solutions to its customers while structure capital, further categorized into customer capital and organizational capital, represents "what remains in the company when employees go home for the night" (Roos et al., 1997, p.58), such as customer relationships, brands and reputation, management processes, information and

networking systems, and so forth. Intellectual capital plus financial capital construct the total value of the company represented by market capitalization. Figure 3.3 demonstrates the value scheme in Skandia.

Figure 3.3 Skandia's value scheme
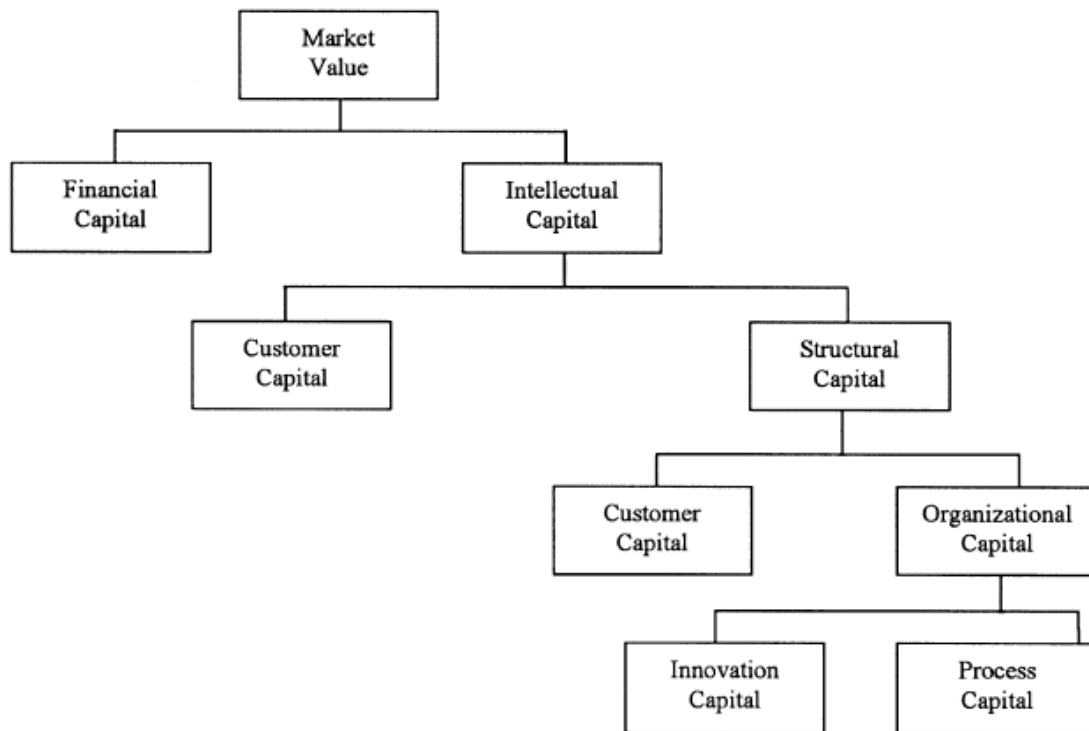
In practice, the Navigator Scheme follows the BSC taking into account financial, operational and customer factors for performance measurement. But it is more explicit in which thirty-six key indicators were applied to measure five different 'focuses' of corporate performance: namely financial focus, customer focus, process focus, renewal and development focus, and human focus (Levy and Duffey, 2007; Schneider, 2006; Bontis, 2001). Each focus has its own objective and set of indicators. Table 3.3 below provides a summary of the model.

Table 3.3 "Focus" of the Skandia Navigator Scheme

Focus	Objective	Key indicators
Financial focus	To measure income generated by the committed intangible investment	Revenues/employee, revenue from new customers/total revenue, income/management assets, etc.
Customer focus	To assess the quality of the relationship to customers and its evolution	Days spent visiting customers, ratio of sales contacts to sales closed, number of customers gained versus lost, index of satisfaction, etc.
Process focus	To measure the productivity of information systems, the level of equipment of the personnel and the technical staff management	Administrative expenses/total revenues, volatility-interest rates, PCs/employee, processing time, etc.
Renewal and development focus	To assess the development of the firm's capabilities, including its human resources dimensions	Competence development expense/employee, satisfied employee index, marketing expense/managed assets, marketing expense/customer, etc.
Human focus	To measure the performance of human resources, comprising terms of time allowance	Managers with advanced degrees; annual turnover of staff, leadership index, etc.

Source: adapted from Bontis (2001, p. 46) & Schneider (2006, p. 43)

All the indicators in the Skandia model are monitored on a yearly basis. The results (of the indicators) from various focuses are used to prepare an intellectual capital statement in order to "highlight the value creating process at Skandia and forms a basis for both business planning and management as well as for outside reporting" (Schneider, 2006, p.44). Skandia developed the first internal IC statement in 1985 for better managing its intangibles, and in 1994 the company issued the first external IC statement as a supplement to the annual report, which made the IC-related information become accessible to its stakeholders (Bontis, 2001; Kaufimann and Schneider, 2004).

Most academic researchers in the field acknowledge that Skandia makes considerable efforts to create a taxonomy for IC measurement, which has "emboldened others to look beyond traditional assumptions of what creates value for organizations" (Bontis, 2001, p.47). The model is impressive in particular in recognizing the importance of customer capital for value

creation of an organization; also, it provides a broad coverage of organizational structural and process indicators that have not been used before (Bontis, 2001; Chen et al., 2004). Skandia's approach is a multi-dimensional conceptualisation of organizational value, which makes the invisible assets become visible, and as a consequence provides a better picture of corporate performance (Bontis, 2001; Schneider, 2006).

Although the Skandia model is considered to be very helpful for firms to measure their IC, it has some drawbacks. Initially, Roos et al. (1997) argue that the model provides only a timely snapshot rather than dynamic flows of intellectual capital because of its heavy reliance on a balance sheet approach. Moreover, according to Huseman and Goodman (1999), it is not sensible that some indicators in relation to structural capital, such as PCs/employee, etc., are deemed to be drivers of value-creation since employees sitting in front of their computers do not necessarily signify they are investing their knowledge into their PCs, which can be translated into the firms' competitive advantage. In addition Andriessen (2004) states that the extensive list of 36 indicators is too many to truly understand what is being measured for users, and it is difficult to determine the cause and effect from the model. Yet given that the model is particularly designed for IC measurement (and reporting), it can be regarded as a significant advancement in the area.

Intangible Assets Monitor (IAM)

The Intangible Assets Monitor (IAM) was developed by Karl-Eric Sveiby in Sweden. It is considered to be another influential model for IC measurement and reporting. In the model, Sveiby identifies three "families of intangible assets (or IC)" comprising internal structure, external structure and employee competence in addition to the visible equity represented by book value, which is the theoretical foundation for the IAM (refer to Table 3.4). According to Sveiby (1997), these three elements of intangible assets should be monitored and assessed principally by non-financial indicators in order to provide better management control.

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Table 3.4 Composition of intangible assets

Visible equity (book value) = Tangible assets – visible debt	Intangible assets (or IC)		
	Internal structure: Including management processes, legal structure, intellectual property, culture, R&D, information systems, etc.	*External structure*: Including brands, reputation, customer and supplier relations, business collaborations etc.	*Employee competence* Including education, experience, skills, etc.

Source: Adapted from Bontis (2001, p. 52)

As to the conceptual framework of the IAM, it is composed of a three-by-three matrix (Schneider, 2006). The prior 'three' represents the three elements of intangible assets while the later 'three' refers to three general measurement indicators proposed by Sveiby (1997): growth/renewal, efficiency, and stability (refer to Table 3.5). In operation, each component of intangible assets is assessed in the light of the three indicators.

Table 3.5 The Intangible Assets Monitor matrix

The Intangible Assets Monitor		
Internal Structure	**External Structure**	**Employee competence**
Indicators of growth/renewal	Indicators of growth/renewal	Indicators of growth/renewal
Indicators of efficiency	Indicators of efficiency	Indicators of efficiency
Indicators of stability	Indicators of stability	Indicators of stability

Source: Schneider (2006, p. 45)

Each general indicator consists of some specific indices for measuring each element of intangibles, which are summarized in Table 3.6.

Table 3.6 Indices in the Intangible Assets Monitor

Intangible Assets	Indices		
	Growth/Renewal	Efficiency	Stability
Internal Structure	Investment in the internal structure, investment in information processing systems, customers contributing to internal structure	Proportion of support staff, sales per support person, values and attitude measurements	Age of the organization, support staff turnover, the rookie ratio
External Structure	Profitability per customer, organic growth	The satisfied customer index, win/loss index, sales per customer	Proportion of big customers, age structure, devoted customers ratio, frequency of repeat orders
Employee Competence	Number of years in the profession, education level, training and education costs, grading of executives, professional turnover, competence-enhancing customers.	Proportion of professionals in the company, the leverage effect of professionals, value-added per professional	Average age, seniority, relative pay position, professional turnover rate

Source: Adapted from Bontis (2001, p. 53)

To sum up, the IAM is another model particularly designed for IC measurement (and reporting). In describing it, Bontis (2001, p.52) states:

In essence, the intangible assets monitor is 'a presentation format that displays a number of relevant indicators in a simple fashion' (Sveiby, 1997, 197). The choice of indicators depends on the company's strategy but should include only a few of the measurement indicators for each intangible asset with the most important areas needing to be covered those of growth and renewal, efficiency, and stability. The IAM can be integrated into the management information system. And lastly, it should not exceed one page in length but should be accompanied by a number of comments.

Comparing with the BSC and the SNS (Skandia Navigator Scheme), the IAM is deemed to be more advanced since it clearly identifies three elements of IC as well as provides a series of indices associated with these three elements, whereas other two models only provide indicators with different "perspectives" or "focuses". Therefore the IAM can be seen as a highly developed IC measurement model. Furthermore the three-element framework of IC is widely accepted and applied by researchers in the area. In this research, the framework was not only employed as a foundation for the development of the IC disclosure index but also as a reference to make recommendations for IC reporting guidelines applicable the Chinese environment. In the following section, issues regarding IC reporting are discussed.

3.4 intellectual capital reporting

Intellectual capital has been widely viewed as the most valuable resources for companies to achieve a competitive edge in the current knowledge economy (Cordazzo, 2007; Rodgers, 2007; Yi and Davey, 2010). However the conventional accounting system that focuses on valuation of physical and financial assets fails to capture most IC attributes (e.g. information systems, reputation, customer satisfaction, distribution networks, and innovativeness), nor does this framework present IC attributes in a concise and meaningful format (Guthrie and Petty, 2000; International Federation of Accounting, 1998; Singh and Van der Zahn, 2009). In these circumstances, many companies have attempted to report their IC on a voluntary basis in corporate annual reports (or other channels, such as internet) so as to reduce information asymmetry and discharge accountability to various stakeholders, as well as signal their legitimacy and excellence to society.[14]

This trend has attracted the attention of some international institutions, accounting standard setters, government regulators, and academic researchers (e.g. OECD, 1999; DATI, 2000; FASB, 2001; AIAF, 2003; Zambon, 2003; Dumy, 2008). Further they have initiated a series of movements to develop IC reporting frameworks. The initiatives are depicted as follows.

3.4.1 Initiatives for intellectual capital reporting

In accordance with Petty and Guthrie (2000), there have been two stages for the development of IC reporting frameworks. The 'first stage', from the 1980s to the mid-1990s, was primarily concerned with raising consciousness and creating mass awareness of the relevance of IC; the

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[14] A detailed discussion regarding drivers for voluntary IC disclosure is presented in chapter 4 "theoretical framework".

'second stage' started from the mid-1990s in which IC became an independent research area, and a range of frameworks were put forward in order to encourage firms to recognize and report developments within the sphere of IC (Bismuth and Tojo, 2008; Schneider, 2006). During the second stage, Fincham and Roslender (2003) identified three distinct "waves" with regard to IC reporting frameworks. The first 'wave' evolved around a scorecard format, which enables firms to disclose a greater variety of information regarding various elements of IC (Bismuth and Tojo, 2008). The most well known reporting models (as well as measurement models) in this 'wave' include **the Balanced Scorecard**, **the Skandia Navigator Scheme,** and **the Intangible Assets Monitor**, which have been reviewed in **section 3.3**.

The second wave of reporting frameworks, mainly developed in the US and Canada, is characterized by the attempt to link IC more explicitly with innovation and value creation processes (Bismuth and Tojo, 2008; Fincham and Roslender, 2003; Schneider, 2006). The frameworks in this 'wave' consist of the Value Creation Index (Low, 2000), the Value Chain Scorecard (Lev, 2001) and the Value Creation Pyramid (Fincham and Roslender, 2003). Nevertheless, the influence of these frameworks is very limited since the founders of them generally have not continued their work.

The 'third' wave of reporting frameworks develops a more narrative-based IC reporting style in the forms of Intellectual Capital Statements (ICSs) and Intellectual Capital Self-Accounts, both of which, in particular ICSs, provide firms with the opportunity to express their IC in narrative terms (Dumay, 2008; Fincham and Roslender, 2003; Schneider 2006). According to Czarniawska (1998), a narrative is composed of three elements: an original state of affairs, an action or an event, and the consequences of affairs. Also, a "plot" is needed to bring the elements together so that the narrative has meaning.

It is widely acknowledged that the narrative format has some advantages for IC reporting (Dumay, 2008; Johanson et al., 2006; Mouritsen et al., 2001; Schneider and Samkin, 2008). First of all, it provides meaningful explanations of why and how a firm is concerned with managing its IC other than disclosing those IC indices, and consequently assists managers, employees and other stakeholders in understanding firms' actions relating to IC management, measurement and reporting; moreover, it allows managers, employees, and other stakeholders to become involved in the IC-related activities in addition to those accountants and IC experts,

which extends the boundaries of involvement, and encourages firms to improve the quality of IC disclosure continuously (Dumay, 2008).[15]

There are both national and international initiatives in this wave, such as the MERITUM project and the NORDIKA guideline in the European Union (Meritum, 2002; Nordika, 2002), the DATI guideline in Denmark (Danish Agency for Trade and Industry, 2003), the Intellectus Model in Spain (CIC, 2004), the GIPID in Japan (Johanson et al., 2006), and so forth (refer to Table 3.7 for more details). Amongst them, the DATI guideline and the MERITUM guideline are the most influential frameworks as well as foundations for some subsequent models. In the following, both of them are detailed.

Table 3.7 Initiatives in the third wave

Framework	Country/Region	Scope	Application	Year
NORDIKA	European Union	All firms	Voluntary	1999
MERITUM	European Union	All firms	Voluntary	2001
AGPEP	Australia	All firms	Voluntary	2002
DATI	Denmark	All firms	Voluntary	2003
Intellectus	Spain	All firms	Voluntary	2003
BMWA	Germany	SMEs	Voluntary	2004
GIPID	Japan	All firms	Voluntary	2005
RICARDIS	European Union	SMEs	Voluntary	2006

Source: Adapted from Bismuth and Tojo (2008, p. 236)

The DATI Guideline

The DATI guideline was issued by the Danish Agency for Trade and Industry (head office of the Danish Ministry of Science, Technology and Innovation) in 2003 for the purpose of providing a general framework for the development of an external IC statement in Denmark (Danish Agency for Trade and Industry, 2003). The development of the guideline was based upon experiences of 17 Danish firms for IC disclosure as a result of a governmental initiative into IC reporting (Bukh and Johanson, 2003; Schneider, 2006).

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[15]This is because the narrative format has a "plot" that could facilitate various stakeholders who do not have much knowledge regarding IC to understand the IC-related activities.

In accordance with the DATI guideline, an intellectual capital statement (ICS) consists of four elements: a knowledge narrative, a set of management challenges, a set of initiatives, a set of indicators, all of which jointly present the strategies and efforts of a company in IC management through text, figures, and illustrations (Danish Agency for Trade and Industry, 2003; Schneider, 2006). Table 3.8 below demonstrates the four elements in detail.

Table 3.8 Elements of an Intellectual Capital Statement

Element	Description	Key points (questions)
Knowledge narrative	A narrative regarding the company's ambition to create and increase use-value of its products and services for its customers and the types of knowledge resources required to accomplish it.	• What products or services does the company offer? • How does it make a difference for the users? • What knowledge resources are necessary to supply the products or services?
Management challenges	The challenges posed by the role of knowledge resources in the firm's business model.	• How are the knowledge resources related? • Which existing knowledge resources need to be strengthened? • What new knowledge resources are required?
initiatives	The efforts to compose, develop and procure knowledge resources.	• What initiatives, actual and potential, can be identified? • What initiatives should be given priority?
Indicators	The mechanisms of monitoring the portfolio, development and the effects of knowledge resources.	• Effects: how do activities work? • Activities: what does the company do to upgrade knowledge resources? • Resource Mix: what is the composition of knowledge resources?

Source: Adapted from Mouritsen et al. (2005, p. 32)

In short, the "knowledge narrative" explains how a firm uses its knowledge resources to create and enhance the 'use value' of its products and services for customers; the 'management challenges' highlight the knowledge resources, such as employees, customers, and processes, which need to be strengthened through in-house development or outsourced; the "initiatives" refer to a firm's efforts to obtain, develop and combine knowledge resources; and the 'indicators' are concerned with how to monitor the initiatives (Johanson et al., 2006). The four elements are interrelated in function. In explaining it, Johanson et al. (2006, p.482) state that:

> *The indicators show how initiatives are launched and put into effect. The initiatives formalize the problems identified as management challenges. The challenges single out what has to be done if knowledge resources are to be developed. The knowledge narrative also sums up, communicates and re-orientates what the company's skills and capacity do or must do for customers. And which knowledge resources are needed within the company. Once fully completed, the analysis can be presented in the intellectual capital statement.*

The MERITUM Project

The full name of MERITUM is "measuring intangibles to understand and improve innovation management". It is a project created and financially sponsored by the European Commission in the late 1990s. A collaboration of 40 academic researchers in the field of intangibles from six European countries (Denmark, Finland, France, Norway, Spain, and Sweden) is involved in the project. The primary objective of the project is "to produce guidelines to measure and disclose intangibles for the purpose of improving decision making for managers and stakeholders" (Petty and Guthrie, 2000, p. 163). In addition, the project has three other themes: establishing a classification scheme for intangibles, documenting company management and control systems for identifying best practices inside European firms involved in the measurement of investments on intangible resources, and assessing the relevance of intangibles in the functioning of capital markets by means of market data analysis (Johanson et al., 2006; Petty and Guthrie, 2000).

The output of the MERITUM project is a proposed guideline for the external disclosure of intellectual capital, which can be divided into three sections demonstrated in Table 3.9.

Table 3.9 Three sections of the MERITUM guideline

Sections of Guideline	Contents
Conceptual Framework	Definition of Basic concepts: Intangible resources, IC, human capital, structure capital, relational capital
Management of Intangibles	Relationship between measurement and reporting and management is addressed through: 1) steps to be followed (formulating the vision of the firm, identifying and measuring critical intangibles) 2) supporting processes to transform measurement and disclosure into managerial action
Intellectual Capital Report Model	Elements contained in the report: 1) the vision of the firm 2) a summary of intangible resources and activities 3) a system of indicators

Source: Adapted from Bukh and Johanson (2003, p. 579)

According to Johanson et al. (2006), the MERITUM guideline is an outcome from a number of theoretical and empirical research projects in relation to management control, capital market and classification issues, and it can be applied as an IC management tool for companies. However later on, since the guideline was not widely available to those countries outside the project nor was it as fully developed as it could be, the work in the MERITUM project was carried over into another project called E*KNOW in 2001 so as to improve and disseminate the MERITUM guideline, as well as facilitate research and communication in the area in Europe (Bukh and Johanson, 2003; Schneider, 2006).

Both the DATI and MERITUM guidelines provide a well established framework for IC reporting, which can be used as a foundation for the development of IC disclosure models in other countries. In the present study, the researcher drew on these two models along with some other models, such as the BSC, the SNS and the IAM, to make recommendations for the development of IC reporting framework applicable to the Chinese environment. In the following section, prior research with regard to IC disclosure is reviewed.

3.5 Prior research regarding IC disclosure

The research and published literature regarding IC disclosure by firms are growing in recent years. These studies often investigate the status of IC disclosure in a particular country (usually cross-sectional) or in a specific industrial sector (or an organization) through a survey of top listed companies on the stock exchange (refer to Table 3.9). The primary research method for these studies is content analysis of corporate annual reports. In the following, the relevant literature is reviewed.

The study conducted by Guthrie and Petty (2000)[16] pioneered this type of research. In the study, they developed a framework of IC attributes derived from Sveiby's Intangible Assets Monitor to code and analyse annual reports of twenty largest Australian listed firms for the 1998 period in order to examine the level of IC disclosure in the Australian context. They found that there was no generally accepted framework for IC reporting in Australia, and few companies appeared to be proactive in measuring and reporting their IC to various stakeholders albeit most of them had realized the growing importance of IC for future financial success. The most frequently reported IC attributes by Australian firms included human resources, technology and intellectual property rights, and organisational and workplace structure.

A number of subsequent studies employed or modified Guthrie and petty' framework to investigate the state of IC disclosure in various national contexts. Examples comprise Brennan (2001, Ireland), Bozzolan et al. (2003, Italy), Goh and Lim (2004, Malaysia), Abeysekera and Guthrie (2005, Sri Lanka), Wong and Gardner (2005, New Zealand), Guthrie et al. (2006, Hong Kong), Ensslin and De Carvalho (2007, Brazil), Striukova et al. (2008, UK), Yi and Davey (2010, China), etc. These studies often obtain similar findings that there is no established framework for IC reporting, and the level of IC disclosure is generally low with most IC items presented in narrative rather than monetary or numerical terms.

Some studies, such as Brennan (2001) and Davey et al. (2009), provide some quotations from corporate annual reports with respect to IC disclosure by firms, which enable readers to gain a deeper comprehension within a "scenario". Most of other studies only record the incidence of IC reporting.

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[16]An earlier version of this article was published as a conference paper [refer to Guthrie et al. (1999)].

Shareef and Davey (2005), Schneider and Samkin (2008), and Yi and Davey (2010) developed a comprehensive IC disclosure index for content analysis of corporate annual reports on the basis of prior research, which is considered to be very helpful to assess both the extent and quality of IC disclosure.

There are some studies comparing IC disclosure practices in different countries, such as Vandemaele et al. (2005, Netherlands, Sweden and UK), Vergauwen and Alem (2005, Netherlands, France and Germany), Guthrie et al. (2006, Australia and Hong Kong), and Abeysekera (2008, Singapore and Sri Lanka). This type of research could result in a better understanding as to IC disclosure practices in an international context.

Some researchers [e.g. Williams (2001); Petty and Cuganesan (2005); Oliveras et al. (2008); Brüggen et al. (2009); Abeysekera (2010); Campbell and Rahman (2010)] used a longitudinal approach to study the trend of IC disclosure in a particular country or industry through analysing the annual report of sample companies for several years (usually from 2 years to 5 years). However, this type of research is quite limited, and should be expanded in the future research.

There are also a few studies attempting to examine the factors that determine the level of IC disclosure in a particular country or industry (e.g. García-meca et al., 2005; Oliveira et al., 2006; White et al., 2007; Li et al., 2008; Brüggen et al., 2009; Abeysekera, 2010; Whiting and Woodcock, 2011). These studies usually applied a quantitative approach in which a series of hypotheses regarding the correlations between IC disclosure and a variety of impact factors were developed based on prior research and some relevant theories (e.g. agency theory and legitimacy theory), and then the hypotheses were tested using some statistical techniques, such as univariate and multiple regression analysis. The commonly used independent variables (namely those impact factors or determinants for IC disclosure) for this type of research include industry type, company size, profitability, listing status, level of leverage, ownership structure, proportion of independent directors, auditor type, etc.

It is noted that most prior research regarding IC disclosure focuses on developed countries with approximately nine studies out of forty-one concerned with developing countries (Goh and Lim, 2004; Abeysekera and Guthrie, 2005; Ensslin and De Carvalho, 2007; Abeysekera, 2008; Kamath, 2008; Xiao, 2008; Abeysekera, 2010; Yi and Davey, 2010; Singh and Kansal,

2011; refer to Table 3.9 for more details). As for China, the largest developing country as well as one of the most dynamic economies in the world, there have been two studies investigating the status of IC disclosure: Xiao (2008) and Yi and Davey (2010).

Xiao (2008) explored the extent of IC disclosure by the top 50 listed firms on the Shanghai Stock Exchange using the 2007 dataset. The results demonstrate that Chinese firms did not attach significant importance for IC reporting. The most frequently reported IC element in the study was human capital while the least reported was external capital. However, excluding the mandatory IC disclosures, internal capital became the most reported IC category whereas human capital was the least reported.

Yi and Davey (2010) extended the previous research and surveyed both the extent and quality of voluntary IC disclosure by 49 dual-listed A and H share companies in 2006 using a comprehensive IC disclosure index. The findings indicate that the level of IC disclosure by Chinese mainland firms was low although there was a clear awareness for the importance of IC reporting. Inconsistent with Xiao (2008), the most reported IC category was external capital while the least reported was human capital.

It is acknowledged that these two exploratory studies provide some insights with respect to IC disclosure in the Chinese context. Yet the drawbacks of them should not be ignored, such as relatively small sample size, a single qualitative research method (content analysis), one-year corporate annual reports only, and relatively old dataset. Furthermore both studies only examined the level of IC disclosure, disregarding the factors that determine it. Given these weaknesses, a more comprehensive research into IC disclosure in Chinese firms is needed. This research was conducted to fill this gap in which it drew on the previous studies, in particular those discussed above, to investigate the level of IC disclosure by 100 top listed companies on Chinese stock exchanges from both extent and quality using the year 2008 and 2009 annual reports, as well as to examine the factors impacting the level of IC disclosure, and further to make recommendations for IC reporting guidelines applicable to the Chinese environment.

Table 3.10 below provides a summary of IC disclosure studies from both the country-specific and industry-specific.

Table 3.10 Previous studies regarding the status of IC disclosure

Author(s)	Country	Purpose	IC framework	Sample size	Data source	Methods	Main findings
Panel A: Country-specific (cross-sectional)							
Guthrie & Petty (2000)	Australia	To examine the extent of IC disclosure	I-E-H[1] (24 items)	20 largest listed companies	AR (1998)	Content analysis (CA)	IC components poorly understood; no consistent reporting framework; external capital mostly reported
Brennan (2001)	Ireland	To examine the extent of IC disclosure	I-E-H (24 items)	11 knowledge-based listed companies	AR (1997 & 1998)	CA	A significant gap between book and market value; low disclosure level
Williams (2001)	UK	To examine the trend of IC disclosure and its relationship with IC performance	51 items	31 FTSE 100 listed companies	AR (1996-2000)	Disclosure index (DI) & hypothesis test (HT)	An upward trend over time; inverse relationship between performance and disclosure
Bontis (2003)	Canada	To examine the extent of IC disclosure	39 items	10,000 firms	AR [2]	CA	significantly low disclosure frequencies of IC items
Bozzolan et al. (2003)	Italy	To examine the level of IC disclosure and the effects of industry and size	I-E-H (22 items)	30 non-financial listed companies	AR (2001)	CA & HT	Extensive external capital disclosures; no significant industry and size effects
Goh & Lim (2004)	Malaysia	To study the IC reporting practices of Malaysian companies	I-E-H (24 items)	Top 20 listed companies	AR (2001)	CA	Highly qualitative rather than quantitative disclosures; focusing on external capital disclosures
Abdolmoha-mmadi (2005)	USA	To develop a framework of IC components and investigate the effect of IC disclosure on market capitalization	10 general categories (58 sub items)	58 randomly selected firms from *Fortune* 500	AR (1993-1997)	CA & HT	Increasing disclosures for brand and proprietary processes; significant differences between the "new" and "old" industrial sectors for disclosures of some IC elements; a highly significant effect on market capitalisation
Abeysekera & Guthrie (2005)	Sri Lanka	To investigate the trend of IC disclosure	I-E-H (45 items)	30 largest listed companies	AR (1998/1999-1999/2000)	CA	An increasing trend; external capital mostly reported
García-Meca et al. (2005)	Spain	To examine both the extent and determinants of IC disclosure	6 general categories (71 items)	116 and 115 listed firms for year 2000 and 2001 respectively	Reports to financial analysts (2000-2001)	CA & HT	Strategy, customers, and processes most reported while R&D and innovation least reported; larger firms disclosing more IC information
Petty & Cuganesan (2005)	Hong Kong	To examine the effects of size, industry and growth on IC disclosure over time	I-E-H	53 listed companies	AR (1992, 1998 & 2002)	CA & HT	Low disclosure level but increase over time; clear size and industry effects on IC disclosure

(*Continued*)

Author(s)	Country	Purpose	IC framework	Sample size	Data source	Methods	Main findings
Vandemael-e et al. (2005)	Netherlands, Sweden & UK	To investigate and compare the disclosure practice of three different countries over a three-year period	I-E-H (22 items)	20 large publicly-listed firms from each country	AR (1998, 2000 & 2002)	CA	Swedish firms with the best performance; generally an upturn trend for all the countries during the investigation period
Vergauwen & Alem (2005)	Netherlands, France & Germany	To survey and compare the level of IC disclosure in various countries	39 items	89 listed companies from three countries	AR (2000-2001)	CA	Significant differences between countries; generally French companies having the best performance.
Wong & Gardner (2005)	New Zealand	To examine the extent of IC disclosure and the industry effect	I-E-H (18 items)	60 listed companies (30 high-tech and 30 traditional)	AR (2003)	CA	External capital mostly disclosed; no significant industry effect on IC disclosure
Bozzolan et al. (2006)	Italy and UK	To explore and compare the effects of industry type and nationality on IC disclosure in two different countries	I-E-H (22 items)	30 matched firms in Italy and UK	AR (2001)	CA & HT	Significant size and industry effect for both countries, but no nationality effect
Guthrie et al. (2006)	Australia & Hong Kong	To investigate and compare the status of IC disclosure in two different regions as well as assess size, industry and time effects	I-E-H (18 items)	50 top Aus and 100 HK listed firms	AR (2001)	CA	Low level disclosure; primarily in qualitative form; a positive correlation between company size and level of IC disclosure
Oliveira et al. (2006)	Portugal	To identify and examine factors influencing IC disclosure	S-R-H[3] (32 items)	56 listed companies	AR[4] (2003)	CA & HT	Significant factors in Univariate analysis: size, ownership structure, type of auditor, industry, and listing status; significant factors in multivariate analysis: size, industry, type of auditor, and ownership concentration
Ensslin & De Carvalho (2007)	Brazil	To investigate the status of IC disclosure in Brazil and compare with other international studies	I-E-H (24 items)	25 top listed firms	AR (2004)	CA	High frequency of voluntary disclosure; primarily in narrative terms; external capital most frequently reported
Sonnier et al. (2007)	US	To examine the relationship between profitability and IC disclosure	S-R-H (121 items)	143 high-tech companies	Form 10-K (2000-2004)	CA & HT	Generally a significant and negative relationship between Profitability and the level IC disclosure

(Continued)

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Author(s)	Country	Purpose	IC framework	Sample size	Data source	Methods	Main findings
Sujan & Abeysekera (2007)	Australia	To survey the status of IC disclosure as well as compare with a previous study using the same research method	I-E-H (25 items)	20 top listed companies	AR (2004)	CA	No consistent IC reporting framework; external capital mostly reported; mainly in qualitative; a modest upturn trend
Abeysekera (2008)	Singapore and Sri Lanka	To compare the disclosure trend and category between a developing and a developed country	I-E-H (45 items)	20 top listed companies	AR (1998-2000)	CA & HT	mixed results for the trend of IC disclosure in both countries; human capital mostly disclosed in Singapore while external capital in Sri Lanka
Kamath (2008)	India	To examine the level of IC disclosure in the emerging industries and the size effect	39 items	30 knowledge-intensive companies	AR (2005/2006)	CA	Low level disclosure; IT industry with the best performance; no significant relationship with firm size
Li et al. (2008)	UK	To study the association between IC disclosure and governance variables	S-R-H (61 items)	100 listed IC-rich firms	AR (2004/2005)	CA (DI) & HT	Significantly correlating to all the governance variables other than CEO role duality
Oliveras et al. (2008)	Spain	To investigate the practice and trend of IC reporting	I-E-H	12 Spanish listed companies	AR (2000-2002)	CA	A significant upward trend; generally low disclosure level; focusing on external capital disclosures
Singh & Van der Zahn (2008)	Singapore	To examine the determinants of IC disclosure in prospectuses of IPOs	6 general categories (81 items)	Prospectuses (Pros) of 444 initial public offerings (IPOs)	Pros (1997-2006)	CA (DI) & HT	A positive correlation with ownership retention; negative for proprietary costs; no significant influence for corporate governance structure
Striukova et al. (2008)	UK	To examine the IC disclosure practices in various industrial sectors	I-E-H (20 items)	15 listed companies	Multiple corporate reports	CA	Major differences in various sectors; primarily in narrative form; external capital mostly reported; web page taking the biggest proportion of disclosures
Whiting & Miller (2008)	New Zealand	To study the extent and type of IC disclosure as well as examine its association with "hidden value"	I-E-H (18 items)	70 publicly listed companies	AR (2003)	CA & HT	External capital most frequently reported; generally no association between IC disclosure and "hidden value" other than those revaluing firms
Xiao (2008)	China	To investigate the extent of IC disclosure	I-E-H (18 items)	50 top listed companies	AR (2007)	CA	Not attach significant importance to IC disclosure; human capital mostly reported whereas external capital mostly reported after excluding the mandatory disclosures

(*Continued*)

Author(s)	Country	Purpose	IC framework	Sample size	Data source	Methods	Main findings
Brüggen et al. (2009)	Australia	To investigate the factors that determining the level of IC disclosure	S-R-H (27 items)	125 listed companies	AR (2002-2004)	CA & HT	Significantly relating to industry type and firm size; no relationship with the level of information asymmetry
Abeysekera (2010)	Kenya	To examine the effect of board size on IC disclosure	I-E-H	26 top listed firms	AR (2002 & 2003)	CA & HT	Firms with larger boards reporting more information regarding tactical internal capital and strategic human capital
Yi & Davey (2010)	China	To examine both the extent and quality of IC disclosure	I-E-H (16 items)	49 dual-listed A and H share companies	AR (2006)	CA (DI)	Low level disclosure; mainly in narrative; external capital most commonly reported
Whiting & Woodcock (2011)	Australia	To examine the correlations between the level of IC disclosure and a series of firm characteristics	I-E-H (18 items)	70 listed firms	AR (2006)	CA & HT	Low level disclosure with external capital mostly reported; a significant association with industry and auditor type; no relationships with ownership concentration, leverage, and listing age

Panel B: Industry-specific

Author(s)	Country	Purpose	IC framework	Sample size	Data source	Methods	Main findings
April (2003)	South Africa	To examine the level of IC disclosure in Mining-industry	I-E-H (24 items)	20 largest listed mining companies	AR	CA & INTERVIEW	Low level disclosure although highly rating IC; external capital most frequently reported; fewer disclosures than other firms
Shareef & Davey (2005)	UK	To examine the extent and quality of IC disclosure by football clubs as well as the size, division, and performance effect	I-E-H (52 items)	19 English professional football clubs	AR (2002)	CA (DI)	Poor IC disclosure; external capital most highly reported; a significant and positive relationship with size and performance
Cerbioni & Parbonetti (2007)	Europe	To investigate the relationships between governance variables and voluntary IC disclosure in biotechnology firms	I-E-H (22 items)	54 listed biotechnology firms from 10 European countries	AR[5] (2002-2004)	CA & HT	Proportion of independent directors positively correlating to the quality of internal structure disclosures; CEO duality negatively relating to the quality of forward-looking information disclosures; board structure helping to improve the overall readability of annual reports

(Continued)

Author(s)	Country	Purpose	IC framework	Sample size	Data source	Methods	Main findings
White et al. (2007)	Australia	To survey the key factors that determine the level of voluntary IC disclosure in biotechnology firms	Six categories (78 items)	96 listed biotechnology companies	AR (2005)	CA (DI) & HT	Key factors including the level of board independence, firm age and size, level of leverage; board independence, leverage and size significantly correlated to voluntary IC disclosure
Schneider & Samkin (2008)	New Zealand	To examine the extent and quality of IC disclosure by local government sector	I-E-H (26 items)	82 local authorities	AR (2004/2005)	CA (DI)	Varied disclosure levels; internal capital mostly reported
Davey et al. (2009)	Europe and North America	To investigate the level of IC disclosure in the fashion industry	I-E-H (35 items)	15 top European companies and 15 top North American companies	AR (2005)	CA	Brand-related information highly reported whereas customer-related information poorly disclosed
Guthrie et al. (2009)	Australia	To analyze the IC disclosure practice of a non-profit organization	I-E-H (58 items)	A single organization (Australian Red Cross Blood Service)	AR & ICR (IC Report) (2002-2005)	CA & INT(ERVIEW)	More disclosures on internal and external capital than human capital; AR concerned with more stakeholder groups than ICR
Campbell & Rahman (2010)	UK	To study the trend of IC disclosure by a UK company over a three decade period	S-R-H (17 items)	a single company (Marks & Spencer)	AR (1978-2008)	CA	An overall upward trend; a re-ordering of sub-elements over time; increasing narrative disclosures while decreasing 'factual' disclosures
White et al. (2010)	Australia and UK	To contrast the nature and level of IC disclosure between Australian and UK biotechnology firms	Six categories (78 items)	104 Australian bio companies and 52 UK bio companies	AR	CA (DI) & HT	A significant leverage effect for both countries; also a clear country effect
Singh & Kansal (2011)	India	To survey the disclosure practices of pharmaceutical firms and its impact on IC valuation	I-E-H (24 items)	20 top listed pharmaceutical firms	AR (2009)	CA	Low and varied disclosure levels; primarily in narrative; external capital most commonly disclosed; most reported elements including brands, and business collaborations; a weak and negative relationship between disclosure and valuation

Notes:

[1] I-E-H: internal capital (or structure), external capital (or structure), and human capital

[2] The financial year for the annual report was not specified (Bontis, 2003)

[3] S-R-H: structural capital, relational capital, and human capital

[4] Focusing on the Management Report and Chairman's Letter in the annual report (Oliveira et al., 2006)

[5] Focusing on the Operating Financial Review (the equivalent of the Management Discussion and Analysis) in the annual report (Cerbioni and Parbonetti, 2007)

3.6 Chapter summary

This chapter provides a comprehensive literature review for intellectual capital. The origin of IC was often linked to the field of economics, strategic management, and accounting while knowledge was increasingly recognized as a superior production factor for value creation of firms. There is no general consensus regarding the definition of IC. However it is often regarded as intangible assets or knowledge resources that can create value for firms, as well as achieve and maintain a competitive advantage for them. As to the composition of IC, a three-element framework developed by Sveiby (1997), comprising internal, external and human capital, gains popularity amongst many IC researchers since it is often used as a theoretical foundation for their research. This study employed the framework as a foundation to develop an IC disclosure index, which was applied as an instrument to assess the extent and quality of IC disclosure by Chinese firms.

Due to the growing importance of IC, many researchers and visionary organizations have developed a number of models for IC measurement and reporting. The most commonly known models include the BSC, the SNS, the IAM, the DATI and MERITUM guidelines. This research drew on these models to make recommendations for IC reporting guidelines applicable to the Chinese environment.

There is considerable literature with respect to IC disclosure in a variety of contexts. However most of this focuses on developed countries with a small number of studies concerned with developing countries. In china, although there have been two studies investigating the level of IC disclosure, the depth and breadth are limited. To address the limitations, the current study used a larger sample size to examine both the extent and quality of IC disclosure by Chinese firms from a longitudinal perspective, as well as investigated the associations between IC disclosure and a variety of impact factors.

In the next chapter, the theoretical framework applied in this research is presented.

THEORETICAL FRAMEWORK

4.1. Introduction

A theoretical framework is often defined as a collection of interrelated concepts employed to guide a particular research project (Cavana et al., 2001; Collis and Hussey, 2009). It can be a single theory, or an integration of several theories, or more generally a basic approach to understanding certain organizational behavior. As for the case of this research, albeit there have been some theories **[**e.g. agency and signalling theory (García-Meca *et al*., 2005); institutional theory (Petty and Cuganesan, 2005); stakeholder and legitimacy theory (Guthrie et al., 2006); media agenda setting theory (Sujan and Abeysekera, 2007); resource-based theory (Abeysekera, 2010)**]** applied as theoretical perspectives to interpret voluntary IC disclosure practices by firms, the author believes that it is not sufficient for any of those theories taken separately to provide an adequate theoretical framework. In this chapter, the author constructs a comprehensive theoretical framework explaining voluntary IC disclosure through integrating four relatively often-used theories in the area, namely agency theory, stakeholder theory, signalling theory, and legitimacy theory. The remainder of the chapter is organized as follows.

Section 4.2 reviews the four theoretical traditions and examines their relationships with voluntary IC disclosure. Section 4.3 presents the process for the construction of the integrated theoretical framework. It consists of two steps: firstly identifying the relationships between the theories, and secondly integrating those theories in terms of the interrelated concepts. Section 4.4 delineates the corporate annual report as a medium for the application of the constructed framework in this research. Finally section 4.5 summarizes the chapter.

4.2 Theoretical traditions for voluntary IC disclosure

4.2.1 Agency theory

Agency Theory primarily deals with the principal-agent relationship (also referred to as the agency relationship) existing in the separation of ownership and management, or in the separation of risk bearing, decision making and management functions (Jensen and Meckling, 1976; Fama and Jensen, 1983; Morris, 1987). The principal-agent relationship is defined by

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[17]A condensed version of this chapter entitled "Towards a comprehensive theoretical framework for voluntary IC disclosure" was published in Journal of Intellectual Capital, Vol. 12 No. 4, pp. 571-585.

Jensen and Meckling (1976) as "…a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent" (p.308). The most commonly regarded principal-agent relationship is between the shareholders (as the principal) and the management (as the agent) of an organization. Other common principal-agent relationships include the creditor-shareholder (or management) and the management-employee relationships.

Agency theory originates from the risk-sharing literature in economics (e.g. Arrow, 1971; Wilson, 1968) that explores risk-sharing problems between cooperating parties with varied attitudes toward risk. According to Eisenhardt (1989), agency theory broadens the literature to include the ubiquitous principal-agent relationship. Given the significance of accounting information for decision-making, the application of agency theory to explain and predict the disclosure of accounting information by organizations has gained substantial interest amongst accounting researchers since the 1980s (e.g. Morris, 1987; Ratanajongkol et al., 2006; Watson et al., 2002; Watts and Zimmerman, 1986; Xiao et al., 2004). In the following section, a detailed review with regard to agency theory is presented.

4.2.1.1 Fundamental concepts

A basic agency model

The basic agency model consists of two parties: namely the principal and the agent. In accordance with Lambert (2001), the principal is the party who provides funds, bears risks and offers incentives while the agent is the party required to fulfill duties and tasks, make decisions as well as bear risks on the behalf of the principal. Drawing on Lambert (2001), a basic principal-agent relationship is usually developed in four steps. Firstly a compensation contract between the principal and the agent is established in which the compensation of the agent will be determined based upon the agreed performance measures. The agent then selects a series of actions (e.g. operating decisions, financing decisions, or investment decisions) in seeking to maximize his or her compensation in terms of the contract. Next the actions and the consequent outcomes are assessed based on the performance measures. Finally the agent is paid according to the terms in the contract. Subramaniam (2006) argues that there are two assumptions underpinning the development of the relationship:

- The outcome of the organization within a single-period can be easily and clearly defined and measured by monetary terms (e.g. gross sales or net profits). That is, the performance of the agent can be assessed in monetary measures.

- Given that a certain amount of risk, unpredictable and uncontrollable for both the principal and the agent, may impact the outcome of the organization, it can be assumed the greater the risk, the higher the agent's compensation.

The agency problem

According to Deegan and Samkin (2009), agency theory is based on the central assumption of economics that "…all individual action is driven by self-interest and that individuals will act in an opportunistic manner to increase their wealth" (p.71). There are two derivative assumptions for agency theory drawing on the central assumption: (1) both the principal and the agent are utility maximisers who tend to maximize their returns by all means[18]; and (2) the interests of both parties might not be aligned (Berle and Means, 1932; Jensen and Meckling, 1976). These two assumptions indicate that both the principal and the agent have their own interests and they seek to maximize their individual utility, which is likely to result in conflicts between them (the so-called agency problem). The agency problem could not be avoided unless both parties share the same interests completely.

Information asymmetry

Information asymmetry is another key concept of agency theory. It arises when one party in a particular agency setting (or relationship) has an information advantage (so-called private information) over another party. Information asymmetry is assumed to exist in most business settings where the manager (the agent) possesses an information advantage over the owner (the principal) since the manager tends to be more directly involved in the daily operation of the company. Information asymmetry is deemed to exacerbate the agency problem (Subramaniam, 2006). More specifically, it may generate two agency problems: adverse selection and moral hazard.

Adverse selection problems initially arise when the principal is not able to determine if the agent is competent for the authorized job in the pre-contractual stage due to the lack of information with regard to the agent. Subsequently the context is extended to the contractual

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[18] The assumption is often referred to as the assumption of "rational economic person".

period in which the principal can observe the behavior of the agent but cannot determine whether the agent behaves in the optimal interests. For instance, the management of a company (the agent) may choose accounting policies that maximize the reported net profit so as to obtain higher bonuses, whereas the shareholders (the principal) may be not able to fully recognize the intention of the agent because of the limited knowledge regarding accounting (Subramaniam, 2006).

