

**University of Glasgow
Department of Management**

Degree of Doctor of Philosophy (PhD)

**Opportunity Identification in MNC Subsidiaries:
Context and Performance Implications**

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Abstract

This thesis brings together notions from the distinctive fields of international business and entrepreneurship in order to examine the under-investigated theme of Opportunity Identification (OI) within an entirely new context, that of the multinational subsidiary. Despite its centrality in entrepreneurship research, the notion of OI still lies at an embryonic stage of investigation, particularly as an organisation-wide phenomenon. Especially with respect to the multinational subsidiary, the concept of OI has not been examined per se, regardless of studies proving that entrepreneurial subsidiaries of MNCs can also be actively involved in the identification and pursuit of innovative ideas. In addressing the above key gaps, *the present thesis develops a resource-based framework that examines both antecedents and outcomes of OI at the individual subsidiary level.* This framework essentially integrates theoretical perspectives on subsidiary entrepreneurship and OI under a Resource-Based View (RBV) of the multinational subsidiary. This constitutes an innovative approach both in the subsidiary-related and entrepreneurship literature.

This study adopts a mixed methods approach in combining qualitative theory building and quantitative theory testing within a two-staged research methodology. The first stage involved conducting exploratory case studies in 6 Scottish “entrepreneurial” subsidiaries, given the scarcity of relevant empirical work. The second stage involved carrying out a large-scale mail survey on U.S., European, and Japanese subsidiaries operating in the UK. An overall response rate of 16% was achieved. Quantitative data analysis entailed hypotheses testing through both Multiple Regression and Structural Equation (SEM) models.

This study conceptualises subsidiary entrepreneurship as a notion broader than subsidiary initiative, comprising not only radical change and innovation, but also less fundamental but still significant improvements that continuously take place at the subsidiary level. The findings prove that subsidiary entrepreneurship is essentially driven by opportunities identified at the subsidiary level. For the identification of these opportunities, particular subsidiary-specific “entrepreneurial capabilities”, such as the subsidiary’s innovation propensity, risk attitude and external networking with non-direct value-chain members, are critical. Also, factors determining the parent-subsidary relationship, such as the subsidiary’s autonomy levels and the flows of “strategic” knowledge and skills between the subsidiary and the parent, provide access to unique and valuable resources that can expand the subsidiary’s opportunity set. However, the external environment, both local and international, was not found to pose a significant direct effect on subsidiary OI. This study concludes with establishing a positive link between subsidiary entrepreneurship and performance.

Implications for theory, practice and policy making are discussed. Major contributions of this study to theory include *the development of a more holistic conceptualisation and measurement of subsidiary entrepreneurship, along with the adoption of a Resource-Based View (RBV) of the multinational subsidiary,* which establishes the existence of specific “entrepreneurial” capabilities at the subsidiary level.

Declaration of Originality

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

I declare that the thesis embodies the results of my own work. Following normal academic conventions, I have made due acknowledgement of the work of others.

Copyright Statement

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To Nicholas

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Chapter 1: Introduction

1.1 Background of the research

This thesis brings together notions from the distinct fields of international business and entrepreneurship to shed light into the theme of multinational subsidiary entrepreneurship. Despite the significance of international entrepreneurship as a major stream of research in both disciplines, and the generally acknowledged presence of entrepreneurial activities in large and established organisations (Ahuja and Lampert, 2001), operations of MNCs and their multinational subsidiaries have received significantly less consideration (Dimitratos and Jones, 2005).

Indeed, a major challenge facing the multinational corporation (MNC) is attempting to develop an internal entrepreneurial culture and enhance the entrepreneurial potential of its foreign subsidiaries¹. As subsidiaries pursue local opportunities likely to be exploited by the entire multinational system (Birkinshaw, 1997), subsidiary entrepreneurship may be beneficial not only for the individual subsidiary, but also for the whole organisation (Bartlett and Ghoshal, 1989; McEvily and Zaheer, 1999; Birkinshaw and Hood, 2001; Birkinshaw et al, 2005). *Despite its criticality and the possible benefits for the entire MNC, the topic of subsidiary entrepreneurship has received inadequate research attention* (Paterson and Brock, 2002; Young and Tavares, 2004; Birkinshaw et al, 2005; Boojihawon et al, 2007).

Research pertaining to the theme of subsidiary entrepreneurship has essentially focused on the particular notion of “subsidiary initiative” (Birkinshaw, 1997, 2000), as an “entrepreneurial process” that leads to “international responsibilities for the subsidiary” (Birkinshaw, 1997, p.207). Such initiatives that have implications for the entire MNC have been essentially the focus of research on subsidiary entrepreneurship, sidestepping entrepreneurial activities of limited-scope with implications for the individual subsidiary only (Birkinshaw and Ridderstråle, 1999). Indeed, Birkinshaw’s (1997) conceptualisation of subsidiary initiative excludes this latter type of “trivial initiatives” (Birkinshaw, 1997, p. 211). However, literature on corporate entrepreneurship tends to encompass a broader

¹ This research defines a subsidiary as a value-adding entity in a host country, which can perform a single or an entire value chain of activities (Birkinshaw and Hood, 1998). A single host country can have several subsidiaries of the same parent that are independent of one another and consequently can have different “entrepreneurial capabilities” and also perform dissimilar entrepreneurial activities.

spectrum of entrepreneurial activities, which might relate not only to the creation of new business activities, but also to the transformation and renewal of existing organisations (Stopford and Baden-Füller, 1994). Hence, subsidiary entrepreneurship might comprise not only radical change and innovation, but also less fundamental but still significant improvements that continuously take place at the subsidiary level (Andersson and Pahlberg, 1997), i.e. “incremental innovations” (Freeman, 1987). To address this gap, the present study takes a wider perspective in conceptualising the notion of subsidiary entrepreneurship. *Subsidiary entrepreneurship is therefore studied as a broader concept, ranging from incremental (but value-adding) change to radical innovation, which can be relevant to all types of subsidiaries.*

Though primarily focused on the notion of “subsidiary initiative”, existing literature has generally acknowledged the centrality of the notion of opportunity identification (OI) in entrepreneurship². Subsidiary literature considers entrepreneurial activities to commence “with the identification of an opportunity” (Birkinshaw, 1997, p.207). Entrepreneurship literature has also emphasised the concept of OI as lying at the heart of entrepreneurial activity (Shane and Venkataraman, 2000). Based on the same grounds, topical research affirms the importance of OI as a major theme of study within the field of international entrepreneurship (Zahra and George, 2002; Dimitratos and Plakoyiannaki, 2003; Oviatt and McDougall, 2005; Dimitratos and Jones, 2005).

Regardless of its criticality, *the concept of OI still lies at an embryonic stage of investigation.* Indeed, research on OI within the entrepreneurship literature tends to examine the particular notion at the individual entrepreneur- level rather than as an organisation-wide phenomenon. Also, most studies take distinctive perspectives and concentrate on particular aspects of the OI process, thereby failing to provide an integrative and holistic framework. Especially within the context of the multinational subsidiary, the notion of OI has not been examined per se, despite studies proving that entrepreneurial subsidiaries can also be actively involved in the identification and pursuit of innovative ideas (Birkinshaw, 2000; Prahalad, 1999).

In addressing the above key gaps in the fields of international business and entrepreneurship, the present thesis examines the theme of subsidiary entrepreneurship, with particular focus on the notion of subsidiary OI. In particular, it *examines the antecedents and outcomes of entrepreneurial OI at the individual subsidiary level.* In terms

² Stevenson and Jarillo’s (1990) opportunity-based definition of entrepreneurship appears to have become widely accepted in the literature (Brown, Davidsson, and Wiklund, 2001).

of antecedents, the present study seeks to identify distinctive capabilities at the subsidiary level, along with factors in the corporate context and the subsidiary's external environment, that drive subsidiary OI. In terms of outcomes, it places the notion of OI within the broader context of subsidiary entrepreneurship to primarily examine its impact on subsidiary entrepreneurial activity (entrepreneurial performance³) and subsequently investigate its effect on overall subsidiary performance (through the intervention of entrepreneurial activity / entrepreneurial performance).

Drawing on relevant recommendations in the entrepreneurship literature (Amabile, 1990; Shane, 2000; Fiet, 2002; Shepherd and DeTienne, 2005), this study examines the notion of OI at two distinct levels:

First, it focuses on the *extent to which the subsidiary identifies opportunities*, along with the antecedents and outcomes of this process. In that respect, opportunities are considered to encompass all prospects or possibilities that can be useful to the subsidiary's activities, irrespective of their scope and impact. This aspect of OI addresses the need for a holistic conceptualisation of subsidiary entrepreneurship (Birkinshaw, 1997; Wright, 1999; Dess et al., 2003; Birkinshaw et al., 2005; Boojihawon et al., 2007), as a phenomenon ranging from incremental but value-adding change to radical innovation.

Second, this study examines the particular *identification of radical opportunities* at the subsidiary level, along with the antecedents and outcomes of this process. The focus on radical OI is essentially based on Schumpeter's (1934) notion of "opportunity creation", a concept relating to new resource combinations, rather than optimisation of existing resources (Schumpeter, 1934; Ripsas, 1998; Ardichvili et al., 2003). Radical OI is generally associated with opportunities that represent a clear departure from existing practices, for example opportunities for new products, processes and technologies that have a tremendous impact on economic performance (Poynter and White, 1989; Roth and Morrison, 1992; Dunning, 1994) and drive economic growth (Schumpeter, 1934; Brown and Eisenhardt, 1998). The consideration of radical OI at the subsidiary-level is critical, given that different antecedents and outcomes may be associated with this particular concept. Besides, in a rapidly changing and highly competitive world, radical OI seems even more critical as the only way to ensure organisational survival (Michalski, 2006).

³ The term "entrepreneurial performance", as used in the current thesis, refers to the output of entrepreneurship, i.e. entrepreneurial activities that have been undertaken at the subsidiary-level. These might have a local or an international orientation and could be strategic or more operational in nature. Irrespective of their scope and magnitude, such "entrepreneurial activities" are essentially manifestations of subsidiary entrepreneurship.

1.2 Theoretical underpinnings of the study

In examining the notion of subsidiary OI, and its antecedents and outcomes at the subsidiary level, this study essentially *draws on the resource-based view (RBV) and the related schools of thought focusing on the development of firm-level capabilities*. This constitutes an innovative approach of this thesis, both in terms of the subsidiary-related literature in international business and also literature on entrepreneurship and corporate entrepreneurship. Figure 1.1 depicts the development of the theme under investigation through identification of key gaps in relevant literature.

In international business (IB) literature, the multinational parent has traditionally been viewed as the only source of capabilities within the MNC (Birkinshaw and Hood, 1998; Birkinshaw et al., 1998; Lipparini and Fratocchi, 1999). Indeed, most of the early research on MNCs focused on the corporate parent as the key actor in the multinational system and also considered the parent-subsidiary relationship from a traditional hierarchical perspective (Daniels et al., 1984; Bartlett and Ghoshal, 1989; Roth and Morrison, 1990; Birkinshaw and Morrison, 1995; Dunning, 1995). More recently, however, it has been acknowledged that foreign subsidiaries may also contribute to the MNC's stock of capabilities (Rugman and Verbeke, 2001), with benefits for the entire multinational system (McEvily and Zaheer, 1999).