Moral hazard problems occur when the principal cannot observe the agent's behavior in pursuing his or her individual interests that is not aligned with the principal's expectations. The situation usually arises in the contractual period. In the situation, for instance, the agent may attempt to shirk his or her duties (not dedicating to the job) or consume perquisites excessively (e.g. luxury office fittings, business trips).

4.2.1.2 Agency problems and solution mechanisms

Apart from information asymmetry, two other asymmetries (or conflicts), namely goal conflicts and different risk preferences, also lead to agency problems (Eisenhardt, 1989; Saam, 2007). Goal conflicts occur when both the principal and the agent attempt to maximize their own individual utility. In other words, the principal wants to maximize his or her returns, whereas the agent seeks to maximize his or her income (Saam, 2007). The realization of the goal for the principal primarily rests on the endeavor of the agent. It is assumed by agency theory the greater the endeavor of the agent, the greater the outcome for the principal. Yet greater endeavor generates a greater sacrifice of utility (so-called disutility) for the agent. Consequently, the principal expects the agent to maximize his efforts for maximizing her returns, whereas the agent wants to maximize his income with the minimized effort (Jensen and Meckling, 1976; Saam, 2007). Problems therefore arise owing to the existence of differing utility functions between the two parties.

Different risk preferences refer to varied attitudes towards risk between the principal and the agent. In general, the agent is assumed to be risk averse because he or she heavily relies on the income from the organization for his or her livelihood (Williamson, 1963). The principal, however, can diversify compared with the agent, and therefore is assumed to be risk neutral (Eisenhardt, 1989; Wiseman and Gomez-Mejia, 1998). Due to different risk preferences, the agent may choose actions in his or her own interests regardless of the principal's expectations. Problems arise in this situation.

In order to mitigate the principal-agent problems, some mechanisms have been elaborated by a number of agency theorists as follows:

- Screening mechanism (Samm, 2007; Spence, 1974): the principal can use some procedures, such as consistent tests, or assessment centers, to improve the selection of the agent.

- Self-selection mechanism (Arrow, 1986): the principal can provide different contracts which maybe either outcome-based[19] or behavior-based[20] to the agent. The choice of the agent will reveal her preference at work, which will assist the principal to monitor the behavior of the agent in operation.

- Monitoring mechanism (Jensen and Meckling, 1976; Eisenhardt, 1989): the establishment of the monitoring mechanism is to curb the agent's opportunistic behavior. Strategies, such as external/internal audit (Watts and Zimmerman, 1986; Anderson *et al*., 1993), board of directors (Fama and Jensen, 1983), and performance evaluation systems (Kaplan and Atkinson, 1989), are often used by the principal for the purpose.

- Incentive compensation (or reward) mechanism (Berle and Means, 1932; Jensen and Meckling, 1976): the principal can also offer the agent some performance-related rewards (e.g. bonus, promotion, stock options or other organizational perks) as incentives to reduce opportunistic activities.

- Bonding mechanism (Jensen and Meckling, 1976): the principal may prescribe some rules which the agent has to bind her actions to, otherwise she will be sanctioned. For example, because of the importance of financial measures to assess the performance of the agent, the agent might be required to bond herself to produce timely financial statements.

- Signaling mechanism[21] (Grinblatt and Hwang, 1989; Spence, 1974): on the other hand, the agent may positively highlight herself, for instance, through voluntary disclosure of intellectual capital or corporate social responsibility, to the principal to improve mutual understanding, and consequently reduce agency problems. In this mechanism, the agent plays an active role.

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[19] Examples include stock options, commissions, and market governance.
[20] For instance, salaries or hierarchical governance (Eisenhardt, 1989)
[21] The signalling mechanism strongly relates to concepts of signalling theory that is detailed in section 4.2.3.

All the above mechanisms seek to align the interests (or behaviors and actions) of the agent with the interests of the principal, and thereby mitigate the agency problems. The implementation of these mechanisms would incur costs (the so-called agency costs). The costs are generally classified into three categories as monitoring costs, bonding costs and residual costs (Deegan and Samkin, 2009; Subramaniam, 2006). Accordingly, monitoring costs and bonding costs are associated with activities in the monitoring and the bonding mechanism. The costs incurred in other mechanisms are called residual costs. Although the mechanisms generate costs to the principal (or the agent), they are valuable in reducing or resolving agency problems.

The above provides a review of agency theory. In the following section, the relationship between agency theory and voluntary IC disclosure is described.

4.2.1.3 Agency theory and voluntary IC disclosure

Pursuant to agency theory, agency problems arise when both the principal and the agent seek to maximize their own interests, which are not aligned. Information asymmetry is one of the key factors leading to agency problems. On the other hand, Intellectual capital is regarded as the key value driver for organizations in the present knowledge-based economy. Information in respect of IC is therefore highly demanded by shareholders (or investors) for decision-making. However since most IC information is not mandatorily required by accounting standards and rules, it is primarily disclosed on a voluntary basis.

As for the relationship between agency theory and the voluntary disclosure of IC, it is contended that the voluntary disclosure of IC could reduce information asymmetry between the principal and the agent (or the shareholders and the management in a business setting), and as a consequence eliminate related agency problems and costs. More specifically, Li et al. (2008) states that voluntary IC disclosure could decrease opportunistic behavior (e.g. insider trading) since it provides a more intensive monitoring package for a company, while Singh and Van der Zahn (2008) argue that voluntary IC disclosure could lower cost of capital because it enhances investors or creditors' confidence with regard to the impact of IC on the company's value creation. In other previous studies, such as García-Meca et al. (2005), Oliveira et al. (2006) and White et al. (2007), reducing information asymmetry and the related costs was also considered to be one of the drivers for firms to disclose their IC voluntarily.

Limitations

Although agency theory can be employed to explain and predict voluntary IC disclosure practices by firms, it has some limitations. Firstly, the theory puts an emphasis on the monetary terms to measure the performance of the agent whereas most IC attributes are qualitative in nature and difficult to assign a monetary value. Furthermore the theory is heavily based on the assumption of self-interest of individuals that often puts the principal and the agent in opposition to each other, creating conflicts. However, both parties may benefit from each other (namely reciprocity) for obligations in many occasions, for example, some agents may act responsibly in the interests of the principal (e.g. reporting IC information voluntarily) due to their personal needs of achievement or respect (McClelland, 1960; Wright et al., 2001). Finally the theory, excessively focusing on the principal-agent relationship (especially the shareholder-management relationship), ignores the agent's (or management's) relationships with other interest-related groups or individuals (e.g. customers, suppliers, local charities, government, and industry bodies) which also impact the operation of an organization. To avoid these limitations, a broader and more holistic theoretical perspective, namely stakeholder theory, is introduced into the theoretical framework.

4.2.2 Stakeholder theory

Stakeholder theory is concerned with the relationships of an organization with a variety of stakeholders in society. It expands the traditional shareholder theories (e.g. agency theory) that focus on the wealth maximization for shareholders. From a stakeholder perspective, an organization should attempt to meet multiple goals of a wide range of stakeholders rather than merely those of shareholders. As Guthrie et al. (2006, p. 256) state:

> According to stakeholder theory, an organization's management is expected to undertake activities deemed important by their stakeholders and to report on those activities back to the stakeholders... stakeholder theory highlights organizational accountability beyond simple economic or financial performance.

According to Näsi (1995), the concept of stakeholder initially appeared within the Stanford Research Institute in 1963. Since 1980s the stakeholder concept has been popularized in accounting research since it is widely acknowledged that maintaining a good relationship with stakeholders is needed for organizations to maximize their long term value (Alam, 2006). In recent years, many academic researchers (e.g. Guthrie *et al*., 2006; Menassa, 2010; Ratanajongkol *et al*., 2006; Whiting and Miller, 2008) have employed stakeholder theory as a

theoretical foundation to interpret and predict voluntary disclosure practices of accounting information (e.g. CSR and IC). In the next section, the definition and the classification of the stakeholder are presented

4.2.2.1 What is a stakeholder?

As for the definition of the stakeholder, there has been a variety of suggestions. A widely-accepted one was proposed by Freeman (1984) as any group or individual who can affect or is affected by the achievement of an organization's activities. Based on this definition, the "stakeholder" could consist of shareholders, creditors, employees, consumers, suppliers, the public, media, various interest groups, governmental agencies and so forth who are related to an organization whether financially or non-financially. Under this perspective, an organization is placed within a broader social system in which it communicates with a wide range of interest-related parties or individuals, as shown in Figure 4.1.

Figure 4.1 The organization as a part of a wider social system
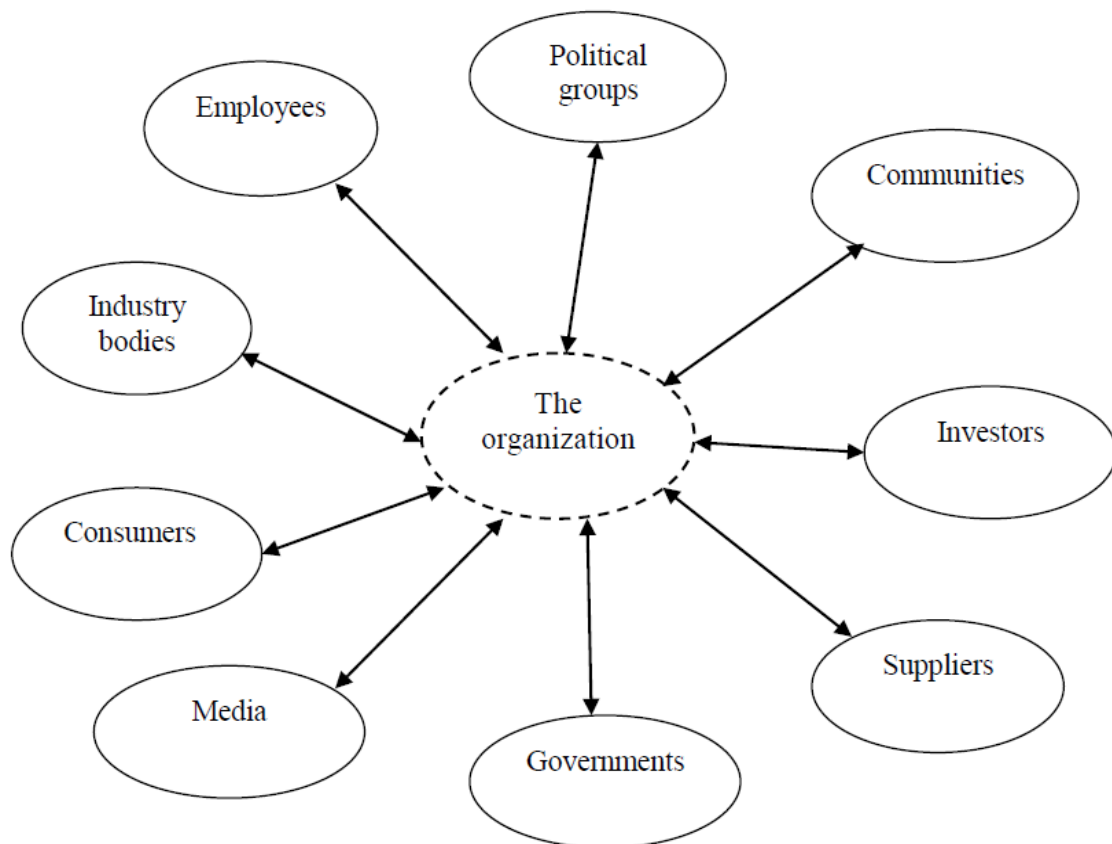
Source: Adapted from Deegan and Samkin (2009, p. 93)

Since various needs and demands exist amongst stakeholders, there have been some attempts to distinguish and classify stakeholder groups from a strategic perspective so as to balance and prioritize their needs and demands (Alam, 2006). For instance, Clarkson (1995) classified stakeholders into two groups: primary and secondary stakeholders. The primary stakeholders refer to those considered to be critical for the survival of the organization. This group, including shareholders, employees, customer, suppliers, lenders, as well as government and communities, are usually given priority by organizations for their information demands. The secondary stakeholders, comprising environmentalists, media and consumer advocates, are deemed not crucial for the organizations to survive.

Mitchell et al. (1997) provided a more comprehensive classification for stakeholders based on three key dimensions: power, legitimacy, and urgency. They classified stakeholders into eight different groups (from the lowest to the highest priority), comprising non-stakeholder, dormant, discretionary, demanding, dominant, dangerous, dependent and definitive stakeholders (refer to Figure 4.2). Among them, the non-stakeholder has insignificant power, legitimacy and urgency while other stakeholder groups are prioritized in terms of the relative significance of power, legitimacy and urgency (refer to Table 4.1).

Figure 4.2 Stakeholder classification and significance ranking
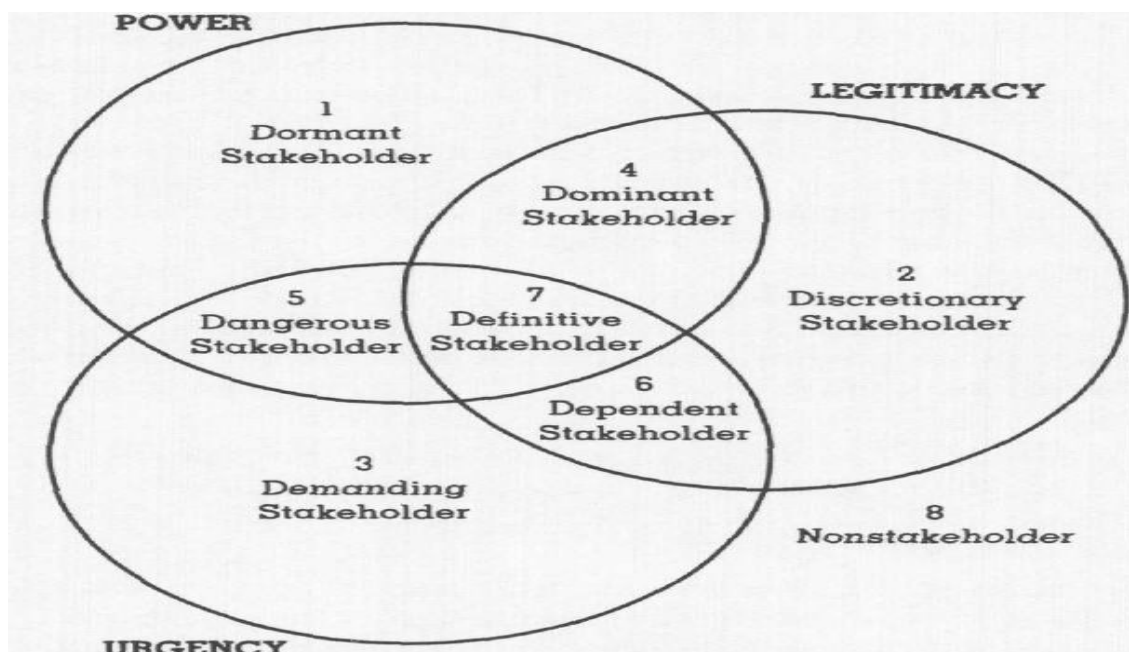
 Source: Mitchell et al. (1997, p. 874)

Table 4.1 The relative significance for various stakeholder groups

Stakeholder group	Power	Legitimacy	Urgency
Dormant	√	×	×
Discretionary	×	√	×
Demanding	×	×	√
Dominant	√	√	×
Dangerous	√	×	√
Dependent	×	√	√
Definitive	√	√	√

Note: '√' indicates significant while '×' means insignificant

Due to the differential significance of stakeholders for the survival of an organization, it is unrealistic for the organization to treat all the stakeholders equally. In reality, the organization usually gives different priorities for the information demands and needs of its stakeholders in the light of its strategic objectives. For instance, if a company, such as an oil company, is facing huge environmental pressure from the government and environmentalists, it would be inclined to disclose more environmental information voluntarily.

4.2.2.2 Key concepts of stakeholder theory

Stakeholder theory often relates to the term "accountability" which is defined by Mulgan (1997) as the responsibility of one party to another in a relationship where one party entrusts another with the performance of certain duties. From an accounting perspective, accountability refers to the responsibility of an organization to disclose information regarding its performance, financial position, financing and investing, and compliance in order to assist users to make appropriate decisions (Australian Accounting Research Foundation, 1990). Under a traditional view, the organization merely needs to discharge accountability to its shareholders. Nonetheless within a stakeholder perspective, an organization should be accountable to not only the shareholders, but to other stakeholders as well.

There are two branches in stakeholder theory as for how to discharge accountability to various stakeholders- an ethical (moral) branch and a positive (managerial) branch. The ethical branch purports that all stakeholders have certain intrinsic rights (e.g. fair treatment) that should be protected by the organization, and the management should engage in activities for the benefits of all stakeholders (or seek to satisfy the demands, needs and expectations of

all stakeholders) (Deegan, 2000; Deegan and Samkin, 2009). In accordance with Deegan and Samkin (2009), within the ethical branch of stakeholder theory, the organization should provide all stakeholders information regarding how its activities affect them, even though they may choose not to use the information or even though they may not be able to impact the fate of the organization directly. This branch seems to be idealistic because the demands, needs and expectations from various stakeholders are different, sometimes even conflicting with one another, and as a consequence it is unlikely for the organization to satisfy all stakeholders simultaneously.

The positive branch of stakeholder theory attempts to explain and predict how the organization deals with demands of various stakeholders. Within this branch, an organization needs to identify the group of stakeholders with a focus on those considered to be significant or powerful to the continued viability and success of the business (Roberts, 1992; Watts and Zimmerman, 1986). In general, stakeholders' significance or power is determined by the extent of dependence of the organization on the stakeholders, which might exist in such forms as control over critical resources required by the organization (e.g. finance, material, labor), access to influential media, ability to influence customers' attitudes to the organization's products or services, or capability to legislate against the organization, etc. (Deegan, 2000; Li, 2008; Ullmann, 1985).

The positive branch advocates that the greater the importance (or power) of particular stakeholders, the greater the expectations of the stakeholders will be addressed by the management of the organization (Guthrie *et al*., 2006; Deegan and Samkin, 2009). Successful organizations are often those which can satisfy the demands of significant or powerful stakeholders. However the significance and power relativities of stakeholders are likely to change over time. Accordingly organizations should adapt their operations and strategies to cope with the changes (Deegan and Samkin, 2009). The positive branch seems to provide a more practical view than the moral branch for organizations to deal with the relationships with various stakeholders.

4.2.2.3 Stakeholder theory and voluntary IC disclosure

The principal concepts of stakeholder theory are that the organization is a part of the broader social system in which it operates, and the organization should be positively accountable to

various stakeholder groups with a strategic perspective. Accounting information disclosure is considered to be an important means for organizations to discharge their accountability.

In particular information with regard to intellectual capital, which is seen as critical resources for corporate success, is increasingly demanded by various stakeholders in recent years (Yi and Davey, 2010). Hence it can be expected that the voluntary disclosure of IC could reduce information asymmetry between the organization and its stakeholders, and as a consequence improve the relationships between them. According to Deegan and Samkin (2009) and Gary et al. (1996), a good relationship with various stakeholders could gain support and approval from them (e.g. loyalty of customers) or distract their opposition and disapproval, which is beneficial for the organization to survive and succeed in a sustainable manner in society.

Some researchers in the area, such as Guthrie et al. (2006), Schneider and Samkin (2008), Vergauwen and Alem (2005) and Whiting and Miller (2008), have used stakeholder theory or some concepts of the theory to interpret the IC disclosure practice of organizations. However empirical evidence in those studies indicates that organizations did not fulfil the expectations of various stakeholders for voluntary IC disclosure sufficiently.

Limitations

Stakeholder theory also has limitations in explaining and predicting organizations' voluntary IC disclosure practices. Firstly, it does not prescribe what information and how much information an organization should report voluntarily. Moreover the theory, excessively emphasizing the organization's accountability to its stakeholders, neglects the extent of stakeholders' engagement in the operation of the organization. This one-way delivery of accountability would be reduced or even nullified if the management of an organization takes a negative (or unethical) posture to respond to its stakeholders (Gray et al., 1996; Ullman 1985). Finally the theory, focusing on the organization's accountability, ignores other factors which also influence the voluntary disclosure of IC by organizations, such as the need to signal their superior quality to the market to attract investors, or the need to legitimize their activities to meet the societal norms and expectations. In the following section, the related theories of signaling and legitimacy are described.

4.2.3 Signaling theory

Signaling theory is concerned with how to address problems arising from information asymmetry in any social setting. It suggests that information asymmetry should be reduced if the party possessing more information can send signals to other interest-related parties. A signal can be an observable action, or an observable structure, which is used to indicate the hidden characteristics (or quality) of the signaler. The sending of a signal is usually based on the assumption that it should be favorable to the signaler (e.g. indicating a higher quality of its products compared with its competitors).

The theory was originally developed by Spence (1973) to explain employment behavior in the study of labor markets. Since signaling is a reaction to information asymmetry, it was also employed by some accounting researchers (e.g. Oliveira *et al.,* 2006; Ross, 1979; Watson *et al*., 2002; Whiting and Miller, 2008; Xiao *et al*., 2004) to interpret voluntary disclosure practices of accounting information by firms. The key concepts of the theory are described below.

4.2.3.1 A classic signaling model

The classic signaling model occurs in a market setting between the seller and the buyer. To begin with, the seller usually possesses an information advantage over the buyer regarding its products or services. Although buyers do not have much information with respect to specific goods, they may have some general perceptions in purchasing (e.g. a certain percentage of products (*p* %) offered will be faulty, and those faulty products should sell at a price of x while the normal products should sell at a price of y, when y > x). Then the buyer will value the products at the same price based on a weighted average of the general perceptions (Morris, 1987).

As a consequence, the seller possessing products with a quality above average incurs an opportunity loss because its products should sell at a higher price if the buyer knows about the superior quality of the products, whereas the seller with a quality below average will obtain an opportunity gain accordingly. Therefore the seller of high quality products has an incentive to highlight the quality of its products to the buyer in order to justify a higher price. To be effective, the signal should be difficult to be imitated by the low quality sellers. Signaling will be an iterative process which continues as long as the higher in price obtained exceeds the signaling costs (Morris, 1987).

As suggested above, signaling may generate costs to the signaler. For instance, if the seller intends to inform the buyer the superior quality of its products, it would seek to advertise the products on TV or in newspaper for example, which will be costly. According to Morris (1987, p. 48), "signaling costs are (usually) inversely related to quality". That is, the higher the quality of the product the lower the signaling costs will be, or the lower the quality of the product the higher the signaling costs will be. In general the signaler chooses to send out signals to the market on the basis that the benefits of doing so outweigh the costs.

Once the signaler decides to send a signal, it must be reliable. It should indicate a particular quality that the signaler does possess indeed. Otherwise the credibility of the signaler will collapse. If a signaler loses its credibility, any further signals would be deemed deceptive by the market. This is an unfavorable situation which a signaler should attempt to avoid.

If the classic model is placed in a general business setting, it can be interpreted as follows. Initially the management of a firm usually has more information than the investors with regard to the operation of the firm (e.g. the viability of a project, expected profits, or risk exposure). Due to the asymmetric information, the investors do not know of the quality of the firm, and therefore cannot distinguish the quality of various firms. Consequently the firm with a quality above average incurs an opportunity loss because its superior quality is not perceived by the investors, while the firm with a low quality obtains an opportunity gain. Under the circumstances, the high-quality firm has an incentive to signal its superior quality in order to attract more investors.

4.2.3.2 Signalling theory and voluntary IC disclosure

Signaling theory suggests that companies with a high quality should signal their advantages to the market. On the one hand, signaling would make investors and other stakeholders reassess the value of the company, and then make decisions more favorable to the company (Whiting and Miller, 2008). On the other hand, the favor of various stakeholders would make a company obtain more investment, and therefore reduce the costs of raising capital. There are a number of means for companies to signal information about themselves. Amongst those, voluntary disclosure of positive accounting information (e.g. CSR and IC) is considered to be one of the most effective (Ross, 1979; Watson *et al*., 2002; Xiao *et al.,* 2004).

In particular voluntary IC disclosure could be a very effective means for companies to signal their superior quality owing to the significance of IC for future wealth creation (Guthrie and Petty, 2000; Whiting and Miller, 2008). Especially for those with a strong IC base, voluntary disclosure of IC could distinguish them from other lower-quality firms. It is often argued that signaling of IC attributes, for example, voluntary disclosure in the annual report, could bring many benefits to a firm, such as improving corporate image, attracting potential investors, lowering capital costs, decreasing volatility of stocks, creating an understanding of its products or services, and more importantly improving the relationships with various stakeholders (Rodgers, 2007; Singh and Van der Zahn, 2008; Vergauwen and Alem, 2005).

Some other studies in the area (e.g. García-Meca et al., 2005; Oliveiras et al., 2008) also suggest that signaling excellence to the market could be a strong motivation for companies to report IC-related information, although the focus and style of reporting may be varied by different firms.

Limitations

Like the aforementioned theories, signaling theory has some drawbacks in explaining and predicting organizations' voluntary IC disclosure practices. Firstly, it does not provide guidelines for companies as to how to signal their quality, which might result in inappropriate signaling. In addition, although the theory acknowledges that signaling would generate (direct) costs, it ignores some indirect (or proprietary) costs that also affect the effect of signaling. For instance, because some intellectual capital attributes (e.g. R&D, financial relations) are critical resources for a company to maintain its competitive advantage, the disclosure of such commercially sensitive information might impair the interests of the company (e.g. being used or imitated by competitors).

In the following section, another important theoretical perspective for voluntary IC disclosure, namely legitimacy theory, is examined.

4.2.4 Legitimacy theory

Legitimacy theory is another theory concerned with the relationship between the organization and society at large. It purports that organizations should continually seek to ensure their operations fall within the bounds and norms of their respective communities so as to be perceived as "legitimate" by various stakeholder groups in society (Deegan and Samkin,

2009; Guthrie *et al.,* 2006). The status of legitimacy is considered to be crucial for the survival of an organization.

According to Deegan (2002), legitimacy theory originated from another theory, known as political economy theory in which it emphasizes that "society, politics and economics are inseparable and economic issues cannot meaningfully be investigated in the absence of considerations about the political, social and institutional framework in which the economic activity takes place" (p.292). Legitimacy theory draws on political economy theory considering issues from a broader (societal) perspective, and develops it within a "legitimacy" context. Since the 1980s, the theory has been widely used as a theoretical foundation in accounting research, in particular in the study of environmental and social reporting (e.g. Guthrie and Parker, 1989; Hogner, 1982; O'Dwyer, 2002; Patten, 1992; Ratanajongkol *et al*., 2006; Tilt, 1994). In the following section, the definition and key concepts of the theory are reviewed.

4.2.4.1 Organizational legitimacy

Legitimacy was defined by Lindblom (1994, p.2) as:

> …a condition or status which exists when an entity's value system is congruent with the value system of the larger social system of which the entity is a part. (When a disparity, actual or potential, exists between the two value systems, there is a threat to the entity's legitimacy.)

Based upon the above definition, it can be concluded that if an organization expects to be deemed legitimate by the society in which it operates, it should align its activities with the socially constructed system of norms, values, beliefs and definitions. Otherwise it might lose the status of legitimacy, which will threaten its survival in society. As Deegan (2006, p.162) states:

> Organization legitimacy can be considered as a 'resource' upon which an organization can be dependent for its survival.

In accordance with Deegan (2006), organizational legitimacy is not fixed, and it is subject to change in terms of time and place due to changing community attitudes. In other words, legitimacy may change some time in the future or in other social settings (e.g. in another country) because of changing community expectations. Therefore organizational legitimacy

should be appreciated within the context of a particular time and a particular site, and organizations need continually to adapt their activities to the changing requirements of legitimacy for survival because once the legitimacy of an organization is questioned by the community in which it operates, it would be difficult for the organization to attract investors, customers, employees, etc. (Deegan, 2006).

However it is difficult to achieve congruence between various expectations and norms of society and the needs of the organization. There often appears to be a gap between the perception of society regarding how an organization should act and the actions that the organization takes – the so called legitimacy gap. According to Sethi (1978), two major sources contribute to the gap. Firstly if the community changes its expectations, the gap would occur even though the organization operates in the same manner as it always has. Secondly the gap arises while some previously unknown or hidden (usually negative) information of an organization is revealed by, for example, the news media. The release of such information would lead to the legitimacy of the organization to be questioned since the media are very influential in shaping opinions of the public.

The existence of a legitimacy gap will threaten the legitimacy of an organization in society. To mitigate the threat, Lindblom (1994), drawing on Dowling and Pfeffer (1975), proposed a number of strategies that an organization can adopt. Firstly, the organization can seek to educate and inform its 'relevant publics' (or stakeholders) as to (actual) changes in its performance and activities that are more commensurate with the value system of the community in which it operates. Secondly, the organization can seek to change the perceptions of the "relevant publics" with respect to its performance and activities without changing its actual behavior. Furthermore the organization may seek to manipulate the perceptions of its stakeholders by diverting attention from the issue of concern (usually a crisis for the organization) onto other related (favorable) issues through appealing to emotive symbols so that the organization can present how it has fulfilled social expectations in other areas of its activities. Finally the organization can attempt to change and influence external expectations in regard to its performance through, for instance, demonstrating that some societal expectations are unattainable.

The above strategies can be used by organizations to gain, maintain, or regain (if it is lost) their legitimacy in society. As for the implementation of those strategies, Lindblom (1994),

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and Dowling and Pfeffer (1975) argue that the public disclosure of information in the corporate annual report for example, would be an effective means.

4.2.4.2 Key concepts of legitimacy theory

According to Deegan (2006), legitimacy theory is a positive theory as it attempts to explain and predict organizational behavior (in terms of efforts made to be legitimate), rather than prescribing how an organization should behave (which is the role of a normative theory). Simultaneously it is also depicted as a systems-based theory under which the organization is posited to be influenced by the society in which it operates and, in turn, to have influence upon the society (Deegan and Samkin, 2009; Gray *et al.*, 1996).

Within a systems-oriented perspective, the organization is a part of the broader societal system. Pursuant to legitimacy theory, the organization should not be considered to have any inherent right to resources (or to exist) unless it is deemed to be legitimate by the particular society (Deegan, 2002). From this point, it is often contended that there is a "social contract" with respect to the state of organizational legitimacy between the organization and the society in which it operates (Mathews, 1993). Indeed, the social contract is regarded as the central concept of legitimacy theory. According to Deegan (2006) and Deegan and Samkin (2009), the concept is often referred to as the multitude of explicit and implicit expectations (or terms) that a particular society holds regarding how an entity should operate. The explicit terms usually represent such terms as legal statutes and regulations while the implicit terms refer to non-legislated social expectations and conventions.

Under the concept of a social contract, the organization should conduct its operations within the expectations and norms of the society at large, rather than only investors' expectations and norms. Only if the organization complies with the expectations and norms of society, will the society allow the organization to continue its operations. If an organization conducts operations without considering societal expectations (or breaches the social contract), a legitimacy gap would arise, and as a consequence the society might revoke the organization's right to continue its operations. As Deegan and Samkin (2009, p.95) state:

> (If an organization breaches the social contract) This might occur through consumers reducing or eliminating the demand for the products of the business, factor suppliers eliminating the supply of labor and financial capital to the business, or constituents

lobbying government for increased taxes, fines or laws to prohibit the actions that do not conform within the expectations of the community.

Therefore in order to survive and grow, the management of organizations should employ various techniques as suggested by Lindblom (1994) to ensure that their operations are perceived to be legitimate by the society in which it operates (or compliant with the social contract).

The term "society" within legitimacy theory is generally considered to be pluralistic in which all the individuals or groups are assumed to be equal. However society, as indicated by the managerial branch of stakeholder theory, is composed of various stakeholder groups with unequal power or ability. Thus the organization in practice is expected to have a series of social contracts with various stakeholder groups, and the significance of the contract in part depends on the power of the respective stakeholder groups (Deegan, 2006). In addition, according to Deegan (2006), the need of legitimacy for different organizations is varied, and not all the organizations will necessarily dependent upon maintaining high levels of organizational legitimacy.

4.2.4.3 Legitimacy theory and voluntary IC disclosure

Pursuant to legitimacy theory, there is a social contract between the organization and the society (or community) in which it operates. Within the contract organizations should comply with societal expectations and norms whilst they conduct their operations. However it is not adequate for them to operate within the social contract only. They also need to take all measures necessary to ensure that their activities are perceived to be commensurate with the societal expectations of various stakeholder groups in society. That is, they need to signal their legitimacy to various stakeholder groups (from the perspective of signaling theory). It is acknowledged that different managers may have distinct perceptions in regard of legitimacy, and consequently may adopt varied strategies to achieve the state of legitimacy. But, as indicated by Lindblom (1994) and Dowling and Pfeffer (1975), the public disclosure of any relevant information would be an effective means to implement these strategies.

Due to the significance of intellectual capital for sustainable development and the success of an organization, the information with respect to IC is increasingly demanded by various stakeholder groups in society (e.g. investors, lenders, and supervisory agencies) (Vergauwen

and Alem, 2005; Tayles et al., 2007). From the perspective of legitimacy theory, organizations should voluntarily report on information that is expected by society since the compliance of societal expectations could result in continued inflows of capital, labor and customers (Pfeffer and Salancik, 1978). Pursuant to this perspective it is necessary for organizations to disclose their IC on a voluntary basis, perhaps in the annual report, so as to indicate that they are complying with societal expectations (or contract), or to deflect the attention of the community (or media) from the prevailing negative influence of the organization's activities (Deegan, 2006). Especially for those organizations with high levels of IC, they need to make more IC disclosures because they are unable to legitimize their status on the basis of fixed assets which are "traditionally recognized as symbols of corporate success" (Guthrie et al., 2006, p. 257).

Prior empirical research, such as Abeysekera and Guthrie (2005), Guthrie et al. (2006), Petty and Cuganesan (2005) and Whiting and Miller (2008), has attempted to apply legitimacy theory to explain voluntary IC disclosure practices by firms.

Limitations

It is acknowledged that legitimacy theory also has some limitations as a theoretical underpinning for voluntary IC disclosure. To begin with, it argues that organizations should take all measures possible to attain the status of legitimacy in society, but in reality not all the managers perceive the importance of legitimacy for their survival. Even if they realize the importance, they may have varied perceptions regarding the term of legitimacy. Moreover the theory is not concerned with whether the legitimizing strategies do work, and if so, which forms of disclosure media (e.g. corporate annual reports, newspapers, or electronic media) are more useful for the organization to implement the strategies. Finally the theory does not provide knowledge with regard to whether any particular stakeholder groups are more readily influenced by legitimizing disclosures than others (Deegan, 2002).

Four theoretical traditions for voluntary IC disclosure have been reviewed. Although each of them can be applied to interpret organizations' voluntary IC disclosure practices from some aspects, no one is sufficient to be an adequate theoretical framework separately. In the next section, the author integrates the four theories in an attempt to construct a relatively comprehensive theoretical framework for voluntary IC disclosure.

4.3 Construction of an integrated theoretical framework

In order to construct an integrated theoretical framework based on the aforementioned four theories, it is necessary to integrate the concepts among the theories which are consistent in explaining voluntary IC disclosure. For this purpose, we need to understand the relationships between the four theories as a basis for explaining voluntary IC disclosure. In the following section, those relationships are examined.

4.3.1 The relationship between theories

Agency theory and stakeholder theory

Agency theory is mainly concerned with the relationship between the principal and the agent (generally referred to as the owner-management relationship in a business setting). It is based on the central assumption of self-interest of individuals. It argues that both the principal and the agent tend to maximize their own returns by all means, which might result in conflicts between both parties (the agency problem). Information asymmetry is seen as one of the key factors leading to agency problems. It is also considered to be the most relevant concept within agency theory to the voluntary disclosure of IC because it is widely accepted that voluntary IC disclosures could reduce information asymmetry between the *management* of a company and its *shareholders*, and consequently improve the relationship between them.

Stakeholder theory deals with the relationships of an organization with various stakeholder groups in the society. Within the theory, the organization is a part of the broader societal system. From a stakeholder perspective, organizations should discharge accountability to not only the shareholders, but other stakeholders also. Stakeholder theory expands agency theory which primarily focuses on the manager-shareholder relationship. This can be seen as an advancement of stakeholder theory. However stakeholder theory does not utilize the concept of information asymmetry. Therefore in explaining the voluntary disclosure practices of IC, both theories need to be integrated. As a consequence, we can argue that the voluntary disclosure of IC can reduce information asymmetry between the *organization* and various *stakeholders* in the society within which the organization operates, and improve the relationship between them.

Stakeholder theory and legitimacy theory

Similar to stakeholder theory, legitimacy theory deals with the relationship between the organization and the society (or community) in which it operates. Both theories place the

organization within the larger societal system. However, legitimacy theory concerned with the society as a whole (comprising both stakeholders and non-stakeholders) has a relatively broader context than stakeholder theory which focuses principally on the stakeholders of an organization.

Pursuant to legitimacy theory, organizations should operate within societal expectations and norms (or comply with the social contract), and simultaneously seek to ensure their operations are perceived to be legitimate by society. This is a two-way interaction between the organization and society, unlike stakeholder theory that puts an emphasis on the one-way delivery of organizational accountability to various stakeholders in society (Li, 2008). From this perspective, legitimacy theory plays a more positive role in explaining voluntary IC disclosure since voluntary disclosure of IC is not only a means for organizations to discharge their accountability to various stakeholder groups, but also to gain and maintain the status of legitimacy in society. Apart from this difference, most notions within legitimacy theory in relation to voluntary IC disclosure are consistent with those of stakeholder theory.

Signaling theory and agency theory

Signaling theory deals with how to address problems arising from information asymmetry (e.g. adverse selection and moral hazard) and thus is closely linked to agency theory. Signaling theory suggests a number of potentially effective solutions to the information asymmetry problem in that the management of an organization can positively highlight its excellence to various stakeholders through, for instance, voluntary disclosure of accounting information (e.g. IC and CSR). In particular, the voluntary disclosure of IC as a signal could improve an organization's corporate image, attract potential investors, lower capital costs, decrease volatility of stocks, create a better understanding of its products and services, and more importantly improve its relationships with various stakeholders.

Legitimacy theory and signaling theory

Pursuant to legitimacy theory, organizations should report the information regarding their IC on a voluntary basis in order to indicate (or signal) that they are complying with societal expectations and norms -- that is, signaling theory provides a range of disclosure strategies by which such disclosure can be achieved. Accordingly legitimacy theory and signaling theory are complementary theories in explaining voluntary IC disclosure practices of organizations.

Table 4.2 below summarizes the interrelated concepts between the theories in explaining voluntary IC disclosure practices.

Table 4.2 The interrelated concepts between theories

Theories	Agency theory	Stakeholder theory	Signalling theory	Legitimacy theory
Key concepts	• Self-interest • Principal-agent • Agency problems • Information asymmetry	• Social system • Stakeholder-management accountability	• Information asymmetry • Signalling excellence	• Accountability • Organizational legitimacy
Some references	• Bozzolan *et al.* (2003) • García-Meca *et al.* (2005) • Olivera *et al.* (2006) • White *et al.* (2007) • Li *et al.* (2008) • Singh and Van der Zahn (2008)	• Vergauwen and Alem (2005) • Guthrie *et al.* (2006) • Schneider and Samkin (2008) • Whiting and Miller (2008)	• Bozzolan et al. (2003) • García-Meca *et al.* (2005) • Olivera *et al.* (2006) • Singh and Van der Zahn (2008) • Whiting and Miller (2008)	• Abeysekera and Guthrie (2005) • Petty and Cuganesan (2005) • Guthrie *et al.* (2006) • Whiting and Miller (2008)
Interrelated concepts	With stakeholder theory: • Information asymmetry • stakeholders	With legitimacy theory: • Accountability • Organizational legitimacy	With agency theory: • Information asymmetry • Signalling	With signalling theory: • Signalling • Organizational legitimacy

4.3.2 Integration of theories

After examining the relationships between the theories, we can integrate the concepts of those theories in relation to voluntary IC disclosure. Based upon the relationships discussed above, the theories are interrelated and underpin each other in explaining the voluntary disclosure practice of IC (refer to Table 4.2). For the purpose of this research, the concepts of the theories were further integrated into three key premises as follows:

1. To reduce information asymmetry between the management of an organization and various stakeholders in the society
2. To discharge accountability to various stakeholders
3. To signal organizational legitimacy and excellence (or superior quality) to the society

The three premises can be regarded as motivations for voluntary IC disclosure. Accordingly, it can be assumed that organizations voluntarily disclose their IC so as to reduce information asymmetry and discharge accountability to various stakeholders, as well as signal their

legitimacy and excellence to society. Figure 4.3 below demonstrates the key concepts of the framework and its construction.

Figure 4.3 The integrated theoretical framework
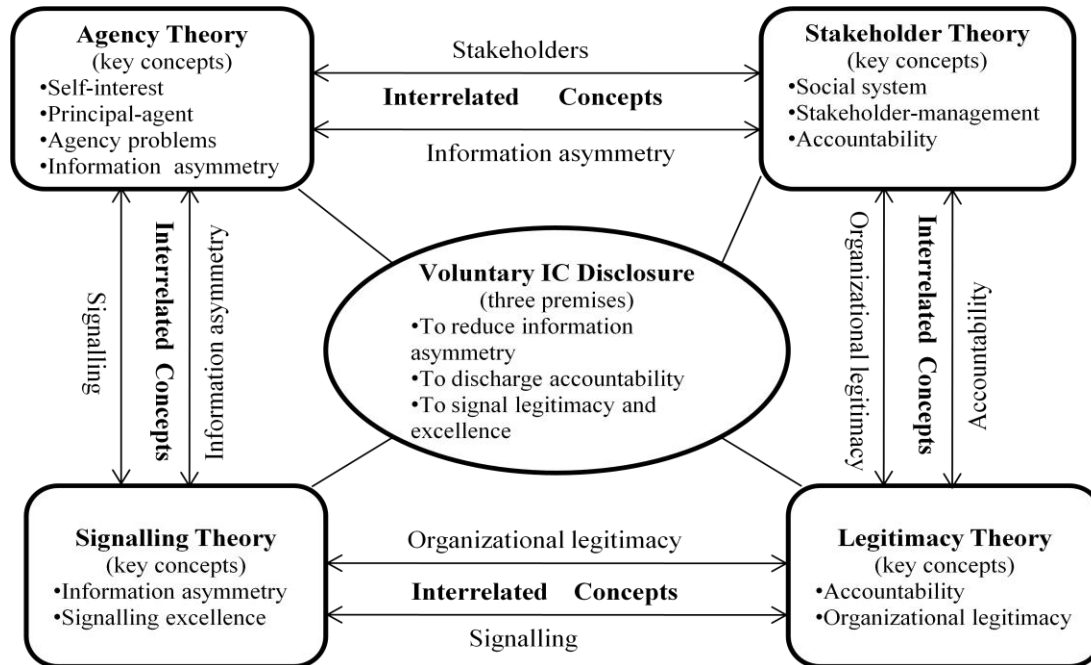
In the current study, the researcher applies this framework to the Chinese environment to interpret voluntary IC disclosure practices by Chinese firms, which is detailed in Chapter 7 (refer to section 7.6.2).

4.3.3 Benefits and Costs of voluntary IC disclosure

On the basis of the constructed framework, a number of benefits[22] for voluntary IC disclosure are summarized, which would significantly motivate organizations to disclose their IC:

- Reduce insider trading (relating to premise 1)
- Improve the relationships with various stakeholder groups in society (relating to premise 1 and 2)
- Divert attention of the community from the prevailing negative influence of their activities (relating to premise 3)
- Improve corporate image (relating to premise 3)

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[22] Refer to the relationships between the four theories and voluntary IC disclosure as discussed in section 4.2.1.3, 4.2.2.3, 4.2.3.2, and 4.2.4.3.

- Attract potential investors and customers (relating to premise 3)

- Attract talents and retain the existing ones (relating to premise 3)

- Lower capital costs (relating to premise 3)

- Decrease volatility of stocks (relating to premise 3)

- Create an understanding of the products and services amongst various stakeholders (relating premise 3)

Despite the benefits for organizations to disclose their IC voluntarily, there are also some costs which impact organizations' decisions. The costs generally include direct costs for preparing and disseminating IC reports, and indirect (or proprietary) costs, such as competition costs, political costs, potential litigation costs, and auditing costs. It is easy to appreciate the direct costs since the preparation and dissemination of IC reports necessarily incur costs for organizations (e.g. hiring specific IC staff). As for the proprietary costs, they often refer to the costs embedded in the consequences of certain corporate behavior rather than directly linked to it. The particular proprietary costs relating to voluntary IC disclosure are as follows.

- Competition costs. While an organization discloses IC information to the public, the information with a strategic significance (e.g. R&D) might be used or imitated by its competitors for intelligence purposes (Vergauwen and Alem, 2005). This would incur competition costs for the organization.

- Political costs. According to Deegan and Samkin (2009), political costs refer to the costs that particular groups external to the organization (e.g., governments and trade unions) may be able to impose on the organization, such as the costs associated with increased taxes, increased wage claims, etc. The voluntary disclosure of IC by an organization might attract unwanted attention from governmental/supervisory agencies or trade unions. This may generate political costs to the organization.

- Potential litigation costs. It is required by accounting standards and rules all over the world that accounting information disclosures should be reliable and consistent. Nevertheless most IC attributes, which cannot be recognized in the balance sheet under the conventional accounting framework, represent a future potential for value creation. The voluntary disclosure of such information may be not considered reliable and consistent by investors, and consequently incur unnecessary legal litigations.

- Auditing costs. Auditors in the accounting firm are generally required to follow accounting regulations and auditing standards strictly whilst they audit financial statements. This is the so-called auditing conservatism. The purpose of auditing conservatism is to protect auditors' reputation and to avoid the potential risk of litigation (Clarkson et al., 2003). As for most IC information, it is not mandatorily required by accounting standards and regulations. In accordance with the principle of auditing conservatism, auditors would not like to audit this type of information for their own interests. As a consequence, voluntary IC disclosures might lead to unexpected costs for organizations to deal with the auditing issues.

The above costs will impair organizations' willingness to disclose their IC. Nonetheless the decision of an organization to report additional accounting information, such as intellectual capital, is typically modeled with a cost-benefit framework (Ferguson *et al.,* 2002). Organizations are expected to disclose their IC voluntarily only if the perceived benefits exceed the costs of doing so (Ferguson et al., 2002; Verrecchia, 1983; Yuan and Xiao, 2007). Of course, it is acknowledged that different organizations may have varied perception as to the cost-benefit framework, and then may adopt a different disclosure policy.

4.4 Corporate annual reports

This research views the corporate annual report as a primary vehicle for organizations to reduce information asymmetry, discharge accountability as well as signal organizational legitimacy and excellence to various stakeholders in society. A corporate annual report is generally considered to be a formal document prepared by public-listed firms largely as a response to the statutory corporate reporting requirements existing in any jurisdiction (Stanton and Stanton, 2002). Currently the corporate annual report has become a highly sophisticated product that attempts to construct a full picture of the company's operation (Hopwood, 1996). A modern corporate annual report commonly comprises both mandatory and voluntary information in the forms of (monetary) numbers, narratives, photographs and graphs.

It is widely acknowledged that the corporate annual report is an important medium through which managers can indicate what is significant for them, as well as a communication medium connecting with various stakeholders of a firm (April et al., 2003; Guthrie and Petty, 2000; Stanton and Stanton, 2002; Yi and Davey, 2010). In recent years, more and more

voluntary information disclosures, such as CSR and IC, appear in annual reports so as to facilitate these functions.

There have been a great number of previous studies which chose the corporate annual report as a primary medium to investigate the status of CSR disclosure (e.g. Guthrie and Parker, 1989; Neu *et al.,* 1998; Deegan *et al*., 2002; Menassa, 2010) or IC disclosure (e.g. Guthrie and Petty, 2000; Abeysekera and Guthrie, 2005; Oliveras *et al*., 2008; Campbell and Rahman, 2010; Whiting and Woodcock, 2011). According to Guthrie *et al.* (2004), two reasons are accountable for this selection: firstly the firm has complete editorial control over the document (other than the audited financial sections); secondly it is usually the most widely available public document distributed by the firm. For the purpose of this study, the corporate annual report was also adopted as a medium to examine the extent and quality as well as drivers of voluntary IC disclosure in the Chinese context.

4.5 Chapter Summary

This chapter provides a comprehensive theoretical framework for the present study through integrating a series of theoretical traditions, comprising agency theory, stakeholder theory, signaling theory, and legitimacy theory. Agency theory, based on the central assumption of "self-interest", purports that information asymmetry exists in most business settings where the management of an organization has an information advantage over its shareholders.

Stakeholder theory extends the concept of "shareholder" within agency theory to a broader context of "stakeholder". It argues that organizations should discharge accountability to a variety of stakeholders in society. Signaling theory, closely linked to agency theory, suggests that the organization should highlight its excellence to society in order to address problems arising from information asymmetry. Legitimacy theory, which further develops the stakeholder theory, posits that organizations should not only comply with the societal expectations in operation (or discharge their accountability) but also need to ensure that they are perceived to be compliant with the societal expectations and norms by various stakeholder groups in society (or signal their organizational legitimacy to society).

Since these theories are interrelated, and support each other in explaining organizations' voluntary IC disclosure practices, they were integrated to construct a (relatively) comprehensive theoretical framework. The constructed framework includes three concepts

that are seen as drivers for companies to disclose their IC voluntarily. Based on the concepts, a number of benefits for voluntary IC disclosure are summarized, which would motivate firms to report their IC. On the other hand, it is acknowledged that there are some costs, especially some proprietary costs, which also impact companies' decisions for IC disclosure. The organization is expected to report its IC voluntarily only if the benefits overweigh the costs. Consistent with many previous studies, the corporate annual report is adopted in this research as a vehicle to examine the status of IC disclosure in the Chinese context.

In the next chapter, research methodology and methods for this research are described.

CHAPTER FIVE

RESEARCH METHODOLOGY AND METHODS

5.1 Introduction

Research is defined by Cavana et al. (2001, p. 4) as "…simply the process of thoroughly studying and analysing the situational factors surrounding a problem in order to seek out solutions to it". During the course of research, two key elements, namely research methodology and methods, need to be clearly identified. In this chapter, the research methodology and methods employed for the current research are presented. The structure of the chapter is organized as follows.

Section 5.2 discusses the selection of research methodology for this research. A mixed methods approach combining both quantitative and qualitative elements was adopted. The methods for data collection and analysis are presented in section 5.3. This study was designed in three stages comprising the development of an IC disclosure index, content analysis of corporate annual reports, and hypothesis development and testing with respect to the determinants of IC disclosure in the Chinese context. Finally section 5.4 summarizes the chapter.

5.2 Research methodology

Research methodology refers to the system of methods and rules to investigate certain social phenomenon, which often rests on the research paradigm adopted by the researcher (Hart, 1998; House, 1994). According to Collis and Hussey (2009, p. 55), a research paradigm is "a framework that guides how scientific research should be conducted, based on people's philosophies and their assumptions about the world and the nature of knowledge". It is often regarded that there are two major paradigms for social science research: the positivist (or quantitative) paradigm and the interpretivist (or qualitative) paradigm.

5.2.1 The two main paradigms

The positivist/quantitative paradigm, originated in the social sciences, is "underpinned by the belief that reality is independent of us and the goal is the discovery of theories, based on empirical research (observation and experiment)" (Collis and Hussey, 2009, p. 56). Positivist research often begins with a theoretical position to develop a series of hypotheses (usually in the form of variables) with regard to the observed phenomena, and then attempt to test those

hypotheses if they are supported or not by concrete empirical evidence, using some statistical techniques. The intepretivist/qualitative paradigm is based on the assumption that social reality is socially constructed and largely rests on what individuals perceive it to be (Cavana et al., 2001; Collis and Hussey, 2009; Creswell, 2003). Unlike positivist research, interpretivist research usually "presents a rich and complex description of how people think, react and feel under certain contextually specific situations" (Cavana et al., 2001, p. 9). Table 5.1 below provides a summary of the philosophical assumptions underlying the two paradigms.

Table 5.1 Assumptions of two main paradigms

Philosophical assumption	Positivist/quantitative paradigm	Interpretivist/qualitative paradigm
ontology **(the nature of reality/knowledge)**	Reality is objective and singular, apart from the researcher	Research is subjective and multiple, as seen by the participants
Epistemology **(the relationship of researcher to that being researched)**	Research is independent of that being investigated	Researcher interacts with that being researched
Axiology **(the role of values)**	Research is value-free and unbiased	Researcher is value-laden and biased
Rhetoric **(the language of research)**	Researcher writes in a formal style and uses passive voice, accepted quantitative words and set definitions	Researcher writes in an informal style and uses the personal voice, accepted qualitative terms and limited definitions
Methodology **(the process of research)**	A hypothetic-deductive process of cause and effect is involved with a static design (categories are isolated beforehand) Research is context free Theories are used to explain and predict that being investigated Results are accurate and reliable through validity and reliability Associated methodologies include experimental studies, cross-sectional studies, longitudinal studies and surveys	An inductive process of mutual simultaneous shaping of factors is involved with an emerging design (categories are identified during the process) Research is context bound Theories are developed from interpretive understanding Findings are accurate and reliable through verification Associated methodologies comprise case studies, participative enquiry, action research, grounded theory, ethnography, hermeneutics and the feminist perspective.

Source: Adapted from Collis and Hussey (2003, p. 48; 2009, p. 58) and Creswell (1994, p. 5; 1998 p. 75).

Drawing on the philosophical assumptions, Collis and Hussey (2009, p. 62) argue that business research under the positivist (or quantitative) paradigm tends to: (1) use large samples; (2) have an artificial location; (3) be concerned with hypothesis testing (using statistical techniques); (4) produce precise, objective, quantitative data (and using quantitative methods for data analysis); (5) produce results with high reliability but low validity; and (6) allow results to be generalized from the sample to the population. On the other hand, research under the interpretivist paradigm tends to: (1) use small samples; (2) have a natural location; (3) be concerned with generating theories; (4) produce 'rich', subjective, qualitative data; (5) produce findings with low reliability but high validity; and (6) allow findings to be generalized from one setting to another similar setting.

5.2.2 Mixed methods methodology

On the basis of the above arguments, we can see that the two paradigms are often seen as opposite and incompatible with each other with respect to their philosophical assumptions and real research practices. This incompatibility (thesis) has led to heated debate (the so-called "paradigm wars") in which the researchers from distinct schools reject each other's paradigm (Gage, 1989; Howe, 1992; Tashakkori and Teddlie, 1998). Some researchers criticize that the incompatibility thesis excessively focuses on divergence between the two paradigms and neglect opportunities for convergence (Bryman, 2007; Crafton et al., 2011; Hammersley, 1992). Moreover, Hedrick (1994) believed that the paradigm (quantitative/qualitative) debate was a "useless endeavour" (p. 45) since most of research approaches under different paradigms could be complementary.

In recent decades, some researchers have begun to introduce the concept of *pragmatism* as a solution for the debate. The pragmatists contend that researchers should have freedom to choose methods from various paradigms (quantitative or qualitative) based on usefulness to address research questions (Collis and Hussey, 2009). In other words, under pragmatism researchers should focus on the entire research process through mixing both qualitative and quantitative methods in a single study regardless of the philosophical debate with respect to reality and the nature of knowledge (Creswell and Tashakkori, 2007; Grafton et al., 2011). This pluralistic approach is often called a mixed methods approach.

Albeit some researchers (e.g. Scott and Briggs, 2009; Sale et al., 2002) insist that quantitative and qualitative methodologies should not be mixed in any way because of incommensurable epistemic and ontological foundations, the mixed methods approach, which is grounded on

the philosophy of pragmatism, has gained popularity in social science research over several decades and has been viewed as a "third paradigm" (Denscombe, 2008) or "third methodology" (Hall and Howard, 2008). There have been increasing accounting researchers applying the approach to their research (e.g. De Silva, 2011; Elsayed and Hoque, 2010; Graham et al., 2005; Hooks et al., 2002; Wouters and Wilderom, 2008). It is often argued that, using a mixed methods methodology in research, the weakness of one paradigm could be offset with the counter-balancing strengths of the other (Collis and Hussey, 2009; Jick, 1979). More specifically, the mixed methods approach enables researchers to extend findings beyond those observable employing a single method (Grafton et al., 2011), identify empirical contradictions that might otherwise be missed, and establish confidence through observing convergence in findings from distinct strands of the research (Denzin, 1978). Also Grafton et al. (2011) argue that mixed methods research combining both quantitative and qualitative elements offers researchers an opportunity to incorporate divergent views, which would lead to a deeper comprehension in regard to the research problem.

Given the benefits of the mixed methods approach, this research applied this approach to investigate the research problem. In the following section, the justification for the application of the approach in the present study is detailed.

5.2.3 Mixed methods methodology in this research

There were two major research objectives for the current study.[23] The first objective was to investigate the current status of IC disclosure in mainland China for both extent and quality while the second objective was to investigate the determinants of IC disclosure in the Chinese mainland context.

To achieve the first objective, an IC disclosure index was developed on the basis of expectations of Chinese stakeholders, as an instrument to analyze corporate annual reports of 100 top A-share companies for two years (2008 and 2009).[24] During this course, both quantitative and qualitative approaches were applied. For the quantitative element, a questionnaire survey was designed to obtain the weighting for each IC attribute based upon the opinions of a panel of Chinese IC experts on the importance of the IC attribute. The qualitative elements include a consultation process with the selected panellists to validate the

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[23] Four research objectives, as indicated in Chapter one (p. 3), can be merged into two primary research objectives.

[24] For details regarding the development of the IC disclosure index, please refer to Chapter 6 "Development of IC disclosure index".

draft list of IC items, and content analysis of corporate annual reports to determine the extent and quality of IC disclosure in Chinese companies.

To achieve the second objective, a standard quantitative approach was employed. Firstly a series of hypotheses in regard to impact factors of IC disclosure were developed based on a number of theories which underpin voluntary IC disclosure, including agency theory, stakeholder theory, signalling theory and legitimacy theory. Then the results obtained from the first research question were used as empirical evidence to test the hypotheses through some statistical techniques, such as the Pearson correlation test and OLS regression analysis. Figure 5.1 summarises the quantitative and qualitative elements involved in this research (refer to p. 88).

It is considered that the application of a mixed methods methodology for the current study is appropriate since the research design of this study is quite complicated, not only examining the state of IC disclosure, but investigating the associations between IC disclosure and a series of impact factors. Furthermore, the application of a mixed method methodology enriches research findings attained by any one research method[25], and consequently lead to an in-depth or holistic understanding with respect to IC disclosure in the Chinese mainland context, which contributes significantly to knowledge and extant literature in the area.

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[25]As a matter of fact, most previous studies in regard to IC disclosure employed a single qualitative approach for their research, namely content analysis of corporate annul reports. It is a limitation that the current study attempts to avoid.

Figure 5.1 Qualitative and quantitative elements of this research
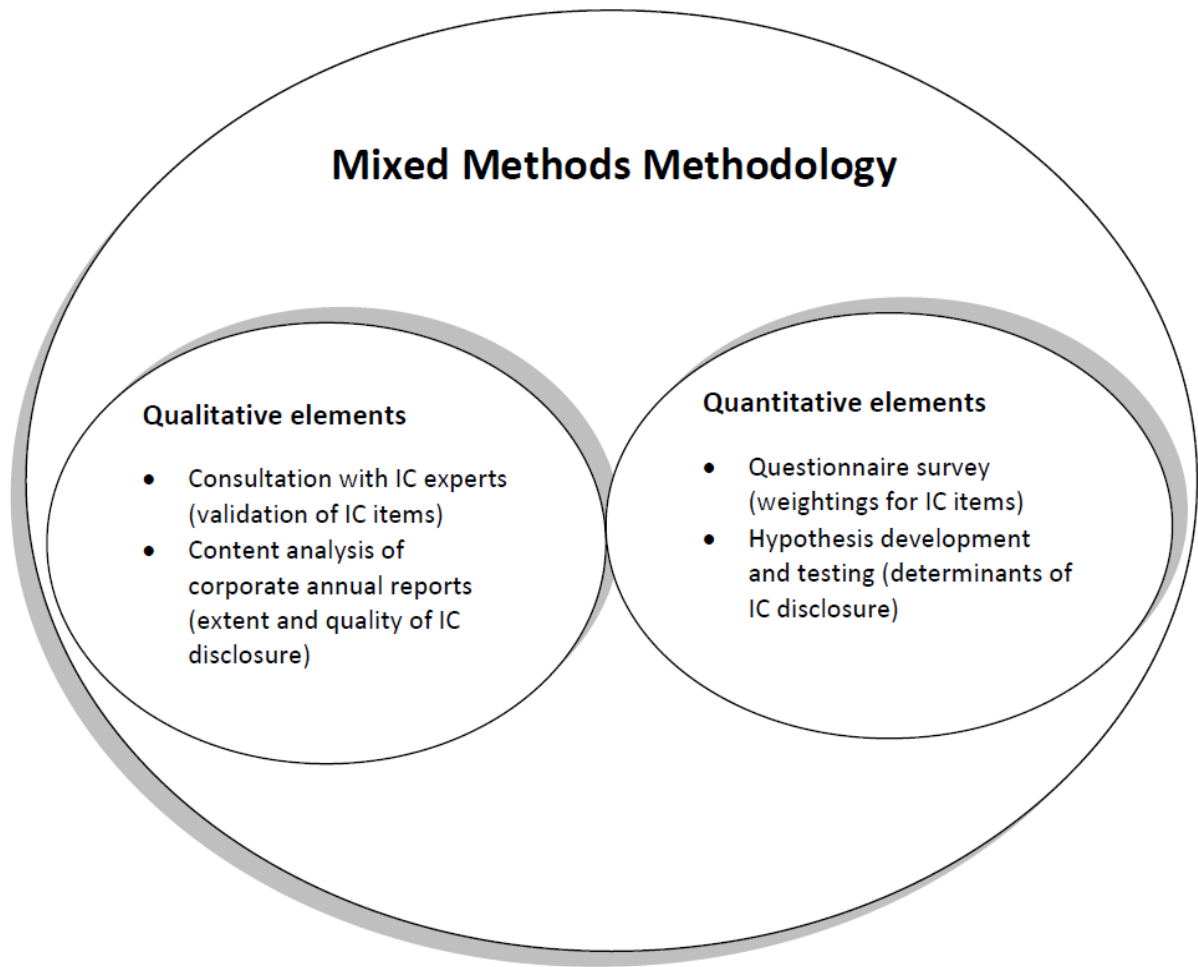
5.2.4 Mixed methods research strategies

In accordance with Creswell (2003), there are three general strategies associated with mixed methods research: sequential procedures, concurrent procedures, and transformative procedures, each of which is described as follows.

- Sequential procedures: in which the research may begin with an exploratory and qualitative method followed by a quantitative method with a large sample so as to generalize results to a population. Alternatively the research may start with a quantitative method for testing hypotheses and follow up with a qualitative method (e.g. interview or case study) to explore more details regarding the investigation. The purpose of this strategy is to elaborate on or expand the findings of one method with another method.

- Concurrent procedures: in which both quantitative and qualitative data are collected at the same time, and then are interpreted collectively using some triangulation techniques. The purpose of this strategy is to provide a comprehensive analysis as to the research problem.

- Transformative procedures: in which the investigator employs a theoretical lens as a guiding framework to collect and interpret both quantitative and qualitative data. In this design, the researcher may choose a sequential or a concurrent approach for data collection.

In the present study, a sequential strategy was adopted in general. Firstly the researcher used a qualitative method, namely content analysis of corporate annual reports, to examine the extent and quality of IC disclosure by Chinese companies from various angles. Then a quantitative method involving a process of hypothesis development and testing was applied to investigate the determinants of IC disclosure in the Chinese environment. In the following section, the methods for this research are presented in detail.

5.3 Research methods

A concrete research process usually consists of four steps as illustrated in Figure 5.2: preparation, data collection and analysis, interpretation of findings, and report preparation and presentation. Firstly, the preparation process for this research is described.

Figure 5.2 Flow of research process
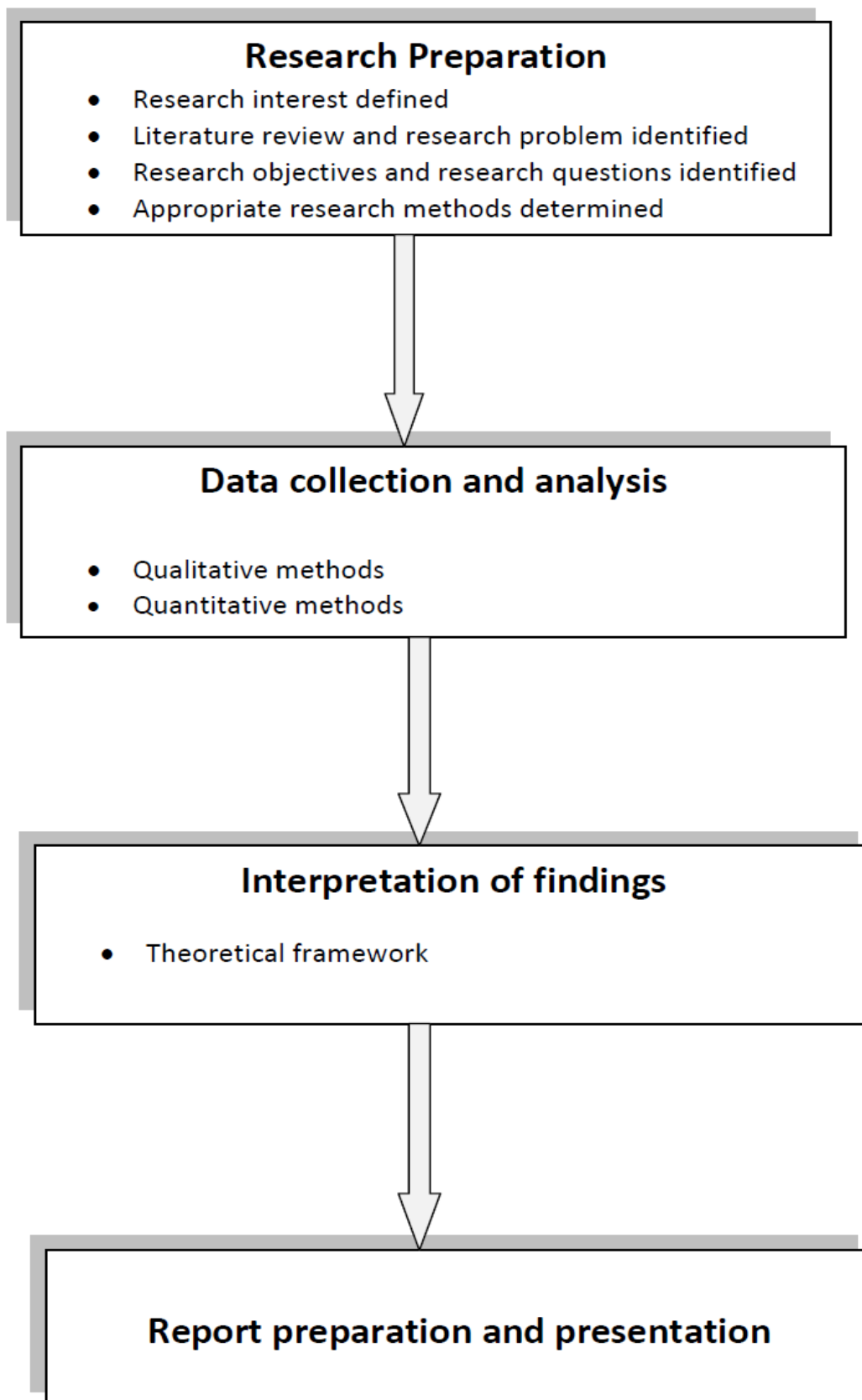
5.3.1 Research preparation process

Drawing upon Hooks (2000), the preparation of this research includes the following procedures: defining research interest, literature review and defining research problem, developing research objectives and research questions, and finally determining appropriate research methods, which are described as follows.

Research interest defined

Intellectual capital is often regarded as a key value driver for corporate success in the current knowledge-based economy. In recent years, increasing companies have realized the importance of IC and as a consequence would like to disclose their IC in corporate annual reports in order to discharge accountability to various stakeholders as well as attract potential investors. The researcher deems that it would be very interesting to investigate the status of IC disclosure in the Chinese (mainland) context since China is currently the largest developing country as well as one of the most dynamic economies in the world.

Literature review and research problem identified

A comprehensive literature review with regard to IC disclosure was conducted. It was found that most previous studies focus on developed countries rather than developing countries. As for the case of China, there are only two studies to date: Xiao (2008) and Yi and Davey (2010), both of which examine the state of IC disclosure in Mainland China over a one-year period only (year 2007 and 2006 respectively) using a single research method (content analysis of corporate annual reports) and a relatively small sample size (50 top A-share companies and 49 dual-listed A and H share companies respectively). The researcher believes that the two studies were insufficient to reflect a holistic picture of IC disclosure by Chinese firms. It is contended that a more comprehensive research is needed so as to obtain an in-depth understanding in regard to IC disclosure in the Chinese mainland context.

Research objectives and research questions identified

Bearing in mind the research problem, two primary research objectives as follows were developed on the basis of literature review:

- To examine the extent and quality of IC disclosure by Chinese mainland firms from various angles

- To investigate the determinant factors which impact the disclosure of IC information by Chinese mainland firms

Grounded on the research problem and the research objectives, the following research questions were developed to guide data collection and analysis:

1. How can the extent and quality of IC disclosure by Chinese firms be measured?
2. Is there an information gap between IC disclosure practices of Chinese firms and the expectations of Chinese stakeholders?
3. What is the trend of IC disclosure by Chinese firms in terms of extent and quality?
4. Are there any differences for IC disclosure amongst Chinese firms in various industrial sectors?
5. Are there any differences between companies with varied listing status in China?
6. What are the factors that influence the disclosure practices of Chinese firms?
7. What are the associations between IC disclosure of Chinese firms and the impact factors?

Appropriate research methods determined

Based upon the preparatory work, the detailed methods for this research are determined and described in the following section.

5.3.2 Research design

Following the initial preparation phase, this research was designed in three stages as outlined in Figure 5.3. In the following, the three stages are detailed.

Figure 5.3 Summary of research stages

Stage 1: development of IC disclosure index

- Identification of IC items: prior literature and consultation with IC experts
- Weightings of IC items: questionnaire survey
- Quality criteria: prior literature

Stage 2: content analysis of corporate annual reports

- Sample selection: 100 top listed A-shares companies
- Data source: 2 years of corporate annual reports
- Pilot test: 10 randomly selected annual reports by two coders
- Coding of annual reports of sample companies: by sentence
- Data analysis: from 5 angles
- Interpretation of findings: using the constructed theoretical framework

Stage 3: hypothesis development and testing

- Identification of impact factors (independent variables): prior literature, availability of data, and importance
- Hypothesis development: prior literature and some relevant theories.
- Hypothesis testing: univariate and multiple regression analysis

First stage: development of the IC disclosure index

In the first stage, an IC disclosure index was constructed as an instrument for content analysis of corporate annual reports. The details for the construction of the disclosure index are presented in chapter 6. This section only provides a summary in which the emphasis is placed on the validity and reliability of the construction process.

The IC disclosure index was developed in three steps. Both qualitative and quantitative methods were involved during the process. Firstly a draft list of IC items was identified based on previous studies with regard to IC disclosure in the national context. To validate the potential IC framework applicable to the Chinese environment, a consultation process with an advisory panel comprising 20 Chinese experts on IC from 6 stakeholder groups was carried out via email. A consensus was achieved after negotiating with some panellists who had varied views regarding the framework, and the final list of 20 IC items was established.

Secondly a questionnaire survey was designed to identify the weightings of the IC items in which a five-point rating scale (1-5) was used to gather opinions from the panel of IC experts on the importance of the disclosure items. The responses or ratings from the panellists for each IC attribute were summed and then divided by twenty (the total number of panellists) to obtain a mean score which represents the weighting for the attribute. It is contended that the use of a panel with twenty panellists from six (annual report) user groups avoids the bias imposed by only one user group (usually financial analysts) in prior research.

The final step for the construction of the index involved developing criteria to assess the quality of IC disclosure. Based upon previous research employing disclosure indices, the criteria with a five-point scale (0-4) were developed.

Once the index was constructed, it was used to analyze the annual report of sample companies. In the following the procedures for content analysis of corporate annual reports are described.

Second stage: content analysis of corporate annual reports

In the second stage, the main purpose was to gain an in-depth understanding with regard to the status of IC disclosure by Chinese firms from both extent and quality through content analysis of corporate annual reports, in other words, to accomplish the first research objective. Firstly the sample selection and data sources are described.

In the current study, 100 top A-share Chinese firms in terms of market capitalization[26] were selected as the sample. The following reasons are accountable for this selection. Firstly the sample companies are the largest companies in China. It is expected that large firms should report more IC information than those relatively small companies due to the resource advantage and high visibility to the public. Secondly the sample companies cover a wide range of industrial sectors, which could result in a holistic cross-sectional study through which we could gain a comprehension regarding IC disclosure practices in various industries. Moreover most sample companies are leaders and the best performers in their specific industries, which represent the elite of the Chinese economy. Thirdly the sample includes both pure A-share and dual-listed A and H share Chinese firms, which represents a unique stock market. Finally the selection of 100 companies is a reasonable sample size for reliable and valid statistical analysis, for instance, the regression analysis to examine the associations between IC disclosure and the impact factors in this study (refer to chapter 8).

 Corporate annual reports of years 2008 and 2009 of the sample companies were primary data sources for this research. The annual report prepared by public-listed companies, at present, is usually a comprehensive document including both mandatory and voluntary information (e.g. CSR and IC) in the forms of numbers, narratives, photographs and graphs, which seeks to reflect a full landscape of companies' operations. Companies often use it as a principal vehicle to highlight what is important for them, as well as a communication medium to discharge accountability to various stakeholders (Guthrie and Petty, 2000; Stanton and Stanton, 2002; Yi and Davey, 2010). The selection of two-year annual reports enables a longitudinal study through which we could obtain an understanding in regard of the trend of IC disclosure in the Chinese mainland context.

Content analysis

In this stage, content analysis of corporate annual reports was employed as the primary research method. According to Krippendorff (2004, p. 18), content analysis is "a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use." As a method for data collection, it involves codifying both quantitative and qualitative information into various pre-defined themes (or categories) based

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[26] At the beginning of September, 2010

on selected criteria so as to derive patterns in the presentation and reporting of information (Guthrie et al., 2004). Content analysis is often viewed as an interpretative approach which seeks to interpret the meaning of texts through quantifying and analyzing published information systematically, objectively and reliably (Ahuvia, 2001; Guthrie et al., 2004; Steenkamp and Northcott, 2007). In this sense, the method could enable researchers to go behind the text as presented to make contextualized inferences with respect to the hidden meanings (Denscombe, 1998; Steemkamp and Northcott, 2007). This can be seen as a potential contribution of the approach.

Content analysis of corporate annual report has been widely applied in accounting research for a number of years, in particular in the area of social and environmental reporting (e.g. Guthrie and Parker, 1990; Hackston and Milne, 1996; Unerman, 2000; De Villiers and Van Staden, 2006; Beck et al., 2010). In recent years, many IC researchers have used the method to evaluate the level of IC disclosure in a variety of contexts (e.g. Guthrie and Petty, 2000; April et al., 2003; Oliveira et al., 2006; Schneider and Samkin, 2008; Yi and Davey, 2010). This research, drawing on the previous studies, employs the method to gauge the extent and quality of IC disclosure by Chinese mainland firms.

In accordance with Guthrie and Mathews (1985), and Guthrie et al (2004), the following criteria should be met in order to achieve an effective content analysis:

- The categories of classification must be clearly and operationally defined;
- It must be identified clearly that an item either belongs or does not belong to a particular category;
- The information can be quantified;
- A reliable coder is necessary for the purpose of consistency.

In this research, the above criteria were employed to code the annual reports prepared by the sample firms.

Coding of corporate annual reports and data analysis

The procedures of coding corporate annual reports using the developed IC disclosure index are detailed in Chapter 6 (refer to section 6.5). In this section, a summary is provided only. Sentences rather than words, paragraphs or portion of pages were chosen as the unit of coding. A coding framework was constructed on the basis of the disclosure index. To improve the

reliability of the coding process, a pilot test was conducted by two coders (the researcher and an IC expert in the panel) in which ten annual reports from the sample companies were selected on a random basis. During the process, both coders firstly code the selected annual reports independently and then collate the results for each IC attribute until a consensus was achieved. After the pilot test, the researcher coded the rest of the annual reports through a coding sheet.

Once the coding of annual reported was completed, the data collected was quantified and analyzed from various angles, on the basis of the research questions. The angles include:

- The extent and quality of IC disclosure in terms of items, categories and the overall IC (refer to sections 7.2-7.5 in Chapter 7 for details)
- The information gap between the actual IC disclosure practices by Chinese firms and the expectations of Chinese stakeholders (represented by the panel of IC experts) (refer to section 7.2)
- A longitudinal analysis [using 2006 dataset from a previous Chinese study by Yi and Davey (2010), and the 2008 and 2009 dataset from the current study] to examine the trend of IC disclosure by Chinese firms (refer to sections 7.2-7.5)
- The extent and quality of IC disclosure by industry (the sample companies were classified into six industries: finance, business service, utilities, energy, material, and industrial/consumer goods, refer to section 7.7)
- The extent and quality of IC disclosure by listing status (pure A-share companies and dual-listed A and H share companies, refer to section 7.8)

Interpretation of findings

Through analysing the data collected from content analysis of annual reports, the researcher attained a number of findings regarding the extent and quality of IC disclosure by Chinese firms. In order to obtain an in-depth understanding as to the status of IC disclosure in the Chinese mainland context, a comprehensive theoretical framework was constructed to interpret the findings through integrating the four most commonly used theories in disclosure studies: agency theory, stakeholder theory, signalling theory and legitimacy theory (refer to Chapter 4). The constructed framework posits that there are three factors which motivate organizations to report their IC on a voluntary basis: (1) to reduce information asymmetry between the management of an organization and various stakeholders in society; (2) to

discharge accountability to various stakeholders; (3) to signal organizational legitimacy and excellence (or superior quality) to society. Empirical evidence in this study indicates that the three motivations for voluntary IC disclosure are applicable to the Chinese environment (refer to section 7.6).

Third stage: hypotheses development and testing

The first research objective examining the extent and quality of IC disclosure by Chinese firms was achieved in the second stage of research. The third stage focused on the second research objective investigating the determinants of IC disclosure in the Chinese context. As mentioned previously, a purely quantitative research approach was involved in this stage. Firstly a series of hypotheses as to the associations between IC disclosure practices by Chinese companies and a variety of impact factors (or determinants), comprising industry type, company size, leverage, listing status, ownership structure, independent directors, stand-alone CSR report, profitability and auditor type, were developed based on a number of previous studies as well as some relevant theories. Then the hypotheses were tested using statistical techniques (e.g. univariate and multiple regression analysis), employing the data obtained from the second stage with regard to the disclosure scores[27] of overall IC, internal capital, external capital and human capital for each firm,. The details for this stage are presented in chapter eight.

Based upon the above discussion regarding the three stages in this research, we can find that four types of triangulation as identified by Denzin (1978) were involved:

- Data triangulation (that employs various data sources in a single study): both questionnaire survey and content analysis of corporate annual reports were employed for data collection.
- Investigator triangulation (that involves different researchers for an investigation): two coders were used to code the annual reports of the selected companies in the pilot test.
- Theory triangulation (in which multiple theoretical perspectives are applied to explain the findings): four theories were integrated to construct a comprehensive theoretical framework explaining IC disclosure practices by Chinese firms.

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[27] Which are normalized scores indicating the extent and quality of IC disclosure (see chapter 7 for details).

- Methodological triangulation (in which distinct methods were used in the research process): both quantitative methods (e.g. questionnaire survey) and qualitative methods (e.g. content analysis) were used in this research.

Triangulation involving multiple methods of observation is consistent with the characteristics of mixed methods methodology. It is believed that the application of triangulation in the current study could reduce bias for the data and ensure credibility for the results (Hooks, 2000).

5.3.3 Report preparation and presentation

After the three stages, data collection and analysis for this research were finished. The next step was to write up the final report. In order to assist the readers gain a holistic comprehension regarding this research, the construction of the theoretical framework, the development of the IC disclosure index, the results and discussion for the second stage, and the results and discussion for the third stage were prepared and presented in four independent chapters (chapter 4, 6, 7 and 8 respectively).

5.4 Chapter summary

There are generally two main research paradigms for social science research, namely the positivist (or quantitative) paradigm and the interpretivist (qualitative) paradigm. The two paradigms are underpinned by various philosophical assumptions in terms of ontology, epistemology, axiology, rhetoric and methodology. In this research, a mixed methods approach combining both quantitative and qualitative elements was applied. The mixed methods methodology is grounded on the philosophy of pragmatism under which researchers should be free to choose research methods from different research paradigms regardless of the underlying philosophical assumptions regarding reality and the nature of knowledge. It is argued that the application of the mixed methods methodology, providing researchers an opportunity to incorporate distinct views into an often-called "third paradigm", could result in a deeper understanding with respect to the research problem.

In order to solve the research problem and achieve the research objectives, this study was designed in three stages. Firstly an IC disclosure index was developed as an instrument for content analysis of corporate annual reports in the second stage. This stage involved the application of both quantitative methods (e.g. questionnaire survey with a panel of Chinese IC experts) and qualitative methods (e.g. a consultation process with the panellists). Secondly

the annual reports of the sample companies were coded for data collection using a coding framework developed from the disclosure index. The collected data were then quantified and analyzed on the basis of the research questions derived from the first research objective to examine the extent and quality of IC disclosure by Chinese firms. To interpret the research findings, a comprehensive theoretical framework with three premises (motivations) was constructed through integrating four most often used theories in disclosure studies: agency theory, stakeholder theory, signalling theory and legitimacy theory.

In the third stage, a purely quantitative research approach was involved in which a series of hypotheses in regard to the associations between IC disclosure practices of Chinese firms and nine impact factors were deduced based on prior research and some relevant theories. Then the hypotheses were tested through some statistical techniques, such as univariate and multiple regression analysis. During the process of this research, four types of triangulation, comprising data triangulation, investigator triangulation, theory triangulation and methodological triangulation, were involved, which are consistent with the characteristics of mixed methods methodology.

In the next chapter, the development of the IC disclosure index is detailed.

CHAPTER SIX

DEVELOPMENT OF THE IC DISCLOSURE INDEX

6.1. Introduction

The disclosure index is seen as an important instrument for accounting information disclosure studies. A disclosure index was defined by Coy (1995) as:

> "…a qualitative-based instrument designed to measure a series of items which, when the scores for the items are aggregated, gives a surrogate score indicative of the level of disclosure in the specific context for which the index was devised" (p.121).

In this research, an IC disclosure index with three elements (items, weightings and quality criteria) was developed as an instrument to examine the extent and quality of IC disclosure by Chinese firms. This chapter describes the process for the development of the index, which is structured as follows.

Section 6.2 describes the course of identifying IC items for the index through literature review and consultation with an expert panel. The process to identify weightings of the items using a questionnaire survey is detailed in section 6.3. Next section 6.4 presents how the quality criteria were established from prior literature. Section 6.5 depicts the coding process of corporate annual reports using the developed index. Finally section 6.6 summarizes the chapter.

6.2 Selection of IC items

There were two steps for the selection of IC items in this study. Firstly a review of prior literature with regard to IC disclosure in a national context was conducted in order to obtain potential IC items. Secondly a consultation process with an IC expert panel was carried out to validate the potential IC attributes. In the following section, the first step is described in detail.

6.2.1 Potential items from prior literature

For the purpose of the first step, nine influential articles, including two articles in the Chinese context (Xiao, 2008; Yi and Davey, 2010), were selected (refer to Appendix A). Amongst the literature, the research undertaken by Guthrie and Petty (2000) is deemed to be an exploratory study in which they identify 24 IC items under three IC categories (internal capital, external capital and human capital) derived from Sveiby (1997)'s Intangible Asset

Monitor. Most of the subsequent studies follow the framework, or make minor changes to the framework. Table 6.1 summarizes all the IC attributes used in the previous literature (the number in the bracket indicates the frequency of the item used by prior research.).

Table 6.1 Initial draft of IC items

Internal Capital	External Capital	Human Capital
1. Intellectual property (9) 2. Corporate culture (9) 3. Management processes (9) 4. Information systems (9) 5. Management philosophy (8) 6. Networking systems (7) 7. Financial relations (7) 8. Research projects (2)	1. Brands (9) 2. Customers (9) 3. Distribution channels (9) 4. Business collaborations/partnerships (9) 5. Licensing agreements (9) 6. Company reputation/names (8) 7. Customer loyalty (6) 8. Customer satisfaction (5) 9. Favorable contracts (4) 10. Franchising agreements (4) 11. Financial contracts (2) 12. Research collaborations (1) 13. Research and development (1) 14. Market share (1)	1. Work-related knowledge (9) 2. Education (8) 3. Entrepreneurial spirit (7) 4. Employees (6) 5. Training (5) 6. Work-related competences (5) 7. Vocational qualifications (4) 8. Know-how (4) 9. Education qualifications (1) 10. Innovativeness of employees/team of employees (1)

From the table, we find that there are a total of 32 items employed by prior research. Among them ten items were used by all the articles (9), and three items were applied by eight out of nine articles. In addition, three items were used by seven articles while two items were applied by six articles. However there were five items used by only one article.

Since this study is concerned with the general state of IC disclosure in China rather than focusing on a particular industry, the list of items need not to be exhaustive. To shorten the list, some items that are similar in nature are combined into one item, such as "management philosophy/corporate culture", "information/networking systems", "licensing agreements/franchising agreement/favorable contracts" [28], "(education and vocational) qualifications", "education/training", and "work-related knowledge/competences"[29]. Besides, "research projects" was incorporated into "research and development" as an internal capital item rather than an external capital item while innovativeness of employees/team of

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[28] "Financial contracts" was also incorporated into this item.
[29] "Know how" was merged into this item as well.

employees was emerged into "entrepreneurial spirit". "Market share" was changed into a broader name "marketing" comprising marketing channels, strategies and outcomes; and "financial relations" was expanded to "financial/investor relations" for the purpose of a broader context. The modified list of potential IC items (a total of 19 including 6 for internal capital, 8 for external capital, and 5 for human capital) are shown in Table 6.2.

Table 6.2 Second draft of IC items

Internal Capital	External Capital	Human Capital
1. Research & Development 2. Intellectual property 3. Management philosophy/corporate culture 4. Management processes 5. Information/networking systems 6. Financial/investors relations	1. Brands/reputation 2. Customers 3. Customer satisfaction/loyalty 4. Marketing 5. Distribution channels 6. Business collaborations 7. Research collaborations 8. Licensing agreements/franchising agreements/favorable contracts	1. Employees 2. Qualifications 3. Education/training 4. Work-related knowledge/competences 5. Entrepreneurial spirit

Informal discussions with a Chinese accounting professor expert in intellectual capital and two accountants preparing annual reports in Chinese public listed firms were then carried out so as to make the identification of potential IC attributes more closely linked to the Chinese context. All of them consider the list of potential items identified previously applicable to the Chinese environment. The professor also suggested that "suppliers", should be included in the list as an external capital item. He stated that:

> "'*Suppliers', although less important than 'customers' as an intellectual capital element in common sense, are also important intellectual assets for firms because a good relationship with them (suppliers) may bring the firm many benefits, for example, favorable contracts with better discounts or priorities to purchase products or services.*"

The author adopted the suggestion. Accordingly, there were a total of 20 potential IC items including 6 in internal capital, 9 in external capital and 5 in human capital as shown in Table 6.3.

Table 6.3 Third draft of IC items

Internal Capital	External Capital	Human Capital
1. Research & Development 2. Intellectual property 3. Management philosophy/corporate culture 4. Management processes 5. Information/networking systems 6. Financial/investors relations	1. Brands/reputation 2. Suppliers 3. Customers 4. Customer satisfaction/loyalty 5. Marketing 6. Distribution channels 7. Business collaborations 8. Research collaborations 9. Licensing agreements/franchising agreements/favorable contracts	1. Employees 2. Qualifications 3. Education/training 4. Work-related knowledge/competences 5. Entrepreneurial spirit

A potential IC framework was constructed primarily from prior literature at this stage. The framework covering the most important elements of IC is considered to be comprehensive although the size is not large (only 20 items). It is applicable to the objective of this study to investigate the general status of IC disclosure across a variety of industrial sectors in China. Nevertheless because the framework was principally developed from prior (largely western) literature, it was necessary to test its validity within a Chinese context. To do this, a consultative process with a panel of Chinese experts in intellectual capital was carried out, which is detailed as follows.

6.2.2 Consultation process with an expert panel

To further validate the potential IC framework applicable to the Chinese environment, a consultative panel comprising twenty Chinese experts in intellectual capital was established. According to Hooks (2000, p. 124), "an expert is someone who has special knowledge about a specific subject". The selected experts for this study are those who are knowledgeable about intellectual capital and its reporting. The selection of panel members is therefore purposive rather than random.

6.2.2.1 Selection of panel members

Before the selection of potential panel experts, the following criteria were established to maximize the variation in expertise accessed.

- Must be expert in IC and its reporting

- Must be a Chinese (mainland) resident

- Should be professionals from various groups of stakeholders such as CFOs and accountants preparing annual reports from sample companies, accounting scholars

from universities and research agencies, CPAs from big accounting firms, financial analysts from investment companies or banks, officials working in governmental supervisory agencies for corporate reporting.

- Would like to participate in this research

After the establishment of the criteria, the researcher started to search for potential participants through a relationship network (so called *guanxi*) in China. Guanxi refers to the beneficial relationships between people (or people and organizations, or amongst organizations). It can be established and expanded through family members and friends or business associates. One most important characteristic of guanxi is its chain effect which means that people can significantly expand their relationships through the established relationships and finally form an intricate guanxi network in which people can benefit from each other economically, politically and emotionally. Guanxi is a very important element in the Chinese culture. If people do not have any guanxi, it is difficult to achieve anything in China.

It is fortunate that the author for this research has some family members, friends and previous classmates working in top listed companies, universities, accounting firms, and government in China. Relying on the relationships and some expanded from the established relationships, 20 potential participants applicable to the selection criteria were invited to participate in the research, comprising 7 by direct contact, 8 by telephone, and 5 by mail or e-mail.