Birkinshaw's (1996, 1997) work on "subsidiary initiative" was one of the first to shed light on the significance of subsidiary-specific resources and capabilities (Birkinshaw, 1996, 1997, Birkinshaw and Hood, 1998; Birkinshaw, 1999). This study greatly contributed to a shift in emphasis towards a more "subsidiary-focused" view of the MNC. While most topical research has been focusing its attention around subsidiaries that provide critical resources and capabilities to the entire multinational system (McEvily and Zaheer, 1999; Andersson and Forsgren, 2000; Holm and Pedersen, 2000; Rugman and Verbeke, 2001; Frost et al., 2002; Andersson et al., 2002), further academic work is still required to explore and explain the development of resources and capabilities at the subsidiary level (Rugman and Verbeke, 2001; Schmid and Schurig, 2003). The present study addresses this gap through taking a resource- and capabilities-based view of the multinational subsidiary.

In the entrepreneurship literature, researchers (Alvarez and Busenitz, 2001) have suggested that understanding entrepreneurial phenomena could bring new insights to the resource-based approach. A resource-based view of entrepreneurship would consider it as a process of identification, acquisition and accumulation of resources to take advantage of perceived opportunities (Bergmann-Lichtenstein and Brush, 2001). Nonetheless, most resource-based

research has paid little attention to entrepreneurship and thus largely failed to integrate entrepreneurial phenomena in its framework (Barney, 2001). The particular notion of OI, associated with the discovery of alternative uses of existing resources (Kirzner's (1973) "discovery view") and the creation of new resources through the combination and recombination of other resources (Schumpeter's (1934) "creation view"), could provide a prolific ground for the resource-based paradigm. Consequently, *the present study uses the resource-based framework as a "connective link" amongst theoretical perspectives on OI, in order to provide a holistic model of firm-level OI.*

To conclude, an RBV of the multinational subsidiary is particularly useful for merging previous literature in the two distinct fields of international business and entrepreneurship with the purpose of developing an integrative and coherent framework for studying the notion of OI at the individual subsidiary level. The following section explains analytically this framework and related research objectives of the present study.

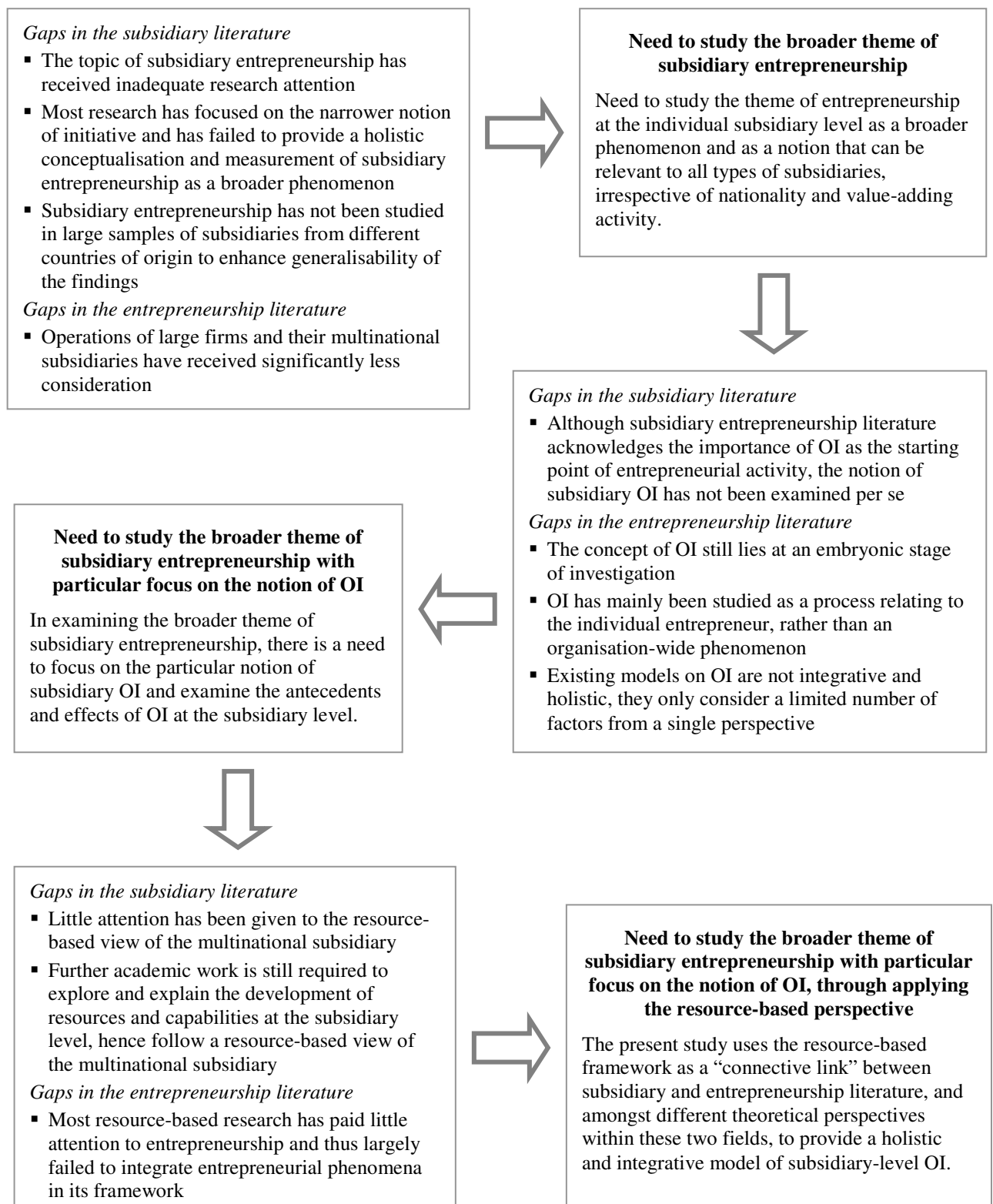


Figure 1.1: Development of the theme under investigation through identification of key gaps in relevant literature

1.3 Research framework and research objectives

Literature on corporate entrepreneurship tends to emphasise two sets of factors as critical determinants of firm-level entrepreneurship: internal/organisational factors and characteristics of the external environment. Indeed, while research has typically emphasised the internal organisational environment as a defining factor of firm-level entrepreneurial behaviour (Khandwalla, 1977; Miller and Friesen, 1982; Covin and Slevin, 1991; Lumpkin and Dess, 1996), researchers have been seeking to explain and predict corporate entrepreneurship through contingency models that also incorporate a set of environmental characteristics (Miller, 1983; Khandwalla, 1987; Covin and Slevin, 1991; Zahra, 1991, 1993).

In a similar vein, literature on subsidiaries has also identified internal/organisational and external/environmental factors as critical for examining the particular concept of subsidiary entrepreneurship (Birkinshaw et al, 1998; Birkinshaw and Hood, 1998). Nonetheless, in the particular context of the multinational subsidiary, intra-organisational aspects are examined both at a corporate (MNC) and a subsidiary level. Consequently, studying entrepreneurial phenomena in subsidiaries requires the consideration of three distinct sets of factors: *first*, subsidiary-specific resources and capabilities that can be linked to subsidiary entrepreneurial behaviour, *second*, aspects of the corporate setting in which the subsidiary operates, essentially determined through characteristics of the parent-subsidiary and subsidiary-subsidiary relationship; and *third*, elements of the external (local and international) environment in which the subsidiary builds and exploits its resources and capabilities.

The aforementioned three sets of factors essentially determine subsidiary entrepreneurship. Considering that entrepreneurship originates from opportunities that are being identified at the subsidiary-level, the same factors might also relate to the particular concept of subsidiary OI. As a result, *subsidiary-specific resources and capabilities, elements in the corporate (MNC) setting in which the subsidiary operates and characteristics of the external (local and international) environment might to a great extent drive or inhibit subsidiary OI (Figure 1.2).*

Moreover, whilst generally accepted that entrepreneurship can have a positive influence on firm-level performance (Covin and Slevin, 1991; Zahra, 1991, 1993; Zahra and Covin, 1995; Zahra and Garvis, 2000; McDougall and Oviatt, 2000), few empirical studies have focused on the entrepreneurship - performance relationship (Zahra, 1993; Zahra et al., 1999; Andersson et al., 2001; Dess et al., 2003; Dimitratos et al., 2004). Also, the particular effect

of OI on firm-level performance has not been studied per se, and most importantly not within the context of the multinational subsidiary. Besides, the theme of subsidiary performance in general has received inadequate research attention (Andersson et al, 2001). In addressing these deficiencies, the present study considers the outcomes of OI at the subsidiary level. In particular, it primarily examines the impact of OI on subsidiary entrepreneurial activity (entrepreneurial performance). This is essential, given that the entrepreneurial activity (entrepreneurial performance) originates from opportunities identified and subsequently exploited at the subsidiary level (Birkinshaw, 1997). *While subsidiary OI might impact upon entrepreneurial activity (entrepreneurial performance) at the subsidiary level, it is worth further investigating the extent to which such activity can actually have a positive overall impact on subsidiary performance (through the intervention of entrepreneurial activity / entrepreneurial performance) (Figure 1.2).*

In conclusion, a holistic framework for studying the notion of subsidiary OI as the starting point of entrepreneurial activity entails examining both antecedents and outcomes of the OI process. Such issues are clearly addressed through the following three research objectives. While the first two seek to identify factors driving OI, the third basically focuses on the outcomes of OI at the subsidiary level:

1. What are the “entrepreneurial capabilities” in MNC subsidiaries that drive subsidiary OI?
2. What are critical factors in the subsidiaries’ corporate (MNC) setting and the external environment (local and international) that influence subsidiary OI?
3. How does subsidiary OI affect subsidiary entrepreneurial activity (entrepreneurial performance) and overall subsidiary performance (through the intervention of entrepreneurial performance)?

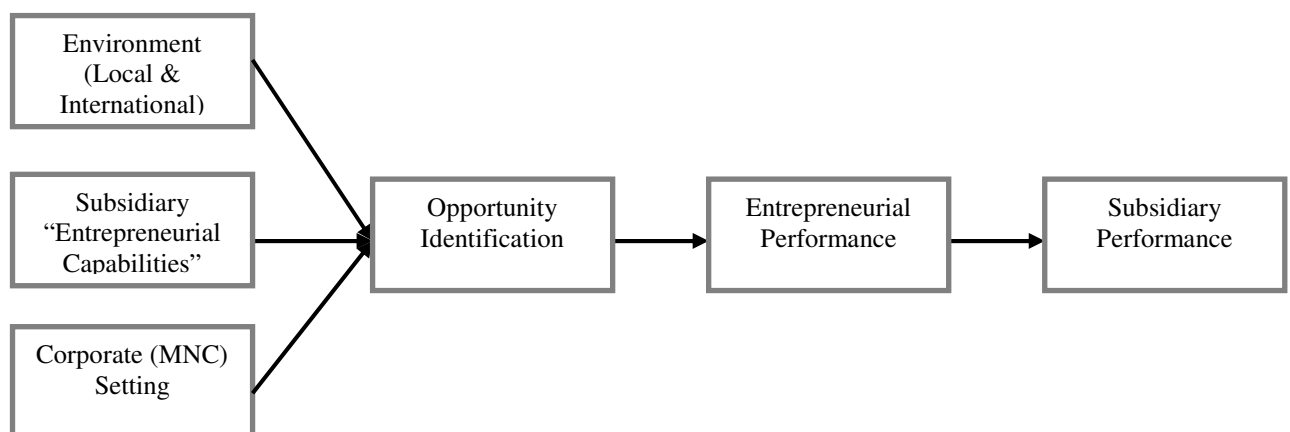


Figure 1.2: The conceptual framework of the research

1.4 Research approach

This study follows a mixed methods approach in addressing its research objectives. In particular, *it encompasses qualitative theory building and quantitative theory testing through following a two-staged research methodology*. While mixed research approaches have been employed in international business studies (Ghoshal and Bartlett, 1988; Birkinshaw, 1997, 1999; Bresnan et al, 1999), entrepreneurship research on OI has also stressed the benefits of resorting to such methods (Caracelli and Greene, 1997).

The first stage involved conducting *multiple exploratory case studies*. Given the scarcity of empirical work on the theme of OI in both subsidiary-related and corporate entrepreneurship literature, the exploratory method was deemed most appropriate for addressing the research purposes. Indeed, exploratory studies are particularly useful when little extant knowledge exists on a topic and hence there is limited empirical data to form a sound basis for drawing propositions (Bryman and Burgess, 1995; Easterby-Smith et al, 2001; Ghauri and Grønhaug, 2002). Also, multiple case studies are generally preferable, in that they offer advantages such as increased robustness (Herriott and Firestone, 1983; Yin, 2003) and generalisability of findings (Patton, 1990; Miles and Huberman, 1994).

More specifically, exploratory case studies were conducted in six foreign-owned “entrepreneurial” subsidiaries for purposes of hypothesis building. The underlying principle for deciding on the case study firms was selecting “information rich cases” worthy of in-depth investigation (Patton, 1990, p. 181), i.e. having exhibited some degree of entrepreneurial behaviour. The addition of new case studies stopped when theoretical saturation was reached (Eisenhardt, 1989). Specifically, this study considered six subsidiaries from different industries and involved in a wide range of value-adding activities, aspects which facilitated the generalisability of the findings. Based on a review of existing literature in the fields of international business and entrepreneurship, relevant prior theory was taken into consideration during this qualitative stage, particularly for developing the interview guide and analysing the qualitative data. Exploration into the topic of subsidiary OI and entrepreneurship (result of the qualitative research) assisted in the development of specific research hypotheses and the refinement of the purely theory-driven conceptual framework. Also, the findings of the case-study research provided significant input in the development of the survey instruments, which were used during the second stage of the research methodology.

The second stage involved conducting a *large-scale survey research*. While the exploratory case study research assisted in drawing research propositions on the under-investigated

theme of subsidiary OI, quantitative research allowed for statistical testing of the derived propositions. Also, given the increased requirement of this study for generalisability of findings, the use of a large-scale survey approach was deemed most appropriate. While research conducted on multinational subsidiaries tends to employ quantitative methods (e.g. Bartlett and Ghoshal, 1986; Birkinshaw et al, 1998), entrepreneurship research on OI has further stressed the need for future empirical work under quantitative studies (Ardichvili et al, 2003).

More specifically, a large-scale mail survey was conducted in 2,250 foreign-owned subsidiaries located in the UK. The sample was selected following the disproportionate sampling method from subsidiaries headquartered in the country-triad (U.S., Europe and Japan) given the increased relative contribution of such regions to the UK FDI stock levels. Quantitative data analysis primarily entailed hypotheses testing through multiple regression models, examining different sets of relationships between key constructs of this research. Given the nature of the conceptual model (involving multiple dependence relationships simultaneously), and the characteristics of the data collected (sufficient sample size and large number of constructs), the most topical structural equation modelling (SEM) approach was considered superior to regression analysis. Data analysis using the SEM method was conducted in order to test the entire model, including all sets of dependence relationships simultaneously. Results were compared across the two data analysis techniques and generalisable conclusions were drawn to address the research objectives of the study.

1.5 Main contributions of the study

The present thesis contributes at three main levels:

At a research level, it brings together notions from the fields of international business and entrepreneurship, seeking synergies in both disciplines. In particular, it develops a more holistic conceptualisation of subsidiary entrepreneurship and particularly focuses on the most topical phenomenon of subsidiary OI. Subsidiary-related and entrepreneurship literature are integrated under a resource-based view (RBV) of subsidiary OI, which by itself constitutes an innovative approach in terms of both subsidiary-related and entrepreneurship literature. This thesis contributes to subsidiary literature by identifying particular subsidiary-specific resources and capabilities, as well as elements of the parent-subsidiary relationship, that drive OI; and by establishing a positive link between subsidiary entrepreneurship and performance. This thesis contributes to entrepreneurship literature

through exploring the topical notion of OI, as well as its antecedents and consequences, at a firm-level.

At a managerial level, the present study provides key insights into the factors that are most likely to affect entrepreneurial phenomena at the subsidiary level, and more specifically the subsidiary's OI ability. It further highlights how such factors can influence subsidiary performance. As regards management at the corporate headquarters, it allows them to acknowledge particular subsidiary characteristics that could be more beneficial to the entire MNC.

At a policy-making level, the present study sheds light into particular environmental decisions that need to be considered in order to develop a population of “entrepreneurial subsidiaries”⁴ in the host country, and also to further encourage entrepreneurial activity and promote OI within existing foreign-owned subsidiaries.

1.6 Structure of the thesis

The present thesis comprises eight chapters that are structured as follows:

Chapter one briefly explains the background of the research and introduces relevant literature in the fields of international business and entrepreneurship, in order to present the research framework and related objectives of this study. It also provides a brief account of the methodological approach taken and the structure of the present thesis.

Chapter two provides an extensive review of international business literature on multinational subsidiaries that relates to the theme of subsidiary entrepreneurship. It commences with a brief outline of the main streams of MNC literature, pinpointing the concept of subsidiary entrepreneurship as a topical shift of attention within the “subsidiary-focused” research. It continues to explain the evolution of theoretical approaches underpinning these streams of literature, starting from traditional economic theories to the application of the resource-based approach at the subsidiary level. Drawing upon Birkinshaw and Hood's (1998) model of subsidiary development, this chapter suggests that three distinct theoretical approaches are relevant to exploring the theme of subsidiary entrepreneurship: “headquarter assignment”, “subsidiary choice” and “environmental determinism”. The first theoretical approach, highlighting elements of the parent-subsidiary and subsidiary-subsidiary relationship, is explained from a resource-dependence

⁴ Young et al (1994) have used the term “developmental subsidiaries” to refer to subsidiaries that can provide dynamic benefits for the host economy.

perspective. The second approach, based on the resource- and capabilities-based view of the firm (RBV), seeks to identify “unique” and “valuable” subsidiary-specific resources and capabilities that drive subsidiary entrepreneurship. The third approach draws on location theory to address environmental issues and their effect on subsidiary entrepreneurship. This chapter concludes by merging these three theoretical approaches under the RBV and proposes the resource-based framework as most appropriate for studying the particular theme of subsidiary entrepreneurship.

Chapter three provides an extensive review of entrepreneurship literature and particularly focuses on the notion of OI. It commences with a brief review of the views on opportunity that have been expressed throughout the years in order to provide a holistic definition of the notion of OI. It continues to analyse the different theoretical perspectives relating to OI: the “functional”, the “personality” and the “behavioural”, and further proposes a synthesis of perspectives under the RBV. Subsequently, a thorough review of relevant literature on corporate entrepreneurship and international entrepreneurship is provided to develop an integrative framework for studying firm-level OI. This framework incorporates two key sets of factors: specific resources and capabilities held at the firm level that might relate to an increased ability of identifying entrepreneurial opportunities, and also particular factors in the firm’s external environment.

Chapter four integrates literature in the distinctive fields of international business and entrepreneurship (reviewed in chapters two and four respectively) in order to examine the topical theme of OI within an entire new context, that of the multinational subsidiary. In particular, it highlights the significance of the theme of OI in both the subsidiary-related and entrepreneurship research, and synthesises relevant literature in the two fields to produce a resource-based framework for studying the particular theme of subsidiary OI. This literature-based preliminary framework facilitates exploration into the under-investigated notion of subsidiary OI and provides significant input to the exploratory case-study research.

Chapter five addresses methodological considerations of the present research. In particular, it commences with an analysis of the philosophical stance adopted by this study and justifies the particular selection of a “mixed methods” approach as most suitable for satisfying the research purposes. Subsequently, it presents the qualitative research process. After substantiating the appropriateness of the exploratory case-study method, it provides a detailed analysis of the procedures followed for case selection, collection and analysis of the multiple case-study data. The chapter concludes with a thorough examination of the

quantitative research process. In particular, the large-scale mail survey method is presented, with detailed reference to the development of the questionnaire, key sampling decisions and the procedures followed for quantitative data analysis.

Chapter six presents the findings of the exploratory case-study analysis that was conducted for purposes of *theory building* during the first stage of the research methodology. This chapter initially explores into the topic of subsidiary entrepreneurship and provides a more holistic conceptualisation of the notion, as a broader concept that can be relevant to all types of subsidiaries. Subsequently, the chapter focuses on the particular notion of subsidiary OI, as well as its antecedents and outcomes at the subsidiary level. It identifies specific factors in the subsidiary, corporate and environmental contexts that are proposed as key drivers of subsidiary OI. The chapter further suggests a positive impact of subsidiary OI on subsidiary entrepreneurial activity (entrepreneurial performance) and on overall subsidiary performance (through the intervention of entrepreneurial activity / entrepreneurial performance). This chapter concludes by presenting the refined conceptual model of OI in multinational subsidiaries and developing related research hypotheses.

Chapter seven presents the findings of the quantitative research, which was conducted for purposes of *theory testing*. This chapter focuses on two distinct multivariate data analysis methods for testing the hypotheses derived during the exploratory qualitative stage: multiple regression analysis and structural equation modelling (SEM). These two data analysis techniques are employed independently to test the proposed research hypotheses, as these have emerged through a synthesis of relevant literature and exploratory case-study analysis. While multiple regressions are run to test particular dependence relationships amongst the constructs of the conceptual model, SEM allows for testing the entire model simultaneously. Although the results of the two data analysis techniques to a great extent converge, some disparities are also accounted for. This chapter concludes with acceptance or rejection of the proposed research hypotheses and the development of a concrete model of subsidiary OI.