During the initial contact with the potential participants, they were fully informed in regard to "who the researcher is", "what the research purposes are", "what the proposed research methods are", and "their rights on the confidentiality, withdrawal, further queries to the research and the request for a summary of the research findings" before they made the decision for participation. Fortunately, all of them were very interested in the research and wished to be involved in the research. A consultative panel was established. Details of the panelists are listed below.

1. Two CFOs from sample companies
2. Five Accountants participating in preparing annual reports from sample companies
3. Four Accounting Scholars expert in IC disclosure: one from a research agency and three from universities
4. Three CPAs from big N accounting firms

5. Four financial analysts from investment companies or banks

6. Two officials working in governmental supervisory agencies for corporate reporting

This panel consists of twenty professionals from six expert/stakeholder groups. All of them have good knowledge relevant to this research, and represent a variety of voices to the subject. The inclusion of them rather than those with little knowledge regarding IC is beneficial to obtain some critical insights for this research, as well as to validate this research in the Chinese context.

As for the size of the panel, twenty panelists were considered to be appropriate. In accordance with Martino (1972), careful selection of 10-30 subject-matter experts is a reasonable number to establish a panel in research seeking to obtain stakeholder opinions on particular matters. There have been some previous studies, such as Hooks et al., (2002) using 15 experts, and Schneider and Samkin (2008) who selected 11 stakeholders. The selection of twenty panelists in this research, on the one hand, represents comprehensive opinions from a wide range of stakeholders. On the other hand, it avoids the negative influence to the research brought by the possible unavailability of some panelists (that is, even though some panelists may not be available due to some other commitments, a reasonable number of panelists are still there).

6.2.2.2 Feedback from the panelists

Once the panel was established, a letter was sent to each of the panelists via e-mail (refer to Appendix B). In the letter, the author firstly acknowledged their willingness to participate in the research. Next the purpose and the process for the identification of potential IC items was briefly introduced. The author attached the list of twenty potential attributes with a brief description for each attribute (refer to Table 6.4) for their comments. In addition, the elements identified from prior literature (see Appendix A) were also attached as a reference for the panelists to make comments. It was deemed to be a better way to facilitate discussion and elicit opinions from the participants than merely providing a list of attributes without any references. Given that all the panelists are expert in IC, it was expected that they could offer some valuable insights to the research. Finally, the author again stressed their rights on confidentiality, withdrawal, further queries to the research and the request for a summary of research findings.

Within one week after sending the e-mail, fourteen panelists replied with feedback. In the following week, the researcher sent a follow-up email to the six who had not responded. Five of them gave feedback quickly. A call was then made to the remaining one. He explained the reasons for the delay and also responded in the week.

Table 6.4 Final draft of IC items

ITEMS	DESCRIPTION
Internal Capital	
1.1 Research and development	Information regarding research and development activities and outcomes within a company (e.g. new products or services)
1.2 Intellectual property	Comprising patents, copyrights and trademarks, etc.
1.3 Management philosophy/corporate culture	A blend of values, spirit, belief, attitudes, experiences, taboos, rituals etc. existing in a firm
1.4 Management processes	All the processes related to the management of a company (e.g. quality management)
1.5 Information/networking systems	Details on the development, application and impact of information or networking systems
1.6 Financial/investors relations	Relationships between a company and its finance providers or investors
External Capital	
2.1 Brands/reputations	Details of brands or reputation building
2.2 Suppliers	Information (or indicators) relating to suppliers
2.3 Customers	Information (or indicators) relating to customers
2.4 Customer satisfaction/loyalty	Information (or indicators) regarding customer satisfaction or loyalty
2.5 Marketing	Details of marketing channels, strategies and outcomes
2.6 Distribution channels	Information regarding how a firm's services and products reach its customers
2.7 Business collaborations	Business collaborations involving the company (e.g. joint ventures, mergers or acquisitions)
2.8 Research collaborations	Information relating to research collaborations involving the company
2.9 Licensing agreements/franchising agreements/favorable contracts	Information relating to licensing agreements /franchising agreements / favorable contracts held by a firm
Human Capital	
3.1 Employees	Information (or indicators) relating to employees
3.2 Qualifications	Academic and vocational qualifications held by employees
3.3 Education/training	Education or training programs or opportunities provided by a firm
3.4 Work-related knowledge/competences	Obtained from the job or training by employees
3.5 Entrepreneurial spirit	Encompassing innovativeness, proactive and reactive abilities, changeability, and risk taking.

In regard of the feedback from the participants, sixteen of them completely agreed to the list. Three of the remainder, including a professor in accounting, a CPA and a financial analyst, added an element "political relations". But the professor included the attribute in the category of internal capital while the other two considered it as an external capital element. The professor also provided a definition for the attribute. She defined it as "*the relationships between an organization and governmental agencies, such as visits from political leaders, awards and accreditation from governmental agencies, and political background of directors*". It is a reality that having good relationships with governments are crucial for the Chinese firms in doing business. However, through consulting with some practitioners such as CFOs and accountants preparing annual reports in listed companies, all of whom argued that the relationships were so sensitive in nature that the Chinese companies were not likely to report them in their annual reports, the researcher was inclined not to add the attribute on the list based on the practitioners' comments. To achieve a consensus with the three panelists, an e-mail was sent to each of them, in which the author explained why the attribute would not be included in the list. All of them accepted the explanation.

Two of the panelists comprising a senior research fellow from a research agency and a financial analyst (also the one mentioned above) offered some suggestions regarding the potential IC framework. For example, the senior research fellow suggested that the IC framework should comprise more items, in particular for the human capital category. But he did not provide any specific items. The author explained to him via email that there was no generally accepted IC framework currently in the world, and it was not necessary to identify an exhaustive list of IC items for this study to survey a general status of IC disclosure across a variety of sectors. He accepted the explanation. The financial analyst suggested that the IC framework should include some key indicators, and he provided a few indicators under some IC elements such as "number of patents", "percentage of revenue on R&D", "marketing costs/sales", "number of employees in R&D", and "revenue per employee". Since the research at this stage was to establish a general IC framework, the specific indicators were not considered. The author explained to the panelist and obtained his consent.

The validation of the potential IC framework was finalized after the consultation process with the expert panel. Eighty percent of the panelists (16 out of 20) agreed to the framework without any comments. Although the remainder (4 panelists) had some comments initially, a consensus was achieved later through email negotiation with them. Accordingly an IC

framework applicable to the Chinese environment was constructed at this stage, and was ready to be used for the next stage of research.

6.2.3 Summary

In this section, an IC framework comprising 20 items was constructed for the development of an IC disclosure index. Firstly, through a review of prior literature regarding IC disclosure in the national context, 32 potential IC elements were identified. The list of potential attributes was then simplified (to 20 items) for the purpose of this research. In order to further validate the potential IC framework applicable to the Chinese environment, a consultation process with an advisory panel including 20 Chinese experts in IC from 6 stakeholder groups was carried out via email. A consensus was achieved after negotiation with some panelists with different views, and consequently the final IC framework was established. In the following section, the second stage for the development of the IC disclosure index is described.

6.3 Weighting of IC items

6.3.1 Data collection

The second stage to develop the IC disclosure index was to identify the weighting for each item in the established IC framework. Previous studies using disclosure indices show that some employed a weighted index to inform the degree of importance of items (e.g. Hooks et al., 2002; Schneider and Samkin, 2008) and others did not (e.g. Li et al., 2008; Wei et al., 2008).

Without weighting, all the items have the same importance. For an unweighted index, there are no value judgments attached, and no bias in deciding which score should be assigned for the disclosure item. It is argued by Ahmed and Courtis (1999) and Ferguson et al. (2002) that unweighted indices reduce the subjectivity while assessing the relative importance of disclosure items. Some studies (e.g. Firth, 1980; Chow and Wong-Boren, 1987; Adhikari and Tondkar, 1992) indicate that the use of both unweighted and weighted scores for disclosure items brings little or no difference to findings. In addition, the simplicity to develop an unweighted index is also an incentive for some researchers (Hooks, 2000).

However, it is problematic to treat all disclosure items equally that are obviously not of equal importance. Coy and Dixon (2004) argue that treating all disclosure items as being of equal importance regardless of their weight to the overall quality of the report is itself a subjective

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decision. For the subjectivity of applying a disclosure index in research, Marston and Shrives (1991) suggest that it can be neither completely removed, nor is it sensible to expect that it can be. Coy and Dixon (2004) also point out, "(the) so-called subjectivity is something one has to both live with and take care to ameliorate" (p. 84). Furthermore, Hooks (2000) contends that the use of weightings adds value to the disclosure index, and its benefits outweigh the subjectivity involved. Therefore for the purpose of this research, a weighted IC disclosure index was developed.

To determine weightings for disclosure items, some previous studies focused on one user group of the annual report (usually financial analysts or investors) for their opinions on the relative importance of the items (Hooks, 2000). More recently a few studies, such as Hooks et al. (2002), Nelson et al. (2003), Coy and Dixon (2004), and Schneider and Samkin (2008), add a stakeholder focus to research. In those studies, the researchers employ various user groups that represent a wide range of stakeholders through incorporating their views to weight disclosure items. For instance, Hooks et al. (2002) used sixteen user/stakeholder groups[30] for her study on annual reporting of the electricity industry while Schneider and Samkin (2008) employed four stakeholder groups[31] for their research on IC disclosure by the local government sector.

According to Hooks (2000, p. 128), "the weightings result from feedback from a wide range of stakeholders so that the bias that would be imposed by just one-user group, for example, financial analysts, is avoided and may be eliminated." The "stakeholder" is one focus of the present study in which one key driver for IC disclosure by Chinese firms is to improve the relationships between the company and various stakeholders. Hence the concept of using opinions from a wide range of stakeholders to identify weightings of disclosure items was employed in this research. Due to the good relationship with a panel of (20) experts established in the previous stage, the panel was used as well for this stage of research.

A questionnaire survey was designed to gather opinions of the panelists on the disclosure importance of the IC attributes identified previously. The final version of the questionnaire was in Chinese. Yet because the two thesis supervisors of the author are native English

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[30]Including auditor, lender, regulator, preparer, academic, environmentalist, employee, consumer, financial reporter, industry consultant, consumers' advocate, director, energy trust, major electricity users, and financial analyst

[31]Comprising internal citizens, external citizens, oversight agents, and report preparers

speakers, the questionnaire was initially designed in English in order to obtain suggestions and approval from them. Several meetings were organized to discuss the questionnaire. The two supervisors offered considerable comments with regard to the design of the questionnaire, such as the definition of IC items, and the rating scale of importance. The author revised the questionnaire many times in accordance with their comments.

Once the questionnaire was approved by the two supervisors, the author asked a professional translator to translate it into Chinese. Then the author asked a Chinese visiting scholar at Waikato University to translate the Chinese version back into English. Through comparing the translation by the visiting scholar with the author's English version, minor differences were found. Finally the author asked a lecturer[32] who is a bilingual in both English and Chinese to assess different versions of the questionnaire. He believed that the author's English version was more professional than the visiting scholar's translation, in particular for the terms used for some IC items. And the Chinese translation by the professional translator was considered to be accurate and tightly corresponding to the author's English version. Therefore it was employed as the final version of the questionnaire.

As for the content of the questionnaire (refer to Appendix C), the researcher firstly gave instructions in regard to "who the researcher is", "what the objectives of the survey are", "how to fill in the questionnaire" and "the assurance of confidentiality". Although some information had been provided during the initial contact with the panelists, it was deemed formal and appropriate to inform them again. Next the detailed questions were presented. In this section, the panelists were asked to rate the relative importance of IC items using an interval rating scale from one to five (refer to Table 6.5). Despite a consensus regarding the IC items achieved at the first stage, the questionnaire still provides opportunities (or spaces) to allow the participants to add other items (and rate them simultaneously) if necessary. Comments or suggestions with respect to the overall survey were requested in the final section of the questionnaire.

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[32] Working at Waikato University

Table 6.5 Rating scale for importance

1	2	3	4	5
Unimportant to disclose	Of **Little** importance to disclose	**Moderately** important to disclose	**Very** Important to disclose	**Extremely** important to disclose

As for the five-point rating scale, Hooks (2000) considers it easy to comprehend and quick to use. Albeit there are some advantages of employing an open-ended ratio scale to quantify responses from respondents, it is a dilemma sometimes for panelists to assign a numeric value for the relative importance of an item. A five-point scale, according to Ingram and Robbins (1992), limits the extent to which respondents can differentiate their responses as well as differ in their interpretation of the level of importance indicated by particular numerical value. Most of the prior research using a disclosure index has limited the ratings to a five-point scale, either 0 to 4 (e.g. Barrett, 1977; Hooks, 2000; Schneider and Samkin, 2008) or 1 to 5 (e.g. Firth, 1979; Firer and Meth, 1986; Adhikari and Tondkar, 1992). Drawing on the previous studies, this research chose the five-point (1-5) rating scale.

Once the questionnaire (in Chinese) was ready, it was posted to the panelists with a return envelop and postage. After two weeks, seven responses were collected. A follow-up letter was then sent to those without responses. Within another three weeks, the rest (responses) were received. Seven of the respondents including four accounting scholars, two financial analysts and one CPA requested a summary of findings pertaining to the survey. In the following, the results for the questionnaire survey are collated and reported.

6.3.2 Results

6.3.2.1 Ratings of the IC items

To calculate the weighting for a particular IC item, the ratings assigned to the item by the twenty panelists were summed and the total then divided by twenty to obtain a mean score. The higher the score of an IC item, the greater the importance that the item should be reported in the annual report. The reason using a mean to summarize the response score was that it gave equal weight to each of the responses without producing misleading results (Coy et al., 1993; Hooks, 2000; Schneider, 2006). Besides, according to Dinius and Rogow (1988), it is necessary to report means so as to disclose the wide disparity of opinions from panel members.

The ratings for each IC item given by individual panel members are presented in Appendix D. The spread of weightings as shown in the table reflects the diverse nature of the expert panel, and the different objectives and focus of each panelist. There were no additional IC items added by any of the panel members in any of the three categories. The achieved consensus as to the IC framework at the first stage may be accountable for this.

Amongst the IC items, 'intellectual property' was the most highly rated item by the panel with a mean score of 4.5 out of 5 (namely "extremely important to disclose"). The possible explanation is that this item is the most relevant item to IC not only from its name but also from its nature, and some elements of it (e.g. patents) can be recognized in the traditional accounting system. Other items such as 'brands/reputation', 'marketing', 'business collaborations', 'licensing agreements/franchising agreements/favorable contracts', 'research and development' (R&D), and 'customer satisfaction/loyalty' were also highly rated by the panelists, all of which achieved an average score above 4 ("very important to disclose"). All these items other than 'research and development' belong to external capital. The high level of importance placed on external capital attributes maybe a result of the composition of the panel, where the majority of panelists (13 out of 20) represent external stakeholders of the company.

Three items ('management philosophy/corporate culture', 'information/networking systems' and 'education/training') were the least rated items with an identical average score of 3 ("moderately important to disclose"). That is, there were no IC items rated unimportant or little importance to disclose. In the following section, the detailed results with respect to the relative importance of disclosure items for each IC category are discussed.

Internal capital

Internal capital refers to the knowledge embedded in the organizational structure, processes, procedures, routines, systems and culture, which is created by employees or brought in, but which stays in the organization when employees go home after work. It includes six items as shown in Table 6.6.

Table 6.6 Responses of the panel for internal capital

Disclosure Items		Frequency					Mean	Std. D
		1	2	3	4	5		
Research and development	Information regarding research and development activities and outcomes within a company (e.g. new products or new services)	0	2	3	9	6	4.0	0.94
Intellectual property	Comprising patents, copyrights and trademarks, etc.	0	0	1	9	10	4.5	0.60
Management philosophy / corporate culture	A blend of values, spirit, belief, attitudes, experiences, taboos, rituals etc. existing in a firm	2	4	7	6	1	3.0	1.08
Management processes	All the processes related to the management of a company (e.g. quality management)	3	3	4	7	3	3.2	1.32
Information / networking systems	Details on the development, application and impact of information or networking systems	3	3	7	5	2	3.0	1.21
Financial / investor relations	Relationships between a company and its finance providers or investors	0	2	7	5	6	3.8	1.02

Notes:

The disclosure items were rated for importance using a five-point scale as follows.

1	2	3	4	5
Unimportant to disclose	Of **Little** importance to disclose	**Moderately** important to disclose	**Very** Important to disclose	**Extremely** important to disclose

The frequency indicates the number of panelists (a total of 20) who gave each of the ratings.

The mean = sum of (the ratings x frequencies) / 20, taking "information/networking systems" for example, 3 = (1*3 +2*3 + 3*7 + 4*5 + 5*2) / 20.

Std. D: standard deviation, which indicates how much variation there is from the mean.

From the table, it can be found that half of internal capital attributes ('intellectual property', 'research and development', and 'financial/investors relationships') were rated as very important or extremely important by the panel. 'Intellectual property' was the most highly rated item with an average score of 4.5 in the category as well as across all the IC items. It was also the only IC item rated as extremely important in which 50% of the panelists considered it extremely important and 45% deemed it very important. 'Research and development' was another highly rated item with a mean score of 4.0. Seventy-five percent of the panel members deemed it very important or extremely important to disclose in the annual report. It was not surprising because this item was regarded as a crucial element for future value creation of a firm, and consequently many firms attached significant importance to it.

'Management philosophy/corporate culture' and 'information/networking systems' were the least rated items in the category, both of which achieved a mean score of 3 as moderately

important. Management process was another relatively low rating item with an average score of 3.2, also deemed moderately important.

As to the responses from individual panel members (refer to Appendix D), panelist number nine and number twenty (an accounting scholar from a university and an official from a governmental supervisory agency) assigned the highest score to this category (a sum of 26 for all the items in the category). Panelist number thirteen, a CPA working in a big accounting firm, gave the lowest score (15) to the category with two items ('management processes' and 'information/networking systems') assigned a score of only 1 (unimportant to disclose).

External capital

External capital refers to the knowledge embedded in the relationships external to the organization, such as suppliers, customers, business partners, etc. It comprises nine items as shown in Table 6.7.

Table 6.7 Responses of the panel for external capital

Disclosure Items		Frequency					Mean	Std. D
		1	2	3	4	5		
Brands/reputation	Details of brands or reputation building	0	0	3	9	8	4.3	0.72
Suppliers	Information (or indicators) relating to suppliers	1	5	4	8	2	3.3	1.12
Customers	Information (or indicators) relating to customers	0	2	4	10	4	3.8	0.89
Customer satisfaction/loyalty	Information (or indicators) regarding customer satisfaction or loyalty	0	1	3	12	4	4.0	0.76
Marketing	Details of marketing channels, strategies and outcomes	0	1	2	9	8	4.2	0.83
Distribution channels	Information regarding how a firm's services and products reach its customers	2	2	4	10	2	3.4	1.14
Business collaborations	Business collaborations involving the company (joint ventures, mergers or acquisitions)	0	2	4	4	10	4.1	1.07
Research collaborations	Involving the company	0	3	9	7	1	3.3	0.80
Licensing agreements /franchising agreements/ favorable contracts	Held by a firm	1	2	2	4	11	4.1	1.25

The table shows that 67% (6 out of 9) of external capital items were rated as very important by the panel. It was not surprising since external relationships were often considered to be critical assets by firms (due to its huge potential for future value creation), in particular in China, a country in which *guanxi* (relationships) plays a significant role in doing business. 'Brands/reputation' was the most highly rated item achieving a mean score of 4.3. Eight-five

percent of the panelists deemed it very important or extremely important to disclose. In addition, four items ('marketing', 'business collaborations', 'licensing agreements/franchising agreements/favorable contracts', and 'customer satisfaction/loyalty') also achieved an average score above 4.0. 'Suppliers' and 'researcher collaborations' were the least rated items in the category, both of which obtained a mean score of 3.3 as moderately important. Another relatively lowly rated item was 'distribution channels' with an average score of 3.4.

For the responses from the panel (refer to Appendix D), panelist number twenty (an official working in a governmental supervisory agency) again assigned the highest score to this category (a sum of 40 for all external capital items). It was not unexpected because this panelist worked in the regulatory agency for the Chinese stock market, an organization always calling for more transparency for accounting information disclosure. Panelist number fifteen (a financial analyst for an investment company), number nineteen (another official from a governmental supervisory agency), and number thirteen (a CPA) also assigned a relatively high score to the category (a sum of 39, 38, and 37 respectively). The lowest score (28) was given by panelist number seven (an accountant from a sample company) and number fourteen (another CPA).

Human capital

Human capital refers to the individual's knowledge such as qualification, skills, values and experiences within an organization, which goes home with employees after work. It consists of five items as shown in Table 6.8.

Table 6.8 Responses of the panel for human capital

Disclosure Items		Frequency					Mean	Std. D
		1	2	3	4	5		
Employees	Information (or indicators) relating to employees	0	2	6	9	3	3.7	0.88
Qualifications	Academic and vocational qualifications held by employees	0	0	12	6	2	3.5	0.69
Education/training	Education or training programs or opportunities provided by a firm	1	7	4	7	1	3.0	1.08
Work-related knowledge /competences	Obtained from the job or training by employees	0	2	8	7	3	3.6	0.89
Entrepreneurial spirit	Encompassing innovativeness, proactive and reactive abilities, changeability, and risk taking	0	5	5	5	5	3.5	1.15

We can find from the table that 80% of the human capital items (four out of 5) were rated as very important. It was not surprising since human capital was the most obvious intellectual capital element, and it was previously deemed to be equivalent to IC for a long time in China. 'Employees' was the most highly rated item in this category with an average score of 3.7. Sixty percent of the panelists consider it very important or extremely important to disclose. 'Work-related knowledge/competences' was another relatively highly rated item in the category. Half of the panel members considered it very important or extremely important. The least rated item in this category was 'education/training' with an average score of 3.0. Seven (35%) panelists considered that it was of little importance to disclose. Only one panel member rated it as extremely important.

As for the responses from the panel (refer to Appendix D), panelist number eight (a senior research fellow working in a research agency) allocated the highest score (a sum of 24) to this category. He rated four items out of five as extremely import to disclose. Panelist number ten (another scholar from a university) also assigned a relatively high score (23) to the category in which all the items were deemed at least very important. The lowest score (12) was given by panelist number eighteen, a financial analyst from an investment bank. He rated 3 items out of 5 as minor importance. Also, panelist number two (a CFO from a sample company) assigned a very low score (13) to the category. In the next section the responses of the panelists to the overall IC are described.

Responses of the panel to the overall IC
For the responses of the panel members to the overall IC (see Appendix D), panelist number eight (the senior research fellow) allocated the highest score (a sum of 82 for all the IC items). In addition, panelist number fifteen (a financial analyst from an investment company) and number nineteen (an official working in a governmental supervisory agency) also assigned a relatively high score (a sum of 80) to the overall IC. The lowest scores (61) were given by panelist number two (a CFO from a sample company) and number fourteen (a CPA from a big accounting firm).

As to the responses in terms of stakeholder groups[33], the scholar group (four members) and the official group (two members) assigned the highest score (78, an average score for all the

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[33] Please refer to "notes" in Appendix D

group members) to the overall IC. The financial analyst group (four members) also allocated a relatively high score (75) to the overall IC. These findings indicate the high demand for IC information by the three (external) stakeholder groups. The lowest score (65) was given by the CFO group (two members), which shows the unwillingness of the management of Chinese companies for the disclosure of IC information even though highly expected by external stakeholders. Additionally, the CPA group (three members) and the accountant group (five members) also allocated relatively low scores to the overall IC (67 and 71 respectively).

6.3.2.2 Suggestions/comments from the panelists

The questionnaire also provided an opportunity for the panel members to make suggestions or comments as to the survey. Accordingly, several panelists raised a number of interesting issues regarding the research, which were not expected by the researcher. For instance, panelist number ten, an associate professor from a university, suggested that a follow-up interview with the panel members should be carried out in order to understand the underlying reasoning behind the ratings. In a previous study undertaken by Hooks (2000), the researcher employed both a questionnaire survey and interview to identify the weighting of disclosure items for the electricity industry. According to Hooks (2000), the addition of an interview (a qualitative approach) to the research could further validate and explain the data gathered from the questionnaire survey (a quantitative approach). However, the researcher in this study considered that the allocation of ratings sometimes relied on instant judgment (or feeling) for some panelists rather than a careful reasoning so that it was difficult for them to explain why they allocated this score to the item rather than others (on the other hand, considerable use of the panelists had already been made). Furthermore the focus of the research at this stage was to determine the weightings of the disclosure items rather than the reasoning behind. The interview was therefore not necessary in this case.

Another panel member (Panelist 2), a CFO from a sample company, made some comments with regard to attitudes of Chinese firms for information disclosure. He stated that "*no companies really want to disclose any further information (including IC) in their annual reports in China unless mandatorily required.*" This statement reflects the reality of IC disclosure in China to some extent although empirical evidence in this research indicates a high level of IC disclosures by Chinese firms (refer to chapter 7).

Panelist number eleven, another scholar from a Chinese university, commented on the disclosure items as follows:

> "*All of them (the items) should be disclosed theoretically. However it is a hard decision for many companies in practice due to the sensitive nature of some of them, such as the information relating to ongoing research and development projects. Once disclosed (such information), they may be imitated by the competitors quickly.*"

An official working in a governmental supervisory agency (Panelist 20) argued that:

> "*It is unrealistic to require the listed firms to disclose all the IC items…The best way is to guide them (the listed companies) to report (the IC-related information) on a voluntary basis through developing certain IC disclosure guidelines.*"

Further, panelist three, an accountant preparing the annual report in a publicly listed company, expressed his expectations for IC reporting guidelines from the Chinese government as:

> "*…We acknowledge the benefits of IC reporting. However how to report and where to report remain problems for us. I hope that the government (policy makers) could provide us some guidelines for that (IC reporting).*"

Finally, a CPA (auditor) working in a big accounting firm (panelist 14) raised some concerns as to the auditing of IC-related information. He claimed that:

> "*…We do not expect Chinese firms to report a lot of IC-related information. Even if they report, we do not have an existing assurance system for this type of information. That's also a problem for us (to audit the IC-related information).*"

The above comments and suggestions offered the researcher some valuable insights for this research. They assisted the researcher gain a deeper understanding in regard to the status of IC disclosure by Chinese firms. Next, the draft disclosure index with weightings is presented.

6.3.3 Draft disclosure index with weightings

Once the results of the survey were obtained, the weightings of the IC items were identified (refer to Table 6.9). It can be found from the table that all the disclosure items were rated by the panel at least moderately important, comprising 5% (only one item, 'intellectual property') rated as extremely important, 55% (11 out of 20 items) as very important, and 40% as moderately important.

Table 6.9 Weighting of the disclosure item

1. Internal Capital		Weighting	Importance
1.1 Research and development	Information regarding research and development activities and outcomes within a company (e.g. new products or new services)	4.0	Very important
1.2 intellectual property	Comprising patents, copyrights and trademarks, etc.	4.5	Extremely important
1.3 management philosophy/ corporate culture	A blend of values, spirits, belief, attitudes, experiences, taboos, rituals etc. existing in a firm	3.0	Moderately important
1.4 management processes	All the processes related to the management of a company (e.g. quality management)	3.2	Moderately important
1.5 information/networking systems	Details on the development, application and impact of information or networking systems	3.0	Moderately important
1.6 financial/investors relations	Relationships between a company and its finance providers or investors	3.8	Very important
2. External Capital		**Weighting**	**importance**
2.1 Brands/reputation	Details of brands or reputation building	4.3	Very important
2.2 Suppliers	Information (or indicators) relating to suppliers	3.3	Moderately important
2.3 Customers	Information (or indicators) relating to customers	3.8	Very important
2.4 Customer satisfaction/loyalty	Information (or indicators) regarding customer satisfaction or loyalty	4.0	Very important
2.5 Marketing	Details of marketing channels, strategies and outcomes	4.2	Very Important
2.6 Distribution channels	Information regarding how a firm's services and products reach its customers	3.4	Moderately important
2.7 Business collaborations	Business collaborations involving the company (e.g. joint ventures, mergers or acquisitions)	4.1	Very important
2.8 Research collaborations	Involving the company	3.3	Moderately important
2.9 Licensing agreements/franchising agreements/ favorable contracts	Held by a firm	4.1	Very important
3. Human Capital		**Weighting**	**Importance**
3.1 Employees	Information (or indicators) relating to employees	3.7	Very important
3.2 Qualifications	Academic and vocational qualifications held by employees	3.5	Very important
3.3 Education/training	Education or training programs or opportunities provided by a firm	3.0	Moderately important
3.4 Work-related knowledge/competences	Obtained from the job or training by employees	3.6	Very important
3.5 Entrepreneurial spirit	Encompassing innovativeness, proactive and reactive abilities, changeability, and risk taking	3.5	Very important

6.3.4 Summary

This section presents the process to identify the weighting for the IC items. A questionnaire survey was designed primarily for gathering opinions from a panel of IC experts on the importance of the disclosure items. The panel comprising twenty members from six (annual report) user groups represents a wide range of stakeholders, which avoids the bias imposed by only one-user group (e.g. financial analyst) often found in prior research. The results show that all the items achieved a weighting at least moderately important, including 60% rated as extremely or very important. In addition, the panelists offered some comments and suggestions on the questionnaire survey that were considered very helpful for the researcher to gain a deeper understanding in regard of IC disclosure in the Chinese context. In the next section, the selection of quality criteria for the IC disclosure index is depicted.

6.4 Quality criteria

As the weightings for the IC items were determined, the next step for the construction of the IC disclosure index was to establish quality criteria that were used to assess the quality of IC disclosure. Botosan (1997) points out that disclosure quality is significant, but very difficult to measure. Nonetheless Hooks (2000) argues that "unless quality is assessed, it is difficult to distinguish between poor and excellent disclosures" (p.154). Thus it was contended that the significance of assessing the quality of IC disclosure outweighed the difficulty of doing it (Hooks, 2000; Schneider, 2006).

As for the definition of disclosure quality, Singhvi and Desai (1971) describe it as the completeness, accuracy and reliability of information, whilst Adhikari and Tondkar (1992) denote it as "intensity". Wallace et al. (1994) further extended the concepts of quality to "comprehensiveness". According to Wallace and Naser (1995), once the reported information is regarded as comprehensive, it must "provide the reader with a sense that no important aspect has been left undisclosed (p.327)." Comprehensiveness is therefore considered to be a measurable component of disclosure quality.

There have been quite a few previous studies on IC disclosure incorporating the element of disclosure quality into their research (Schneider, 2006). These studies have employed quality criteria with differing scales to assess the so-called disclosure quality of IC information in organizations' annual reports. Examples include: Brennan (2001), Williams (2001), Bontis (2003), Goh and Lim (2004) and Abeysekera and Guthrie (2005) using a two-point scale (0-1,

1 for disclosure and 0 for non-disclosure); Bozzolan et al. (2003) and Wong and Gardner (2005) using a three-point scale (0-2, 2 for quantitative disclosure and 1 for qualitative disclosure); Guthrie et al. (1999) using a four-point scale (0-3, 3 for monetary disclosure; 2 for numerical disclosure and 1 for narrative disclosure); and Shareef and Davey (2005) and Schneider and Samkin (2008) using a six-point scale (0-5, refer to Table 6.10).

Table 6.10 Quality criteria for IC disclosure

Quantitative/monetary with narrative (5)	The disclosure is clearly defined in monetary or actual physical quantities and narrative statements are made.
Quantitative/monetary (4)	The disclosure item is clearly defined in monetary terms or actual physical quantities.
Narrative (3)	The disclosure item is discussed showing clearly its influence on the company or its policies.
Obscure (2)	The disclosure item is discussed in limited references or value comments while discussing other topics and themes.
Immaterial (1)	The company states that the disclosure item is immaterial to the financial well-being and results of the company.
Non-disclosure (0)	The disclosure item does not appear in the annual report.

Source: Adapted from Schneider and Samkin (2008, p. 470)

For the purpose of this research, the quality criteria with a six-point scale were considered to be more relevant due to their comprehensiveness in assessing the quality of IC disclosure. However the criteria, favorable to quantitative IC information that can be assigned a score of 4 or 5, may impair the objectivity while qualitative information in some cases are "more informative and fostered greater understanding than would have been achieved had quantitative measures been disclosed" (Schneider, 2006, p.135). It was therefore decided to amend the criteria so as to avoid the weakness. After consulting with the scholar group (four members) in the expert panel, the criteria were slightly modified to a five-point scale (0-4) for the current study, which are presented as follows:

- Quantitative/monetary with narrative (4): the disclosure is clearly defined in monetary or actual physical quantities and clear narrative statements are made.
- Narrative (3): the disclosure item is discussed showing clearly its influence on the company or its policies.
- Obscure (2): the disclosure item is discussed with limited reference or value comments while discussing other topics and themes.

- Immaterial (1): the company states that the disclosure item is immaterial to the financial well-being and results of the company.

- Non-disclosure (0): the disclosure item does not appear in the annual report.

The point "4" in the previous criteria was deleted. If this type of information (monetary value or actual physical quantities only) was disclosed, it would be assigned a score of 2 in the current study owing to its obscurity to readers. The quality criteria with a five-point scale were established for the construction of the IC disclosure index in this research, as they were deemed to be comprehensive and appropriate in assessing the quality of IC disclosure by Chinese firms.

It should be noted that, some IC items in the index (e.g. 'management philosophy/corporate culture', 'management processes', 'work-related knowledge', and 'entrepreneurial spirit'), are narrative in nature, and it is problematic to assign monetary or quantitative value for them. Thus these items were assigned a maximum score of 3.

Final draft of the ICD

Once the quality criteria were established, the IC disclosure index was finally constructed. It consists of three elements (items, weightings and quality criteria) as shown in Table 6.11. The index was used as an instrument for content analysis of corporate annual reports in this research.

Table 6.11 Final draft of the IC disclosure index

1. Internal Capital		Weighting	Maximum Quality Score
1.1 Research and development	Information regarding research and development activities and outcomes within a company (e.g. new products or new services)	4.0	4
1.2 intellectual property	Comprising patents, copyrights and trademarks, etc.	4.5	4
1.3 management philosophy/ corporate culture	A blend of values, spirit, belief, attitudes, experiences, taboos, rituals etc. existing in a firm	3.0	3
1.4 management processes	All the processes related to the management of a company (e.g. quality management)	3.2	3
1.5 information/networking systems	Details on the development, application and impact of information or networking systems	3.0	4
1.6 financial/investors relations	Relationships between a company and its finance providers or investors	3.8	4
2. External Capital		Weighting	Maximum Score
2.1 Brands/reputation	Details of brands or reputation building	4.3	4
2.2 Suppliers	Information (or indicators) relating to suppliers	3.3	4
2.3 Customers	Information (or indicators) relating to customers	3.8	4
2.4 Customer satisfaction/loyalty	Information (or indicators) regarding customer satisfaction or loyalty	4.0	4
2.5 Marketing	Details of marketing channels, strategies and outcomes	4.2	4
2.6 Distribution channels	Information regarding how a firm's services and products reach its customers	3.4	4
2.7 Business collaborations	Business collaborations involving the company (e.g.joint ventures, mergers or acquisitions)	4.1	4
2.8 Research collaborations	Involving the company	3.3	4
2.9 Licensing agreements/franchising agreements/ favorable contracts	Held by a firm	4.1	4
3. Human Capital		Weighting	Maximum Score
3.1 Employees	Information (or indicators) relating to employees	3.7	4
3.2 Qualifications	Academic and vocational qualifications held by employees	3.5	4
3.3 Education/training	Education or training programs or opportunities provided by a firm	3.0	4
3.4 Work-related knowledge/competences	Obtained from the job or training by employees	3.6	3
3.5 Entrepreneurial spirit	Encompassing innovativeness, proactive and reactive abilities, changeability, and risk taking	3.5	3

6.5 Coding of annual reports

After the construction of the IC disclosure index, it was used to code annual reports of the sample companies in order to examine the extent and quality of IC disclosure by Chinese firms. There are some counts of data used for content analysis, such as words, sentences, paragraphs or portion of pages. In this research, sentences, rather than words, paragraphs or portion of pages, were chosen as the unit of coding. The reason is that, compared with sentences, individual words have little meaning without a context and paragraphs or portions of pages might consist of several distinct meanings which were tough to code (Milne and Adler, 1999). Vandemaele et al. (2005) believe that sentences as the recording unit are "more reliable than any other unit of analysis" (p. 420). A coding framework based on the IC disclosure index was constructed for content analysis (refer to Figure 6.1).

In addition, the following rules were also strictly employed during the course of coding (Schneider and Samkin, 2008; Wong and Gardner, 2005):

- Do not code for the Auditor's report, Financial Statements and Notes to the Financial statements [34]

- While coding tables, one row = one sentence

- Code for meaning rather than looking for exact words as some concepts are broad (and exact words maybe not adequate)

- Not code if the concept is implied

- Provided an IC item is disclosed more than once, a quality score would be given based on the aggregate of disclosures.

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[34] Since disclosure made simply in response to accounting standards or legislation could not reflect what level of commitments firms held towards reporting their IC (Guthrie et al., 1999)

Figure 6.1 The coding framework

Figure 6.1: The coding framework flowchart
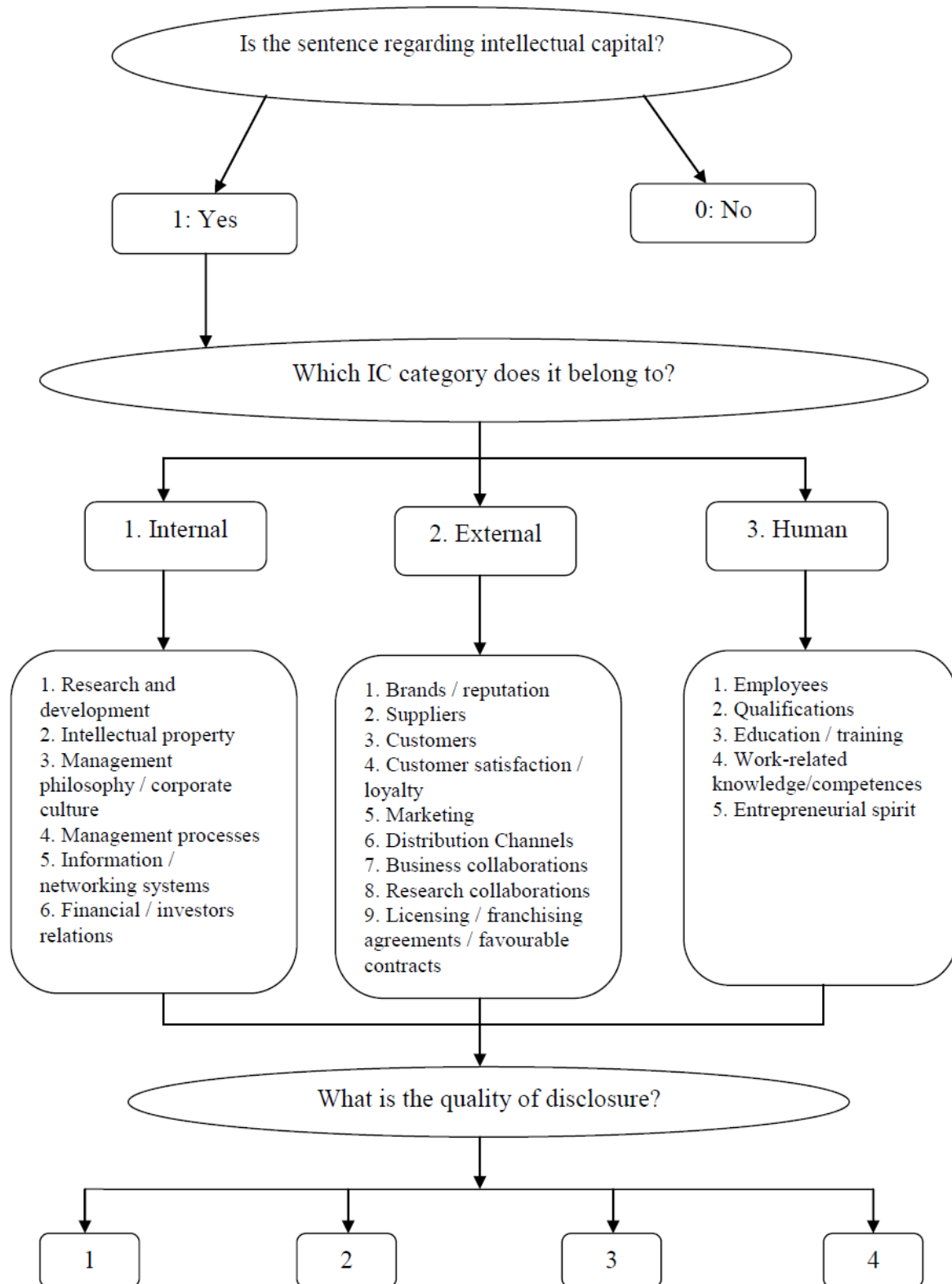
Source: Adapted from Schneider and Samkin (2008, p. 472)

The IC-related information for each sample company was coded into a coding sheet (refer to Appendix E). In order to improve the reliability of the coding process, the author invited an accounting lecturer in the expert panel (panellist No.11) to act as the second coder for a pilot test. In the pilot test, ten annual reports from the sample companies were randomly selected. Both coders coded each of them and then compared the result for each item. For any divergence, a negotiation process was conducted until a consensus was achieved.[35] After the pilot test, the researcher completed coding of the rest of annual reports independently. It is considered that the negotiation process in the pilot test was very helpful for the author to attain a relatively objective view for coding of the annual report, which enhanced the reliability of this research.

Once the coding process was finished, the collected data were analyzed from a number of angles, which are presented in chapter 7.

6.6 Chapter summary

This chapter details the development of an IC disclosure index for the current study. Firstly a total of 20 IC items were identified primarily from prior literature. Then a consultative process with an expert panel comprising twenty Chinese IC experts was undertaken to validate the IC framework as applicable to the Chinese environment. Next a questionnaire survey with the same panel was conducted so as to identify weightings of the IC items. The responses (ratings) from the panellists for each IC item were summed and then the total was divided by twenty to obtain an average score that indicates the weighting of the item. The final step for the development of the index was to establish criteria for assessing the quality of IC disclosure. Based on the prior research using disclosure indices, a five-point scale was employed.

Once the index was constructed, it was used to code annual reports of the sample companies. Sentences were used as the unit of analysis. A pilot test was conducted by two coders in order to improve the reliability of this research. The data collected from annual reports were analyzed from a variety of angles. The results and discussion are presented in the next chapter.

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[35]The results for the pilot test were merged into the final results in chapter 7.

CHAPTER SEVEN

PART ONE OF FINDINGS

7.1 Introduction

In the previous chapter an IC disclosure index was developed as an instrument to investigate the status of IC disclosure in the Chinese context. This chapter reports on the results with regard to the extent and quality of IC disclosure by Chinese companies from various angles, which were obtained through the application of the disclosure index. The structure of the chapter is organized as follows.

Firstly the extent and quality of IC disclosure by items and categories are presented in section 7.2 and 7.3. Section 7.4 demonstrates the distribution of IC disclosures in annual reports of Chinese firms. In section 7.5, the extent and quality of IC disclosure by firms are described. Section 7.6 discusses the results within the Chinese environment. The disclosure performance of Chinese firms by industry type and listing status are depicted in section 7.7 and 7.8. Finally section 7.9 summaries the chapter.

7.2 Disclosure of IC items: extent and quality

In this section, the extent and quality of IC disclosure by items for year 2009 is examined in terms of three categories: internal capital, external capital and human capital. Simultaneously a longitudinal comparison with the year 2008 dataset (using the same sample) and a previous (similar) Chinese study using the 2006 dataset (Yi and Davey, 2010) is conducted in order to obtain an understanding in respect to the trend of IC disclosure in the Chinese context. In addition, the information gap between the actual disclosure performance of each item and the expectation of stakeholders for the disclosure of the item is surveyed. Firstly we look at the disclosure practice of internal capital items.

Internal capital items

Internal capital consists of six items: 'research & development', 'intellectual property', 'management philosophy/corporate culture', 'management processes', 'information/networking systems' and 'financial/investor relations'. Table 7.1 below demonstrates the frequency and quality (score) of disclosure of the items. It is apparent that 'management processes' was the most frequently reported IC attribute, being reported by 99 firms out of 100 with the highest disclosure score of 0.98 in this category (as well as the

overall IC). In addition, 'management philosophy/corporate culture', 'research & development', and 'financial/investors relations' were also highly reported, with a disclosure score of 0.91, 0.87 and 0.86 respectively. 'Intellectual property' was the least reported item in the category, being reported by 57 firms with a score of 0.50. Overall, this category was disclosed well with all the items achieving a score above 0.50.

Table 7.1 Disclosure of internal capital items

1. Internal Capital	Frequency (n = 100)					Disclosure Score (0-1)
	0	**1**	**2**	**3**	**4**	
1.1 Research & development	3	0	8	24	65	0.87
1.2 Intellectual property	43	0	11	8	38	0.50
1.3 Management philosophy/corporate culture	4	0	14	82	n/a	0.91
1.4 Management processes	1	0	3	96	n/a	0.98
1.5 Information/networking systems	22	0	12	47	19	0.60
1.6 Financial/investors relations	1	0	15	12	72	0.86

Note:

"Frequency" refers to the number of firms obtaining a particular quality score (0-4) while "disclosure score" represents a normalized quality measure (0-1) for the reporting of each IC item, taking 'research & development' for example to demonstrate how to calculate it: $0.87 = (3*0 + 0*1 + 8*2 + 24*3 + 65*4) / 100*4$.