Chapter eight discusses the findings of the present study in relation to the defined research objectives. This chapter constructively merges prior theory and insights of the qualitative and quantitative analysis to draw generalisable conclusions regarding the antecedents and outcomes of subsidiary OI. The chapter concludes with a discussion of the implications of the research for literature in the fields of international business and entrepreneurship, for management at a corporate (MNC) and subsidiary level, and for public policy. Finally, it

acknowledges several limitations of the present study and proposes relevant directions for future research.

Chapter 2:

Literature on Multinational Subsidiaries: Subsidiary Entrepreneurship

2.1 Introduction

The purpose of this chapter is to provide an extensive review and evaluation of relevant literature on multinational subsidiaries that pertains to the topical but under-investigated theme of subsidiary entrepreneurship (Dimitratos and Jones, 2005; Boojihawon et al, 2007). Indeed, despite its criticality and the possible benefits for the entire MNC, the topic of subsidiary entrepreneurship has received inadequate research attention (Paterson and Brock, 2002; Young and Tavares, 2004; Birkinshaw et al, 2005).

The structure of the present chapter is as follows: *Section 2.2* provides a brief outline of the major streams that have emerged within the multinational subsidiary literature, pinpointing the concept of subsidiary entrepreneurship as a topical shift of research attention within the “subsidiary-focused” research. It then goes on to explain the evolution of theoretical approaches underpinning these streams of research, starting from traditional economic theories to the application of the resource-based perspective within the subsidiary context.

Section 2.3 introduces Birkinshaw and Hood’s (1998) widely accepted model of subsidiary development to identify three distinct sets of factors that might also drive entrepreneurial phenomena at the subsidiary level: *parent-related factors* under the “headquarter assignment” perspective, *subsidiary-specific factors* under the “subsidiary choice” perspective and *environment-driven factors* under the “environmental determinism” perspective. These three perspectives and their theoretical underpinnings are analysed in detail: the “headquarter assignment” perspective - essentially referring to aspects of the parent-subsidiary and subsidiary-subsidiary relationship - is examined drawing on the resource dependence theory (RDT); the “subsidiary choice” perspective is analysed following a resource-based view (RBV), integrating elements of the network perspective and organisational learning theory to identify particular “entrepreneurial” resources and capabilities held at the subsidiary level; the “environmental determinism” perspective is examined through a review and evaluation of traditional location theories and their more recent approaches.

This chapter concludes (*Section 2.4*) by integrating the above perspectives (i.e. the resource-dependence view of parent-subsidiary and subsidiary-subsidiary relationships, the resource-

based view of subsidiary-specific resources and capabilities, and the examination of traditional and dynamic environmental characteristics based on location theory) to provide a comprehensive resource-based framework of subsidiary entrepreneurship.

2.2 Development of the multinational subsidiary literature

This section reviews and classifies the main streams that have emerged within the subsidiary literature in order to introduce the notion of subsidiary entrepreneurship as a most topical theme within subsidiary-related research (Figure 2.1). It further explains the evolution of theoretical underpinnings behind these streams of research through identifying a respective shift from a “hierarchical” towards a “heterarchical” conceptualisation of the MNC, and from a parent-based towards a subsidiary-based focus (Figure 2.3).

2.2.1 Streams within the subsidiary literature

Most early literature on multinational subsidiaries essentially focused on the entire MNC as the unit of analysis or the parent-subsidiary relationship from a traditional hierarchical perspective (Figure 2.2). Research under the so-called *strategy-structure stream* focused exclusively on the strategies and structures of MNCs, while no explicit attention was paid to the individual subsidiary per se (Stopford and Wells, 1972; Egelhoff, 1982; Daniels et al., 1984). Studies under this stream essentially incorporated elements of organisational theory to establish a connection between strategy and structure, and acknowledged that MNC structures change over time to fit strategy. Most contemporary researchers acknowledged the need for global integration and local responsiveness simultaneously (Evans et al, 1989) and started proposing more flexible structures as alternatives to the traditional hierarchy. Bartlett and Ghoshal’s (1989) “transnational organisation” became widely accepted as the ideal design of the MNC.

Based on these grounds, literature espousing a traditional hierarchical conceptualisation of the MNC started shifting its attention from the multinational parent towards the parent-subsidiary relationship. Although studies under this *parent-subsidiary relationship stream* were the first to acknowledge the multinational subsidiary as a distinct entity, a traditional hierarchical approach was still followed (Figure 2.2). Research essentially examined issues of parental control on its portfolio of foreign subsidiaries, and centered around the themes of centralisation and formalisation of decision-making (Hedlund, 1981; Gates and Egelhoff,

1986), as well as coordination and integration across subsidiaries but from a corporate perspective, i.e. with the purpose of attaining corporate-wide benefits (Picard, 1980).

During the mid-eighties, another stream of research began to explore new conceptualisations of the MNC that brought to light more dynamic aspects of the parent-subsidiary relationship (Hedlund, 1986; Ghoshal, 1986), confronting many of the traditional assumptions of the hierarchical approach. Hedlund's (1986) view of the MNC as a "*heterarchy*" enabled a more holistic understanding of the subsidiary as a semi-autonomous entity within a differentiated system. This "heterarchical" conceptualisation of the MNC significantly deviated from the traditional "hierarchical" approach, in acknowledging the existence of lateral relationships within the multinational system and the dispersion of resources and decision-making throughout the MNC. Following a heterarchical approach, the *MNC process stream* drew on the strategy process literature to address issues relating to decision-making within the MNC. Unlike the previous approaches, this stream of research acknowledged that subsidiaries have access to distinctive resources and can often operate with more degrees of freedom than previously considered (Hedlund, 1994). In that respect, formal control was regarded as less important for controlling subsidiaries than management systems or cultural control (Prahalad and Doz, 1981; Hedlund, 1986; Kim and Mauborgne, 1993; Herbert, 1999). However, the primary unit of analysis within this stream of research was again the MNC as a whole and not the individual subsidiary (Figure 2.2).

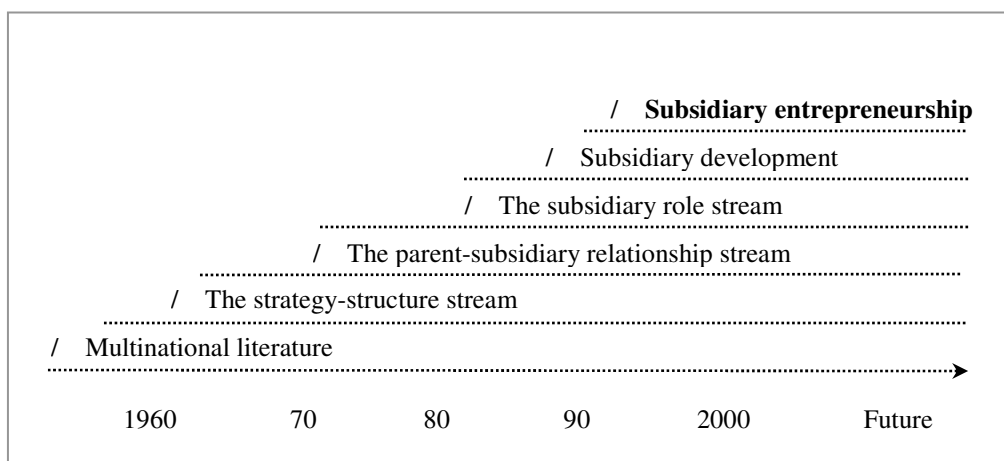
The important shift in emphasis towards the multinational subsidiary was evidenced under the *subsidiary role stream*. Following Bartlett and Ghoshal's (1986) study of innovation processes, much research sought to understand the different roles played by different subsidiaries. Underlying all this work was the assumption that the subsidiary is not just an instrument of the parent, but has unique resources and "certain degrees of freedom in shaping its own destiny" (Birkinshaw, 1994, p. 383). While White and Poynter (1984) were the first to explicitly consider the subsidiary's ability to take autonomous action within the multinational system, researchers have created various ways of classifying subsidiary roles based on different dimensions⁵ (e.g. Bartlett and Ghoshal, 1986; Jarillo and Martinez, 1990; Gupta and Govindarajan, 1991; Birkinshaw and Morrison, 1995; Taggart, 1997).

While literature on subsidiary roles largely considered that these were assigned by the parent corporation (Jarillo and Martinez, 1990; Gupta and Govindarajan, 1991), more recent research suggested that the subsidiary itself can have a significant influence upon its own

⁵ Some of these roles could be linked to the theme of subsidiary entrepreneurship and are presented explicitly in paragraph 2.3.1.2.

development. This concept of a subsidiary-initiated development was first considered by Prahalad and Doz (1981). Under the more topical *subsidiary development stream*, a key subsidiary objective was not only to improve its performance, but also to justify its own existence as an individual entity within the multinational system. As such, the subsidiary development stream has been mainly concerned with the evolution of subsidiary roles over time. In their innovative work, Birkinshaw and Hood (1998) explicitly examined the main factors driving subsidiary evolution. Of central importance in their model of subsidiary development is that the latter is essentially driven by factors internal to the subsidiary, as conveyed through initiative of subsidiary management (Birkinshaw, 1997; Birkinshaw et al, 1998), or by external factors, including either decisions and actions of the parent (Chang, 1995; Malnight, 1996) or external environmental conditions (Prahalad and Doz, 1987; Bartlett and Ghoshal, 1989). As will be explained in Section 2.3, this study relies heavily on Birkinshaw and Hood's (1998) model in order to examine the most topical notion of subsidiary entrepreneurship as a distinct path to subsidiary-driven development.

Summarising the above, Figures 2.1 and 2.2 depict the shift in research focus within the multinational subsidiary literature. Figure 2.1 presents the overarching streams of subsidiary-related research on MNCs, drawing heavily on Paterson and Brock's (2002) recent literature review. While this distinction might not be rigid, research under each stream builds to a great extent upon the work of the previous classifications⁶.



Adapted from Paterson and Brock (2002)

Figure 2.1: Development of the MNC Subsidiary Literature

⁶ Birkinshaw (1994) also espouses a similar classification of MNC subsidiary literature.

Figure 2.2 describes the change from a traditional hierarchical view of the MNC, represented by the strategy-structure and parent-subsidary relationship streams, towards a more heterarchical conceptualisation, signified by the MNC process school and studies on subsidiary roles and their evolution. Subsequent research moved along this approach of the MNC as a differentiated network, but the focus was set from the corporate (MNC) to the subsidiary level (Birkinshaw, 1994). More topical research follows the subsidiary development approach and deals with the subsidiary's distinctive capabilities as its engine of growth (Birkinshaw, 1996).

Figures 2.1 and 2.2 further introduce the notion of subsidiary entrepreneurship as a particularly topical field of study and an extension of research on subsidiary development. Indeed, entrepreneurship at the subsidiary level can be considered as an important driver of subsidiary evolution (Birkinshaw and Hood, 1998). However, as will be explained in the following sections, the notion of subsidiary entrepreneurship has only been studied to a limited extent (Paterson and Brock, 2002; Young and Tavares, 2004; Dimitratos and Jones, 2005; Birkinshaw et al, 2005; Boojihawon et al, 2007). Indeed, research on subsidiary entrepreneurship has essentially focused on the notion of “subsidiary initiative” (Birkinshaw, 1997, 2000), defined as a discrete entrepreneurial activity with international impact (Birkinshaw, 1997). Although this definition of subsidiary initiative acknowledges it as an activity that can take place within the context of the individual subsidiary, it tends to disregard entrepreneurial activities of limited-scope with implications for the individual subsidiary only (Birkinshaw and Ridderstråle, 1999). Consequently, an exclusive focus on the phenomenon of “subsidiary initiative” is considered too narrow to address the entire theme of subsidiary entrepreneurship. In that respect, there seems to be a clear gap in the subsidiary-related literature in terms of developing a more holistic conceptualisation and measurement of subsidiary entrepreneurship (Birkinshaw, 1997; Wright, 1999; Dess et al., 2003; Birkinshaw et al, 2005; Boojihawon et al, 2007).

In addressing this gap, and given the obvious link between subsidiary entrepreneurship and development, the present thesis draws heavily on previous empirical work on subsidiary evolution, and particularly on Birkinshaw and Hood's (1998) prominent model. Also, in examining the theme of subsidiary entrepreneurship, this study takes a “heterarchical” view of the MNC and particularly focuses at the individual subsidiary level, hence follows a “subsidiary-focused” approach.

As a final point, it should be clarified that the above categorisation in streams of subsidiary-related literature does not imply a similar evolution in theoretical approaches of the MNC.

An examination of relevant theories of the MNC and their advancement over time is the purpose of the following section.

		<i>Level of Analysis</i>	
		MNC	Subsidiary
<i>MNC Conceptualisation</i>	Hierarchy	Strategy-Structure	Parent-Subsidiary Relationship
	Heterarchy (network)	MNC process	Subsidiary Role / Development Subsidiary Entrepreneurship

Adapted from Birkinshaw (1994)

Figure 2.2: Classification of Streams of Subsidiary Literature

2.2.2 Evolution of theories applied to the multinational subsidiary

Early research on multinational organisations drew predominantly on economic theory to provide explanations for their mere existence. The economic theory of foreign production assumed that imperfections in intermediate markets provided the opportunity for foreign firms to build competitive advantages over their domestic counterparts (Buckley and Casson, 1976; Hymer, 1976; Dunning, 1980; Rugman, 1981). A great deal of these early MNC-related studies integrated the *transactions cost approach* in international business (Williamson, 1981; 1986) and emphasised that MNCs arise as an economically effective instrument for transferring resources across nations and minimising costs in international operations (Buckley and Casson, 1976). The transaction cost theory, as applied to the MNC context, essentially focused on the MNC level of analysis, and traditionally assumed that firm-specific advantages originated in the home country and were leveraged on a global basis. Dunning's (1980, 1988, 1993) *eclectic paradigm* further sought to explain the existence of MNCs in terms of ownership-specific advantages towards domestic competitors (O), location-specific advantages that favoured investment in the local country

(L), and intermediate market failures that supported internalisation over other forms of contractual arrangements (I) (Buckley and Casson, 1976; Rugman, 1981; Caves, 1982).

While these early approaches espoused a hierarchical view of the MNC, other theoretical perspectives, also based on economic grounds, were applied to explain the dyadic parent-subsidary relationship. In particular, *agency theory* (Jensen and Meckling, 1976) was employed to explain hierarchical control and delegation of responsibility from the parent to its subsidiaries. Applications of agency theory on the MNC essentially described parent-subsidary relationships through a principal-agent framework (Eisenhardt 1989; Nohria and Ghoshal, 1994). Within the MNC context, the parent, as the principal, delegated responsibilities and decision-making authority to foreign subsidiaries. Agency problems were resolved through corporate monitoring that basically deterred self-interested behaviour at the subsidiary level, or incentives aligning corporate and subsidiary goals (Jensen and Meckling, 1976).

Although studies employing agency theory acknowledged the subsidiary as an individual entity, they principally followed a “parent-focused” view of the MNC. Following the same rationale, more recent studies in MNC research tend to apply agency theory to explain MNCs foreign market entry decisions (Tihanyi and Ellstrand, 1998) and the design of compensation strategies for foreign subsidiaries (Roth and O’Donnell, 1996; O’Donnell, 2000). However, due to its “parent-focus”, agency theory has been generally considered most suitable for studying control at the corporate (MNC) level, while it has limited applicability to the subsidiary level of analysis (O’Donnell, 2000).

Another traditional theoretical approach, initially applied to the MNC level of analysis, has been the *resource dependence theory*. The resource dependence logic was originally employed to examine the strategic interdependencies faced by MNCs as entities competing for scarce resources in foreign market environments (Yuchtman and Seashore, 1967; Jacobs, 1974; Pfeffer and Salancik, 1978; Moran, 1985). Based on the premise that organisations are unable to generate all the required resources, dependency situations arose when MNCs relied on irreplaceable resources controlled by local firms (Aldrich, 1976; Pfeffer and Salancik, 1978). Though initially pertaining to the MNC level, the network conceptualisation of the MNC (Hedlund, 1986) revived theoretical interest in applying the resource dependence logic to examine relationships developed within the multinational system. Resource dependencies were not only defined by hierarchical relations, but also by lateral relationships amongst different entities within the MNC. In such a “heterarchical” structure, subsidiaries with critical resources and powerful positions could influence not

only their own activities but those of the rest of the MNC (Forsgren, 1989; Doz and Prahalad, 1993).

As such, the “*network*” approach of the MNC represented a clear shift away from a dyadic, “hierarchical” view, towards a more “heterarchical” consideration of the MNC, as a geographically-dispersed set of semi-autonomous entities. Though the roots of this theoretical approach can be found in the work of Prahalad (1976), Bartlett (1979) and Hedlund (1986), it was further revitalised through the application of network principles from other disciplines (e.g. Forsgren and Johanson, 1991; Ghoshal and Bartlett, 1990; Nohria and Eccles, 1992). While network thinking was initially applied at the MNC level to describe the organisation’s embeddedness in internal and external networks (Ghoshal and Bartlett, 1990; Forsgren and Johanson, 1991; Nohria and Ghoshal, 1997), the network perspective essentially emphasised the subsidiary as a node in a network rather than a subordinate entity. In that respect, the network approach essentially signified the beginning of the “subsidiary-focused” research. Following the same logic, more recent empirical work applied elements of the network approach to the subsidiary level (Birkinshaw and Hood, 1998; Gupta and Govindarajan, 2000) and considered both the subsidiary’s internal (e.g. Gupta and Govindarajan, 1991, 2000; Arvidsson, 1999) and external network (Andersson and Forsgren, 1995, 1996; Andersson and Pahlberg, 1996).

The network conceptualisation of the MNC also brought to the forefront the importance of the development and internal transfer of resources and capabilities residing in different geographical locations within the MNC (Ghoshal and Bartlett, 1990). The development of the *resource-based view* (RBV) of the firm (Wernerfelt, 1984; Prahalad and Hamel, 1990; Barney, 1991; Grant, 1991), a dominant perspective in strategic management, has offered great potential to the study of the MNC within the field of international business. The RBV considered firms as bundles of resources and capabilities that, under certain conditions, can generate competitive advantage (Barney, 1991). This theory was initially framed by Wernerfelt (1984), though its roots can be found in economic theory, and particularly the writings of Penrose (1959).

Consistent with the resource-based approach, the MNC was viewed as a network of resource transactions amongst organisational subunits located in different countries (Gupta and Govindarajan, 1991). Early research under the RBV considered that, in large part, an MNC’s strategy determined how these resource transactions were arranged amongst subunits. In that respect, most of the early research on MNCs focused on the corporate parent as the key actor in the multinational system, which was traditionally viewed as the

only source of capabilities within the MNC (Bartlett and Ghoshal, 1989; Roth and Morrison, 1990; Birkinshaw and Morrison, 1995; Dunning, 1995). However, other studies acknowledged that MNCs employed resources developed or acquired in one part of the firm to create competitive advantage in other parts (Ohmae, 1990; McEvily and Zaheer, 1999). Such studies acknowledged that foreign subsidiaries are critical to the international competitiveness of the MNC and constitute an important source of strategic resources (Gupta and Govindarajan, 1991; Roth and Morrison, 1992; Birkinshaw, 1996) and capabilities (Rugman and Verbeke, 2001).

In a similar vein, while traditionally firm-specific advantages were considered to arise in the parent corporation and subsequently transferred to its subsidiaries⁷, most topical research clearly suggested that MNC advantage can also originate at the subsidiary level (Rugman and Verbeke, 2001). Such advantages are essentially driven by resources and capabilities that are specifically developed and held at the subsidiary level (Birkinshaw and Hood, 1998; Rugman and Verbeke, 2001), and are most critical when made available to the rest of the MNC (Birkinshaw et al, 2005). Relevantly, Rugman and Verbeke (1992, 2001) introduced the notion of “subsidiary-specific” advantages⁸, as resource combinations that are difficult to diffuse internally, but can be exploited at an international level.

Espousing a heterarchical view of the MNC and focusing particularly on knowledge as a strategic resource, the *evolutionary theory of the multinational corporation* (Kogut and Zander, 1993), posited that the reason behind the MNC’s mere existence was its distinctive ability to absorb and disseminate knowledge within the boundaries of the firm. From such a standpoint of firms as repositories of knowledge, the MNC was viewed as a vehicle for creating, integrating and applying knowledge across its different locations. In this view, proposed as an alternative explanation to the traditional economic theory arguments (Williamson, 1979, 1981), the multinational firm arose not because of market failure in transactions involving knowledge but because of its superior ability to transfer knowledge and knowledge-related processes internally (Kogut and Zander, 1993; Madhok, 1997).