A longitudinal comparison

In this research, the author focused on the year 2009 dataset. However the year 2008 dataset (using the same sample) as well as a previous study conducted by Yi and Davey (2010) using the 2006 dataset were also examined to enable a longitudinal comparison of IC disclosure in the Chinese context. The results of three years are shown in Table 7.2 below.

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Table 7.2 A longitudinal comparison of internal capital disclosure

Internal Capital	2006			2008			2009		
	No. (49)	%	Score (0-1)	No. (100)	%	Score (0-1)	No. (100)	%	Score (0-1)
Research & development	n/a	n/a	n/a	92	92%	0.83	97	97%	0.87
Intellectual property	18	37%	0.29	46	46%	0.38	57	57%	0.50
Management philosophy/corporate culture	19	39%	0.35	82	82%	0.78	96	96%	0.91
Management processes	48	98%	0.89	99	99%	0.97	99	99%	0.98
Information/networking systems	18	37%	0.23	69	69%	0.51	78	78%	0.60
Financial/investors relations	30	61%	0.43	96	96%	0.82	99	99%	0.86

From the table, it can be seen that both the extent and the quality of disclosures of internal capital items improved from 2006 to 2009. Especially from 2006 to 2008, there was a considerable increase for all the items other than 'management processes'. Between 2008 and 2009, the increase was relatively steady. In 2006, only one item "management processes" achieved a disclosure score above 0.50 whereas almost all the items obtained a score over 0.50 in 2008 and 2009. Amongst the items, 'management processes' was the most highly reported item for all three years. Nevertheless for the least reported item, it was varied, 'intellectual property' for both year 2008 and 2009 while 'information/networking systems' for year 2006.

With regard to the change of disclosure performance of individual items, 'management philosophy/corporate culture' was the most strikingly improved item with an increase of 0.56 (0.91-0.35) in disclosure score over a three-year period. In addition, the disclosures of 'financial/investors relations' and 'information/networking systems' were also significantly improved with an increase of 0.43 and 0.37 respectively. The disclosure of 'management processes' was improved as well but with the least increase of 0.09 among the category items.

Information gap

This research also investigated whether there was an information gap between the actual disclosure practice of each IC attribute by Chinese firms and the expectation of Chinese stakeholders for the disclosure of the item (namely the disclosure importance of each IC item from Chinese stakeholders' perceptions, refer to chapter 6 for details). Table 7.3 below demonstrates the disclosure score of each internal capital item and its level of importance.

Table 7.3 The information gap of internal capital disclosures (2009 dataset)

1. Intellectual Capital	Disclosure Score (0-1)	Importance
1.1 Research & development	0.87	Very important
1.2 Intellectual property	0.50	Extremely important
1.3 Management philosophy/corporate culture	0.91	Moderately important
1.4 Management processes	0.98	Moderately important
1.5 Information/networking systems	0.60	Moderately important
1.6 Financial/investors relations	0.86	Very important

According to the table, we can see that the disclosures of such items as 'research and development', 'information/networking systems' and 'financial/investors relations' were very consistent with the stakeholders' expectations. However the item 'intellectual property', considered to be extremely important by the stakeholder panel, was under-disclosed with a score of 0.50. So there was an information gap for the disclosure of this item, which needs to be addressed in the future. Two other items, 'management philosophy/corporate culture' and 'management processes', both achieved a very high disclosure score (above 0.90), but the stakeholder panel deemed them to be moderately important. Therefore the disclosures of them exceeded the expectation of stakeholders.

Disclosure details for each item

To better understand the reporting practice of IC by Chinese firms, the disclosure performance of each item was examined in detail using the 2009 dataset. Firstly the internal capital attributes were examined.

1.1 Research & development

'Research & development' (R&D) refers to the information regarding research and development activities and outcomes within a company. It was reported by 92 firms (92% of the total) including 63 firms (63%) achieving the maximum score of 4 and 22 firms (22%) obtaining a score of 3. For instance, China South Locomotive & Rolling Stock Co., Ltd. reported its R&D investment and outcomes, which achieved the maximum score. It stated in the section of "Report of Directors" of its annual report that:

In 2009, the Company invested RMB2, 620 million in technical R&D, launched 404 new R&D projects and continued with 304 existing R&D projects. During the year, the Company won one first-class prize of the State Scientific and Technological Progress Award, as well as two special prizes, one first-class prize, three second-class prizes and two third-class prizes of the science and Technology Award of China Railway Society (China South Locomotive & Rolling Stock Co., Ltd., 2009, p. 67).

As another example, China COSCO Holding Co., Ltd. obtained a score of 3 in disclosing one of its R&D projects in "Management Discussion and Analysis":

It (the company) had been participating in the "Ship and Cargo Online Monitoring System" and in the research and development of "Demonstration and Development of Supply Chain Application Systems based on Intelligent Container Public Service System", a national key technology research and development project. As such, the group outperformed other competitors in terms of technological advancement and sustainable development (China COSCO Holding Co., Ltd., 2009, p. 36).

The disclosure quality of this item, in general, was quite good with a score of 0.87. It was not surprising because the capability of R&D was seen as one of the core competences for organizations in the current knowledge-based economy. The disclosure of the item would signal the potential of a company to succeed in a sustainable manner in the future.

1.2 Intellectual property

'Intellectual property' comprises patents, copyrights, trademarks, etc., held by a firm. It was disclosed by 57% of the total firms with 38 firms (38%) achieving the maximum score of 4. For example, China Petroleum and Chemical Co. reported the application and grant of its patents both domestically and internationally, achieving the maximum score. It claimed in "Business Review and Prospects" that:

In 2009, the Company applied for 1,570 domestic patents and was granted 605. The Company applied for 135 foreign patents and was granted 37 (China Petroleum and Chemical Co., 2009, p. 18).

The disclosure level of this item was relatively low with a score of 0.50 (the lowest in the category). A possible explanation is that the sample included many companies in banking, insurance and other service sectors which are not very likely to create intellectual property in

the operation as compared with the traditional manufacturing sectors. In addition intellectual property is often deemed to be a critical competitive resource so that many firms do not intend to disclose it for the purpose of maintaining confidentiality and protecting competitive advantages (Vergauwen and Alem, 2005).

1.3 Management philosophy/corporate culture

'Management philosophy/corporate culture' refers to a blend of the values, spirit, belief, attitudes, experiences, taboos, rituals, etc. existing in a company. This item was narrative in nature so that it was assigned a maximum score of 3. Ninety-six companies out of 100 (96%) reported the item with 82 firms (82%) attaining the maximum score. For instance, China CITIC Bank achieved the maximum score for the disclosure of its business philosophy in "Management Discussion and Analysis":

> *Carrying out its business philosophy of "coordinating the development of efficiency, quality and scale", the Bank has continued to strengthen its credit management and improved its asset quality while ensuring a steadily rapid loan growth (China CITIC Bank., 2009, p. 19).*

Another example, Bank of China reported its corporate spirit, obtaining the maximum score as well:

> *Bank of China has upheld the spirit of "pursuing excellence" throughout its near hundred-year history. It is widely recognised within the industry and by its customers for its prudent operations and customer-centric business concepts (Bank of China Ltd., 2009, p. 3).*

The disclosure level of this item was very high with a score of 0.91. This was not unexpected because increasing Chinese enterprises have formed their own management philosophy and corporate culture commensurate with the high-speed development of the Chinese economy during the last three decades, and would like to highlight them to the public through annual reporting.

1.4 Management processes

'Management processes' refers to policies, procedures and other processes in association with the management of a company, covering a wide range of activities such as cost management and risks control. This item was also scored out of a maximum of 3 due to its narrative nature.

Almost all the firms in the sample (99%) disclosed the item comprising 96 firms (96%) achieving the maximum score. The disclosure of this attribute was outstanding with the highest score of 0.98 across all the IC attributes.

In illustration, China Coal Energy was awarded the maximum score in reporting its cost management measures:

> *The Company continued to strengthen cost management and on the basis of implementing fixed amount for cost items of product, strictly controlling the unit consumption level, optimizing the relation between mining and stripping, placed more emphasis on implementing whole-process, total-factor and all-round cost control regarding mining design and working face layout, and reduced the coal cost through improving the production efficiency (China Coal Energy Co., Ltd., 2009, p. 36).*

1.5 Information/networking systems

'Information/networking systems' relates to the details on the development, application and impact of information or networking systems within a company. It was disclosed by 78 firms (78%) with 19 firms (19%) achieving the maximum score of 4 and 47 firms (47%) obtaining a score of 3. For example, China Minsheng Bank Co., Ltd. reported the status of its on-line banking, which achieved the maximum score. It claimed in "Management Discussion and Analysis" that:

> *In the reporting period, the company's e-banking services achieved rapid growth. Transaction volume reached RMB5, 144,050 million. The aggregate numbers of corporate online-banking and individual online-banking accounts were 99,000 and 3,061,000 respectively (China Minsheng Banking Co., Ltd., 2009, p. 42).*

As another example, Bank of Communication Co., Ltd. obtained a score of 3 for giving information with regard to the development and construction of its IT systems in "President's Statement":

> *The Bank accelerated its level of information technology, upgraded its main system and started construction of a new-generation IT system for its overseas branches. The Bank was first in the industry to realize "having two information systems operating simultaneously for the same city" for its core business system, constructing an*

integrated and centralised production operations and control platform (Bank of Communication Co., Ltd., 2009, p. 22).

1.6 Financial/investors relations

'Financial/investors relations' refers to the relationships between a company and its financial providers (e.g. banks) or investors. The item was reported by almost all the companies (99% of the total) with 77 firms (77%) attaining the maximum score of 4. For instance, Baoshan Iron & Steel Co., Ltd. disclosed its good relationships with various financial institutions in a sub-section "Fund Providers", achieving the maximum score (Baoshan Iron & Steel Co., Ltd., 2009, p. 67). Another example, China Shenhua Energy Company Ltd., obtaining the maximum score as well, reported very detailed information with respect to its relationships with investors in "Investor Relations" (China Shenhua Energy Company Ltd., 2009, pp. 129-131).

The disclosure level of this item was quite high with a score of 0.86. Since good relationships with financial providers or investors enable a company obtain adequate funds for the future development (e.g. technology innovation, new product/service development), it was not surprising that the company attaches significant importance to develop and report the relationships.

External capital items

External capital comprises nine attributes: 'brands/reputation', 'suppliers', 'customer satisfaction/loyalty', 'marketing', 'distribution channels', 'business collaborations', 'research collaborations', and 'licensing agreements/franchising agreements/favourable contracts'. Table 7.4 below shows the disclosure performance of these attributes in terms of both extent and quality. It was found that 'customers' was the most frequently reported item in this category, being reported by all the firms with a disclosure score of 0.96. In Addition, 'business collaborations', 'suppliers' and 'marketing' were also highly reported, achieving a disclosure score of 0.85, 0.79 and 0.79 respectively. 'Research collaborations', being reported by 35 firms out of 100 with a sore of 0.24, was the least reported external capital item, as well as across all the category items. 'Customers satisfaction/loyalty' was another item obtaining a relatively low disclosure score in the category (under 0.50). Overall, 78% of external capital items obtain a disclosure score above 0.50.

Table 7.4 Disclosure of external capital items

2. External Capital	Frequency (n = 100)					Disclosure Score (0-1)
	0	**1**	**2**	**3**	**4**	
2.1 Brands/reputation	7	0	9	73	11	0.70
2.2 Suppliers	14	0	9	11	66	0.79
2.3 Customers	0	0	8	2	90	0.96
2.4 Customers satisfaction/loyalty	35	0	23	21	21	0.48
2.5 Marketing	3	0	14	45	38	0.79
2.6 Distribution channels	22	0	17	17	44	0.65
2.7 Business collaborations	4	0	16	14	66	0.85
2.8 Research collaborations	65	0	10	25	0	0.24
2.9 Licensing agreements/franchising agreements/favourable contracts	30	0	17	30	23	0.54

A longitudinal comparison

A longitudinal comparison for the disclosure of external capital items over a three-year period was conducted as well. The results are demonstrated in Table 7.5.

Table 7.5 A longitudinal comparison of external capital items

External Capital	2006			2008			2009		
	No. (49)	**%**	**Score (0-1)**	**No. (100)**	**%**	**Score (0-1)**	**No. (100)**	**%**	**Score (0-1)**
Brands/reputation	41	84%	0.78	87	87%	0.64	93	93%	0.70
Suppliers	n/a	n/a	n/a	83	83%	0.75	86	86%	0.79
Customers	45	92%	0.69	93	93%	0.86	100	100%	0.96
Customer satisfaction/loyalty	13	27%	0.22	51	51%	0.36	65	65%	0.48
Marketing	17	35%	0.23	87	87%	0.70	97	97%	0.79
Distribution channels	26	53%	0.39	70	70%	0.60	78	78%	0.65
Business collaborations	49	100%	0.81	95	95%	0.80	96	96%	0.85
Research collaborations	n/a	n/a	n/a	26	26%	0.19	35	35%	0.24
Licensing agreements/franchising agreements/favourable contracts	5	10%	0.08	52	52%	0.42	70	70%	0.54

As can be seen from the table, there was a generally upward trend for the disclosure of all the attributes in the category from both extent and quality other than 'brands/reputation' which

shows an inverse trend in disclosure quality. A substantial improvement for most of the items appeared between 2006 and 2008. However between 2008 and 2009, the improvement became steady for all the items. These trends are very similar to the disclosure of internal capital items. 'Business collaborations' was the best reported item in 2006 while 'customers' for both 2008 and 2009; 'licensing /franchising agreements/favourable contracts' was the poorest disclosed item in 2006 as 'research collaborations' for both 2008 and 2009.

Among the items, the reporting of 'marketing' made the biggest progress with an increase of 0.56 in disclosure score between 2006 and 2009. In addition the disclosure of 'licensing /franchising agreements/favourable contracts' was also improved markedly during the period. It was quite surprising that the disclosure quality of 'brands/reputation' and 'business collaboration' followed a downward trend between 2006 and 2008.

Information gap

Table 7.6 shows the disclosure score and the level of importance determined by the stakeholder panel for each external capital item. We can see from the table that the disclosures of such items as 'brands/reputation', 'customers', 'marketing', 'distribution channels', and 'business collaborations' (representing 56% of the total external capital attributes), deemed very important or moderately important, were consistent with the expectation of stakeholders. The item 'suppliers', considered moderately important by the stakeholder panel, achieved a disclosure score of 0.79 which exceeds the expectation of stakeholders. The other three items (approximately 33%) were under-disclosed, which indicates that there was an information gap for the disclosure of them.

Table 7.6 The information gap of external capital disclosures (2009 dataset)

2. External Capital	Disclosure Score (0-1)	Importance
2.1 Brands/reputation	0.70	Very important
2.2 Suppliers	0.79	Moderately important
2.3 Customers	0.96	Very important
2.4 Customers satisfaction/loyalty	0.48	Very important
2.5 Marketing	0.79	Very important
2.6 Distribution channels	0.65	Moderately important
2.7 Business collaborations	0.85	Very important
2.8 Research collaborations	0.24	Moderately important
2.9 Licensing agreements/franchising agreements/favourable contracts	0.54	Very important

Disclosure details for each item

The disclosure of each external capital item was also examined in detail as follows.

2.1 Brands/reputation

'Brands/reputation' relates to the details on brands or reputation building of products and services associated with a firm. This item was frequently disclosed by 93 companies (93% of the total) with 11 firms (11%) achieving the maximum score of 4 and 73 firms (73%) obtaining a score of 3. The results indicates that the Chinese companies attached great importance to brand and reputation building, and would like to report it to various stakeholders in the society so as to enhance their faith and loyalty to the company.

As an example, Air China Ltd. reported its brand value in monetary terms, achieving the maximum score. It stated that:

> *In June 2009, the Group, with its brand valued at RMB31, 723 million, ranked 25th among China's Top 500 Most Valuable Brands published by the World Brand Laboratory. It was selected as one of "the 60 Most Influential Brands on China's League Table of Top 100 Enterprises for the 60th anniversary of the People's Republic of China" in December 2009 (Air China Ltd., 2009, p. 25).*

It was found that, during the course of content analysis of annual reports, quite a few firms had attempted to report their brand value using monetary terms.

Another example, Industrial and commercial Bank of China Ltd. attained a score of 3 for the disclosure of its reputation on social responsibility in "Company Profile":

> *The Bank strives to duly implement the organic unification of economic and social responsibilities, establishing the image of a large responsible bank in the aspects of supporting economic and social development and resources, and participating in community services, and has repeatedly won the awards of "Most Respectable Enterprise in China" and "Valuable Enterprises - Model for Social Responsibility" (Industrial and Commercial Bank of China Ltd., 2009, p. 2).*

2.2 Suppliers

'Suppliers' refers to the information (or indicators) relating to suppliers of a company, such as reliance on key suppliers and bargaining power against suppliers (Li et al., 2008). It was reported by 86% of the total firms (86) including 66 firms (66%) attaining the maximum score of 4. For instance, ZTE Corporation was awarded the maximum score for disclosing its key suppliers in "Report of Directors":

> *Purchased by the Group from its largest suppliers amounted to RMB3, 144 million in 2009, accounting for 9.18% of the total purchases of the Group for the year, while the purchases made from its five largest suppliers amounted to RMB7,207 million, accounting for 17.98% of the total purchases of the Group for the year (ZTE Corporation., 2009, p. 50)*

2.3 Customers

'Customers' refers to the information (or indicators) in relation to customers of a firm, such as reputation of customers and customer purchasing histories. This item was disclosed by all the firms with 90%, achieving the maximum score of 4. As an example, China Merchants Bank Co., Ltd., obtaining the maximum score, demonstrated its customer base in "Management's Analysis and Discussion":

> *Over the past 22 years, the Company has developed 345,600 corporate depositors and 15,500 corporate borrowers, including domestic industry leaders and large enterprise groups, government agencies, financial institutions, and Fortune Top 500 multinationals. Meanwhile, the Company has been striving to develop small and medium-size enterprises to form a balanced customer structure with large, medium and small customers reasonably proportioned (China Merchants Bank Co., Ltd., 2009, p. 44).*

Another instance, Bank of China Ltd., also attaining the maximum score, highlighted the growth of its medium and high-end customer base in "Message from the President":

> *The personal banking business focused heavily on improving service quality and expanding its customer base, with a particular emphasis on medium and high-end customers. This contributed to rapid growth, with personal RMB loans and deposits in the domestic operations increasing by RMB 325.078 billion and RMB 387.031*

billion respectively, and the number of medium and high-end customers increasing by 30.30 percent (Bank of China Ltd., 2009, p. 11).

This item was reported strikingly with the highest disclosure score of 0.96 in the category. Almost all the firms disclosed very detailed information regarding its customer base.

2.4 Customer satisfaction/loyalty

'Customer satisfaction/loyalty' refers to the information (or indicators) with respect to customer satisfaction or loyalty to products or services of a company. It was disclosed by 65 firms (65%) with 21 firms (21%) attaining the maximum score of 4 and 21 firms (21%) obtaining a score of 3. It was impressive that many companies reported the customer satisfaction or loyalty rate in their 2009 annual reports. For example, China Life Insurance Company Ltd. made disclosures with regard to its customer loyalty and satisfaction rate in "Social Responsibility Report", attaining the maximum score:

> *The research results indicate that the general custom loyalty of the Company in 2009 achieved an average score of 8.6 (out of 10), which improved by 3.6% and 13.1% respectively as compared with year 2008 and year 2007; the general customer satisfaction of the company in 2009 obtained a score of 8.8 with an increase of 6% and 12.8% as compared with 2008 and 2007 (China Life Insurance Company Ltd., 2009, p. 26).*

Another instance, China Merchants Bank Co., Ltd. reported its customer satisfaction in "Management's Analysis and Discussion", obtaining a score of 3. It claimed that:

> *In addition, the company's products and services have been widely recognized by our clients who maintain a high level of satisfactions with our services (China Merchants Bank Co., Ltd., 2009, p. 44).*

2.5 Marketing

'Marketing' relates to the details regarding how a company promotes its services or products, and the consequent outcomes. The disclosure of this item was quite good with a score of 0.79. Ninety-seven percent of the total firms reported the item including 38 firms (38%) achieving the maximums score of 4 and 45 firms (45%) obtaining a score of 3. For example, China Shenhua Energy Company Ltd. attained the maximum score for the disclosure of its marketing strategies and achievements in "Chairman's Statements":

To cope with changes in the operating environment in 2009, through reasonable adjustment of marketing strategies, the company actively entered into long-term strategic cooperation with key customers, explored new markets such as metallurgy, and at the same time developed new types of coal products in an effort to diversity its markets. The annual coal sales volume of the company reached 254.3 million tonnes, representing a year-on-year growth of 9.3%. Domestic seaborne coal long-term contract price was RMB441.4 per tonne, representing a year-on-year increase of 8.0% (China Shenhua Energy Company Ltd., 2009, p. 9).

As another example, China Minsheng Banking Co., Ltd. presented one of its brilliant marketing programs in "Management Discussion and Analysis", obtaining a score of 3:

The Company launched My Dream 2009 program in 2009…The program received the Cross-media Marketing and Sales Integrated Award, Best Innovative Marketing Award and Competitive Marketing Excellence Award from China Advertising Association, China Times and China Business Journal respectively (China Minsheng Banking Co., Ltd., 2009, p. 40).

2.6 Distribution channels

'Distribution channels' refers to the information in regard to how a company's products or services reach its customers. It was reported by 78% of the total firms with 44 firms (44%) achieving the maximum score of 4. For instance, China Merchants Bank Co., Ltd. provided very detailed information as to its distribution channels in "Management's Analysis and Discussion", obtaining the maximum score. It claimed that:

The Company provides products and services via multiple distribution channels. As at 31 December 2009, in 65 cities across Mainland China, the Company had 52 branches, 685 sub-branches (including outlets)…a branch in Hong Kong; a branch and a representative office in New York, the United States; a representative office in London (China Merchants Bank Co., Ltd., 2009, p. 45).

2.7 Business collaborations

'Business collaborations' includes any forms of business collaborations involving the company, such as joint ventures, strategic alliances, mergers and acquisitions. Ninety-seven percent of the total firms disclosed the item including 66% attaining the maximum score of 4.

It was another highly reported attribute in the category with a disclosure score of 0.85. The high level of disclosure for this item was unsurprising because the collaborative arrangements are a beneficial way for companies to conduct business and implement strategies in the modern commercial environment (Guthrie et al., 2006).

As an example, Jiangxi Copper Co., Ltd. was awarded the maximum score in disclosing the information in regard to its joint-venture with another company in "Management Discussion and Analysis":

> *The Company had joined with China Metallurgical Group Corporation and successfully bid the exploration rights of Aynak Copper Mine in Afghanistan, and invested RMB58.14 million to establish MCC-JCC Aynak Minerals Company Limited in which the company holds 25% equity interest (Jiangxi Copper Co., Ltd., 2009, p. 30).*

2.8 Research collaborations

'Research collaborations' refers to the information relating to research activities involving a company, such as collaborations with universities or research agencies. It was reported only by 35 firms (35%) with no firms achieving the maximum score of 4 and 25 firms obtaining a score of 3. The disclosure performance of this item was very poor with the lowest score (0.24) in the category as well as across all the IC items. This result may be because most of the companies really did not have such collaborations in the reporting period so that no related information was disclosed.

As an instance, ZTE Corporation reported its research collaborations with a number of colleges and research institutes in "Report of the Board of Directors", achieving a score of 3:

> *In 2009, the Group ... took the lead in the formation of the "ZTE Forum for Cooperation of Enterprises, Academies and Research Institutes in Telecommunications" in associations with 17 elite colleges and 4 research institutes specializing in telecommunications, with the aim of forging a value chain linking the industry, the academia and the research sector. Through this forum, a number of joint venture projects in the wireless, wireline and services segments were set up during the year, effectively combining academic research with industrial capabilities to shorten the lead-time for product development and improve the company's core competitiveness as a result (ZTE Corporation., 2009, p. 50).*

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2.9 Licensing agreements/franchising agreements/favourable contracts

'Licensing agreements/franchising agreements/favourable contracts' refer to the agreements held by a company offering other companies the legal rights to use its patents, trademarks or brand names, etc., or other favourable contracts held by the company. This item was reported by 70% of the total firms including 23% achieving the maximum score of 4 and 30% obtaining a score of 3. For example, China Coal Energy Co., Ltd. achieved the maximum score for the reporting of a licensing agreement related to the trademark in "Significant Events":

> *The Company and China Coal Group entered into a "Trademark Licensing Framework Agreement" on 5 September 2006. The Agreement has a term of 10 years and is renewable automatically for 10 years upon expiry. Pursuant to the Agreement, China Coal Group shall grant to the Company non-exclusive right and license of the trademarks…The nominal license fee paid by the Company to the China Coal Group is RMB1 per year (China Coal Energy Co., Ltd., 2009, p. 80).*

Another example, Petrochina Company Ltd., obtaining a score of 3, reported the item as follows:

> *The Company and CNPC continue to implement the three intellectual property licensing contracts entered into on March 10, 2000, namely the Trademark Licensing Contract, the Patent and Know-how Licensing Contract and the Computer Software Licensing Contract…Pursuant to these licensing contracts, CNPC has granted the company the exclusive right to use certain trademarks, patents, know-how and computer software of CNPC at no cost (Petrochina Company Ltd., 2009, p. 47).*

Human capital items

Human capital includes five attributes: 'employees', 'qualifications', 'education/training', 'work-related knowledge/competences', 'entrepreneurial spirit'. The extent and quality of disclosure of these items are presented in Table 7.7.

Table 7.7 Disclosure of human capital items

3. Human Capital	Frequency (n = 100)					Disclosure Score (0-1)
	0	**1**	**2**	**3**	**4**	
3.1 Employees	0	0	0	26	74	0.94
3.2 Qualifications	0	0	1	48	51	0.88
3.3 Education/training	27	0	13	15	45	0.63
3.4 Work-related knowledge/competences	37	0	15	48	n/a	0.58
3.5 Entrepreneurial spirit	12	0	31	57	n/a	0.78

From the table, we can see that 'employees' was the most frequently reported item in the category, being reported by all the firms with a disclosure score of 0.94. In addition, items such as 'qualifications' and 'entrepreneurial spirit' were also highly reported, achieving a disclosure score of 0.88 and 0.78 respectively. 'Work-related knowledge/competences' was the least disclosed item, being reported by 63 firms (out of 100) with a disclosure score of 0.58. Overall this category was disclosed very well with all the items obtaining a score over 0.50.

A longitudinal comparison

Results regarding the disclosure performance of human capital items from 2006 to 2009 are presented in Table 7.8. As is shown in the table that there was a generally upturn trend for the disclosure of all the items in the category although at times it was not significant. Between 2006 and 2008, there was an obvious improvement for the disclosure of such items as 'education/training' and 'work-related knowledge/competences'. All the disclosure items in the category obtained a steady improvement between 2008 and 2009, except for 'work-related knowledge/competences' which demonstrates a decreasing trend. 'Employees' was the most highly reported item in the category for all the three years. Yet the worst reported item was varied, 'work-related knowledge/competences' for both 2006 and 2009, 'education/training' for 2008.

Among the human capital items, the disclosure of 'work-related knowledge/competences' achieved the biggest progress with an increase of 0.37 in disclosure score after a two-year interval (from 2006 to 2009). Another item 'education/training', its disclosure was also significantly improved (with an increase of 0.36) during the three-year period.

Table 7.8 A longitudinal comparison of human capital items

Human capital	2006			2008			2009		
	No. (49)	%	Score (0-1)	No. (100)	%	Score (0-1)	No. (100)	%	Score (0-1)
Employees	45	92%	0.82	100	100%	0.90	100	100%	0.94
Qualifications	n/a	n/a	n/a	100	100%	0.85	100	100%	0.88
Education/training	19	39%	0.27	67	67%	0.56	73	73%	0.63
Work-related knowledge/competences	13	27%	0.21	65	65%	0.60	63	63%	0.58
Entrepreneurial spirit	39	80%	0.55	74	74%	0.66	88	88%	0.78

Information gap

As can be seen from Table 7.9 that the disclosures of all the items in the category except for 'work-related knowledge/competences' (80% of the total) were consistent with the expectation of the stakeholder panel. This reconfirms the excellent performance of this category. 'Work-related knowledge/competences' was the only under-disclosed item, obtaining a score of 0.58, which was, however, considered very important by stakeholders.

Table 7.9 The information gap of human capital disclosures (2009 dataset)

3. Human Capital	Disclosure score (0-1)	importance
3.1 Employees	0.94	Very important
3.2 Qualifications	0.88	Very important
3.3 Education/training	0.63	Moderately important
3.4 Work-related knowledge/competences	0.58	Very important
3.5 Entrepreneurial spirit	0.78	Very important

Disclosure details for each item

The disclosure details for each human capital item are depicted in the following section.

3.1 Employees

'Employees' refers to the information (or indicators) relating to employees of a company, such as employee commitment and employee productivity. This item was disclosed by all the companies including 74% achieving the maximum score of 4. Of note is that some firms (e.g. China Coal Energy Co., Ltd., 2009, pp. 96-98; Bank of Communication Co., Ltd., 2009, p. 75) had used a particular section, usually titled "Human Resources Management", to report the status of its employees systematically in the annual report.

3.2 Qualifications

'Qualifications' includes both the academic and the vocational qualifications held by employees of a firm. It was also reported by all the firms with around half of them (51%) achieving the maximum score of 4. The disclosure of this item was usually included in 'employees' (e.g. Bank of Communication Co., Ltd., 2009, p. 75).

3.3 Education/training

'Education/training' relates to the education or training programmes or opportunities provided by a company in order to enhance the employees' working skills or techniques. Seventy-three percent of the total companies disclosed the item with 45% attaining the maximum score of 4. For example, Ping An Insurance Company of China, Ltd. achieved the maximum score for reporting information regarding its education and training programs and costs in "Chairman's Statement":

> We continued to emphasize staff training and education, providing them with an open and state-of-the-art learning environment. By the end of 2009, we have established 80 training centres in China and our annual training cost reached RMB387 million (Ping An Insurance Company of China, Ltd., 2009, p. 8).

3.4 Work-related knowledge/competences

'Work-related knowledge/competences' refers to the knowledge or competences obtained from ongoing training or on the job by employees of a firm. This item was scored out of a maximum of 3 because it is narrative in nature. Sixty-three firms (63%) reported the item including 48 firms (48%) obtaining the maximum score. As an example, Bank of China Ltd. was awarded the maximum score for disclosing the item in "Management Discussion and Analysis":

> In 2009, the Bank strengthened the cultivation and development of three groups of talents in accordance with the needs of strategy, business and talent development...promoted qualification training of professional development and cultivated a group of middle and high-level professionals. In order to promote the transformation of the outlets, the Bank continued the staff allocation optimisation program, delivered a series of IT Blueprint training sessions and increased training

opportunities to enhance the comprehensive skills of frontline teller in the outlets (Bank of China Ltd., 2009, p. 61).

3.5 Entrepreneurial spirit

'Entrepreneurial spirit' includes the perceptions or skills such as innovativeness, proactive and reactive abilities, changeability, and risk taking, owned by managers or employees in the operation of a company. This item was also allocated a maximum score of 3 due to its narrative nature. It was reported by 88% of the total companies including 57% achieving the maximum score. For instance, China Life Insurance Company Ltd., achieving the maximum score, presented its perceptions in coping with challenges in "Chairman's Statements":

The year 2009 was the most difficult year for economic development in China after embarking on the century…Facing complex and volatile external operating environment, the Company adhered to the guidelines laid down by the scientific concept of development and the overall strategy of 'seeking stable growth, improving profitability through business restructuring, deepening reforms and strengthening internal control'. The company strived to turn challenges into opportunities, overcame various difficulties, and achieved stable and healthy business development (China Life Insurance Company Ltd., 2009, p. 12).

Summary of results

The overall IC disclosure by Chinese firms in 2009 was quite good with 90% (18 out of 20) of the items achieving a score above 0.50 (see Table 7.10). The three most highly reported items were 'management processes', 'customers' and 'employees' while the three least reported items were 'research collaborations', 'customers satisfaction/loyalty' and 'intellectual property'. With respect to the relationship between the actual IC disclosure practices by Chinese firms and the expectation of stakeholders, the disclosure of 60% of the total IC items (12 out of 20) was consistent with the expectation of the stakeholders. But also five items (25%), comprising 'research collaborations', 'customer satisfaction/loyalty', 'intellectual property', 'licensing/franchising agreements/favourable contracts' and 'work-related knowledge/competences', were under-disclosed in accordance with the expectations of the stakeholder panel , which need to be improved in the future.

Table 7.10 Disclosure of Overall IC items (2009 dataset)

Items	Disclosure score (0-1)	Importance
1.4 Management processes	0.98	Moderately important
2.3 Customers	0.96	Very important
3.1 Employees	0.94	Very important
1.3 Management philosophy/corporate culture	0.91	Moderately important
3.2 Qualifications	0.88	Very important
1.1 Research & development	0.87	Very important
1.6 Financial/investors relations	0.86	Very important
2.7 Business collaborations	0.85	Very important
2.2 Suppliers	0.79	Moderately important
2.5 Marketing	0.79	Very important
3.5 Entrepreneurial spirit	0.78	Very important
2.1 Brands/reputation	0.70	Very important
2.6 Distribution channels	0.65	Moderately important
3.3 Education/training	0.63	Moderately important
1.5 Information/networking systems	0.60	Moderately important
3.4 Work-related knowledge/competences	0.58	Very important
2.9 Licensing/franchising agreements/favourable contracts	0.54	Very important
1.2 Intellectual property	0.50	Extremely important
2.4 Customers satisfaction/loyalty	0.48	Very important
2.8 Research collaborations	0.24	Moderately important

In comparison with the 2006 and 2008 dataset, as is shown in Figure 7.1 that there was an upward trend for overall IC disclosure from 2006 to 2009, with an increase in (mean) disclosure score from 0.45 to 0.73 over the period. One-way ANOVA indicated that the increase between years was significant (F = 7.214, p = .002). A Turkey post-hoc test revealed that the increase between 2006 and 2008, and 2006 and 2009, was significant (p = .020 and p = .001 respectively). However, there was no significant increase between 2008 and 2009 (p = .602). As to the three most highly reported items (refer to Table 7.11), they were very similar for the three years. For the three least reported items, they were identical in 2008 and 2009, but different from those in 2006 when they were 'licensing agreements', 'work-related knowledge' and 'customer satisfaction'. In general, the reporting of IC items in 2008 was very consistent with the situation in 2009, but much better than in 2006.

Figure 7.1 The trend of overall IC disclosure
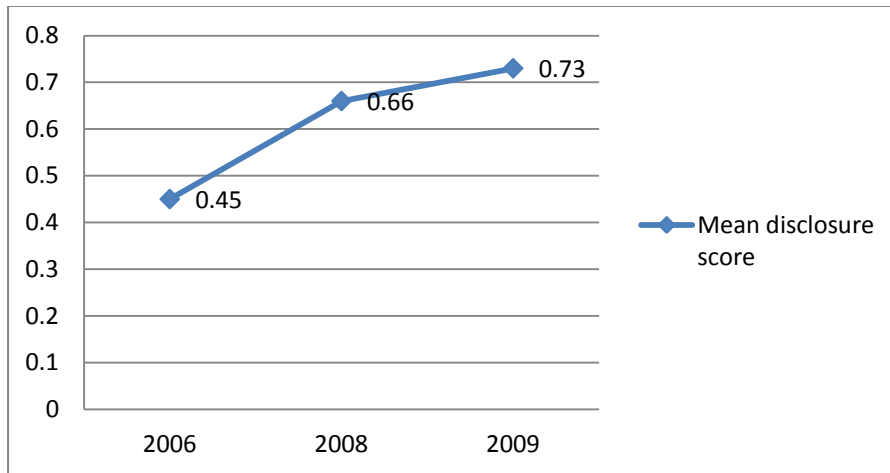
Table 7.11 The best and least reported items

Year	2006	2008	2009
The best three	'management processes'	'Management processes'	'Management processes'
	'employees'	'Employees'	'Customers'
	'business collaborations'	'Customers'	'Employees'
The least three	'Licensing agreements'	'Research collaborations'	'Research collaborations'
	'Work-related knowledge'	'Customers satisfaction/loyalty'	'Customers satisfaction/loyalty'
	'Customer satisfaction'	'Intellectual property'	'Intellectual property'

7.3 Disclosure of IC categories: extent and quality

This research also examined the extent and quality of IC disclosure by categories. Simultaneously a longitudinal comparison over the three-year period was also conducted. Firstly the extent of IC category disclosure is depicted.

Extent

Figure 7.2 shows the frequency of IC disclosure in terms of the three categories for the 2009 dataset. It can be seen that Chinese firms favoured external capital reporting which accounted for 43% of total IC disclosures. This was consistent with the 2006 (refer to Figure 7.3) and the 2008 dataset (refer to Figure 7.4) where external capital was the most popular disclosure category for the two years representing 46% and 42% of the total disclosure respectively.

This trend was not unexpected because, in order to cope with the increasing global competition since 2001 in which China joined the World Trade Organization (WTO), Chinese firms had placed great emphasis on the development of their external capital elements (e.g. enhancing brand value and corporate reputation, rationalizing distribution networks, strengthening business collaborations). Moreover, the disclosure of external capital could be more effective than the disclosure of internal capital or human capital in attracting foreign direct investment (FDI) which is encouraged by the Chinese government under the "reform" and "open door" policy. Human capital, occupying 25% of the total disclosure in the 2009 dataset, was the least reported IC category, while internal capital held 32% of the total, standing at the second position. Similar results are reported for the 2006 and 2008 datasets (refer to Figure 7.3 and 7.4).

Figure 7.2 Disclosure frequencies by Categories in 2009
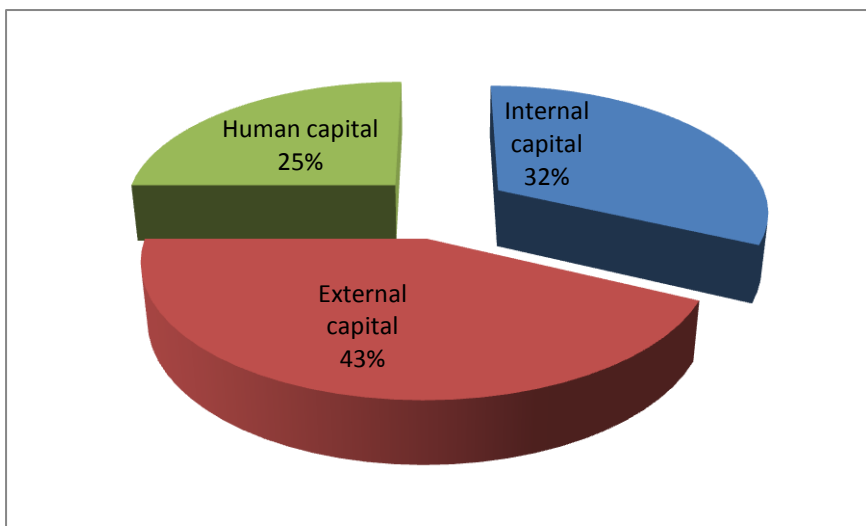
Figure 7.3 Disclosure frequencies by categories in 2006

Human capital 24%
Internal capital 30%
External capital 46%
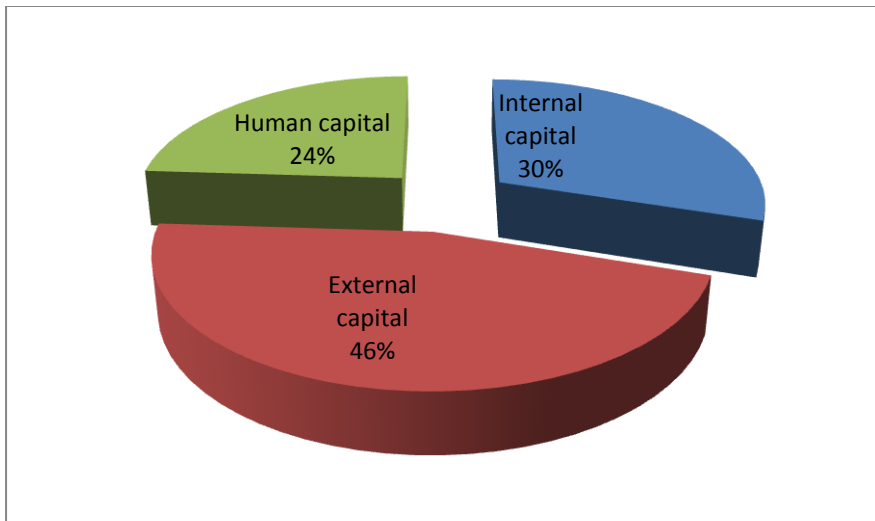
Figure 7.4 Disclosure frequencies by categories in2008

Human capital 26%
Internal capital 32%
External capital 42%
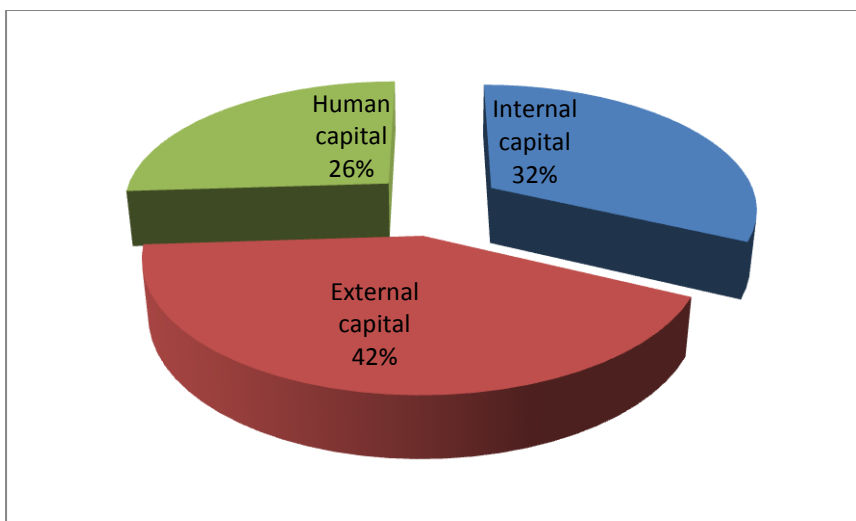
Quality

As for the disclosure quality of IC by categories, we can see from Table 7.12 that internal capital was the most highly reported category in quality with a mean disclosure score of 0.79, slightly higher than that for human capital (with a minor gap of 0.03). External capital was the least reported category with a mean score of 0.67, which was quite surprising since this category was the best performer in disclosure frequency accounting for 43% of the total IC disclosure. The contrary results indicate that the high frequency of IC disclosure does not translate to a high quality of disclosure (Yi and Davey, 2010).

Table 7.12 IC disclosure quality by categories in 2009

Category	Internal capital	External capital	Human capital
Mean disclosure score	0.79	0.67	0.76
Frequency of disclosure	32% (0.32)	43% (0.43)	25% (0.25)

In comparison to the 2006 and the 2008 dataset, as is exhibited in Table 7.13, there was an identical status for 2008 and 2009, years in which internal capital was the most highly reported category while external capital was the least, although the mean disclosure score of 2009 for each category was higher than that for 2008. The 2006 dataset was quite different from these two years in which human capital was the most highly reported category whilst internal capital was the worst. In addition, the disclosure score for each category in 2006 was significantly lower than that for 2008 and 2009.

Table 7.13 A longitudinal comparison for disclosure quality

Category	Internal capital	External capital	Human capital
Mean score (2006)	0.44	0.45	0.46
Mean score (2008)	0.72	0.59	0.71
Mean score (2009)	0.79	0.67	0.76

7.4 Distribution of IC disclosures in corporate annual reports

A typical annual report of the Chinese firm is primarily composed of sections such as "Corporate Information", "Financial Highlights", "Chairman's Statement", "President's Statement", "Management Discussion and Analysis", "Details of Changes in Share Capital and Shareholding of Substantial Shareholders", "Directors, Supervisors, Senior Management and Staff", "Report of Corporate Governance", "Report of Directors", "Report of Supervisors", "Significant Events", and "Financial Statements and Notes". As for the distribution of IC information in Chinese corporate annual reports, it was found that four sections, including "Chairman's Statement", "President's Statement", "Management Discussion and Analysis" and "Report of Directors", accounted for approximately 60% of the total IC disclosure for each company.

It was also noted that more than half of the sample companies (58%) attached the "Sustainability Report" (or "Corporate Social Responsibility Report") as an appendix in their annual reports, which consists of a great amount of IC information. The report, although the size was varied by different companies, systematically reported many elements of IC (e.g. R&D, customers, brand/reputation, employees, etc.), which significantly improved the extent and quality of IC disclosure of those firms.

7.5 IC disclosure by firms: extent and quality

In this research, the extent and quality of IC disclosure in terms of firms were also examined. Table 7.14 shows the results including the disclosure frequency[36] and the weighted quality score[37] for each category as well as the overall IC. Firstly the extent (or frequency) of IC disclosure by sample companies is described (see p. 159).