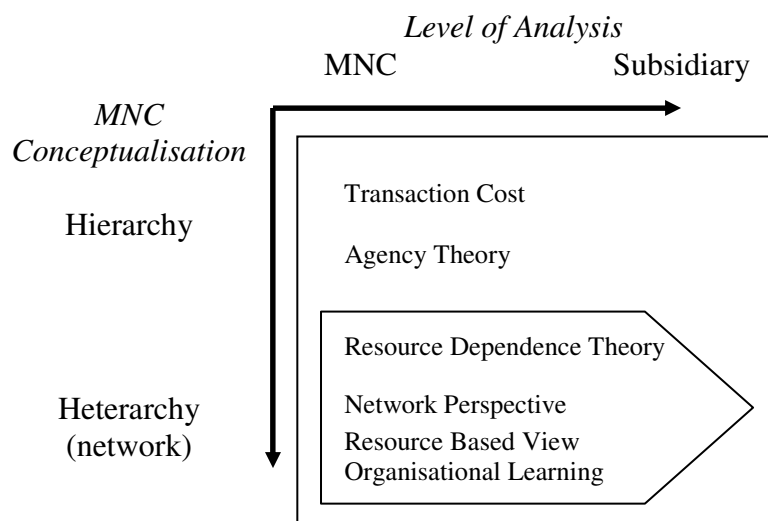
In line with the RBV, more recent literature viewed intra-firm learning as a mechanism for gaining competitive advantage (Birkinshaw et al., 1998). Knowledge acquired from other subsidiaries and internalised at the subsidiary level was assumed to create opportunities for generating new knowledge that is fed back into the multinational system, creating a “spiral

⁷ This has been the basic premise of the traditional transaction-cost based approach of the MNC, as explained above.

⁸ These are defined as advantages emerging through the interaction of ownership- and location-specific advantages (Rugman and Verbeke, 2001).

of knowledge” in the organisation (Nonaka and Takeuchi, 1995). Following the same rationale, most topical “subsidiary-focused” research tends to emphasise the importance of inter-unit learning within the MNC (Birkinshaw et al., 1998).

Figure 2.3 presents the evolution of key MNC theoretical approaches, which appears to follow chronologically the progression and development of mainstream theories and their application to the MNC context. Commencing with the more traditional economic theories, such as the transaction cost-based theory of international production, there has been a clear shift towards a more “heterarchical view” of the MNC, upon conceptualisation of the MNC as an interdependent network. As presented in Figure 2.3, the application of theories to the MNC context seems to be following a general shift from the most traditional “hierarchical” approaches towards the more topical “network-based” theoretical views. Simultaneously, there seems to be a change in focus from the MNC-wide to the subsidiary level of analysis. Indeed, within the network resource-based theory, the individual subsidiary is gaining considerable attention as an individual research object. Even within the more traditional economic theories, such as the transaction cost-based approach, there is a clear shift towards a more “subsidiary-focused” view of the MNC (Rugman and Verbeke, 1992, 2001) and an explicit intention of integrating the transaction cost approach with the resource-based theories (Foss and Foss, 2004).



Source: the author

Figure 2.3: Evolution of theoretical approaches

It is noteworthy that the aforementioned distinctive theoretical approaches applied to the MNC should not necessarily be considered conflicting, as they basically sought to address different research interests. More specifically, the transaction cost-based theory attempted to explain the reasons behind firm internationalisation; the agency theory focused more on the successful dyadic parent-subsidiary relationship; the network perspective sought to describe the inter-relationships between units of the MNC and the system in which it is embedded; the resource-dependence theory has mainly dealt with the power dynamics within the multinational system; the RBV has been mainly concerned with the development of internal resources and capabilities that can lead to competitive advantage; and the evolutionary theory of the MNC particularly focused on the development and transfer of knowledge as a strategic resource. Although some commonality is present amongst some of these theories (for example the transaction cost theory and the RBV tend to focus on the factors influencing the decisions and behaviour of firms, while the network and organisational learning perspectives focus on identifying and describing particular firm-level behavioural processes), alternative theoretical approaches are to a great extent independent of each other (Birkinshaw, 1994).

The present thesis espouses most current “subsidiary-focused” research in taking a “resource-based” view of the multinational subsidiary. As has been explained in the previous section, the particular notion of subsidiary entrepreneurship emerged as an extension of literature on subsidiary development, and hence incorporates an inherent focus on subsidiary-specific resources and capabilities (Birkinshaw, 1996, 1997; Birkinshaw and Hood, 1998). In fact, Birkinshaw and Hood (1998) have defined subsidiary evolution as the accumulation and depletion of subsidiary resources and capabilities that basically drive subsidiary roles over time. In addition, the resource-based framework and related “dynamic capabilities” approach (Grant, 1991, 1996; Teece et al., 1997) serve a more dynamic examination of firm-level phenomena, and hence appear particularly suitable for studying the theme of subsidiary entrepreneurship. Due to its intrinsic focus on resources, the resource-based view can also act as a unifying framework bringing together “heterarchical” perspectives of the MNC, such as the network and learning-based approaches, and apply these to the subsidiary level of analysis. This later point of the RBV as an integrating framework will be further discussed at the end of the present chapter (Section 2.4). Finally, a “resource-based” view of the individual subsidiary addresses a clear gap in subsidiary-related literature. While most topical research has acknowledged that subsidiaries can provide critical resources and capabilities to the entire multinational system (McEvily and Zaheer, 1999; Andersson and Forsgren, 2000; Holm and Pedersen, 2000; Rugman and

Verbeke, 2001; Frost et al., 2002; Andersson et al., 2002), the development of resources and capabilities at the subsidiary level has received inadequate research attention (Rugman and Verbeke, 2001; Schmid and Schurig, 2003).

2.3 Perspectives of subsidiary development and entrepreneurship

In their attempt to shed light on the processes that drive changes in subsidiary activities and the underlying subsidiary capabilities, Birkinshaw and Hood (1998) developed a model of subsidiary evolution. Their conceptualisation brought into the forefront three significant sets of factors upon which subsidiary development is dependent. These three distinctive sets include parent company, subsidiary and host country environmental factors⁹.

The first set of *parent company factors* draws upon an important stream of MNC literature that has traditionally focused on the “parental influence” on subsidiary behaviour and performance. The underlying assumption has been that parental control and allocation of power within the MNC system essentially determines subsidiary activities (Doz and Prahalad, 1981, 1984; Prahalad and Doz, 1987; Bartlett and Ghoshal, 1989; Roth et al., 1991). This stream of literature basically describes subsidiary roles as recipients and implementers of the multinational parent’s strategic choice and hence has been referred to as the “*headquarter assignment*” perspective. Early studies under this perspective essentially dealt with issues such as centralisation and formalisation of decision-making (Hedlund, 1981; Gates and Egelhoff, 1986), as well as coordination and integration across the MNC’s portfolio of subsidiaries (Picard, 1980), with the intention of achieving MNC-wide benefits (Hulbert et al, 1980). Parent-determined drivers of subsidiary development included factors such as the allocation of resources to the subsidiary level, changes in the subsidiary’s assigned charter and also the parent’s tendency to favour autonomy versus control (Bartlett and Ghoshal, 1986).

The second set of factors driving subsidiary development, particularly emphasised in Birkinshaw and Hood’s (1998) model, pertains to the individual subsidiary. Research under the so-called “*subsidiary choice*” perspective has clearly shifted the emphasis towards setting the multinational subsidiary as the primary unit of analysis. Since the support of the parent might not be sufficient for successful subsidiary development (Tallman, 1991; Madhok, 1997), subsidiaries need to develop resources and capabilities of their own in order to survive and grow (Young, et al., 1994). Of central importance to this “subsidiary-

⁹ The relevance of these three sets of factors has also been stressed by Paterson and Brock (2002).

focused” research is the idea that subsidiaries evolve over time through the accumulation of distinctive resources and the development of specialised capabilities (Prahalad and Doz, 1981; Hedlund, 1986). Subsidiary evolution is essentially driven by factors internal to the subsidiary, such as the subsidiary’s entrepreneurial posture and its own networks. In addition, a significant part of the “subsidiary-focused” research centers on the particular notion of subsidiary “initiative” (Birkinshaw, 1997), which in essence is a key manifestation of subsidiary entrepreneurship. The prominent concept of subsidiary initiative, mainly linked to the existence of subsidiary-specific resources and capabilities, will be more explicitly analysed in the following sections of this chapter.

The third driver of subsidiary development includes elements of the local environment, basically environmental opportunities and threats (Birkinshaw and Hood, 1998; Paterson and Brock, 2002), under an “*environmental determinism*” perspective (Hannan and Freeman, 1977; Aldrich, 1979). This set of factors incorporates both direct and indirect external influences. Subsidiaries operate in their own unique task environment, which determines or constraints their activities and to which they have to adapt in order to be effective (Ghoshal and Nohria, 1989; Ghoshal and Bartlett, 1990; Rosenzweig and Singh, 1991; Westney, 1994). The subsidiary’s local environment can thus have both positive and negative effects on subsidiary development and growth (Birkinshaw and Hood, 1998). The host country environment seems relevant both in the “headquarter assignment” and the “subsidiary choice” perspective, as it affects both the parental ability to add value to the local subsidiary, but also subsidiary-driven growth. Particularly within the “subsidiary focused” research, increased attention has been given to the fact that environmental variables of the host country affect the entrepreneurial and innovative capabilities of the individual subsidiary (Birkinshaw, 1999; Frost, 2001; Zahra et al., 2000).

Before going on to analyse the perspective taken by the present thesis, it is important to clarify that the three aforementioned perspectives - “headquarter assignment”, “subsidiary choice” and “environmental determinism” - should not necessarily be considered independently. In their conceptualisation of subsidiary development, Birkinshaw and Hood (1998) describe how these three mechanisms interact to determine subsidiary development. Studies written from the parent company perspective assume that parent-related factors are the most important drivers of subsidiary development (Chang, 1995; Malnight, 1996), those written from the subsidiary-focused perspective emphasise subsidiary initiative (Birkinshaw, 1997), while those from a regional development perspective highlight environmental aspects (Hood and Young, 1994). However, most studies acknowledge, to an extent, some influence from all these sets of factors.

The present thesis draws heavily on Birkinshaw and Hood's (1998) conceptualisation of subsidiary development, also espoused by more recent studies (Paterson and Brock, 2002), to examine the topical theme of subsidiary entrepreneurship. Given that the latter has been considered as an important path to subsidiary-initiated evolution (Birkinshaw and Hood, 1998), the study of entrepreneurial phenomena at the subsidiary level can be informed by relevant literature under the stream of subsidiary development (as described in Section 2.2.1). In line with such literature, underlying assumption of the present thesis is that entrepreneurship at the subsidiary level is to a large extent determined by subsidiary-specific resources and capabilities, but also influenced by aspects of the parent-subsidiary relationship and the external environment. *Hence, while this thesis mainly takes a "subsidiary-focused" view of the MNC, it also acknowledges and examines the importance of corporate – related factors (essentially relating to the parent-subsidiary and subsidiary-subsidiary relationships), as well as the external environment in promoting or impeding entrepreneurial phenomena.* The following paragraphs examine in detail these three sets of factors and their relevance to the particular theme of subsidiary entrepreneurship.

2.3.1 Aspects of the parent-subsidiary and subsidiary-subsidiary relationship

As mentioned previously, research espousing the "headquarter assignment" perspective considers the parent as the key actor in the multinational system (Daniels et al., 1984; Bartlett and Ghoshal, 1989; Roth and Morrison, 1990). Studies supportive of this view emphasise the allocation of activities and resources from the parent to its subsidiaries (Doz and Prahalad, 1981, 1984; Prahalad and Doz, 1987; Bartlett and Ghoshal, 1989; Roth et al., 1991). This allocation shapes both the internalisation of activities within the MNC and also the subsidiary's ability to take advantage of opportunities within its local environment. The "headquarter assignment" approach essentially explores facets of the parent-subsidiary relationship, but mainly from the parent's perspective (Birkinshaw and Morrison, 1995; Dunning, 1995).

Drawing on this approach and thus studying the parental influence on subsidiaries seems to be very relevant to studies of subsidiary behaviour and performance. Focusing on the particular theme of subsidiary entrepreneurship, characteristics of the parent-subsidiary relationship have been found to significantly affect entrepreneurial phenomena at the subsidiary level (Birkinshaw and Hood, 1998). Subsidiary initiative, a form of entrepreneurial activity at the subsidiary level, has been found to be suppressed by high levels of decision centralisation (Bartlett and Ghoshal, 1986), low levels of subsidiary

credibility within the multinational system and low levels of parent-subsidary communication¹⁰.

This section examines the relevance of aspects of the parent-subsidary relationship for studying subsidiary entrepreneurship through considering the power dynamics within the multinational system. While a stringent “headquarter assignment” perspective would argue for a merely “hierarchical” power configuration within the MNC, more recent approaches do acknowledge some subsidiary influence. In that respect, *the subsidiary’s relative power within MNC might also affect entrepreneurial phenomena at the subsidiary level*.

While literature on organisational power has provided a multiplicity of relevant definitions, this concept has essentially been described as comprising four basic elements: first, power has been generally link to some sort of *influence* over behaviours and outcomes (Pfeffer, 1981; Galbraith, 1983; March, 1995); second, power is *relative* to that of other actors in the system; third, power is *situational* (March, 1995), i.e. specific to the particular task or process in question; fourth, power is *socially constructed or enacted* (Berger and Luckman, 1967; Weick, 1979) in that it is subject to different interpretations. Also, while multiple sources of organisational power have been identified in relevant literature, these tend to be organised under two broad categories: *structural power* and *resource-based power*. While structural power essentially refers to legal authority (Weber, 1947), resource-based power is the result of control over valuable resources on which other organisations are contingent (Pfeffer and Salancik, 1974, 1978; March, 1995).

Though acknowledging the importance of both sources of organisational power at the subsidiary level¹¹, the present research mainly focuses on the resource-based aspect for various reasons. *First*, this assumption aligns with the definition of subsidiary power a notion that can be reinforced by but does not necessarily relate to formal and legitimate decision-making authority (Brooke, 1984). *Second*, while resources drive firm-level competitive advantage, in the particular context of the MNC such resources affect the entire resource balance of the system, depending on whether they are possessed or controlled by the parent company or individual subsidiaries. *Third*, the resource-based consideration of the multinational subsidiary is a topical approach that has received limited research attention, although particularly relevant to the dynamic notion of subsidiary entrepreneurship. *Fourth*, the particular focus on firm-level resources and, extending that on

¹⁰ The notion of subsidiary initiative will be explicitly examined under the “subsidiary choice” perspective.

¹¹ Structural power essentially emerges through “assigned” subsidiary roles and autonomy levels, while resource-based power accrues through exploitation of subsidiary-specific resources and capabilities.

firm-level capabilities, serves as a connecting link amongst different theoretical approaches within the context of the present study. This final point will be analysed explicitly at the end of this chapter.

2.3.1.1 Organisational power and resource dependence within the MNC

In considering the power dynamics within the multinational system from a resource-based power perspective, this thesis incorporates elements of the resource dependence theory (RDT) under a resource-based view of the multinational subsidiary. Indeed, the relevance of the resource-dependence approach for studying MNCs has been corroborated by many studies (Forsgren, 1989; Doz and Prahalad, 1993). The present section uses elements of the RDT to explain intra-MNC resource dependencies that essentially determine the subsidiary's power within the multinational system. The following paragraphs provide a brief overview of the RDT and subsequently apply it to the individual subsidiary level in order to examine the particular notion of subsidiary entrepreneurship.

The RDT views that organisational power is determined by resource dependence relationships that are developed among organisations. Hence, key assumption behind the resource dependence perspective is a competition for and sharing of scarce resources amongst organisational entities (Yuchtman and Seashore, 1967; Aldrich, 1979; Mindlin and Aldrich, 1975). Dependence situations essentially surface as a result of such competition and resource sharing¹². Three main factors have generally been associated with resource dependencies: 1) *resource importance / criticality to the operation and survival of organisations* (Thompson, 1967; Pfeffer and Salancik, 1978). This notion has been considered to relate to Jacobs's (1974) concept of "essentiality", borrowed from economic theory; 2) *resource scarcity / existence of alternatives to the resource* (Thompson, 1967; Pfeffer and Salancik, 1978). Relevantly, Jacobs (1974) has talked about "substitutability", suggesting that dependence is inversely proportional to the availability of essential resources; 3) *discretion over the resource's allocation and use* (Pfeffer and Salancik, 1978). Combining these three factors together, it has been suggested that maximum dependency (and therefore maximum power) occurs when an organisation has full discretion over a

¹² The term "resources", as traditionally used within the RDT, extends beyond physical resources and production inputs (such as natural resources, raw materials, local capital) to include infrastructure resources (e.g. transportation conditions), marketing resources (e.g. distribution networks and consumer base), and information resources (e.g., internet use, openness of public information) (Moran, 1985; Rosenzweig and Singh, 1991).

resource of high importance to another organisation, and there are no alternatives to that resource.

Originally, the resource dependence logic was employed to examine inter-organisational relationships. Early studies applying the RDT in the MNC context viewed MNCs as entities competing for scarce resources within foreign markets (Moran, 1985). MNCs experienced dependency situations when they relied on scarce resources controlled by local firms (Pfeffer and Salancik, 1978). Such external dependencies were alleviated through resorting to internal resources residing within the multinational system (Kobrin, 1982). The same view has also been shared by more topical research (Luo, 2003).

Recent studies have further employed the resource dependence logic to explain intra-organisational relationships (Harpaz and Meshoulman, 1997). The conceptualisation of the MNC as a differentiated network brought to light a multiplicity of relationships developed amongst the diverse entities in the multinational system. Internal resource dependencies between parent and subsidiaries and amongst subsidiaries themselves to a great extent determine intra-organisational power (Andersson et al., 2001). More specifically, dependence on resource exchanges with other organisational units reduces a particular unit's relative power (Emerson, 1962; Blau, 1964; Cook and Emerson, 1984; Pfeffer, 1981; Krackhardt, 1990). Applied to the multinational context, dependence of the MNC on resource exchanges with a particular subsidiary can increase the influence of the latter on the MNC's strategic decisions.

Although researchers espousing the traditional "headquarter assignment" perspective would emphasise the parent organisation's superior power within the MNC, applying the RDT to the intra-organisational context suggests that power based on the control of critical resources is multidirectional and can flow upwards, downwards or horizontally within the multinational system, e.g. from subsidiaries to the parent as well as the other way. The parent company may rely on its foreign subsidiaries for certain essential resources, thus is dependent, to varying degrees, upon its subsidiaries (Ghoshal and Nohria, 1989). Even early studies had stressed that, to become influential, a subsidiary must be involved in a system where the resource interdependencies between the units are important (Ghoshal and Bartlett, 1990). The possession of critical resources and the reliance of other intra-MNC entities on these resources provide for the subsidiary a position of power, which can be used to influence decisions and promote the subsidiary's individual interests (Andersson and Pahlberg, 1997).

2.3.1.2 Sources of power at the subsidiary level

Literature has identified two distinct sources subsidiary power (Forsgren and Pahlberg, 1992; Andersson and Pahlberg, 1997): the first is linked to the subsidiary's *involvement and interdependence in intra-organisational networks*, while the second relates to subsidiary's degree of *autonomy and independence*. Forsgren and Pahlberg (1992) have argued that, while network position can affect a subsidiary's ability to influence strategic decisions within the MNC, resource independence pertains to the subsidiary's ability to operate autonomously and thus avoid hierarchical control. The present study examines both sources of subsidiary power. On one hand, it focuses on intra-MNC interdependencies determined by resource flows from and to the individual subsidiary (also defining the subsidiary's role), and on the other hand it considers the enjoyed autonomy levels as indicators of the subsidiary's independence. Both of these concepts are investigated with respect to the theme of subsidiary entrepreneurship. The following paragraphs examine relevant literature that has linked subsidiary autonomy and subsidiary roles with subsidiary entrepreneurship.

Subsidiary autonomy

As argued above, researchers have identified subsidiary autonomy¹³ as a basis of power relating to the subsidiary's ability to achieve independence through avoiding parental control, but not necessarily to its ability of exercising control within the MNC (Andersson and Pahlberg, 1997). Autonomy may either be "assigned" by the parent, thus reveal legitimate authority, or "assumed" through subsidiary behaviour¹⁴ (Birkinshaw, 1997, 2000). While delegation of autonomy at the subsidiary level mainly takes place for strategic flexibility reasons (Gates and Egelhoff, 1986; Bartlett and Ghoshal, 1989), increased autonomy levels are often the result of internal subsidiary efforts (O'Donnell, 2000).

Attitudes towards autonomy have changed through time and across streams of literature (Young and Tavares, 2004). Analysis from the point of view of the MNC (espousing the "headquarter assignment" perspective) tends to consider issues of centralisation and control, whereas approaches from the subsidiary point of view (under the "subsidiary choice" perspective) focus on the subsidiary's efforts to increase autonomy (Birkinshaw et al., 1998; Hood and Taggart, 1999).

¹³ The notion of autonomy essentially refers to the subsidiary's freedom or independence in taking decisions on its own behalf (Young and Tavares, 2004).

¹⁴ This distinction can be linked to the previous differentiation between "structural" (Weber, 1947) and "resource-based" power (Pfeffer and Salancik, 1974, 1978; March, 1995).

Studies have generally linked the notion of autonomy to the subsidiary's innovative potential (Ghoshal and Bartlett, 1988; Jarillo and Martinez, 1990; Gupta and Govindarajan, 1994; Birkinshaw, 1997, 2000; Birkinshaw and Hood, 1998). "Subsidiary-focused" research has also considered autonomy as both a prerequisite and desired outcome of subsidiary development (Forsgren, et al., 1992; Birkinshaw and Morrison, 1995; Birkinshaw and Hood, 1998; Hood and Taggart, 1999; Paterson and Brock, 2002). In a similar vein, researchers have further posited that autonomous subsidiaries can increase their influence within the multinational system (Forsgren et al, 1992) and contribute towards firm-specific advantages (Birkinshaw et al, 1998).

Particularly with respect to the theme of subsidiary entrepreneurship, the concept of autonomy has been positively linked to the pursuit of entrepreneurial initiatives at the subsidiary level (Zahra, 1991; Birkinshaw, 1997, 2000). Nonetheless, although the concept of subsidiary autonomy has been the focus of numerous studies, recent papers call for further research attention (Young and Tavares, 2004), particularly with respect to establishing a link between link between autonomy and international entrepreneurship (Young, Dimitratos, and Dana, 2003).