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[36] Namely number of items reported
[37] Refer to Appendix G to see how to calculate the score

Table 7.14 Final IC disclosure score by firms in 2009 (descending order)

Company	Internal capital		External capital		Human capital		Final	
	No.	Score	No.	Score	No.	Score	No.	Score
China Coal Energy Co., Ltd	6	0.96	9	0.84	5	1.00	20	0.91
China CITIC Bank	5	0.77	9	0.95	5	1.00	19	0.91
Bank of China Ltd	5	0.77	9	0.94	5	1.00	19	0.91
SAIC Motor Co., Ltd	5	0.85	9	0.89	5	1.00	19	0.90
China Minsheng Banking Co., Ltd	6	1.00	8	0.80	5	1.00	19	0.90
China Railway Construction Co., Ltd	6	0.96	8	0.82	5	1.00	19	0.90
Shanghai Fosun Pharmaceutical Co., Ltd	6	0.96	9	0.83	5	1.00	20	0.90
Baoshan Iron & Steel Co., Ltd	6	0.96	9	0.83	5	0.94	20	0.89
Wuhan Iron and Steel Co., Ltd	6	0.96	9	0.83	5	0.94	20	0.89
Western Mining Co., Ltd	6	0.91	9	0.84	5	1.00	20	0.89
Yanzhou Coal Mining Co. Ltd	6	0.96	9	0.78	5	1.00	20	0.88
Shanxi Lu'an Environmental Energy Development Co., Ltd	6	0.96	8	0.78	5	1.00	19	0.88
China Construction Bank Co	5	0.77	9	0.89	5	1.00	19	0.88
China Eastern Airlines Co., Ltd	6	0.91	8	0.81	5	0.94	19	0.87
Jiangxi Copper Co., Ltd	6	0.92	8	0.80	5	0.94	19	0.87
China South Locomotive & Rolling Stock Co., Ltd	6	0.96	8	0.79	5	0.95	19	0.87
China Gezhouba Group Co., Ltd	6	1.00	8	0.76	5	0.94	19	0.87
Qingdao Haier Co., Ltd	6	0.96	8	0.78	5	0.94	19	0.87
China Yangtze Power Co., Ltd	5	0.74	9	0.90	5	0.95	19	0.86
Petrochina Company Ltd	6	0.96	7	0.73	5	1.00	18	0.85
Industrial and Commercial Bank of China Ltd	6	0.95	8	0.76	5	0.94	19	0.85
Ping An Insurance Company of China, Ltd	5	0.77	8	0.82	5	1.00	18	0.85
Hua Xia Bank Co., Ltd	5	0.77	8	0.82	5	1.00	18	0.85
Bank of Beijing Co., Ltd	5	0.77	8	0.82	5	1.00	18	0.84
China Railway Group Ltd	6	0.96	8	0.71	5	1.00	19	0.84
China Life Insurance Company Ltd	5	0.74	8	0.85	5	0.88	18	0.83
China Merchants Bank Co., Ltd	5	0.77	8	0.83	5	0.89	18	0.83
TBEA Co., Ltd	5	0.85	8	0.76	5	0.94	18	0.83
Shanghai International Port Co., Ltd	6	0.96	7	0.68	5	0.94	18	0.82
Suning Appliance Co., Ltd	5	0.72	8	0.88	5	0.84	18	0.82
Offshore Oil Engineering Co., Ltd	6	0.96	8	0.70	5	0.9	19	0.82
Bank of Nanjing Co., Ltd	5	0.74	8	0.78	5	1.00	18	0.82
Industrial Bank Co., Ltd	5	0.77	8	0.75	5	1.00	18	0.81
Shanghai Electric Group Co., Ltd	6	0.92	8	0.69	5	0.95	19	0.81
Zijin Mining Group Co., Ltd	6	0.96	8	0.71	5	0.83	19	0.81
Zhejiang China Commodities City Group Co., Ltd	5	0.69	9	0.83	5	0.94	20	0.81
Shanghai Pudong Development Bank Co., Ltd	5	0.77	7	0.73	5	1.00	17	0.80
Anhui Conch Cement Co., Ltd	6	0.91	7	0.70	5	0.84	18	0.79
Jinduicheng Molybdenum Co., Ltd	5	0.85	8	0.72	5	0.9	18	0.79
Haitong Securities Co., Ltd	5	0.69	8	0.73	5	1.00	18	0.78
Inner Mongolia Baotou Steel Rare-Earth Hi-teck Co., Ltd	5	0.79	8	0.70	5	0.94	18	0.78
Southwest Securities Co., Ltd	5	0.69	8	0.77	5	0.94	18	0.78
China COSCO Holding Co., Ltd	5	0.69	8	0.76	5	0.90	18	0.77
Yantai Wanhua Polyurethanes Co., Ltd	6	0.75	9	0.72	5	0.90	20	0.77
CITIC Securities Co., Ltd	5	0.70	8	0.71	5	0.94	18	0.76

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Company	Internal capital		External capital		Human capital		Final	
	No.	Score	No.	Score		No.	Score	No.
Sinopec Shanghai Petrochemical Co., Ltd	6	0.96	6	0.57	5	0.94	17	0.76
Bank of Communication Co., Ltd	5	0.77	8	0.74	4	0.73	17	0.75
China United Telecommunications Co., Ltd	6	0.80	6	0.66	5	0.83	17	0.74
Shenzhen Development Bank Co., Ltd	6	0.70	7	0.70	5	0.90	18	0.74
China Oilfield Services Ltd	5	0.80	7	0.62	5	0.94	17	0.74
Gemadale Corporation	6	0.86	7	0.70	4	0.67	17	0.74
Daqin Railway Co., Ltd	6	0.85	7	0.63	5	0.83	18	0.73
ZTE Corporation	6	0.81	8	0.76	3	0.58	17	0.73
China Southern Airlines Co., Ltd	5	0.69	8	0.72	5	0.83	18	0.73
China Shipping Container Lines Co., Ltd	5	0.64	8	0.71	5	0.89	18	0.73
China Pacific Insurance Co., Ltd	5	0.69	7	0.69	5	0.79	17	0.71
Poly Real Estate Group Co., Ltd	5	0.64	8	0.70	5	0.84	18	0.71
Nari Technology Development Co., Ltd	6	0.92	7	0.66	3	0.50	16	0.70
Jiangsu Expressway Co., Ltd	4	0.57	7	0.66	5	0.94	16	0.70
Changsha Zoomlion Heavy Industry Science and Technology Development Co., Ltd	6	0.83	7	0.60	5	0.73	18	0.69
China Vanke Co., Ltd	4	0.54	7	0.69	5	0.85	16	0.68
GD Midea Holding Co., Ltd	6	0.79	8	0.76	2	0.35	16	0.68
Datong Coal Industry Co., Ltd	6	0.76	7	0.64	4	0.67	17	0.68
China Petroleum and Chemical Co	6	0.87	6	0.58	3	0.63	15	0.67
Dongfang Electric Co., Ltd	5	0.74	6	0.63	4	0.66	15	0.67
Baoding Tianwei Electric Co., Ltd	5	0.64	7	0.60	5	0.88	17	0.67
China Shenhua Energy Company Ltd	4	0.50	7	0.76	3	0.63	14	0.66
Gree Electric Appliances Inc	5	0.70	7	0.64	3	0.63	15	0.66
Aluminum Corporation of China Ltd	6	0.87	6	0.50	4	0.68	16	0.65
Hualan Biological Engineering, Inc	5	0.85	8	0.67	2	0.35	15	0.65
Pingdingshan Tianan Coal Mining Co., Ltd	5	0.70	7	0.60	5	0.67	17	0.64
Sany Heavy Industry Co., Ltd	5	0.64	7	0.61	4	0.67	16	0.63
Shanghai Oriental Pearl Co., Ltd	5	0.71	7	0.67	3	0.46	15	0.63
Inner Mongolia Yili Industrial Group Co., Ltd	6	0.79	7	0.60	3	0.52	16	0.63
GD Power Development Co., Ltd	5	0.69	7	0.52	5	0.78	17	0.62
Xinjiang Guanghui Industry Co., Ltd	5	0.72	7	0.68	2	0.35	14	0.62
Bank of Ningbo Co., Ltd	5	0.64	6	0.56	4	0.73	15	0.62
Datang International Power Generation Co., Ltd	4	0.62	6	0.44	5	0.94	15	0.61
Jiangsu Hengrui Medicine Co., Ltd	6	0.87	6	0.49	3	0.58	15	0.61
Henan Shuanghui Investment & Development Co., Ltd	6	0.62	7	0.61	4	0.56	17	0.60
FAW Car Co., Ltd	5	0.69	7	0.62	3	0.46	15	0.60
Sanan Optoelectronics Co., Ltd	3	0.46	8	0.74	2	0.46	13	0.60
Yunnan Baiyao Group Co., Ltd	6	0.66	6	0.53	3	0.63	15	0.59
Harbin Pharmaceutical Group Co., Ltd	5	0.70	6	0.50	4	0.62	15	0.58
Air China Ltd	4	0.62	6	0.63	2	0.35	12	0.57
Shanghai Bashi Industrial Co., Ltd	5	0.71	7	0.53	3	0.46	15	0.57
Huolinhe Opencut Coal Industrial Co., Ltd of Inner Mongolia	5	0.69	5	0.48	3	0.58	13	0.56
Shandong Gold Co., Ltd	6	0.88	5	0.38	3	0.46	14	0.54
Huaneng Power International, Inc	4	0.62	5	0.38	4	0.78	13	0.54
Zhongjin Gold Co., Ltd	6	0.92	5	0.35	3	0.46	14	0.54
Weichai Power Co., Ltd	5	0.60	5	0.45	4	0.61	14	0.53
Wuliangye Yibin Co., Ltd	4	0.53	5	0.51	3	0.52	12	0.52
China CSSC Holdings Ltd	4	0.54	6	0.57	2	0.35	12	0.51

(Continued)

Company	Internal capital		External capital		Human capital		Final	
	No.	Score	No.	Score		No.	Score	No.
Shan Xi Guo Yang New Energy Co., Ltd	3	0.51	5	0.45	3	0.46	11	0.47
Shenzhen Zhongjin Lingnan Nonfemet Co., Ltd	4	0.53	4	0.38	3	0.58	11	0.47
Kweichow Moutai Co., Ltd	5	0.59	5	0.38	3	0.46	13	0.46
Tangshan Jidong Cement Co., Ltd	4	0.44	5	0.48	2	0.40	11	0.45
Yunnan Copper Co., Ltd	5	0.63	4	0.33	3	0.46	12	0.44
Shanxi Xishan Coal and Electricity Power Co., Ltd	4	0.49	4	0.42	2	0.41	10	0.43
Shan Dong Dong-E-E-Jiao Co., Ltd	5	0.56	4	0.31	2	0.35	11	0.39
Mean	5.26	0.76	7.2	0.67	4.24	0.77	16.71	0.72
Std. D	0.73	0.14	1.30	0.15	1.06	0.22	2.50	0.13
Median	5	0.77	7	0.70	5	0.85	17.5	0.74
Highest	6	1.00	9	0.95	5	1.00	20	0.91
Lowest	3	0.44	4	0.31	2	0.35	10	0.39

Extent

As for internal capital disclosure, the average number of items disclosed per company was 5.26 out of a maximum possible of 6. There were 41 firms (41% of the total) which disclosed all the internal capital items. The lowest number of reporting items was 3 which was obtained by only two firms: Sanan Optoelectronics Co., Ltd., and Shan Xi Guo Yang New Energy Co., Ltd. Overall the disclosure frequency of internal capital by Chinese firms was quite high.

In regard to external capital disclosure, the average number of items reported per firm was 7.2 out of a possible 9. Thirteen companies (13%) reported all the external capital items. There were also 36 firms (36%) which reported 8 items out of 9. The lowest number of disclosure items for this category was 4 which was achieved by four companies (4%). Compared with internal capital, the disclosure frequency of external capital was relatively lower.

As to human capital disclosure, the average number of items per company was 4.24 out of a possible 5. Sixty-one percent of the total firms (61) reported all the human capital items while nine percent (9 firms) reported only two items (the lowest number). Overall the disclosure frequency of this category was also quite high.

For the overall IC disclosure, the average number of items reported per firm was 16.71 out of a maximum possible of 20. Eight firms (8%) disclosed all the IC items and eighteen firms (18%) missed only one item. The lowest number of items for overall IC disclosure was ten

which was obtained by only one company, namely Shanxi Xishan Coal and Electricity Power Co., Ltd.

A longitudinal comparison

The disclosure frequency of three IC categories as well as the overall IC in three years (refer to Yi and Davey (2010) for the 2006 dataset, and Appendix H for the 2008 dataset) is exhibited in Table 7.15. From the table, we can find that there was a clear upturn trend for the extent of IC disclosure over the three-year period. In particular between 2006 and 2008 (after a one-year interval), the improvement was significant ($p = .000$ for all the categories and the overall IC).[38] Furthermore, there were eight firms and five firms which reported all the IC items in 2008 and 2009 respectively whereas no firms disclosed all the items in 2006.

Table 7.15 A longitudinal comparison of IC disclosure frequency by firms

Category	2006			2008			2009		
	Mean	**Max**	**%**	**Mean**	**Max**	**%**	**Mean**	**Max**	**%**
Internal capital	2.71	5	54%	4.84	6	81%	5.26	6	88%
External capital	4	7	57%	6.44	9	72%	7.2	9	80%
Human capital	2.37	4	59%	4.06	5	81%	4.24	5	85%
Overall IC	9.08	16	57%	15.34	20	77%	16.71	20	84%

Quality

With regard to the quality of IC disclosure, it can be seen from Table 7.14 that human capital was the highest scoring category, achieving an average disclosure score of 0.77. The highest disclosure score for this category was 1 obtained by two firms: China Minsheng Banking Co., Ltd. and China Gezhouba Group Co., Ltd. There were 97 firms (97% of the total) achieving a score over 0.50. The lowest scoring firm for this category was Tangshan Jidong Cement Co., Ltd., with a disclosure score of 0.44.

The second highest scoring category was internal capital which achieved a mean disclosure score of 0.76, a little lower than for human capital. The highest disclosure score for this category was 0.95 achieved by China CITIC Bank while the lowest disclosure score was 0.31

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[38] Using Turkey post-hoc test

obtained by Shan Dong Dong-E-E-Jiao Co., Ltd. There were 86 firms (86%) obtaining a score above 0.50 for the disclosure of this category.

The lowest scoring IC category was external capital which obtained a mean disclosure score of 0.67. There were twenty companies (20%) achieving the highest disclosure score of 1 for this category. Eight-three percent of the total firms got a score above 0.50. The lowest disclosure score for this category was 0.35 obtained by six firms.

As compared with the results in Table 7.12 which also shows the quality score for each IC category, we can find that there were some differences between the two sets of results. The reason for that is that the current results represent a weighted disclosure score whereas the previous results refer to a non-weighted score.

Overall the average reporting score for the total IC across all the sample firms was 0.72. The highest score was 0.91 achieved by three firms: China CITIC Bank, Bank of China Ltd., and China Coal Energy Co., Ltd. There were 93 firms (93%) scoring over 0.50 for the overall IC disclosure. The lowest disclosure score was 0.39 obtained by Shan Dong Dong-E-E-Jiao Co., Ltd.

A longitudinal comparison

As is shown in Figure 7.8, there was again an upward trend for the disclosure quality of each IC category as well as the overall IC. Especially between 2006 and 2008 the improvement was significant ($p = .000$ for all the categories and the overall IC).[39] This trend was very consistent with the frequency of IC disclosure. In regard to the percentage of firms achieving a score over 0.50 for the overall IC disclosure, there was a drastic increase from approximately 33% in 2006 to 93% in 2009.

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[39] Using Turkey post-hoc test

Figure 7.5 A longitudinal comparison of IC disclosure quality by firms

	2006	2008	2009
Internal capital	0.4	0.69	0.76
External capital	0.44	0.6	0.67
Human capital	0.48	0.73	0.77
Overall IC	0.44	0.65	0.72
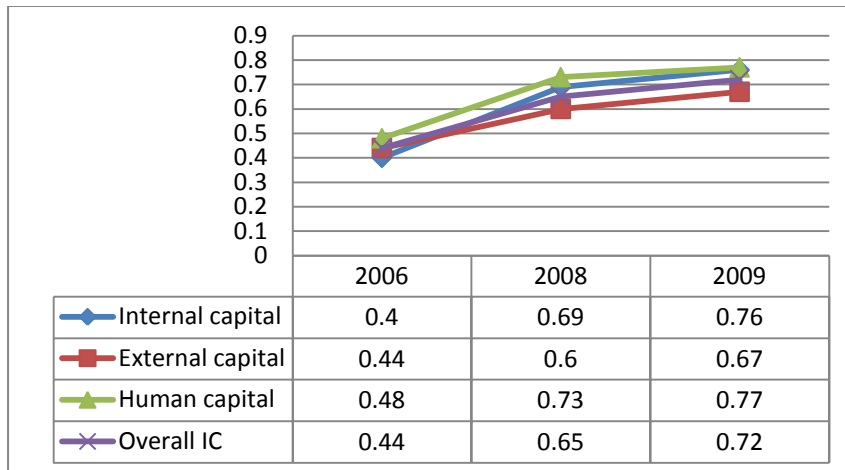
Note: All the scores in this figure were weighted.

To further explore the IC disclosure practices by Chinese firms, the three highest scoring firms and the three lowest scoring firms are examined in detail.

Highest scoring companies

There were three companies: China Coal Energy Co., Ltd., China CITIC Bank and Bank of China Ltd., achieving the highest score of 0.91 out of a possible maximum of 1.00. It was not surprising because China Coal Energy Co., Ltd, as an enterprise in the energy industry, was generally expected to disclose more information by various stakeholder groups (e.g. the general public and special interest groups) due to the nature of its products, exploration and research and development (Williams, 2001); the other two firms, both in the financial service sector (in which firms are usually lack of a strong base of fixed assets), also tended to make more IC disclosures in order to legitimize their status as an IC-rich company in the current information age. Within the annual reports of these companies, four sections comprising "Chairman's Statement", "Management Discussion and Analysis", "Report of Directors" and "Sustainability Report" were the primary sources of IC disclosures. In particular, China Coal Energy and Bank of China used a particular section to report their human resources.

In regard to the detailed reporting practice of the three firms, both China CITIC Bank and Bank of China disclosed 5 internal capital items out of 6 with a score of 0.77 while China Coal reported all the internal capital items with a higher score of 0.96. For the disclosure of external capital, all the firms reported nine attributes out of nine but with varied disclosure

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scores (0.84, 0.95 and 0.94 respectively), which indicates that the disclosure quality of the three companies was different. As to the human capital disclosure, all of them performed perfect obtaining the possible maximum score of 1.00, and disclosed all the items. Overall, China Coal disclosed all the IC items with a score of 0.91 while the other two firms reported 19 items out of 20 but attaining a score of 0.91 as well.

Lowest scoring companies

The three lowest scoring firms were Shan Dong Dong-E-E-Jiao Co., Ltd., Shanxi Xishan Coal and Electricity Power Co., Ltd. and Yunnan Copper Co., Ltd., obtaining a disclosure score of 0.39, 0.43 and 0.44 respectively. It was unsurprising for Shan Dong Done-E-E-Jiao and Yunnan Copper since both firms were in the traditional manufacturing sector, generally owning a strong base of fixed assets, and therefore it was not likely for them to report much information regarding IC. However Shanxi Xishan, as an energy company, was expected to report more IC information.

The researcher believed that there were three factors contributing to the low level disclosure of the three companies. Firstly the size of the annual report for these companies was relatively small, especially for Done-E-E-Jiao (131 pages) and Shanxi Xishan (153 pages). Furthermore their reports excessively focused on financial statements and notes, with very limited references regarding other relevant information, such as IC. Finally, all of them did not attach a "Sustainability Report" in their annual reports, which usually consists of a great deal of IC information.

With respect to the detailed disclosure practice of these companies, both Done-E-E-Jiao and Yunnan Copper reported 5 internal capital items out of 6 with a disclosure score of 0.56 and 0.63 respectively while Shanxi Xishan disclosed 4 items with a lower score of 0.49. As for the external capital disclosure, all the firms reported 4 items out of 9 but with varied disclosure scores of 0.31, 0.42 and 0.33 respectively. For the disclosure of human capital, both Dong-E-E-Jiao and Shanxi Xishan disclosed two items out of 5 with a fairly low score of 0.35 and 0.41 respectively while Yunnan Copper reported 3 attributes obtaining a higher score of 0.46. Overall, all the firms reported around ten IC items out of 20 with a disclosure score under 0.50.

7.6 Discussion

7.6.1 Current status of IC disclosure in China

In previous sections, the extent and quality of IC disclosure by Chinese companies were examined from various angles. On the basis of the results, we can find that the current level of IC reporting in mainland China was quite high with an overall score of 0.72 (out of a possible maximum of 1.00) on total disclosures for all the firms in the sample. More than 90% of the firms scored above 0.50, and 90% of IC attributes scored over 0.50. Furthermore, increasing numbers of firms had attempted to report on some elements of IC systematically in some sections of their annual reports (e.g. "Sustainability Report" and "Human Resources Management"). In addition, some Chinese firms tended to use monetary and numerical terms to quantify some attributes of their IC, such as brand value and customer satisfaction/loyalty rate. All these results indicate that Chinese firms, at present, not only had a good understanding in regard to the real value of IC but were on the way to measure and report their IC effectively.

However it was also acknowledged that there were some drawbacks for Chinese companies in disclosing their IC. First of all, no firms issued a stand-alone or complete IC report, which means that the attributes disclosed by any individual firm were haphazardly distributed in various sections of the annual report. However, this should not be criticized because there is no established or generally-accepted framework for IC reporting currently in China or elsewhere. Moreover quite a few reported items (excluding those narrative items) were still expressed in discursive rather than numerical and monetary terms, which indicate that Chinese firms still lack methods to measure some elements of IC. In addition, almost no companies mentioned the term "intellectual capital" in their annual reports although all of them reported on some aspects of IC, which suggests that Chinese firms do not have a comprehensive appreciation regarding IC. All these weaknesses indicate that Chinese firms still need to improve their reporting practices for IC in the future. Furthermore, developing a generally-accepted IC reporting framework applicable to the Chinese environment will be an urgent research agenda for Chinese scholars and practitioners in order to solve the problems.

In summary, although there were still a number of disadvantages, an overall disclosure score of 0.72 was strong enough to suggest that Chinese firms already had a strong commitment in communicating their IC information to various stakeholders in society.

7.6.2 Contributing factors to the status

As demonstrated in the above discussion, we know the current state of IC disclosure in China. However, what factors did contribute to this status? In the following, this question is addressed.

According to the constructed theoretical framework in this research (refer to chapter 4), there are often three factors motivating companies to disclose their IC on a voluntary basis: (1) to reduce information asymmetry between the management of a company and various stakeholders in the society; (2) to discharge accountability to various stakeholders; and (3) to signal organizational legitimacy and excellence (or super quality) to the society. All these motivations were applicable to the Chinese environment.

Firstly, since the reform of Chinese state-owned enterprises in the 1990s, many Chinese firms had transited from purely state-owned firms to joint-stock firms with a multiple-shareholding structure including both state-owned and private shares, and a number of them had established a modern corporate governance system. A typical principal-agent relationship between the management of the company and various stakeholder groups (e.g. government agencies, private investors, and the general public) appeared in the circumstances. Pursuant to the concept of information asymmetry, the stakeholders usually lack information with regard to the operation, the development and the potential of the company, and therefore they require the disclosure of these types of information. Under the pressure from stakeholders, it is not surprising for Chinese firms to report on some important corporate information voluntarily, such as IC, in order to reduce information asymmetry and the related agency costs, as well as to improve the relationship between them.

Secondly, a large number of Chinese firms, in particular those publicly-listed firms, are still state-controlled or owning a large proportion of state-owned shares at present. As the Chinese government (namely the communist party) claims, all the properties of the state belong to the people of the state. This statement suggests that Chinese firms with state-owned shares should be accountable to the people (or the general public) of the country. Also, pursuant to the concept of accountability, firms need to discharge accountability to other stakeholder groups, such as governmental agencies, private investors from both domestic and international arenas, environmentalists, etc., so as to obtain support from them. Since the disclosure of IC is widely acknowledged as an effective means for firms to discharge

accountability to various stakeholders, it is not unexpected that Chinese firms have a good performance on voluntary IC disclosure.

Thirdly since the Chinese government implemented the "reform" and "open-door" policy, the Chinese economy had undergone dramatic development over the past three decades. However, due to the lack of consciousness on sustainability, the rapid development of the Chinese economy was done so at great cost and destruction to the natural environment, which resulted in many social and environmental problems (e.g. pollution and food safety). Chinese firms were therefore seriously criticized by both domestic and international environment-protection communities. Numerous non-government organizations were involved in environment-protection activities, and called for clean and sustainable development for the Chinese economy. In recent years, the Chinese government has enacted and implemented several laws and rules to curb those social and environmental problems, and begun to reform the mode of economic development with an emphasis on science and technology. In these circumstances, increasing numbers of companies have realized that the traditional means in business operation cannot secure their status of legitimacy, and even threatened their survival in society. Hence, many companies have attempted to shift the means to create value through developing intellectual capital. Simultaneously, to deflect negative attitudes (or impressions) on the part of stakeholders and signal legitimacy to society, it is unsurprising for Chinese firms to report on their IC actively.

In addition, in recent years as China became more involved in the WTO, the Chinese stock market was booming with a strikingly increasing number of listed firms. The market also became more open to both domestic and foreign investors. In these circumstances, the competition for attracting investment became more intense between Chinese listed firms. In order to obtain a favourable position in the market, firms usually employ all means possible to highlight themselves. Owing to the significance of IC for future success of a company, the voluntary disclosure of IC is often deemed to be an efficient way for the company to signal its excellence to the market. This is another reason for Chinese firms to be active in disclosing their IC.

It was also found in this research that some firms were very reluctant to report on their IC or some elements of IC. These findings can be attributed to the following factors. Initially some Chinese companies might consider that the preparation and dissemination of IC information would be a cost for them (usually called direct costs), and therefore they would not like to

disclose this type of information. Furthermore some IC attributes such as R&D are of a strategic significance, and the disclosure of them might be quickly used or imitated by competitors for intelligence purposes (the so-called competition costs). This will impair the company's interests. Therefore it is not likely for some companies to report on information of such a sensitive nature (Yi and Davey, 2010). Thirdly the voluntary disclosure of IC may attract unwanted attention from governmental or supervisory agencies or trade unions, which could have negative consequences to the firm (the so-called political costs) (Williams, 2001). So the management of some companies may determine not to report their IC adequately. Fourthly some firms might deem the generation of IC to be an internal management issue and thus beyond the scope of the annual report (Guthrie et al., 1999). Finally the dominant role of the conventional accounting framework as well as the lack of a generally-accepted IC reporting model might be also factors discouraging some companies from disclosing their IC (Yi and Davey, 2010).

7.6.3 The trend of IC disclosure

In this research a longitudinal comparison of IC disclosure by Chinese firms over a four-year period (2006-2009) was conducted. From the results we can find that there was a generally upward trend for the disclosure of IC items, categories and the total IC. In particular between 2006 and 2008, the improvement was striking. This finding may be owing to a one-year interval. Between 2008 and 2009 the improvement became steady. The results indicate that the reporting of IC by Chinese firms had reached a new level by 2008 for both extent and quality. The trend was not surprising because in recent years, increasing Chinese firms had realized the importance of IC as a key value driver for future financial success, and would like to disclose their IC to public so as to improve the communication with various stakeholder groups as well as attract potential investors.

Besides, when compared with the previous national studies (e.g. Abeysekera and Guthrie, 2005; Brennan, 2001; Guthrie and Petty, 2000; Oliveras et al., 2008; Wong and Gardner, 2005), it can be seen that the results of this research are not greatly in line with them as those studies usually observed a low level disclosure of IC in their countries. This is unsurprising since the prior research represents the status of IC disclosure over earlier periods in which the understanding with regard to IC by firms was fairly limited. It is expected that this research could act as a stimulus to elicit another wave of research on IC disclosure in different countries using mixed methods rather than the content analysis only.

7.6.4 The information gap

As for the information gap between the actual performance of IC disclosure and the expectation of various stakeholders, it can be found that the disclosure of 75% of IC attributes was consistent with or exceeded the expectation of stakeholders. Only five items: 'intellectual property', 'customer satisfaction/loyalty', 'research collaborations', 'licensing/franchising agreements/favourable contracts' and 'work-related knowledge/competences' were under-disclosed and need to be further improved. The results suggest that there was no significant gap for IC information between the Chinese company and its stakeholders. This finding again confirms the high level disclosure of IC by Chinese firms.

7.7 IC disclosure by industry type

In this research, the disclosure of IC by industry type was also examined in order to determine which industrial sectors in China, leading the performance. According to the industry classifications provided by Hang Seng Indexes Compay Limited (Hong Kong) and China Securities Regulatory Commission (CSRC), the Chinese firms were classified into six industry sectors comprising finance, business services, utilities, energy, material and industrial/consumer goods. The disclosure performances of those sectors are exhibited in Table 7.16.

Table 7.16 IC disclosure by industry type (2009 dataset)

Industry type	Company	Internal capital	External capital	Human capital	overall
Finance (n = 20)	Industrial and Commercial Bank of China Ltd	0.95	0.76	0.94	0.85
	Bank of China Ltd	0.77	0.94	1.00	0.91
	China Life Insurance Company Ltd	0.74	0.85	0.88	0.83
	China Merchants Bank Co., Ltd	0.77	0.83	0.89	0.83
	Ping An Insurance Company of China, Ltd	0.77	0.82	1.00	0.85
	Bank of Communication Co., Ltd	0.77	0.74	0.73	0.75
	Shanghai Pudong Development Bank Co., Ltd	0.77	0.73	1.00	0.80
	Industrial Bank Co., Ltd	0.77	0.75	1.00	0.81
	China CITIC Bank	0.77	0.95	1.00	0.91
	China Pacific Insurance Co., Ltd	0.69	0.69	0.79	0.71
	China Minsheng Banking Co., Ltd	1.00	0.80	1.00	0.90
	CITIC Securities Co., Ltd	0.70	0.71	0.94	0.76
	Bank of Beijing Co., Ltd	0.77	0.82	1.00	0.84
	Haitong Securities Co., Ltd	0.69	0.73	1.00	0.78
	Hua Xia Bank Co., Ltd	0.77	0.82	1.00	0.85
	Shenzhen Development Bank Co., Ltd	0.70	0.7	0.90	0.74
	China Construction Bank Co	0.77	0.89	1.00	0.88
	Bank of Ningbo Co., Ltd	0.64	0.56	0.73	0.62
	Southwest Securities Co., Ltd	0.69	0.77	0.94	0.78
	Bank of Nanjing Co., Ltd	0.74	0.78	1.00	0.82
Mean		**0.76**	**0.78**	**0.94**	**0.81**
Std. D		**0.08**	**0.09**	**0.09**	**0.07**
Business services (n = 13)	Daqin Railway Co., Ltd	0.85	0.63	0.83	0.73
	China United Telecommunications Co., Ltd	0.80	0.66	0.83	0.74
	Air China Ltd	0.62	0.63	0.35	0.57
	China COSCO Holding Co., Ltd	0.69	0.76	0.90	0.77
	Suning Appliance Co., Ltd	0.72	0.88	0.84	0.82
	China Eastern Airlines Co., Ltd	0.91	0.81	0.94	0.87
	China Oilfield Services Ltd	0.80	0.62	0.94	0.74
	China Southern Airlines Co., Ltd	0.69	0.72	0.83	0.73
	Zhejiang China Commodities City Group Co., Ltd	0.69	0.83	0.94	0.81
	China Shipping Container Lines Co., Ltd	0.64	0.71	0.89	0.73
	Shanghai Bashi Industrial Co., Ltd	0.71	0.53	0.46	0.57
	Shanghai Oriental Pearl Co., Ltd	0.71	0.67	0.46	0.63
	Jiangsu Expressway Co., Ltd	0.57	0.66	0.94	0.70
Mean		**0.72**	**0.70**	**0.78**	**0.72**
Std. D		**0.09**	**0.10**	**0.21**	**0.09**

(Continued)

Industry type	Company	Internal capital	External capital	Human capital	overall
Utilities (n = 9)	China Yangtze Power Co., Ltd	0.74	0.90	0.95	0.86
	Shanghai International Port Co., Ltd	0.96	0.68	0.94	0.82
	China Railway Construction Co., Ltd	0.96	0.82	1.00	0.90
	China Railway Group Ltd	0.96	0.71	1.00	0.84
	Datang International Power Generation Co., Ltd	0.62	0.44	0.94	0.61
	Huaneng Power International, Inc	0.62	0.38	0.78	0.54
	GD Power Development Co., Ltd	0.69	0.52	0.78	0.62
	China Gezhouba Group Co., Ltd	1.00	0.76	0.94	0.87
	Offshore Oil Engineering Co., Ltd	0.96	0.70	0.90	0.82
Mean		**0.83**	**0.66**	**0.91**	**0.76**
Std. D		**0.16**	**0.17**	**0.08**	**0.13**
Energy (n = 13)	Petrochina Company Ltd	0.96	0.73	1.00	0.85
	China Petroleum and Chemical Co	0.87	0.58	0.63	0.67
	China Shenhua Energy Company Ltd	0.5	0.76	0.63	0.66
	China Coal Energy Co., Ltd	0.96	0.84	1.00	0.91
	Zijin Mining Group Co., Ltd	0.96	0.71	0.83	0.81
	Yanzhou Coal Mining Co. Ltd	0.96	0.78	1.00	0.88
	Sinopec Shanghai Petrochemical Co., Ltd	0.96	0.57	0.94	0.76
	Shanxi Lu'an Environmental Energy Development Co., Ltd	0.96	0.78	1.00	0.88
	Shan Xi Guo Yang New Energy Co., Ltd	0.51	0.45	0.46	0.47
	Pingdingshan Tianan Coal Mining Co., Ltd	0.70	0.60	0.67	0.64
	Shanxi Xishan Coal and Electricity Power Co., Ltd	0.49	0.42	0.41	0.43
	Huolinhe Opencut Coal Industrial Co., Ltd of Inner Mongolia	0.69	0.48	0.58	0.56
	Datong Coal Industry Co., Ltd	0.76	0.64	0.67	0.68
Mean		**0.79**	**0.64**	**0.76**	**0.71**
Std. D		**0.19**	**0.14**	**0.22**	**0.16**
Material (n = 14)	Baoshan Iron & Steel Co., Ltd	0.96	0.83	0.94	0.89
	Aluminum Corporation of China Ltd	0.87	0.50	0.68	0.65
	Anhui Conch Cement Co., Ltd	0.91	0.70	0.84	0.79
	Shandong Gold Co., Ltd	0.88	0.38	0.46	0.54
	Jiangxi Copper Co., Ltd	0.92	0.80	0.94	0.87
	Jinduicheng Molybdenum Co., Ltd	0.85	0.72	0.90	0.79
	Zhongjin Gold Co., Ltd	0.92	0.35	0.46	0.54
	Inner Mongolia Baotou Steel Rare-Earth Hi-teck Co., Ltd	0.79	0.70	0.94	0.78
	Wuhan Iron and Steel Co., Ltd	0.96	0.83	0.94	0.89
	Western Mining Co., Ltd	0.91	0.84	1.00	0.89
	Yantai Wanhua Polyurethanes Co., Ltd	0.75	0.72	0.90	0.77
	Yunnan Copper Co., Ltd	0.63	0.33	0.46	0.44
	Tangshan Jidong Cement Co., Ltd	0.44	0.48	0.40	0.45
	Shenzhen Zhongjin Lingnan Nonfemet Co., Ltd	0.53	0.38	0.58	0.47
Mean		**0.81**	**0.61**	**0.75**	**0.70**
Std. D		**0.16**	**0.20**	**0.23**	**0.18**

(Continued)

Industry type	Company	Internal capital	External capital	Human capital	overall
Industrial /consumer Goods (n = 31)	Kweichow Moutai Co., Ltd	0.59	0.38	0.46	0.46
	SAIC Motor Co., Ltd	0.85	0.89	1.00	0.90
	Wuliangye Yibin Co., Ltd	0.53	0.51	0.52	0.52
	China Vanke Co., Ltd	0.54	0.69	0.85	0.68
	Shanghai Electric Group Co., Ltd	0.92	0.69	0.95	0.81
	Sany Heavy Industry Co., Ltd	0.64	0.61	0.67	0.63
	ZTE Corporation	0.81	0.76	0.58	0.73
	Poly Real Estate Group Co., Ltd	0.64	0.70	0.84	0.71
	China South Locomotive & Rolling Stock Co., Ltd	0.96	0.79	0.95	0.87
	GD Midea Holding Co., Ltd	0.79	0.76	0.35	0.68
	Dongfang Electric Co., Ltd	0.74	0.63	0.66	0.67
	Changsha Zoomlion Heavy Industry Science and Technology Development Co., Ltd	0.83	0.60	0.73	0.69
	Gree Electric Appliances Inc	0.70	0.64	0.63	0.66
	China CSSC Holdings Ltd	0.54	0.57	0.35	0.51
	Xinjiang Guanghui Industry Co., Ltd	0.72	0.68	0.35	0.62
	Yunnan Baiyao Group Co., Ltd	0.66	0.53	0.63	0.59
	TBEA Co., Ltd	0.85	0.76	0.94	0.83
	Jiangsu Hengrui Medicine Co., Ltd	0.87	0.49	0.58	0.61
	Baoding Tianwei Electric Co., Ltd	0.64	0.60	0.88	0.67
	Henan Shuanghui Investment & Development Co., Ltd	0.62	0.61	0.56	0.6
	Inner Mongolia Yili Industrial Group Co., Ltd	0.79	0.60	0.52	0.63
	Qingdao Haier Co., Ltd	0.96	0.78	0.94	0.87
	Gemadale Corporation	0.86	0.70	0.67	0.74
	Nari Technology Development Co., Ltd	0.92	0.66	0.50	0.70
	Shan Dong Dong-E-E-Jiao Co., Ltd	0.56	0.31	0.35	0.39
	Harbin Pharmaceutical Group Co., Ltd	0.70	0.50	0.62	0.58
	FAW Car Co., Ltd	0.69	0.62	0.46	0.60
	Hualan Biological Engineering, Inc	0.85	0.67	0.35	0.65
	Weichai Power Co., Ltd	0.60	0.45	0.61	0.53
	Shanghai Fosun Pharmaceutical Co., Ltd	0.96	0.83	1.00	0.90
	Sanan Optoelectronics Co., Ltd	0.46	0.74	0.46	0.60
Mean		**0.74**	**0.64**	**0.64**	**0.67**
Std. D		**0.14**	**0.13**	**0.21**	**0.13**

As can be seen from the table, the utilities industry was the best performer for internal capital disclosure with an average score of 0.83 while the business services industry was the poorest with an average score of 0.70. For the disclosure of external capital, the finance industry demonstrated the highest mean reporting score of 0.78 while the material industry obtained the lowest average score of 0.61. As to the disclosure of human capital, the finance industry was again the leader achieving the highest average score of 0.94 whereas the business services industry was the poorest performer with an average score of 0.64.

Overall, the finance industry performed the best amongst the industries for the total IC disclosure with an average score of 0.81 while the industrial/consumer goods industry was

the poorest performer obtaining a mean score of 0.67. This situation was not surprising since the finance industry as a service sector generally relies greatly on intellectual capital such as human resources and distribution channels for value creation whereas the industrial/consumer goods industry as a traditional industrial sector depends more on fixed assets for value generation. The second best performer was the utilities industry which achieved an average score of 0.76. The companies in this industry are usually state-owned or significantly state-controlled, which means that these companies should be accountable to the people or the general public of the country in the Chinese environment[40], and, therefore it is unsurprising that those firms had a good performance on IC disclosure. The other three industries including business services, energy, and material had a pretty similar performance with an average score of 0.72, 0.71 and 0.70 respectively.

In addition, there was some statistical analysis with respect to the effect of industry type on IC disclosure which is presented in the next chapter.

7.8 IC disclosure by listing status

Since the Chinese stock market is unique in that the shareholding structure of listed firms is heterogeneous (refer to Chapter 2 for more details), it would be very interesting to compare the disclosure performance of IC by firms with varied share-holding structure. For this purpose the sample companies in this research were divided into two groups comprising 36 dual-listed A and H-share companies and 64 purely A-share companies, which typically represent the unique stock market. The disclosure performances of IC by the two groups of companies are shown in Table 7.17. From the table, it can be found that the mean disclosure scores of internal capital, external capital and human capital, as well as the total IC by the dual-listed firms were higher than for those of the purely A-share companies (0.81 VS 0.74, 0.72 VS 0.65, 0.86 VS 0.72, and 0.77 VS 0.69 respectively).[41] According to Yi and Davey (2010), the dual-listed firms are open to both domestic and foreign investors, and most of them are large corporations in terms of market capitalization as well as top performers in their industries. As a consequence those companies should be more active in reporting their IC owing to their resource advantage and visibility as compared with the solo-listed firms (Guthrie et al., 2006).

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[40] For reasons, please refer to section 7.6.2 "contributing factors to the status"

[41] The researcher also carried out t-test regarding the mean disclosure scores of each IC category as well as the overall IC between the two groups. The results indicate that the disclosure performance of the dual-listed firms for each IC category and the overall IC was significantly better than those purely A-share companies ($p < .01$).

Table 7.17 IC disclosure by listing status

Company	Internal capital	External capital	Human capital	overall
Dual–listed (n = 36)				
Petrochina Company Ltd	0.96	0.73	1.00	0.85
Industrial and Commercial Bank of China Ltd	0.95	0.76	0.94	0.85
Bank of China Ltd	0.77	0.94	1.00	0.91
China Petroleum and Chemical Co	0.87	0.58	0.63	0.67
China Life Insurance Company Ltd	0.74	0.85	0.88	0.83
China Shenhua Energy Company Ltd	0.5	0.76	0.63	0.66
China Merchants Bank Co., Ltd	0.77	0.83	0.89	0.83
Ping An Insurance Company of China, Ltd	0.77	0.82	1.00	0.85
Bank of Communication Co., Ltd	0.77	0.74	0.73	0.75
China CITIC Bank	0.77	0.95	1.00	0.91
China Pacific Insurance Co., Ltd	0.69	0.69	0.79	0.71
China Minsheng Banking Co., Ltd	1.00	0.80	1.00	0.9
Aluminum Corporation of China Ltd	0.87	0.50	0.68	0.65
China Coal Energy Co., Ltd	0.96	0.84	1.00	0.91
Air China Ltd	0.62	0.63	0.35	0.57
China Railway Construction Co., Ltd	0.96	0.82	1.00	0.90
China COSCO Holding Co., Ltd	0.69	0.76	0.90	0.77
Shanghai Electric Group Co., Ltd	0.92	0.69	0.95	0.81
China Railway Group Ltd	0.96	0.71	1.00	0.84
Zijin Mining Group Co., Ltd	0.96	0.71	0.83	0.81
Anhui Conch Cement Co., Ltd	0.91	0.70	0.84	0.79
Datang International Power Generation Co., Ltd	0.62	0.44	0.94	0.61
ZTE Corporation	0.81	0.76	0.58	0.73
Yanzhou Coal Mining Co. Ltd	0.96	0.78	1.00	0.88
China Eastern Airlines Co., Ltd	0.91	0.81	0.94	0.87
Huaneng Power International, Inc	0.62	0.38	0.78	0.54
Jiangxi Copper Co., Ltd	0.92	0.80	0.94	0.87
China South Locomotive & Rolling Stock Co., Ltd	0.96	0.79	0.95	0.87
Dongfang Electric Co., Ltd	0.74	0.63	0.66	0.67
Sinopec Shanghai Petrochemical Co., Ltd	0.96	0.57	0.94	0.76
China Oilfield Services Ltd	0.8	0.62	0.94	0.74
China Construction Bank Co	0.77	0.89	1.00	0.88
China Southern Airlines Co., Ltd	0.69	0.72	0.83	0.73
China Shipping Container Lines Co., Ltd	0.64	0.71	0.89	0.73
Weichai Power Co., Ltd	0.60	0.45	0.61	0.53
Jiangsu Expressway Co., Ltd	0.57	0.66	0.94	0.70
Mean	**0.81**	**0.72**	**0.86**	**0.77**
Std. D	**0.14**	**0.13**	**0.16**	**0.11**

Company	Internal capital	External capital	Human capital	overall
Purely A-share (n = 64)				
Shanghai Pudong Development Bank Co., Ltd	0.77	0.73	1.00	0.80
Industrial Bank Co., Ltd	0.77	0.75	1.00	0.81
CITIC Securities Co., Ltd	0.70	0.71	0.94	0.76
Bank of Beijing Co., Ltd	0.77	0.82	1.00	0.84
Haitong Securities Co., Ltd	0.69	0.73	1.00	0.78
Hua Xia Bank Co., Ltd	0.77	0.82	1.00	0.85
Shenzhen Development Bank Co., Ltd	0.70	0.70	0.90	0.74
Bank of Ningbo Co., Ltd	0.64	0.56	0.73	0.62
Southwest Securities Co., Ltd	0.69	0.77	0.94	0.78
Bank of Nanjing Co., Ltd	0.74	0.78	1.00	0.82
Daqin Railway Co., Ltd	0.85	0.63	0.83	0.73
China United Telecommunications Co., Ltd	0.80	0.66	0.83	0.74
Suning Appliance Co., Ltd	0.72	0.88	0.84	0.82
Zhejiang China Commodities City Group Co., Ltd	0.69	0.83	0.94	0.81
Shanghai Bashi Industrial Co., Ltd	0.71	0.53	0.46	0.57
Shanghai Oriental Pearl Co., Ltd	0.71	0.67	0.46	0.63
China Yangtze Power Co., Ltd	0.74	0.90	0.95	0.86
Shanghai International Port Co., Ltd	0.96	0.68	0.94	0.82
GD Power Development Co., Ltd	0.69	0.52	0.78	0.62
China Gezhouba Group Co., Ltd	1.00	0.76	0.94	0.87
Offshore Oil Engineering Co., Ltd	0.96	0.70	0.90	0.82
Shanxi Lu'an Environmental Energy Development Co., Ltd	0.96	0.78	1.00	0.88
Shan Xi Guo Yang New Energy Co., Ltd	0.51	0.45	0.46	0.47
Pingdingshan Tianan Coal Mining Co., Ltd	0.70	0.60	0.67	0.64
Shanxi Xishan Coal and Electricity Power Co., Ltd	0.49	0.42	0.41	0.43
Huolinhe Opencut Coal Industrial Co., Ltd of Inner Mongolia	0.69	0.48	0.58	0.56
Datong Coal Industry Co., Ltd	0.76	0.64	0.67	0.68
Baoshan Iron & Steel Co., Ltd	0.96	0.83	0.94	0.89
Shandong Gold Co., Ltd	0.88	0.38	0.46	0.54
Jinduicheng Molybdenum Co., Ltd	0.85	0.72	0.90	0.79
Zhongjin Gold Co., Ltd	0.92	0.35	0.46	0.54
Inner Mongolia Baotou Steel Rare-Earth Hi-teck Co., Ltd	0.79	0.70	0.94	0.78
Wuhan Iron and Steel Co., Ltd	0.96	0.83	0.94	0.89
Western Mining Co., Ltd	0.91	0.84	1.00	0.89
Yantai Wanhua Polyurethanes Co., Ltd	0.75	0.72	0.9	0.77
Yunnan Copper Co., Ltd	0.63	0.33	0.46	0.44
Tangshan Jidong Cement Co., Ltd	0.44	0.48	0.40	0.45
Shenzhen Zhongjin Lingnan Nonfemet Co., Ltd	0.53	0.38	0.58	0.47
Kweichow Moutai Co., Ltd	0.59	0.38	0.46	0.46
SAIC Motor Co., Ltd	0.85	0.89	1.00	0.90
Wuliangye Yibin Co., Ltd	0.53	0.51	0.52	0.52
China Vanke Co., Ltd	0.54	0.69	0.85	0.68
Sany Heavy Industry Co., Ltd	0.64	0.61	0.67	0.63
Poly Real Estate Group Co., Ltd	0.64	0.70	0.84	0.71
GD Midea Holding Co., Ltd	0.79	0.76	0.35	0.68
Changsha Zoomlion Heavy Industry Science and Technology Development Co., Ltd	0.83	0.60	0.73	0.69
Gree Electric Appliances Inc	0.70	0.64	0.63	0.66
China CSSC Holdings Ltd	0.54	0.57	0.35	0.51
Xinjiang Guanghui Industry Co., Ltd	0.72	0.68	0.35	0.62
Yunnan Baiyao Group Co., Ltd	0.66	0.53	0.63	0.59
TBEA Co., Ltd	0.85	0.76	0.94	0.83

(Continued)

Company	Internal capital	External capital	Human capital	overall
Jiangsu Hengrui Medicine Co., Ltd	0.87	0.49	0.58	0.61
Baoding Tianwei Electric Co., Ltd	0.64	0.60	0.88	0.67
Henan Shuanghui Investment & Development Co., Ltd	0.62	0.61	0.56	0.60
Inner Mongolia Yili Industrial Group Co., Ltd	0.79	0.60	0.52	0.63
Qingdao Haier Co., Ltd	0.96	0.78	0.94	0.87
Gemadale Corporation	0.86	0.70	0.67	0.74
Nari Technology Development Co., Ltd	0.92	0.66	0.50	0.70
Shan Dong Dong-E-E-Jiao Co., Ltd	0.56	0.31	0.35	0.39
Harbin Pharmaceutical Group Co., Ltd	0.70	0.50	0.62	0.58
FAW Car Co., Ltd	0.69	0.62	0.46	0.60
Hualan Biological Engineering, Inc	0.85	0.67	0.35	0.65
Shanghai Fosun Pharmaceutical Co., Ltd	0.96	0.83	1.00	0.90
Sanan Optoelectronics Co., Ltd	0.46	0.74	0.46	0.60
Mean	**0.74**	**0.65**	**0.72**	**0.69**
Std. D	**0.14**	**0.15**	**0.23**	**0.14**

Also the statistical analysis for the effect of listing status on IC disclosure is demonstrated in the next chapter.

7.9 Chapter summary

In this chapter the extent and quality of IC disclosure by Chinese firms are examined from various angles, such as items, categories, information gap, distributions, individual firms, industrial sectors and the listing status. It was found that the current status of IC disclosure in china was quite good with an overall disclosure score of 0.72 on total disclosures across all the sample companies. More specifically ninety percent of disclosure items achieved a score above 0.50; more than 90% of firms score over 0.50; and the reporting of 75% of IC items was consistent with or exceeded the expectation of stakeholders. Among the IC items, 'management processes', 'customers', and 'employees' were the three best reported items while 'research collaborations', 'customer satisfaction/loyalty', and 'intellectual property' were the three least reported items. As to the disclosure of IC categories, external capital led the performance in frequency, followed by internal capital and human capital, whereas internal capital performed the best in quality, followed by human capital and external capital.

As compared with the 2008 and 2006 dataset, there was generally an upward trend for both extent and quality for the disclosure of IC items, categories and the overall IC. In particular between 2006 and 2008 the improvement was often considerable. For the disclosure performance amongst the industries, the financial sector was the leader in general while the

industrial/consumer goods sector was the poorest performer. It was also found that the dual-listed A and H share firms usually performed better than the purely A-share firms.

In the next chapter, the determinants of IC disclosure by Chinese firms are demonstrated.

CHAPTER EIGHT

PART TWO OF FINDINGS

8.1 Introduction

In the previous chapter, the extent and quality of IC disclosure by Chinese firms were analyzed in detail. This chapter examines the correlations between IC disclosure practices by Chinese firms and a variety of impact factors (or determinants), such as industry type, company size, leverage, listing status, ownership structure, independent directors, stand-alone CSR report, profitability and auditor type, using both univariate and multiple regression analysis. The remainder of this chapter is organized as follows.

Section 8.2 reviews literature regarding determinants of voluntary IC disclosure and deduces hypotheses using some relevant theories. Section 8.3 describes the research approach applied in this chapter. Results and discussion from both univariate and multiple regression analysis are demonstrated in section 8.4. Finally section 8.5 summarizes and discusses the main findings of the chapter as well as indicates a number of implications related to the findings.

8.2 Literature review and hypothesis development

Industry type

Some previous studies have indicated that industry type impacts the level of IC disclosure due to different proprietary (or competitive) and political costs across industries (Guthrie and Petty, 2000; Oliveira *et al*., 2006; Wong and Gardner, 2005). Various methods in prior research had been employed to capture the industry effect on voluntary IC disclosure. For instance, Bozzolan *et al*. (2003) classified sample companies into two industry groups ("high profile" and "low profile"), and found that industry was not significant in determining the level of IC disclosure by Italian firms. García-Meca *et al*. (2005) categorized sample firms as financial or non-financial, and obtained a similar result in the Spanish context. However Oliveira *et al*. (2006) observed a statistically significant industry effect in Portuguese firms through classifying the sample into intangible intensive and intangible non-intensive firms.

In this research, the sample companies were divided into two industry groups: the service group and the industrial group. The service group includes such industries as finance, business services and utilities, which are usually rich in IC, while the industrial group comprises such industries as energy, material and industrial/consumer goods, which are

usually rich in tangibles.[42] These two industries (along with agriculture) are considered to be the key industry sectors by the Chinese government. Pursuant to signalling theory and legitimacy theory, organizations with fewer tangible assets should report more IC information in order to signal their legitimacy and superior quality to society. Thus we can expect that:

Hypothesis 1 (H1): Firms in the service sector report greater IC information than firms in the industrial sector.

Accordingly we can also deduce the following sub-hypothesises with regard to internal capital, external capital and human capital:

Hypothesis 1a (H1a): Firms in the service sector report greater internal capital information than firms in the industrial sector.

Hypothesis 1b (H1b): Firms in the service sector report greater external capital information than firms in the industrial sector.

Hypothesis 1c (H1c): Firms in the service sector report greater human capital information than firms in the industrial sector.

Company size

Company size is another commonly acknowledged impact factor in IC disclosure studies. It has been observed by most prior studies that there is a significantly positive relationship between company size and IC disclosure (e.g. García-Meca et al., 2005; Li et al., 2008; Schneider and Samkin, 2008). This finding is not surprising for the following reasons. Firstly large firms are often rich in various forms of intellectual capital, and therefore expected to report more IC-related information. Secondly large firms have a wider range of stakeholders and accordingly more responsibilities to the stakeholders. Thus they should disclose more IC information in order to discharge their accountability to various stakeholders. Finally according to Meek et al. (1995), large firms incur relatively lower costs to prepare and disseminate IC information, and might have lower competitive costs associated with the disclosure. Total assets, revenues or market capitalization are often employed as a proxy to denote the size of firms.

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[42] Refer to Chapter 7 (section 7.7) for specific classifications of industries.

In the current study, the researcher used revenues as a measure of firm size since it is not affected by accounting standards. To avoid the problem of heteroskedasticity in statistical analysis, the natural logarithm of revenues was taken as a proxy for firm size. On the basis of the above arguments regarding the relationship between the level of IC disclosure and company size, we can predict that:

Hypothesis 2 (H2): There is a significantly positive relationship between firm size and IC disclosure.

Accordingly we can also posit that:

Hypothesis 2a (H2a): There is a significantly positive relationship between firm size and internal capital disclosure.

Hypothesis 2b (H2b): There is a significantly positive relationship between firm size and external capital disclosure.

Hypothesis 2c (H2c): There is a significantly positive relationship between firm size and human capital disclosure.

Leverage

The level of leverage is often regarded as an important factor for firms to determine their disclosure policy. There have been some previous studies investigating the relationship between firm leverage and IC disclosure. However the results are not conclusive. García-Meca et al. (2005) and Oliveira et al. (2006) found no statistically significant relationship between firm leverage and the level of IC disclosure, while Singh and Van der Zahn (2008) and White et al. (2007) observed a significantly positive relationship between the two variables. The ratio of book value of total debt to book value of total assets was often employed as a proxy for the level of leverage by firms in the previous studies. This research followed the prior research taking the ratio as a proxy for firm leverage in the Chinese context.

Pursuant to agency theory, highly leveraged firms should report more IC information voluntarily to market in order to reduce information asymmetry between the management of a firm and its' creditors, and also eliminate the related agency costs. Furthermore in accordance with signalling theory, voluntary IC disclosure is a useful means for companies to highlight their superior quality, which can maintain and enhance the confidence of the

creditors on their operations, and as a consequence obtain more financial support from them. Therefore, we postulate that:

Hypothesis 3 (H3): There is a significantly positive relationship between the level of leverage in a firm and its IC disclosure.

Accordingly we can also conjecture that:

Hypothesis 3a (H3a): There is a significantly positive relationship between the level of leverage in a firm and its internal capital disclosure.

Hypothesis 3b (H3b): There is a significantly positive relationship between the level of leverage in a firm and its external capital disclosure.

Hypothesis 3c (H3c): There is a significantly positive relationship between the level of leverage in a firm and its human capital disclosure.

Listing status

Listing status is another commonly-used explanatory variable for voluntary information disclosure by firms. Previous studies, such as Ferguson et al. (2002), Giner (1997), Hossain et al. (1994) and Wallace et al. (1994), observed a significant association between listing status and the level of voluntary disclosure. However in voluntary IC disclosure studies, for instance, García-Meca et al. (2005) and Oliveira et al. (2006) did not find a statistically significant relationship between the two variables.

According to Cooke (1989), firms listed in multiple stock exchanges generally report more information because they need to follow the disclosure rules of two or more stock exchanges. Moreover, pursuant to stakeholder theory, multi-listed firms should make more voluntary IC disclosures since these firms with a bigger stakeholder base need to discharge more accountability to various stakeholders for their information needs. In the present study, listing status is a dummy variable with 1 if the firm is dual-listed (A and H), and 0 otherwise. Thus we can hypothesize that:

Hypothesis 4 (H4): Dual-listed A and H-share firms report greater IC information than the solo-listed A-share firms.

Accordingly we can also expect that:

Hypothesis 4a (H4a): Dual-listed A and H-share firms report greater internal capital information than the solo-listed A-share firms.

Hypothesis 4b (H4b): Dual-listed A and H-share firms report greater external capital information than the solo-listed A-share firms.

Hypothesis 4c (H4c): Dual-listed A and H-share firms report greater human capital information than the solo-listed A-share firms.

Ownership structure (concentration)

Ownership structure, in particular the level of ownership concentration, is often considered to be one of the determinant factors for voluntary information disclosure of companies. In previous studies, both Oliveira et al. (2006) and Li et al. (2008) observed a statistically significant negative association between ownership structure and the level of IC disclosure. However, White et al (2007) did not find such a relationship while investigating the extent of IC disclosure in Australian biotechnology firms.

Pursuant to agency theory, the problem of information asymmetry as well as agency costs will increase while the shareholding structure of a company becomes more diffuse owing to the increased likelihood of conflicts of interest between shareholders (Fama and Jensen, 1983; Oliveira et al., 2006). Therefore companies with higher levels of shareholder diffusion can be expected to report more information voluntarily in order to reduce information asymmetry and the related agency costs (Oliveira et al., 2006). In contrast, firms with a high level of ownership concentration would be reluctant to disclose information voluntarily because they have less information asymmetry between the management of a company and its dominant shareholders who usually have access to the information they need and can provide an active governance system, something which is difficult for those smaller, more passive and less informed shareholders (Cormier et al., 2005; Li et al., 2008). Since state-owned shares play a dominate role in most Chinese mainland firms, the level of ownership concentration is measured by percentage of state-owned shares among the top 10 largest shareholders in the current study. Hence we can postulate that:

Hypothesis 5 (H5): There is a significantly negative relationship between the level of state-owned share concentration and voluntary IC disclosure.

Accordingly we can also predict that:

Hypothesis 5a (H5a): There is a significantly negative relationship between the level of state-owned share concentration and internal capital disclosure.

Hypothesis 5b (H5b): There is a significantly negative relationship between the level of state-owned share concentration and external capital disclosure.

Hypothesis 5c (H5c): There is a significantly negative relationship between the level of state-owned share concentration and human capital disclosure.

Independent directors

The level of board independence is also an important factor which influences the company's decision to make voluntary disclosures. Previous studies, such as White et al. (2007) and Li et al. (2008), found a statistically significant positive relationship between the level of board independence and the level of IC disclosure. The proportion of independent directors to the total number of directors on the board is usually employed as a proxy for board independence.

Independent directors refer to individuals with no management roles or links with the firm. They represent shareholders to monitor company activities and control the behaviour of firm managers utilizing their expertise and professional reputation, and therefore they are capable of influencing the disclosure policy of a company (Li et al., 2008; White et al., 2007). In accordance with Li et al. (2008), the wider expertise and experience of independent directors on the board would encourage managers to adopt a more proactive disclosure policy which would reflect the value relevance of intellectual capital to various stakeholders. Hence we posit that:

Hypothesis 6 (H6): There is significantly positive relationship between the proportion of independent directors on the board and voluntary IC disclosure.

Accordingly we can also conjecture that:

Hypothesis 6a (H6a): There is a significantly positive relationship between the proportion of independent directors on the board and internal capital disclosure.

Hypothesis 6b (H6b): There is a significantly positive relationship between the proportion of independent directors on the board and external capital disclosure.

Hypothesis 6c (H6c): There is a significantly positive relationship between the proportion of independent directors on the board and human capital disclosure.

Stand-alone CSR report

In recent years, Chinese companies have increasingly issued the stand-alone CSR (corporate social responsibility) or sustainability report as an appendix in their annual reports so as to discharge accountability for information needs of various stakeholders. It can be found that the report generally consists of a wide range of IC-related information (e.g. customer, human resources). There is no prior research examining the association between CSR disclosure and IC disclosure. This research attempts to address this gap and postulates that:

 Hypothesis 7 (H7): Firms issuing a stand-alone CSR report greater IC information than those without such a report.

Also we can expect that:

Hypothesis 7a (H7a): Firms issuing a stand-alone CSR report greater internal capital information than those without such a report.

Hypothesis 7b (H7b): Firms issuing a stand-alone CSR report greater external capital information than those without such a report.

Hypothesis 7c (H7c): Firms issuing a stand-alone CSR report greater human capital information than those without such a report.

Profitability

Profitability, as a key measure of corporate performance, is another commonly regarded determinant factor for voluntary IC disclosure. Prior studies reported mixed results with regard to the association between profitability and the level of IC disclosure. For instance, García-Meca et al. (2005) and Li et al. (2008) observed a statistically significant positive association between the two variables. But Williams (2001) and Sonnier et al. (2007) obtained a contrary result. In addition Oliveira et al. (2006) found no significant relationship between the two variables. Net profit or return on total assets (ROA) was often employed as a proxy for profitability in the previous studies. In the current study, ROA (net profit before taxation/book value of total assets) was adopted because it is a widely-accepted performance metric in China.

Consistent with agency theory, firms with higher profitability tend to report more detailed information so that managers can maintain their positions as well as improve their compensation arrangements (Giner, 1997; Oliveira et al., 2006). Moreover, pursuant to signalling theory, highly profitable firms are more likely to disclose positive information to market so as to enhance investors' confidence and avoid undervaluation of their shares (García-Meca et al., 2005; Singhvi and Desai, 1971). Additionally, according to political cost theory, firms with higher returns should report greater information in order to justify their superior performance (Oliveira et al., 2006). Based upon the aforementioned arguments, we can posit that:

Hypothesis 8 (H8): There is a significantly positive association between profitability and the level of IC disclosure.

Accordingly, we can also predict that:

Hypothesis 8a (H8a): There is a significantly positive association between profitability and internal capital disclosure.

Hypothesis 8b (H8b): There is a significantly positive association between profitability and external capital disclosure.

Hypothesis 8c (H8c): There is a significantly positive association between profitability and human capital disclosure.

Auditor type

Auditor type is often used as an explanatory variable for voluntary information disclosure. Empirical evidence regarding the association between the type of auditor and the level of information disclosed is inconsistent. Giner (1997) and Raffournier (1995) found a statistically significant relationship between the two variables while Hossain et al. (1995) and Depoers (2000) did not. An IC disclosure study, Oliveira et al. (2006) observed a statistically significant positive relationship between the two variables through assigning a value of 1 if the company is audited by a big 4 accounting firm; and 0 in the other cases. In this study, the method (1 and 0) was employed to classify the Chinese firms.

Agency theory posits that auditing is a useful mechanism for companies to reduce information asymmetry between management and shareholders, and as a consequence eliminate related agency problems and costs (Jensen and Meckling, 1976; Oliveira et al.,

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2006). Large and well-known auditing firms usually have stronger incentives to impose more stringent and extensive disclosure standards on companies in order to preserve their own reputation, develop their expertise, and maintain their independence (Chalmers and Godfrey, 2004; Malone et al., 1993; Mora and Rees, 1998; Xiao et al., 2004). On the other hand, from the perspective of signalling theory, companies, which employ large accounting firms to audit their annual reports, should wish to send a signal to the market that they are willing to follow the stringent and extensive standards and would like to make more disclosures. Hence we can expect that:

Hypothesis 9 (H9): Firms audited by big 4 accounting firms report greater IC information than those which are not.

Accordingly we can also conjecture that:

Hypothesis 9a (H9a): Firms audited by big 4 accounting firms report greater internal capital information than those which are not.

Hypothesis 9b (H9b): Firms audited by big 4 accounting firms report greater external capital information than those which are not.

 Hypothesis 9c (H9c): Firms audited by big 4 accounting firms report greater human capital information than those which are not.

8.3 Research approach

To investigate the determinants of voluntary IC disclosure in the Chinese mainland context, 100 top A-share companies in terms of market capitalization were selected as the sample. The year 2009 annual reports of the sample firms were the primary data source. Since the researcher had obtained the results in the previous chapter with respect to the level of IC disclosure in 2009 from both extent and quality, this chapter uses the results, namely the disclosure scores of overall IC, internal capital, external capital and human capital for each company, as dependent variables. Nine impact factors for voluntary IC disclosure, as identified in the course of hypothesis development, were employed as explanatory (or independent) variables. Their definitions are presented in Table 8.1. Amongst the variables, (the definitions of) industry type and listing status as well as ownership structure are closely linked to the Chinese environment.

Table 8.1 Definitions of variables

Variables	Definitions
Dependent variables (DV)	
Overall IC disclosure (OD)	Overall IC disclosure score for each firm
Internal capital disclosure (ID)	Internal capital disclosure score for each firm
External capital disclosure (ED)	External capital disclosure score for each firm
Human capital disclosure (HD)	Human capital disclosure score for each firm
Independent variables (IV)	
Industry type (INDUSTRY)	A dummy variable: 1 for firms in the service sector, 0 in the industry sector (H1)
Firm size (SIZE)	Nature logarithm of revenue for year 2009 (H2)
Leverage (LEV)	Book value of total debt/book value of total assets for year 2009 (H3)
Listing status (LIST)	A dummy variable: 1 for dual listed A and H-share firms, 0 purely A-share firms (H4)
Ownership structure (OWNER)	Percentage of state-owned shares among top 10 largest shareholders (H5)
Independent directors (INDIR)	Percentage of independent directors among total directors (H6)
Stand-alone CSR report (CSR)	A dummy variable: 1 for firms issuing a stand-alone CSR report, 0 otherwise (H7)
Profitability (PROFIT)	Net profit before taxation/book value of total assets (H8)
Auditor type (AUDITOR)	A dummy variable: 1 for firms audited by big 4 accounting firms, 0 otherwise (H9)

Two methods were applied to examine the correlations between the dependent variables and the independent variables. The first method called univariate analysis was to test the correlation between the dependent variable and each independent variable. This method is simple and easy to understand, and can be accomplished through the Pearson Pair-wise Correlation test. The second method called multiple regression analysis was to test the correlations between the dependent variable and a set of independent variables using an Ordinary Least Squares (OLS) model. According to Adelopo (2010), "…OLS refers to the technique used in achieving a line of best fit, such that the sum of the squared deviation of all the distances from this line is minimised. It helps to explain variations in a variable known as the dependent variable by examining the changes in a series of independent or explanatory variables while also capturing the unpredictable elements of the measurements" (pp. 185-

186). A number of previous studies (e.g. Al-Akra et al., 2010; Elsayed and Hoque, 2010; García-Meca et al., 2005; Li et al., 2008; Roberts, 1992; Xiao et al., 2004) had employed the OLS regression model to investigate the determinants of voluntary information disclosure. For the purpose of this research, the application of such a model is appropriate.

Given the need to test the associations between four dependent variables (overall IC disclosure, internal capital disclosure, external capital disclosure and human capital disclosure) and the explanatory variables respectively, four OLS models were developed as follows.

$$OD = \beta_0 + \beta_1 INDUSTRY + \beta_2 SIZE + \beta_3\ LEV + \beta_4 LIST + \beta_5 OWNER + \beta_6 INDIR + \beta_7 CSR$$

$$+\beta_8 PROFIT\ + \beta_9 AUDITOR + \varepsilon \tag{1}$$

$$ID = \beta_0 + \beta_1 INDUSTRY + \beta_2 SIZE + \beta_3\ LEV + \beta_4 LIST + \beta_5 OWNER + \beta_6 INDIR + \beta_7 CSR$$

$$+\beta_8 PROFIT + \beta_9 AUDITOR + \varepsilon \tag{2}$$

$$ED = \beta_0 + \beta_1 INDUSTRY + \beta_2 SIZE + \beta_3\ LEV + \beta_4 LIST + \beta_5 OWNER + \beta_6 INDIR +\ \beta_7 CSR$$

$$+\beta_8 PROFIT + \beta_9 AUDITOR + \varepsilon \tag{3}$$

$$HD = \beta_0 + \beta_1 INDUSTRY + \beta_2 SIZE + \beta_3\ LEV + \beta_4 LIST + \beta_5 OWNER + \beta_6 INDIR +\ \beta_7 CSR$$

$$+\beta_8 PROFIT + \beta_9 AUDITOR + \varepsilon \tag{4}$$

Where β_0 is a constant term (intercept) which represents the neglected factors influencing voluntary IC disclosure in the OLS model while ε is an error term which refers to the difference between the predicted and observed value (or score) of IC disclosure. The expected signs for the coefficients are $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$, $\beta_4 > 0$, $\beta_5 < 0$, $\beta_6 > 0$; $\beta_7 > 0$; $\beta_8 > 0$ and $\beta_9 > 0$.

There are often two problems, namely heteroscedasticity and multicollinearity, which will impair the effect of estimation of an OLS model. Heteroscedasticity occurs when the variance of the error terms differ across observations, the presence of which results in inefficient estimates of the coefficients although they remain unbiased (Adelopo, 2010). In this study, the researcher used the Breusch-Pagan/Cook-Weisberg test to detect whether there was a problem of heteroscedasticity. The results indicate that all the models other than model 4 had no presence of such a problem (refer to Table 8.5). To correct the problem for model 4, a commonly used as well as easily conducted method, namely the Robust Standard Errors

(RSE)[43], was employed since it relaxes the assumptions that the errors are independent and identically distributed (Wooldridge, 2003).

As for the problem of multicollinearity, it occurs when several independent variables in a multiple regression model are highly correlated to one another. This problem may lead to strange results in regression analysis, for instance, the adjusted R^2 becomes too high and not statistically significant. In this research, two approaches were applied to detect the problem. The first approach was to examine the correlations between the explanatory variables through the Pearson Correlation test before running the regression model. The results suggest that there would be no severe problem of multicollinearity for the independent variables because all the correlation coefficients are under 0.8 (refer to Table 8.2).[44] Another approach used to detect the problem of multicollinearity was to compute the variance inflation factor (VIF) for each independent variable after running the regression model.[45] The results indicate that multicollinearity appears not to be a problem since the highest value of VIF is less than 3 (refer to Table 8.5, p. 187).[46]

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[43] Also known as the Huber/White estimators

[44] Refer to Judge et al. (1985) and Khanna et al. (2004) for the assertion

[45] VIF = $1 / (1-R^2)$ in which R^2 is derived from the regression of an independent variable on all other explanatory variables (García-Meca et al., 2005).

[46] According to Groebner et al. (2005), there should be no problem of multicollinearity if the value of VIF for an independent variable is less than 5.

Table 8.2 Correlation matrix between independent variables

Variable	1	2	3	4	5	6	7	8	9
1	1.000								
2	0.199[b]	1.000							
3	0.514[a]	0.409[a]	1.000						
4	0.248[a]	0.596[a]	0.264[a]	1.000					
5	0.110	0.312[a]	-0.073	0.246[a]	1.000				
6	0.044	0.118	0.038	0.109	0.084	1.000			
7	0.355[a]	0.201[b]	0.182	0.258[a]	0.195[b]	0.222[b]	1.000		
8	-0.495[a]	-0.375[a]	-0.663[a]	-0.354[a]	-0.142	-0.174	-0.382[a]	1.000	
9	0.359[a]	0.540[a]	0.288[a]	0.572[a]	0.111	0.137	0.331[a]	-0.268[a]	1.000

Notes:

1. Where 1: INDUSTRY; 2: SIZE; 3: LEV; 4: LIST; 5: OWNER; 6: INDIR; 7: CSR; 8: PROFIT; 9: AUDITOR; the variables are defined in table 8.1.

2. All correlation coefficients are based upon 100 observations.

3. [a] Correlation is significant at the 0.01 level (2-tailed); [b] correlation is significant at the 0.05 level (2-tailed).

8.4 Results and discussion

8.4.1 Descriptive statistics

For the dependent variables, the detailed results had been presented in chapter 7. In this chapter, only the summarised statistics are provided (refer to panel A of Table 8.3). For overall IC disclosure (OD), the average disclosure score was 0.72. As for the disclosure of the subcategories of IC (ID, ED and HD), the average disclosure scores were 0.76, 0.67 and 0.77 for internal capital, external capital and human capital respectively. The descriptive statistics of independent variables is demonstrated in Table 8.3 (refer to panel A and B).

Table 8.3 Descriptive statistics for both dependent and independent variables

Panel A General variables

Variables	N	Mean	Std. D	Q1	Median	Q3
Dependent variables						
OD	100	0.72	0.135	0.62	0.74	0.838
ID	100	0.76	0.143	0.69	0.77	0.903
ED	100	0.67	0.146	0.6	0.7	0.78
HD	100	0.77	0.215	0.588	0.845	0.94
Independent variables						
SIZE	100	10.078	1.427	9.260	10.046	10.854
LEV	100	0.602	0.230	0.415	0.614	0.786
OWNER	100	0.443	0.241	0.284	0.526	0.620
INDIR	100	0.373	0.073	0.333	0.353	0.382
PROFIT	100	0.077	0.077	0.027	0.062	0.108

Panel B Dummy (independent) variables

Dummy variables		N	Percent of sample
INDUSTRY	0	58	58%
	1	42	42%
LIST	0	64	64%
	1	36	36%
CSR	0	42	42%
	1	58	58%
AUDITOR	0	52	52%
	1	48	48%

Where:

N: number of observations; Std. D: standard deviation; Q1: 25th Percentile; Q3: 75th percentile; all the variables are defined in table 8.1.

8.4.2 Univariate analysis

The Pearson Correlation Coefficient was used to examine the inter-correlations between the dependent and the independent variables for univariate analysis. The results are exhibited in Table 8.4. It can be found that all the explanatory variables other than ownership structure had statistically significant associations with overall IC disclosure. However profitability had a significantly negative association with overall IC disclosure while others are positively correlated to overall IC disclosure. These results provide strong support for hypotheses 1, 2, 3,

4, 6, 7 and 9. Five explanatory variables, comprising firm size, listing status, independent directors, stand-along CSR report, and auditor type, were significantly and positively correlated to internal capital disclosure. Hence, hypotheses 2a, 4a, 6a, 7a and 9a were supported by the results.

Consistent with overall IC disclosure, there were statistically significant correlations between external capital disclosure and all the explanatory variables other than ownership structure, and profitability had negative correlations with external capital disclosure. Thus hypotheses 5b and 8b were rejected in terms of the evidence. As for human capital disclosure, its associations with explanatory variables were in line with overall IC disclosure as well. So hypotheses 5c and 8c were rejected.

To summarize, only hypotheses relating to ownership structure and profitability were not supported by the results in the light of univariate analysis. The evidence indicates that there were no statistically significant correlations between ownership structure and voluntary IC disclosure (including overall IC, internal, external and human capital). In addition, there was a significantly inverse correlation between profitability and voluntary IC disclosure (other than internal capital).[47]

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[47] The correlation between internal capital disclosure and profitability was negative, but not significant.

Table 8.4 Inter-correlations between dependent and independent variables

Variables	OD	ID	ED	HD
INDUSTRY	0.337[a]	0.001	0.334[a]	0.439[a]
SIZE	0.351[a]	0.298[a]	0.265[a]	0.331[a]
LEV	0.276[a]	0.017	0.273[a]	0.342[a]
LIST	0.299[a]	0.209[b]	0.228[b]	0.305[a]
OWNER	0.049	0.058	-0.039	0.152
INDIR	0.281[a]	0.206[b]	0.248[a]	0.246[a]
CSR	0.721[a]	0.458[a]	0.539[a]	0.828[a]
PROFIT	-0.345[a]	-0.070	-0.315[a]	-0.432[a]
AUDITOR	0.432[a]	0.253[a]	0.377[a]	0.432[a]

Notes:

1. All the variables are defined in table 8.1.

2. [a] correlation is significant at the 0.01 level (2-tailed); [b] correlation is significant at the 0.05 level (2-tailed).

8.4.3 Multiple regression analysis

Results in regard to multiple regression analysis are shown in Table 8.5 (see p. 187). From the table we can see that there were no significant correlations between industry and overall IC disclosure (model 1), as well as internal, external and human capital disclosure (model 2, 3 and 4). In other words, industry did not have a significant influence on voluntary IC disclosure by Chinese firms. Therefore hypothesis 1 and its sub-hypotheses 1a, 1b and 1c were not supported. The results are consistent with the findings obtained by Bozzolan et al. (2003) and García-Meca et al. (2005).

There were significantly positive correlations between firm size and overall IC disclosure as well as firm size and internal capital disclosure ($p < .05$). These results provide support for hypothesis 2 and its sub-hypothesis 2a, which are similar to results documented by several previous studies, such as García-Meca et al. (2005), Li et al. (2008) and Schneider and Samkin (2008). The correlations between firm size and external capital disclosure, and firm size and human capital disclosure were positive, but not significant. Hence hypotheses 2b and 2c should be rejected.

Similar to the industry variable, the level of leverage did not have a statistically significant impact on voluntary IC disclosure by Chinese firms, other than in the case of human capital. Thus hypothesis 3 and its sub-hypotheses 3a and 3b were not supported. These results are quite similar to the evidence found by García-Meca et al. (2005) and Oliveira et al. (2006) in their Portuguese studies, but run contrary to Singh and Van der Zahn (2008) and White et al. (2007) in which a significantly positive correlation between the level of leverage and IC disclosure was observed. Although the results provide some support for hypothesis 3b (a significant and positive correlation between leverage and human capital disclosure), the support was weak ($p < .10$).

No statistically significant correlations were found between listing status and voluntary IC disclosure. So there was no support for hypothesis 4 and its sub-hypotheses 4a, 4b and 4c. The results are consistent with findings in several prior studies, such as García-Meca et al. (2005) and Oliveira et al. (2006). It was noted that there was a negative correlation (although not significant) between listing status and voluntary IC disclosure, which indicates that, to some extent, solo-listed A-share firms report more IC information. This finding was quite surprising since dual-listed A and H firms, which have a bigger stakeholder base as well as more disclosure rules to follow, were expected to report more IC-related information.

It was found that there were statistically significant negative correlations between ownership structure (denoted by the level of Chinese state-owned share concentration) and overall IC disclosure as well as ownership structure and external capital disclosure ($p < .05$). Therefore the results provide support for hypotheses 5 and 5b, which are similar to results obtained by Oliveira et al. (2006) and Li et al. (2008). As for the correlations between ownership structure and internal capital disclosure, as well as for human capital disclosure, these were negative, but statistically insignificant.

There were significantly positive correlations between board independence (measured by proportion of independent directors on the board) and overall IC disclosure, and board independence and human capital disclosure ($p < .10$). The results therefore provide some support for hypotheses 6 and 6c although not a very strong one. Some previous studies (e.g. White et al., 2007; Li et al., 2008) observed similar results. Board independence was not found to have a statistically significant influence on internal capital or external capital disclosure, so that hypotheses 6b and 6c were not supported.

A statistically significant and positive correlation was found between having a stand-alone CSR report and voluntary IC disclosure ($p < .01$). The results provide very strong support for all hypotheses in relation to CSR (namely H7 and its sub-hypotheses H7a, H7b and H7c). In previous studies, no evidence can be found relating to this explanatory variable. Hence this research, for the first time, offers some insights with respect to the correlations between CSR reporting and IC disclosure, both of which primarily deal with narrative accounting information.

As to profitability and auditor type, no statistically significant correlations could be observed between these two explanatory variables and voluntary IC disclosure. Thus all hypothesises relating to these two variables (namely H8 and H9 and the sub-hypotheses) were not supported in the current study.

In general, four explanatory variables, namely firm size, ownership structure, independent directors (board independence) and having a stand-alone CSR report, had a significant impact on voluntary IC disclosure in the Chinese context, whereas other explanatory variables did not have such an impact.

With regard to the overall regression, all the OLS models are significant at a $p < 0.01$ level (refer to the F-statistic in Table 8.5). The adjusted R^2 of 0.576 for model 1 suggests that 57.6 per cent of variation for the dependent variable (namely overall IC disclosure) can be explained by the explanatory variables. Compared with the results obtained from previous studies in the area, it is similar to Oliveira et al. (2006) (adjusted $R^2 = 0.574$); higher than García-Meca et al. (2005) (adjusted $R^2 = 0.253$) and White et al. (2007) (adjusted $R^2 = 0.268$), but lower than Li et al. (2008) (adjusted $R^2 = 0.629$). Likewise, the adjusted R^2 of 0.264, 0.341 and 0.725 for model 2, 3 and 4 indicate that 26.4% of variation for internal capital disclosure, 34.1% of variation for external capital disclosure and 72.5% of variation for human capital disclosure could be explained by the explanatory variables. In addition, the significance of the intercept (constant) for all the models implies that there were some other explanatory (or intervening) variables also influencing voluntary IC disclosure which were not captured in this research.

Table 8.5 Regression results

	Predicted sign	VIF	Model 1 (OD)		Model 2 (ID)		Model 3 (ED)		Model 4 (HD)	
			coefficient	*t*-statistic	coefficient	*t*-statistic	coefficient	*t*-statistic	coefficient	*t*-statistic
Constant	n/a	n/a	0.341	3.45[a]	0.342	2.49[b]	0.369	2.77[a]	0.275	2.46[b]
INDUSTRY	+	1.70	0.013	0.56	-0.041	-1.27	0.032	1.03	0.037	1.16
SIZE	+	2.16	0.019	2.13[b]	0.031	2.48[b]	0.014	1.18	0.015	1.51
LEV	+	2.42	0.027	0.45	-0.035	-0.42	0.020	0.24	0.113	1.74[c]
LIST	+	1.88	-0.010	-0.41	-0.001	-0.03	-0.016	-0.48	-0.020	-0.59
OWNER	-	1.29	-0.084	-2.02[b]	-0.069	-1.19	-0.117	-2.08[b]	-0.023	-0.39
INDIR	+	1.08	0.218	1.73[c]	0.187	1.07	0.259	1.53	0.177	1.67[c]
CSR	+	1.38	0.176	8.46[a]	0.144	4.97[a]	0.130	4.60[a]	0.320	9.70[a]
PROFIT	+	2.28	0.086	0.50	0.251	1.04	-0.010	-0.04	0.074	0.34
AUDITOR	+	1.90	0.030	1.23	0.006	0.19	0.041	1.24	0.041	1.25
Model summary										
N			100		100		100		100	
R^2			0.615		0.331		0.401		0.750	
Adj. R^2			0.576		0.264		0.341		0.725	
Std. error			0.088		0.122		0.118		0.113	
F-statistic			15.94[a]		4.95[a]		6.70[a]		37.89[a]	
Diagnostics										
Breusch-Pagan/Cook-Weisberg test			0.19		2.48		0.30		4.31[b]	

Notes:

1. [a] significance at the level of 0.01; [b] significance at the level of 0.05; [c] significance at the level of 0.10.

2. Heteroscedasticity-corrected results using the Robust Standard Errors are displayed for model 4.

8.4.4 Robustness tests

To assess the robustness of the main findings in this chapter, several additional tests were conducted using the 2009 unweighted dataset and the 2008 (weighted) dataset.[48] The use of the 2009 unweighted dataset was to investigate the determinants of voluntary IC disclosure by Chinese firms from an unbiased perspective[49]while the application of 2008 (weighted) dataset enabled a longitudinal examination in regard to the determinants. The same OLS regression model was employed for the tests. The results are demonstrated in Table 8.6 (2009 unweighted dataset) and Table 8.7 (2008 dataset).

As shown in Table 8.6, the regression results for 2009's unweighted dataset were almost identical to the main findings. The only difference was the correlation between firm size and internal capital disclosure. It was weak (although statistically significant, $p< .10$) for the 2009 unweighted dataset whereas moderately statistically significant ($p< .05$) for the main findings.

As for the 2008 (weighted) dataset, we can find from Table 8.7 that the results were generally consistent with the main findings albeit less significant correlations between dependent variables and explanatory variables were found.

Based upon the results from the robustness tests, we can argue that the main findings of this research are reliable, reflecting the overall status with regard to the determinants of IC disclosure in the Chinese context.

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[48] Descriptive statistics for 2009 unweighted dataset and 2008 (weighted) dataset are demonstrated in Appendix Hand I respectively.

[49] Since the weighting for each IC item was determined on the basis of the panellists' rating on the importance of the item, refer to chapter 6 for more details.

Table 8.6 Robustness test results (2009 unweighted dataset)

	Predicted sign	VIF	Model 1 (OD)		Model 2 (ID)		Model 3 (ED)		Model 4 (HD)	
			coefficient	*t*-statistic	coefficient	*t*-statistic	coefficient	*t*-statistic	coefficient	*t*-statistic
Constant	n/a	n/a	0.331	3.36[a]	0.347	2.61[a]	0.355	2.66[a]	0.252	2.22[b]
INDUSTRY	+	1.70	0.018	0.78	-0.021	-0.78	0.029	0.93	0.038	1.18
SIZE	+	2.16	0.020	2.18[b]	0.031	2.61[c]	0.015	1.21	0.016	1.51
LEV	+	2.42	0.037	0.63	-0.004	-0.06	0.031	0.38	0.122	1.84[c]
LIST	+	1.88	-0.013	-0.52	-0.001	-0.04	-0.018	-0.54	-0.018	-0.52
OWNER	-	1.29	-0.087	-2.09[b]	-0.073	-1.34	-0.119	-2.12[b]	-0.025	-0.41
INDIR	+	1.08	0.207	1.65[c]	0.163	1.09	0.246	1.44	0.178	1.65[c]
CSR	+	1.38	0.184	8.83[a]	0.141	5.02[a]	0.132	4.67[a]	0.333	9.88[a]
PROFIT	+	2.28	0.094	0.55	0.249	1.26	0.010	0.04	0.089	0.40
AUDITOR	+	1.90	0.030	1.24	0.008	0.31	0.041	1.26	0.039	1.19
Model summary										
N			100		100		100		100	
R^2			0.636		0.375		0.401		0.755	
Adj. R^2			0.599		0.313		0.341		0.731	
Std. error			0.087		0.110		0.119		0.115	
F-statistic			17.45[a]		6.26[a]		6.70[a]		38.78[a]	
Diagnostics										
Breusch-Pagan/Cook-Weisberg test			0.07		5.15[b]		0.20		5.18[b]	

Notes:

1. [a] significance at the level of 0.01; [b] significance at the level of 0.05; [c] significance at the level of 0.10.

2. Where heteroscedasticity is detected, heteroscedasticty-corrected results using the Robust Standard Errors are displayed.

Table 8.7 Robustness test results (2008 dataset)

	Predicted sign	VIF	Model 1 (OD)		Model 2 (ID)		Model 3 (ED)		Model 4 (HD)	
			coefficient	*t*-statistic	coefficient	*t*-statistic	coefficient	*t*-statistic	coefficient	*t*-statistic
Constant	n/a	n/a	0.298	2.24[b]	0.236	1.39	0.234	1.41	0.413	3.37[a]
INDUSTRY	+	1.72	0.010	0.28	-0.024	-0.61	0.004	0.11	0.063	1.47
SIZE	+	1.97	0.024	1.75[c]	0.033	1.99[b]	0.021	1.23	0.022	1.68[c]
LEV	+	2.03	-0.018	-0.23	-0.063	-0.65	0.031	0.33	0.008	0.10
LIST	+	1.97	0.008	0.21	0.023	0.58	-0.016	-0.35	0.057	1.23
OWNER	-	1.33	-0.070	-1.17	-0.061	-0.79	-0.085	-1.17	-0.064	-0.82
INDIR	+	1.06	0.120	0.80	0.297	1.79[c]	0.188	0.92	-0.196	-1.31
CSR	+	1.62	0.205	5.93[a]	0.177	4.81[a]	0.194	4.61[a]	0.270	6.30[a]
PROFIT	+	1.49	-0.054	-0.34	-0.023	-0.18	0.051	0.29	-0.010	-0.10
AUDITOR	+	1.92	-0.011	-0.29	-0.033	-0.86	-0.001	-0.02	0.001	0.02
Model summary										
N			100		100		100		100	
R^2			0.531		0.365		0.359		0.649	
Adj. R^2			0.484		0.302		0.295		0.614	
Std. error			0.120		0.152		0.154		0.139	
F-statistic			13.26[a]		5.13[a]		6.22[a]		24.92[a]	
Diagnostics										
Breusch-Pagan/Cook-Weisberg test			4.10[b]		11.71[a]		3.01[c]		4.39[b]	

Notes:

1. [a] significance at the level of 0.01; [b] significance at the level of 0.05; [c] significance at the level of 0.10.

2. Where heteroscedasticity is detected, heteroscedasticty-corrected results using the Robust Standard Errors are reported.

8.5 Chapter summary and discussion

This chapter examines the associations between voluntary IC disclosure and a series of impact factors in the Chinese context using both univariate analysis and multiple regression analysis. In univariate analysis, eight out of nine factors were attested to have a significant effect on voluntary IC disclosure. Amongst those factors, it was surprising that profitability had a significantly negative impact on voluntary IC disclosure since firms with higher returns were expected to report more IC information so as to justify their superior performance as well as enable managers to maintain their positions and improve their compensation (Giner, 1997; Oliveira et al., 2006). The level of ownership concentration was the only factor without impact on voluntary IC disclosure. However it was expected that firms with high levels of state-owned share concentration were not willing to report much IC information because the dominant shareholders, such as the governmental agencies in China, could easily access any information they need (Cormier et al., 2005; Li et al., 2008).

With respect to the results in multiple regression analysis, there were four factors comprising firm size, ownership concentration, board independence and having a stand-alone CSR report, which had a significant effect on voluntary IC disclosure. It was unsurprising that the larger Chinese firms (in terms of revenues) reported more IC-related information because of their relatively bigger stakeholder base and consequently more accountabilities to the stakeholders. It was found that Chinese firms with a higher level of state-owned share concentration usually disclosed less IC information, which was consistent with the expectation. But this result was quite different from the evidence obtained from univariate analysis in which no significant correlations were observed between the two variables. It was not unexpected that Chinese firms with a higher proportion of independent directors on the board made more IC disclosures due to the wider expertise and experience as well as the monitoring function of the directors. It was also observed that firms issuing a stand-alone CSR report within the annual report disclosed greater IC information significantly. One possible explanation is that those firms usually had a strong commitment for communicating with various stakeholders through voluntary information disclosure. Besides, the CSR report often consists of a great deal of IC information, and therefore enhances the level of IC disclosure.

In the next chapter, the summary, recommendations and future research directions for the thesis are presented.

CHAPTER NINE

SUMMARY, RECOMMENDATIONS AND CONCLUSION

9.1 Introduction

This is the last chapter for the thesis. The structure of this chapter is organized as follows. Section 9.2 provides a review of the research and examines whether the research objectives were achieved. Section 9.3 presents the recommendations as to IC reporting guidelines applicable to the Chinese environment on the basis of the research findings. Contributions and future directions of this research are covered in section 9.4 and 9.5 respectively.

9.2 Review of the thesis

In the present knowledge-based economy, intellectual capital has been regarded as a key value driver for companies in achieving and sustaining a competitive edge. Because of the importance of IC, many companies, especially those publicly listed companies, have attempted to report their IC in corporate annual reports on a voluntary basis so as to signal their superior quality to the market as well as attract potential investors. Research with regard to voluntary IC disclosure in various contexts is growing commensurate with this trend. The present research was conducted in the Chinese (mainland) context, a context which represents the largest developing country and a unique stock market in the world. There are two primary research objectives for the current study:

1. To survey the extent and quality of IC disclosure in Chinese firms
2. To investigate the determinants which impact the disclosure practices of Chinese firms

In the following, we will examine how this research fulfils these two objectives.

Extent and quality of IC disclosure

To achieve the first research objective, an IC disclosure index was developed in three steps from a stakeholder perspective. Firstly an IC framework comprising twenty items was constructed through literature review and consultation with a panel of Chinese IC experts representing six stakeholder groups. The framework developed is considered to be applicable to the Chinese environment. Then the weighting for each IC item was determined based upon the opinions of the panellists on the importance of each item using a questionnaire survey.

Lastly criteria for assessing the quality of IC disclosure were established on the basis of prior literature.

Once the index was constructed, it was used to code corporate annual reports of the sample companies in order to examine the extent and quality of IC disclosure by Chinese firms. Data gathered from content analysis of annual reports were then quantified and analyzed from various angles, such as IC attribute, category, distribution, overall, industry, and listing status. Also the information gap between the expectations of Chinese stakeholders for IC disclosure and the actual practices of Chinese firms, and the trend of IC disclosure were examined.

Inconsistent with prior research, the results in this study indicate that the current level of IC disclosure in China is quite high in terms of both extent and quality (with an overall disclosure score of 0.72 on total disclosures across all the sample companies), and there was no significant information gap between the expectation of Chinese stakeholders and the actual practices of Chinese firms (with seventy-five percent of disclosure items consistent with or exceeding the expectation of stakeholders). 'Management processes', 'customers' and 'employees' were the three best reported items while 'research collaborations', 'customer satisfaction/loyalty' and 'intellectual property' were the three poorest reported items. For the disclosure of IC categories, external capital performed the best in frequency, followed by internal capital and human capital, whereas internal capital led the performance in quality, followed by human capital and external capital. It was also found that most IC-related information appeared in four sections of annual reports of Chinese firms, comprising "Chairman's Statement", "President's Statement", "Management Discussion and Analysis", and "Report of Directors".

A generally upward trend was observed for voluntary IC disclosure of Chinese firms through a longitudinal comparison over a four-year period. In particular between 2006 and 2008, the improvement was often remarkable. But the improvement between 2008 and 2009 was relatively steady.

In this research, four theories (agency theory, stakeholder theory, signalling theory and legitimacy theory) were integrated in terms of the interrelated concepts to construct a comprehensive theoretical framework for interpreting voluntary IC disclosure practices of firms. The constructed framework suggests that there are three factors motivating firms to report their IC actively: to reduce information asymmetry between the management of a company and various stakeholder groups in society; to discharge accountability to various

stakeholders; and to signal organizational legitimacy and excellence to the market. All these motivations contribute to a strong performance of Chinese firms for voluntary IC disclosure.[50]

However, the researcher also found some weaknesses in reporting their IC for Chinese firms. For instance, no firms issued a stand-alone or complete IC report, and some reported items were only expressed in narrative rather than numerical and monetary terms in corporate annual reports. These weaknesses can be attributed to both direct (e.g. preparation and dissemination of IC information) and proprietary costs (e.g. competition costs and political costs).[51]

As for IC disclosure practices by industry, it was found that Chinese firms in such industries as finance, business services and utilities, usually performed better than firms in other industries. It was also observed that dual-listed A and H share companies (A/H) reported more IC information than those sole-listed A-share companies.

Determinants of IC disclosure

To achieve the second research objective, a series of hypotheses regarding the associations between the level of IC disclosure by Chinese firms and nine impact factors were developed on the basis of prior literature and some relevant theories (e.g. agency theory, stakeholder theory, signalling theory and legitimacy theory). The hypotheses were then tested using empirical evidence in regard to the disclosure practices of Chinese firms through the use of statistical techniques such as univariate and multiple regression analysis.

It was found that all the factors other than ownership structure had a significant effect on voluntary IC disclosure of Chinese firms using univariate analysis, while four out of nine factors comprising firm size, ownership concentration, board independence and having a stand-alone CSR report had a significant impact on voluntary IC disclosure in multiple regression analysis.

These findings have a number of implications for academics, investors, managers, regulators and policy makers. First, they, for the first time, provide comprehensive evidence as to the determinants of voluntary IC disclosure in a very important developing country; in this way the study makes contributions to the extant literature in the area and also enhances the

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[50] Refer to Chapter seven (section 7.6.2) for more discussion.
[51] Refer to Chapter seven (section 7.6.2) for more discussion.

understanding of IC disclosure in a developing country context. Secondly, the evidence offers both domestic and foreign investors valuable insights regarding voluntary IC disclosure in the Chinese stock market and consequently assists them in making appropriate investment decisions. Thirdly, the managers of companies may change their disclosure policies in the light of the findings, for example, improving the extent and quality of IC disclosure in corporate annual reports, so as to more effectively reduce information asymmetry and the related agency costs. Fourthly, the findings can be used by regulators (e.g. CSRC in China) to develop appropriate monitoring strategies for listed companies. Finally, policy makers may employ the findings as references while developing IC disclosure guidelines applicable to the Chinese environment, which would eliminate managerial discretion and improve the efficiency of the stock market.

9.3 Recommendations

Based upon the findings in this research, some recommendations for IC reporting guidelines applicable to the Chinese environment can be made by the researcher. However the purpose of this section is not to develop very detailed IC guidelines for Chinese firms since it is not the focus of this research. Instead, the section attempts to provide a general conceptual framework which would guide regulators or Chinese firms in the development of a comprehensive and applicable IC reporting framework in the future. The recommendations, drawing on a number of previous IC measurement and reporting models (e.g. the Balanced Scorecard, Skandia Navigator Scheme, Intangible Assets Monitor, DATI guidelines, and MERITUM guidelines)[52], are described below.

First, Chinese companies should issue a stand-alone annual IC report independently or as a supplement for the corporate annual report in order to allow both internal and external users to obtain a better picture as to the IC base of the company, the activities of the company employing IC to create value, and the output of the activities. As a consequence, this document could enhance the confidence of various stakeholders on the company, gain more support from them, and, moreover, attain more funding opportunities from investors or financial institutions. The structure of the annual IC report can be organized as follows (Bontis, 2001; Bukh and Johanson, 2003; Mouritsen et al., 2005; Schneider, 2006; Horngren et al., 2011):

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[52] As for details regarding the measurement and reporting models, please refer to Chapter three "literature review"

1. Introduction

1.1 The background of the company

1.2 The adopted IC framework: including definitions of IC and its components, as well as relationships between the components

1.3 Vision/mission statement

1.4 The objectives of the report.

2. Internal capital statement

2.1A summary of internal capital resources, challenges and activities

2.2 Key performance indicators (KPIs) regarding internal capital[53]

3. External capital statement

3.1A summary of external capital resources, challenges and activities

3.2 Key performance indicators regarding external capital

4. Human capital statement

4.1A summary of human capital resources, challenges and activities

4.2 Key performance indicators regarding human capital

5. Potential benefits of IC

Including a general discussion with regard to how three elements of IC (internal, external and human) relate and complement in creating value for corporate growth, strategic management (competence), stakeholder relationships and financial results (future cash flow)

6. Notes

Including discussion of relevant accounting policies, and the explanation of some IC KPIs

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[53] The development of IC KPIs can be primarily based upon three measurement models, namely the Balanced Scorecard, the Skandia Navigator Scheme, and the Intangible Assets Monitor.

In addition, the following principles should be followed for the development of the reporting framework:

- Easy to prepare

- Include both qualitative and quantitative information, using narratives and pictures for the presentation of qualitative information

- Should be high quality: relevance, reliability, clarity, materiality, completeness, substance, gross measurements, neutrality, comparability (Deegan and Samkin, 2009)

- Not necessary to disclose sensitive information, such as business secrets, prior-registration patents, and critical value-creating processes.

- Avoid an exhaustive list of IC KPIs

- Easy to understand

- From a stakeholder perspective rather than focusing on shareholders only

Furthermore, given that some Chinese firms reported a great quantity of IC information in the sustainability (or CSR) report, combining IC elements systematically into sustainability report could be an alternative method for IC reporting. Some other researchers in the area, such as Cordazzo (2005) and Oliveira et al. (2010), also point out the potential for incorporating IC report into sustainability report because of the overlap between them.

Finally, since the reporting of some IC attributes, such as intellectual property, customer satisfaction/loyalty, research collaborations, licensing/franchising agreements/favourable contracts, and work-related knowledge/competences, were under-disclosed by Chinese firms, greater attention should be given to them while developing the framework.

9.4 Contributions of the research

There are some contributions from this research. Firstly this research, employing a relatively big sample size, a mixed methods research methodology, as well as a comparative and longitudinal approach for data analysis, could result in a comprehensive understanding with regard to IC disclosure in the Chinese companies. Secondly this research contributes to the very limited literature as to the associations between the level of IC disclosure and a series of firm characteristics (or impact factors), in particular in the Chinese context. Thirdly the developed theoretical framework is another contribution of this research, which could be used to interpret the IC disclosure practices of companies, survey the perceptions (or drivers) of managers on voluntary IC disclosure, and deduce hypotheses regarding the determinants of

IC disclosure in various contexts. Fourthly the constructed IC disclosure index in this research can be applied or simulated to investigate the status of IC disclosure in other jurisdictions, especially for developing countries. Finally the recommendations provided by this research could facilitate the development of IC reporting guidelines applicable to the Chinese environment.

9.5 Future research directions

Although this research applied a mixed methods approach for investigation, other methods, such as case studies, could be used to examine the disclosure practice of a particular company or industry in the future. Moreover this research can be extended to investigate the state of IC disclosure by small and medium sized companies (SME), which could lead to a more in-depth comprehension with respect to IC disclosure in the Chinese context. Thirdly a comparative study with other developing countries, such as India and Brazil, could be undertaken so as to obtain an international perspective for IC disclosure. Fourthly the developed theoretical framework in this research can be further refined through combining more relevant theories into the framework, such as media agenda-setting theory (e.g. Sujan and Abeysekera, 2007) and institutional theory (e.g. Petty and Cuganesan, 2005).

Finally we can employ the developed theoretical framework as a foundation to investigate the drivers (or perceptions) of managers of firms as to voluntary IC disclosure in certain institutions or jurisdictions. For this purpose, a questionnaire survey with a likert-scale (e.g. 1-5 from unimportant to extremely important) can be designed to gather opinions of managers on the importance of the three drivers for voluntary IC disclosure. Furthermore a regression model can be constructed on the basis of the three (independent) variables (namely opinions of managers on the importance of the three drivers) plus other control variables in relation to firm characteristics, such as industry type, firm size and corporate performance, to examine how managers' perceptions on voluntary IC disclosure will influence the actual disclosure practice of companies.

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Appendix A
IC items used by selected prior research

Literature	Internal capital	External capital	Human capital
Guthrie and Petty (2000)	1.1 Intellectual property • patents • copyrights • trademarks 1.2 Infrastructure assets • management philosophy • corporate culture • management processes • information systems • networking systems • financial relations	2.1 Brands 2.2 Customers 2.3 Customer loyalty 2.4 Company names 2.5 Distribution channels 2.6 Business collaborations 2.7 Licensing agreements 2.8 Favourable contracts 2.9 Franchising agreements	3.1 Know-how 3.2 Education 3.3 Vocational qualification 3.4 work-related knowledge 3.5 work-related competence 3.6 Entrepreneurial spirit
Brennan (2001)	Same as Guthrie and Petty (2000)	Same as Guthrie and Petty (2000)	Same as Guthrie and Petty (2000)
Bozzolan et al. (2003)	1.1 Intellectual property • patents • copyrights • trademarks 1.2 Infrastructure assets • corporate culture • management processes • information systems • networking systems • research projects	2.1 Brands 2.2 Customers 2.3 Customer loyalty 2.4 Distribution channels 2.5 Business collaboration 2.6 Financial contracts 2.7 Licensing agreements 2.8 Franchising agreements	3.1 Know- how 3.2 Education 3.3 Employees 3.4 Work-related knowledge 3.5 Work-related competence
Goh and Lim (2004)	Same as Guthrie and Petty (2000)	Same as Guthrie and Petty (2000)	Same as Guthrie and Petty (2000)
Wong and Gardner (2005)	1.1 Intellectual property 1.2 Management philosophy 1.3 Corporate culture 1.4 Management processes 1.5 Information/networking systems 1.6 Financial relations	2.1 Brands 2.2 Customers 2.3 Customer satisfaction 2.4 Company names 2.5 Distribution channels 2.6 Business collaborations 2.7 Licensing agreements	3.1 Employee 3.2 Education 3.3 Training 3.4 work-related knowledge 3.5 Entrepreneurial spirit
Striukova et al. (2008)	1.1 Intellectual property 1.2 Management philosophy 1.3 Corporate culture 1.4 Management processes 1.5 Information systems 1.6 Networking (communication systems) 1.7 Financial relations	2.1 Brands 2.2 Customers 2.3 Customer satisfaction and loyalty 2.4 company reputation 2.5 Distribution channels 2.6 Business collaboration 2.7 Favourable contracts/licensing agreements 2.8 Research and development	3.1 Employees 3.2 Education and vocational qualifications 3.3 training 3.4 work-related knowledge 3.5 innovativeness of employees/teams of employees *(Continued)*

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Literature	Internal capital	External capital	Human capital
Whiting and Miller (2008)	1.1 Intellectual property 1.2 Management philosophy 1.3 Corporate culture 1.4 Management processes 1.5 Information/networking systems 1.6 Financial relations	2.1 Brands 2.2 Customers 2.3 Customer satisfaction 2.4 Company names 2.5 Distribution Channels 2.6 Business collaborations 2.7 Licensing agreements	3.1 Employee 3.2 Education 3.3 Training 3.4 Work-related knowledge 3.5 Entrepreneurial spirit
Xiao (2008)	1.1 Intellectual property 1.2 Management philosophy 1.3 Corporate culture 1.4 Management processes 1.5 Information systems 1.6 Research projects	2.1 Brands 2.2 Company name 2.3 Customers 2.4 Customer satisfaction and loyalty 2.5 Distribution channels 2.6 Business collaborations 2.7 Research Collaborations 2.8 Financial contracts/licensing agreements	3.1 Employees 3.2 Education 3.3 Training 3.4 Work-related knowledge/competence 3.5 Entrepreneurial spirit
Yi and Davey (2010)	1.1 Intellectual property 1.2 Management philosophy/corporate culture 1.3 Management processes 1.4 Information systems 1.5 Financial relations	2.1 Brands/reputation 2.2 Customers 2.3 Customer satisfaction 2.4 Distribution channels 2.5 Business partnership 2.6 Licensing agreements 2.7 Market share	3.1 Employee 3.2 Education/training 3.3 Work-related knowledge 3.4 Entrepreneurial spirit

Appendix B
E-mail sent to the panellists for comments on the list of IC items

Dear Sir or Madam

Firstly thank you very much for your participation in this research. The purpose of this letter is to have your comments on a list of intellectual capital (IC) items (see attachment A), which were obtained primarily from prior literature relating to IC disclosure in the national context (see attachment B), if they are applicable to the Chinese environment. Please feel free to add or delete any item. Please also note that all comments provided will be treated as confidential, and you have the right to:

- Refuse to provide any comments, and to withdraw from the study at any time.
- Ask any further questions about the study which occur during your participation.
- Request a summary of findings from the study when it is concluded.

I appreciate your contribution to this research in advance.

Best wishes,
Yi An

Note: This is a translation for the original e-mail in Chinese.

Survey Questionnaire

Instructions

This questionnaire is designed by Mr Yi An, a PhD candidate at Waikato Management School (University of Waikato, New Zealand), for data collection for his PhD thesis "V*oluntary disclosure of intellectual capital (IC) in Chinese (mainland) companies*". It is the first stage of data collection for this research project.

There are two objectives for this questionnaire survey. To begin with, it is to assess the importance of a list of IC items that should be disclosed in corporate annual reports from a stakeholder's perspective in the Chinese (mainland) context. In addition, your responses will be used to construct an IC disclosure index that will be employed to examine the extent and quality of IC disclosure in Chinese (mainland) companies.

In the following questionnaire, twenty IC items identified in the previous stage of the research are provided under the widely-accepted three-dimensional framework underlying the conceptualization of IC (internal capital, external capital and human capital). Please assign a score to each of them using the rating scale provided below (1-5). If there are any additional items that you feel should be disclosed in the Chinese (mainland) context, please write them in the spaces provided as well as indicate their importance of disclosure by placing a number (1-5) in brackets following the item.

1	2	3	4	5
Unimportant to disclose	Of **Little** importance to disclose	**Moderately** important to disclose	**Very** Important to disclose	**Extremely** important to disclose

Please note that all information provided will be treated as confidential.

Questionnaire

Definition of Intellectual Capital

There is no generally accepted definition for the term intellectual capital, but it is often regarded as invisible/intangible assets or knowledge resources that can create value for firms, and achieve and maintain a competitive edge for them.

Importance of Disclosure for IC Items

1. Internal Capital (structural capital)

Internal capital refers to the knowledge embedded in the organizational structure, processes, procedures, routines, systems and culture, which is created by employees or brought in, but which stays in the organization when employees go home after work. It includes at least the following items (please circle their importance using the provided scale).

1	2	3	4	5
Unimportant to disclose	Of **Little** importance to disclose	**Moderately** important to disclose	**Very** Important to disclose	**Extremely** important to disclose

Item	Description	Your rating(1-5)				
1.1 Research & Development	Information regarding research and development activities and outcomes within a company (e.g. new products or services)	1	2	3	4	5
1.2 Intellectual property	Comprising patents, copyrights and trademarks, etc.	1	2	3	4	5
1.3 Management philosophy/corporate culture	A blend of values, spirits, belief, attitudes, experiences, taboos, rituals etc. existing in a firm	1	2	3	4	5
1.4 Management processes	All the processes related to the management of a company (e.g. quality management)	1	2	3	4	5
1.5 Information / networking systems	Details on the development, application and impact of information or networking systems	1	2	3	4	5
1.6 Financial /investors relations	Relationships between a company and its finance providers or investors	1	2	3	4	5

Other items (please list any other items you consider should be disclosed in this category)

2. External Capital (relational capital)

External capital refers to the knowledge embedded in the relationships external to the organization, such as suppliers, customers, business partners, etc. It comprises at least the following items (please circle their importance using the provided scale).

1	2	3	4	5
Unimportant to disclose	Of **Little** importance to disclose	**Moderately** important to disclose	**Very** Important to disclose	**Extremely** important to disclose

Item	Description	Your rating(1-5)				
2.1 Brands /reputation	Details of brands or reputation building	1	2	3	4	5
2.2 Suppliers	Information (or indicators) relating to suppliers	1	2	3	4	5
2.3 Customers	Information (or indicators) relating to customers	1	2	3	4	5
2.4 Customer satisfaction/loyalty	Information (or indicators) regarding customer satisfaction or loyalty	1	2	3	4	5
2.5 Marketing	Details of marketing channels, strategies and outcomes	1	2	3	4	5
2.6 Distribution channels	Information regarding how a firm's services and products reach its customers	1	2	3	4	5
2.7 Business Collaborations	Business collaborations involving the company (e.g. joint ventures, mergers or acquisitions)	1	2	3	4	5
2.8 Research collaborations	Information relating to research collaborations involving the company	1	2	3	4	5
2.9 Licensing agreements/franchising agreements/favorable contracts	Information relating to licensing agreements /franchising agreements / favorable contracts held by a firm	1	2	3	4	5

Other items (please list any other items you consider should be disclosed in this category)

3. Human Capital

Human capital refers to the individual's knowledge such as qualification, skills, values and experiences within an organization, which goes home with employees after work. It consists of at least the following items (please circle their importance using the provided scale):

1	2	3	4	5
Unimportant to disclose	Of **Little** importance to disclose	**Moderately** important to disclose	**Very** Important to disclose	**Extremely** important to disclose

Item	Description	Your rating(1-5)				
3.1 Employees	Information (or indicators) relating to employees	1	2	3	4	5
3.2 Qualifications	Academic and vocational qualifications held by employees	1	2	3	4	5
3.3 Education/training	Education or training programs or opportunities provided by a firm	1	2	3	4	5
3.4 Work-related knowledge/competences	Obtained from the job or training by employees	1	2	3	4	5
3.5 Entrepreneurial spirit	Encompassing innovativeness, proactive and reactive abilities, changeability, and risk taking.	1	2	3	4	5

Other items (please list any other items you consider should be disclosed in this category)

If you have any further comments/suggestions with respect to this questionnaire survey, please write them below:

Thank you very much for your assistance with this survey.

Please indicate whether you wish to receive a summary of the findings pertaining to this survey: a) Yes   b) No

Appendix D
Ratings for each IC item by the panelists

Disclosure Items	Panelists[1] (1-20)																				Mean	Std. D
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
1. Internal Capital	Ratings[2] (1-5)																					
1.1 Research & development	3	4	5	5	4	4	2	3	5	5	4	4	2	4	4	4	5	3	5	4	4.0	0.94
1.2 Intellectual property	4	5	4	5	3	4	5	4	4	5	5	5	4	5	4	5	4	5	4	5	4.5	0.60
1.3 Management philosophy/corporate culture	3	1	2	3	1	2	3	3	4	2	4	4	2	3	4	4	5	4	3	3	3	1.08
1.4 Management processes	2	3	4	4	4	3	4	4	5	1	3	2	1	1	3	2	4	4	5	5	3.2	1.32
1.5 Information/networking systems	2	3	5	4	3	5	1	4	3	3	3	3	1	1	2	3	2	4	4	4	3	1.21
1.6 Financial/investors relations	3	2	5	3	4	5	5	3	5	4	3	4	5	3	4	3	2	3	4	5	3.8	1.02
Total score for the category	17	18	25	24	19	23	20	21	26	20	22	22	15	17	21	21	22	23	25	26		
2. External Capital																						
2.1 Brands/reputation	5	3	4	5	3	4	3	4	5	5	4	4	4	4	5	4	5	4	5	5	4.3	0.72
2.2 Suppliers	3	2	2	2	5	2	1	4	5	4	4	2	3	3	4	4	4	3	4	4	3.3	1.12
2.3 Customers	4	2	3	4	5	3	2	4	4	4	5	3	4	4	5	5	4	3	4	4	3.8	0.89
2.4 Customer satisfaction/loyalty	4	2	3	4	4	4	3	4	4	4	5	5	4	4	5	5	4	3	4	4	4.0	0.76
2.5 Marketing	4	3	4	4	5	4	5	4	4	2	5	3	4	4	5	5	5	5	4	5	4.2	0.83
2.6 Distribution channels	4	3	5	4	3	5	1	4	2	1	4	3	4	2	4	4	3	4	4	4	3.4	1.14
2.7 Business collaborations	3	5	5	4	5	4	4	5	2	5	3	5	5	2	3	3	4	5	5	5	4.1	1.07
2.8 Research collaborations	3	5	4	3	2	3	4	3	2	3	3	3	4	2	3	4	3	4	4	4	3.3	0.80
2.9 Licensing agreement/franchising agreements/favorable contracts	3	5	4	4	2	5	5	5	5	5	1	5	5	3	5	2	4	5	4	5	4.1	1.25
Total score for the category	33	30	34	34	34	34	28	37	33	33	34	33	37	28	39	36	36	36	38	40		
3. Human Capital																						
3.1 Employees	5	2	4	4	3	4	2	5	4	5	3	4	3	4	4	3	4	3	4	3	3.7	0.88
3.2 Qualifications	3	3	3	3	4	3	3	5	4	5	3	3	3	3	4	4	4	3	3	4	3.5	0.69
3.3 Education/training	4	2	4	2	3	2	1	5	4	4	2	4	3	3	4	2	3	2	2	4	3	1.08
3.4 Work-related knowledge	4	3	3	3	4	3	5	5	4	5	4	3	3	3	4	4	2	2	3	4	3.6	0.89
3.5 Entrepreneurial spirit	3	3	2	3	5	2	3	4	4	4	5	5	2	3	4	5	2	2	5	4	3.5	1.15
Total score for the category	19	13	16	15	19	14	14	24	20	23	17	19	14	16	20	18	15	12	17	19		
Total score for overall IC	69	61	75	73	72	71	62	82	79	76	73	74	66	61	80	75	73	71	80	75		

Notes:

1. Panelists:

Group A (panelist 1- 2)   Two CFOs from sample companies
Group B (panelist 3-7)   Five Accountants from sample companies
Group C (panelist 8-11)   Four Accounting Scholars expert in IC disclosure
Group D (panelist 12- 14)   Three CPAs from big N accounting firms
Group E (panelist 15-18)   Four financial analysts from investment companies or banks
Group F (panelist 19-20)   Two officials working in governmental supervisory agencies for corporate reporting

2. Ratings:

1   Unimportant to disclose
2   Little importance
3   Moderately important
4   Very Important
5   Extremely important

Appendix E
Coding sheet

Name of company:
Year AR:
Coding date:
Coder:

Company characteristics

Industry type	
Firm size	
Leverage	
Listing status	
Ownership structure	
Independent directors	
Stand-alone CSR report	
Profitability	
Auditor type	

Items	Quality Score			
	1	**2**	**3**	**4**
1. Internal capital				
1.1 Research & development				
1.2 Intellectual Property				
1.3 Management philosophy /corporate culture				
1.4 Management processes				
1.5 Information/networking systems				
1.6 Financial/investors relations				
2. External capital				
2.1 Brands /reputation				

2.2 Suppliers				
2.3 Customers				
2.4 Customer satisfaction/loyalty				
2.5 Marketing				
2.6 Distribution channels				
2.7 Business collaborations				
2.8 Research collaborations				
2.9 Licensing agreements/franchising agreements/favorable contracts				
3. Human capital				
3.1 Employees				
3.2 Qualifications				
3.3 Education /training				
3.4 Work-related knowledge/competences				
3.5 Entrepreneurial spirit				

Note:

AR: annual report; Industry type: service or industry sector; Firm size: (natural logarithm of) revenue; Leverage: book value of total debt / book value of total assets; Listing status: dual listed A and H-share or purely A-share; Ownership structure: percentage of state-owned shares among top 10 largest shareholders; Independent directors: percentage of independent directors among total directors; Stand-alone CSR report: issue or not; Profitability: net profit before taxation/book value of total assets; Auditor type: audited by big 4 accounting firms or not; italicized items would be assigned a maximum score of 3.

Appendix F

Calculation of the weighted disclosure score

The following equation was used to calculate the weighted quality score for the disclosure of each IC category and the overall IC by each company, which represents a normalized score from 0 to 1.

$$Score = \frac{\sum_{i=1}^{n} Ai \times Wi}{\sum_{i=1}^{n} Mi \times Wi}$$, in which:

Ai: actual disclosure score for the *i*th item; *Mi*: possible maximum disclosure score for the *i*th item; *Wi*: weighting for the *i*th item; *n*: number of items for each IC category (6 for internal capital; 9 for external capital; and 5 for human capital) or the overall IC (20).

The author employs China Coal Energy Co. Ltd. as an example to demonstrate how to use the equation to calculate the weighted scores.

Disclosure practice of China Coal Energy Co. Ltd. (2009)

Items	Actual score	Maximum score	Weighting
1. Internal capital			
1.1 Research and development	4	4	4.0
1.2 intellectual property	4	4	4.5
1.3 management philosophy/ corporate culture	3	3	3
1.4 management processes	3	3	3.2
1.5 information/networking systems	3	4	3
1.6 financial/investors relations	4	4	3.8
2. External capital			
2.1 Brands/reputation	3	4	4.3
2.2 Suppliers	3	4	3.3
2.3 Customers	4	4	3.8
2.4 Customer satisfaction/loyalty	3	4	4.0
2.5 Marketing	4	4	4.2
2.6 Distribution channels	3	4	3.4
2.7 Business collaborations	4	4	4.1
2.8 Research collaborations	3	4	3.3
2.9 Licensing agreements/franchising agreements/ favorable contracts	3	4	4.1
3. Human capital			
3.1 Employees	4	4	3.7
3.2 Qualifications	4	4	3.5
3.3 Education/training	4	4	3
3.4 Work-related knowledge/competences	3	3	3.6
3.5 Entrepreneurial spirit	3	3	3.5

- *Weighted score for internal capital = (4*4.0 + 4*4.5 + 3*3 + 3*3.2 + 3*3 + 4*3.8) / (4*4.0 + 4*4.5 + 3*3 +3*3.2 + 4*3 + 4*3.8) = 76.8 / 79.8 = 0.96*
- *Weighted score for external capital = (3*4.3 + 3*3.3 + 4*3.8 + 3*4.0 + 4*4.2 + 3*3.4 + 4*4.1 + 3*3.3 + 3*4.1) / (4*4.3 + 4*3.3 + 4*3.8 + 4*4.0 + 4*4.2 + 4*3.4 + 4*4.1 + 4*3.3 + 4*4.1) = 115.6 / 138 = 0.84*
- *Weighted score for human capital = (4*3.7 + 4*3.5 + 4*3 + 3*3.6) / (4*3.7 + 4*3.5 + 4*3 + 3*3.6) = 62.1 / 62.1 = 1*
- *Final score (weighted score for overall IC) = (76.8 + 115.6 + 62.1) / (79.8 + 138 + 62.1) = 0.91*

Accordingly, to calculate the **unweighted** disclosure score for each IC category and the overall IC by each company, we can use the following equation:

$$Score = \frac{\sum_{i=1}^{n} Ai}{\sum_{i=1}^{n} Mi}$$, in which:

Ai: actual disclosure score for the ith item; Mi: possible maximum disclosure score for the ith item; n: number of items for each IC category (6 for internal capital; 9 for external capital; and 5 for human capital) or the overall IC (20).

Appendix G

Final IC disclosure score by firms in 2008 (descending order)

Company	Internal capital		External capital		Human capital		Final	
	No.	Score	No.	Score	No.	Score	No.	Score
Yanzhou Coal Mining Co. Ltd	6	0.92	9	0.89	5	1	20	0.92
China Construction Bank Co	5	0.73	9	0.98	5	1	19	0.91
Shanghai Fosun Pharmaceutical Co., Ltd	5	0.91	9	0.86	5	1	20	0.91
Qingdao Haier Co., Ltd	5	0.92	8	0.81	5	1	19	0.89
China CITIC Bank	6	0.77	8	0.87	5	1	18	0.87
Offshore Oil Engineering Co., Ltd	6	0.92	9	0.8	5	0.94	20	0.87
Industrial and Commercial Bank of China Ltd	6	1	7	0.73	5	1	18	0.86
China Railway Group Ltd	6	0.92	8	0.82	5	0.88	19	0.86
Zijin Mining Group Co., Ltd	6	0.92	9	0.83	5	0.83	20	0.86
Petrochina Company Ltd	6	1	8	0.69	5	1	19	0.85
SAIC Motor Co., Ltd	6	0.87	8	0.82	5	0.9	19	0.85
TBEA Co., Ltd	6	0.85	8	0.82	5	0.94	18	0.85
China Coal Energy Co., Ltd	5	0.92	8	0.75	5	0.89	19	0.83
China Oilfield Services Ltd	6	0.92	9	0.81	5	0.78	20	0.83
China Gezhouba Group Co., Ltd	6	0.96	8	0.78	4	0.77	18	0.83
Industrial Bank Co., Ltd	6	0.77	8	0.77	5	1	18	0.82
China COSCO Holding Co., Ltd	6	0.91	8	0.76	5	0.84	19	0.82
Anhui Conch Cement Co., Ltd	6	0.85	8	0.81	5	0.78	19	0.82
Zhejiang China Commodities City Group Co., Ltd	5	0.68	9	0.92	5	0.78	19	0.82
Bank of Nanjing Co., Ltd	6	0.77	8	0.79	5	0.94	18	0.82
Suning Appliance Co., Ltd	6	0.72	8	0.82	5	0.9	18	0.81
Dongfang Electric Co., Ltd	5	0.91	8	0.74	5	0.84	19	0.81
China Merchants Bank Co., Ltd	5	0.8	7	0.75	5	0.89	18	0.8
China Eastern Airlines Co., Ltd	5	0.69	8	0.78	5	1	18	0.8
Bank of China Ltd	6	0.74	7	0.73	5	1	17	0.79
Inner Mongolia Baotou Steel Rare-Earth Hi-teck Co., Ltd	5	0.7	8	0.77	5	0.94	18	0.79
China Southern Airlines Co., Ltd	5	0.84	7	0.72	5	0.89	18	0.79
Shanghai Pudong Development Bank Co., Ltd	5	0.73	7	0.72	5	0.94	17	0.77
China Minsheng Banking Co., Ltd	6	0.63	8	0.78	5	0.94	18	0.77
CITIC Securities Co., Ltd	5	0.7	7	0.7	5	1	17	0.76
Bank of Beijing Co., Ltd	6	0.73	7	0.71	5	0.9	17	0.76
China Petroleum and Chemical Co	5	0.8	8	0.63	5	0.95	18	0.75
Shanghai International Port Co., Ltd	5	0.91	7	0.58	5	0.94	18	0.75
China Yangtze Power Co., Ltd	6	0.62	8	0.71	5	0.95	17	0.74
Bank of Communication Co., Ltd	6	0.74	6	0.61	5	1	16	0.73
China Railway Construction Co., Ltd	5	0.87	5	0.54	5	1	16	0.73
Hua Xia Bank Co., Ltd	5	0.69	7	0.68	5	0.88	17	0.73
ZTE Corporation	6	0.81	8	0.71	3	0.63	16	0.72
Changsha Zoomlion Heavy Industry Science and Technology Development Co., Ltd	5	0.74	8	0.76	4	0.61	17	0.72
China Shipping Container Lines Co., Ltd	5	0.69	7	0.65	5	0.9	17	0.72
China Shenhua Energy Company Ltd	5	0.62	7	0.7	4	0.81	15	0.7
Air China Ltd	5	0.67	7	0.67	5	0.83	17	0.7
Baoding Tianwei Electric Co., Ltd	5	0.7	7	0.63	5	0.89	17	0.7
China Life Insurance Company Ltd	6	0.56	6	0.66	5	0.94	16	0.69

(Continued)

Company	Internal capital		External capital		Human capital		Final	
	No.	Score	No.	Score		No.	Score	No.
Aluminum Corporation of China Ltd	5	0.96	5	0.48	5	0.78	16	0.69
Sinopec Shanghai Petrochemical Co., Ltd	6	0.74	6	0.55	5	0.94	16	0.69
Haitong Securities Co., Ltd	5	0.69	7	0.56	5	0.94	17	0.68
Ping An Insurance Company of China, Ltd	6	0.79	6	0.48	5	0.95	17	0.67
China South Locomotive & Rolling Stock Co., Ltd	6	0.8	6	0.55	5	0.79	16	0.67
China Vanke Co., Ltd	5	0.54	6	0.61	5	0.95	15	0.66
Shenzhen Development Bank Co., Ltd	6	0.68	8	0.69	4	0.56	17	0.66
Yantai Wanhua Polyurethanes Co., Ltd	6	0.81	7	0.6	4	0.62	17	0.66
Nari Technology Development Co., Ltd	6	0.92	7	0.6	3	0.44	16	0.66
China Pacific Insurance Co., Ltd	5	0.54	6	0.57	5	0.95	15	0.65
Shanghai Oriental Pearl Co., Ltd	5	0.76	7	0.63	3	0.52	15	0.64
Wuliangye Yibin Co., Ltd	5	0.62	7	0.67	3	0.52	14	0.63
GD Power Development Co., Ltd	5	0.74	7	0.52	4	0.73	16	0.63
Gemadale Corporation	6	0.69	7	0.6	4	0.61	16	0.63
FAW Car Co., Ltd	4	0.61	8	0.76	2	0.35	15	0.63
China United Telecommunications Co., Ltd	6	0.68	6	0.63	3	0.52	14	0.62
China CSSC Holdings Ltd	4	0.92	7	0.57	2	0.35	15	0.62
Datang International Power Generation Co., Ltd	6	0.69	5	0.4	5	0.95	15	0.61
Poly Real Estate Group Co., Ltd	6	0.5	7	0.59	5	0.78	16	0.61
Pingdingshan Tianan Coal Mining Co., Ltd	6	0.61	6	0.6	4	0.61	14	0.61
Jiangsu Expressway Co., Ltd	5	0.5	5	0.49	5	1	14	0.61
Shanghai Electric Group Co., Ltd	5	0.75	5	0.55	3	0.52	13	0.6
Gree Electric Appliances Inc	4	0.59	7	0.64	3	0.52	14	0.59
Bank of Ningbo Co., Ltd	5	0.55	5	0.52	4	0.78	13	0.59
Harbin Pharmaceutical Group Co., Ltd	6	0.69	7	0.62	2	0.41	14	0.59
Daqin Railway Co., Ltd	5	0.65	6	0.5	4	0.67	15	0.58
Datong Coal Industry Co., Ltd	5	0.53	7	0.55	4	0.73	15	0.58
Sany Heavy Industry Co., Ltd	5	0.69	6	0.53	3	0.52	14	0.57
GD Midea Holding Co., Ltd	5	0.84	5	0.46	3	0.46	14	0.57
Yunnan Baiyao Group Co., Ltd	6	0.6	5	0.48	4	0.73	14	0.57
Inner Mongolia Yili Industrial Group Co., Ltd	5	0.72	6	0.5	3	0.52	14	0.57
Shanxi Lu'an Environmental Energy Development Co., Ltd	5	0.69	5	0.41	4	0.73	14	0.56
Huaneng Power International, Inc	5	0.58	6	0.42	4	0.78	14	0.54
Jiangxi Copper Co., Ltd	4	0.7	6	0.54	5	0.78	16	0.54
Henan Shuanghui Investment & Development Co., Ltd	6	0.6	6	0.55	2	0.35	13	0.52
Huolinhe Opencut Coal Industrial Co., Ltd of Inner Mongolia	6	0.49	5	0.5	3	0.58	12	0.52
Zhongjin Gold Co., Ltd	5	0.54	5	0.39	5	0.67	14	0.5
Jiangsu Hengrui Medicine Co., Ltd	3	0.76	3	0.23	5	0.78	13	0.5
Hualan Biological Engineering, Inc	6	0.75	5	0.42	2	0.35	12	0.5
Wuhan Iron and Steel Co., Ltd	5	0.48	6	0.48	3	0.46	13	0.48
Sanan Optoelectronics Co., Ltd	4	0.57	6	0.43	2	0.46	12	0.48
Jinduicheng Molybdenum Co., Ltd	5	0.4	6	0.51	3	0.46	12	0.47
Baoshan Iron & Steel Co., Ltd	5	0.64	4	0.32	3	0.52	12	0.45
Xinjiang Guanghui Industry Co., Ltd	6	0.32	6	0.49	3	0.52	12	0.45
Kweichow Moutai Co., Ltd	4	0.61	5	0.34	2	0.46	11	0.44
Shanxi Xishan Coal and Electricity Power Co., Ltd	6	0.44	4	0.42	2	0.41	10	0.42
Shan Xi Guo Yang New Energy Co., Ltd	5	0.42	5	0.37	3	0.46	11	0.41

(Continued)

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Company	Internal capital		External capital		Human capital		Final	
	No.	Score	No.	Score		No.	Score	No.
Weichai Power Co., Ltd	4	0.48	4	0.33	3	0.52	11	0.41
Shan Dong Dong-E-E-Jiao Co., Ltd	4	0.34	6	0.43	2	0.35	11	0.39
Shanghai Bashi Industrial Co., Ltd	3	0.55	3	0.22	2	0.35	10	0.34
Shandong Gold Co., Ltd	4	0.53	2	0.17	3	0.46	9	0.33
Yunnan Copper Co., Ltd	5	0.44	3	0.27	2	0.35	9	0.33
Tangshan Jidong Cement Co., Ltd	4	0.28	4	0.36	2	0.35	9	0.33
Shenzhen Zhongjin Lingnan Nonfemet Co., Ltd	5	0.21	3	0.32	2	0.41	7	0.31
Western Mining Co., Ltd	4	0.26	1	0.12	3	0.46	6	0.24
Southwest Securities Co., Ltd	5	0.08	1	0.06	2	0.35	4	0.13
Mean	4.84	0.69	6.44	0.60	4.06	0.73	15.34	0.65
Std. D	0.99	0.18	1.72	0.18	1.14	0.22	3.24	0.17
Median	5	0.70	7	0.61	5	0.78	16	0.66
Highest	6	1	9	0.98	5	1	20	0.92
Lowest	1	0.08	1	0.06	2	0.35	4	0.13

Appendix H

Descriptive statistics for 2009 unweighted dataset

Panel A General variables

Variables	N	Mean	Std. D	Q1	Median	Q3
Dependent variables						
OD	100	0.72	0.138	0.623	0.745	0.84
ID	100	0.78	0.133	0.68	0.77	0.898
ED	100	0.67	0.147	0.58	0.69	0.78
HD	100	0.77	0.222	0.573	0.83	0.94
Independent variables						
SIZE	100	10.078	1.427	9.260	10.046	10.854
LEV	100	0.602	0.230	0.415	0.614	0.786
OWNER	100	0.443	0.241	0.284	0.526	0.620
INDIR	100	0.373	0.073	0.333	0.353	0.382
PROFIT	100	0.077	0.077	0.027	0.062	0.108

Panel B Dummy (independent) variables

Dummy variables		N	Percent of sample
INDUSTRY	0	58	58%
	1	42	42%
LIST	0	64	64%
	1	36	36%
CSR	0	42	42%
	1	58	58%
AUDITOR	0	52	52%
	1	48	48%

Where:

N: number of observations; Std. D: standard deviation; Q1: 25th Percentile; Q3: 75th percentile; all the variables are defined in table 8.1.

Appendix I

Descriptive statistics for 2008 dataset

Panel A General variables

Variables	N	Mean	Std. D	Q1	Median	Q3
Dependent variables						
OD	100	0.65	0.166	0.563	0.66	0.79
ID	100	0.69	0.182	0.583	0.695	0.808
ED	100	0.60	0.184	0.483	0.605	0.748
HD	100	0.73	0.223	0.52	0.78	0.94
Independent variables						
SIZE	100	9.914	1.640	9.022	9.906	10.870
LEV	100	0.585	0.245	0.389	0.568	0.791
OWNER	100	0.432	0.245	0.267	0.511	0.622
INDIR	100	0.366	0.071	0.333	0.353	0.375
PROFIT	100	0.081	0.127	0.140	0.071	0.125

Panel B Dummy (independent) variables

Dummy variables		N	Percent of sample
INDUSTRY	0	58	58%
	1	42	42%
LIST	0	64	64%
	1	36	36%
CSR	0	44	42%
	1	56	58%
AUDITOR	0	52	52%
	1	48	48%

Where:

N: number of observations; Std. D: standard deviation; Q1: 25th Percentile; Q3: 75th percentile; all the variables are defined in table 8.1.