Subsidiary role

The degree of dependence of the MNC on a particular subsidiary is determined in large part by the subsidiary's strategic role (Taylor et al., 1996). Therefore, viewed from a resource-dependence perspective, subsidiary roles can form a power base for the multinational subsidiary. As argued before, subsidiary roles can be "assigned" by the parent (Prahalad and Doz, 1981; Bartlett and Ghoshal, 1989), "assumed" through subsidiary initiative (Birkinshaw, 1997), or determined by environmental influence (Ghoshal and Nohria, 1989; Forsgren, Holm and Thilenius, 1997), while in most cases they are defined through an interaction of these three mechanisms. Enhanced subsidiary roles - such as "centres of excellence" (Frost et al., 2002) or "global subsidiary mandates" (Roth and Morrison, 1992) - inherently provide to the subsidiary increased influence within the multinational system (Forsgren, Holm, and Johanson, 1992).

Considerable research has linked subsidiary roles to the notions of innovation and creativity at the subsidiary level (Gupta and Govindarajan, 1994; Forsgren and Pedersen, 1998). Recent studies tend to particularly focus on "high contributory role subsidiaries" (Birkinshaw et al., 1998), which possess specialised resources, unique capabilities, and the required autonomy to play innovative roles within the MNC (Young and Tavares, 2004).

Nonetheless, despite having attracted increasing interest in recent years, empirical work within the area of subsidiary roles still remains limited (Gupta and Govindarajan, 1994; Andersson and Pahlberg, 1997). Also, although some of the dimensions used to identify subsidiary typologies can be linked to the notion of subsidiary entrepreneurship, no study has directly linked subsidiary roles to the latter concept.

Table 2.1 indicates subsidiary types with entrepreneurial potential, as these were identified through a relevant literature review, and based on dimensions that might relate to subsidiary-level entrepreneurship. For example, the notion of innovation has been widely accepted as an important element of entrepreneurship (Steensma et al., 2000; Zahra et al., 2000); unique subsidiary capabilities have been emphasised as key drivers of subsidiary entrepreneurial initiative (Birkinshaw and Hood, 1998); autonomy has been positively linked to innovation and subsidiary initiative (Birkinshaw, 1997; Birkinshaw and Hood, 1998); intra-organisational resource flows have been found to promote subsidiary innovation (Bartlett and Ghoshal, 1989).

Table 2.1: Subsidiary Types with Entrepreneurial Potential				
Author (s)	Nature of study	Focus	Variables linked to subsidiary-level entrepreneurship	Subsidiaries with entrepreneurial potential
Bartlett & Ghoshal (1986, 1989)	Empirical	Subsidiary	Subsidiary capabilities and strategic importance of local environment	Strategic leader
Ghoshal & Bartlett (1988)	Empirical	Subsidiary	Autonomy and ability to diffuse innovations through networks	Innovation creator
Gupta & Govindarajan (1991)	Conceptual	Subsidiary relative to other MNC units	Knowledge inflows vs outflows	Global innovator
Roth & Morrison (1992)	Empirical	Subsidiary	Competencies and Interdependencies	Global subsidiary mandate
Birkinshaw & Morrison (1995)	Empirical	Subsidiary relative to other MNC units	Autonomy and integration of activities	World mandate
Surlemont (1998)	Empirical	Subsidiary relative to other MNC units	Power and competency	Strategic centre of excellence
Randoy & Li (1998)	Empirical	Subsidiary relative to other MNC units	Resource inflows vs outflows	Resource networker
Nobel & Birkinshaw (1998)	Empirical	R&D subsidiaries	Unique subsidiary capabilities	International creator
Pearce (1999)	Empirical	R&D subsidiaries relative to other MNC units	Product innovation	Creative subsidiary
Ambos & Reitsperger (2004)	Empirical	R&D subsidiaries relative to other MNC units	Subsidiary capabilities (exploiting vs augmenting) and interdependencies	Centre of excellence

While Table 2.1 summarises subsidiary roles based on various dimensions that can be linked to the theme of subsidiary entrepreneurship, the present study examines subsidiary roles through focusing on intra-MNC knowledge flows due to the following reasons: *First*, a resource-based consideration of the multinational subsidiary (both from a resource-dependence and a resource-based view) aligns with the particular examination of knowledge as a strategic resource that can be transferred within the multinational system and generate superior power at the subsidiary level. *Second*, substantial literature highlights the importance of knowledge transfers as a reason for the multinational firm's very existence (Kogut and Zander, 1992, 1993; Tsai and Ghoshal, 1998; Tsai, 2001) and further identifies intra-MNC knowledge flows as sources of value creation (Gupta and Govindarajan, 2000; Frost, 2001). *Third*, adding to the fact that further empirical work is required on Gupta's and Govindarajan's (1991) subsidiary typology (Harzing and Noorderhaven, 2006), the concept of intra-MNC knowledge flows has not been considered with respect to the theme of subsidiary entrepreneurship. *Fourth*, the dynamic nature of knowledge flows fits well with the examination of entrepreneurial phenomena. Relevantly, Buckley and Carter (1996) have proposed that innovation within the MNC occurs through the integration of knowledge flows from diverse sources, i.e. "global synthesis".

The present study draws on Gupta and Govindarajan's (1991, 2000) framework of knowledge flows within the MNC. In accordance with Gupta and Govindarajan (2000), it essentially examines procedural types of knowledge that exist in the form of "know-how", rather than declarative "know-what" types of knowledge (Gupta and Govindarajan, 2000; Kogut and Zander, 1993; Simonin, 1999). The subsidiary's strategic role is essentially *defined by the magnitude and direction of such flows of knowledge within the MNC*. The magnitude of flows refers to the extent to which the subsidiary engages in knowledge transfers with other intra-organisational entities, and the directionality of the transactions indicates whether the subsidiary mainly provides or receives knowledge from other locations. An implied assumption in Gupta and Govindarajan's study (1991, 2000), based on the resource-dependence logic, is that these dimensions are determinants of the "criticality" of the resource (Pfeffer and Salancik, 1978). Greater reliance of the parent on "critical" knowledge residing at the subsidiary level tends to increase the subsidiary's power within the multinational system (Gupta and Govindarajan, 1991; Mudambi and Navarra, 2004).

Knowledge, as a resource, has generally been viewed as creating dependencies, hence having the potential to become a source of organisational power (Cyert and March, 1963; Nelson and Winter, 1982; Tregaskis, 2003). A great deal of literature has linked the

subsidiary's relative power and influence within the MNC primarily with the existence of large knowledge outflows to other organisational units (Andersson and Pahlberg, 1997; Mudambi and Navarra, 2004). However, Forsgren and Pedersen (1998, 2000) have further posited that greater subsidiary knowledge can increase the subsidiary's ability to influence MNC strategic decisions only to the extent that other units are able to assimilate and use it. Increased efforts in developing the subsidiary's own knowledge base can have a negative effect on the subsidiary's position within the MNC, if there are not coupled with transfers of knowledge to other intra-organisational units (Forsgren et al., 2000). Nevertheless, other researchers have suggested that strong interdependencies, i.e. when the subsidiary is both a "knowledge provider" and a "knowledge recipient" within the MNC, are more important indicators of subsidiary influence than weaker interdependencies, i.e. when the subsidiary is a "net provider" (Anderson and Narus, 1990; Anderson and Pahlberg, 1997).

2.3.2 Subsidiary influence: the 'subsidiary choice' perspective

Studies under the "subsidiary choice" perspective have particularly emphasised the subsidiary's entrepreneurial capabilities as a critical factor for successful subsidiary development (Birkinshaw and Hood, 1998). In that respect, an important part of the "subsidiary-focused" research has focused on the theme of subsidiary initiative (Birkinshaw, 1996, 1997). As Birkinshaw (1997, p. 207) has proposed, "an initiative is essentially an entrepreneurial process", "undertaken with a view to expanding the subsidiary's scope of responsibility" (Birkinshaw, 2000, p.8), that "leads to international responsibilities for the subsidiary" (Birkinshaw, 1997, p. 211).

Birkinshaw's (1996, 1997) prominent study of subsidiary initiative viewed the individual subsidiary as sitting at the interface of three markets: the local market, consisting of external entities in the host country, the internal market, comprising of the parent and the other subsidiaries within the multinational system, and the global market, including entities in the international arena. Accordingly, Birkinshaw (1997) identified four different forms of subsidiary initiative, defined by the locus of the market opportunity: local market initiative, internal market initiative, global market initiative and hybrid initiatives (i.e. opportunities pursued internally but with global scope). These four types of initiatives are either internally-focused, i.e. based on opportunities identified within the MNC and pursued through a traditional bottom-up process, comprising mainly internal and hybrid initiatives, or externally-focused initiatives, i.e. initiatives based on opportunities in the external marketplace, essentially including local and global initiatives (Birkinshaw and Ridderstråle,

1999). Irrespective of their type and focus, subsidiary initiatives have been associated with MNC-level advantages¹⁵ and concede to the individual subsidiary a broader role than previously considered (Birkinshaw, 1997).

Further research (Birkinshaw et al., 1998; Birkinshaw, 1999) sought to understand in depth the factors associated with subsidiary initiative. The relevance of the three distinct sets of factors driving subsidiary evolution was examined: subsidiary-related factors, aspects of the parent-subsidiary relationship, and characteristics of the external environment. Subsidiary initiative was found to be promoted by high levels of distinctive subsidiary capabilities, and suppressed by high levels of decision centralisation, low levels of subsidiary credibility and low levels of parent-subsidiary communication (Birkinshaw et al., 1998; Birkinshaw, 1999). Over time, initiative was considered to enhance the subsidiary's credibility towards the parent, promote parent-subsidiary communication and also augment the subsidiary's distinctive capabilities (Birkinshaw, 1999).

In examining the particular theme of subsidiary entrepreneurship, the present study relies significantly on the work of Birkinshaw and his colleagues on subsidiary initiative (Birkinshaw, 1997, 1999; Birkinshaw et al., 1998; Birkinshaw et al, 2005). However, Birkinshaw's definition of subsidiary initiative as a discrete entrepreneurial activity at the subsidiary level with international impact (Birkinshaw, 1997), tends to disregard entrepreneurial activities of limited-scope that have implications for the individual subsidiary only (Birkinshaw and Ridderstråle, 1999). Birkinshaw (1997) has referred to these latter subsidiary entrepreneurial activities as "trivial initiatives" (Birkinshaw, 1997, p. 211). However, literature on corporate entrepreneurship tends to consider a broader range of entrepreneurial activities, relating not only to the creation of new business activities, but also to the transformation and renewal of existing organisations (Stopford and Baden-Füller, 1994).

Consequently, although the above definition of subsidiary initiative acknowledges it as an activity that can take place within the context of the individual subsidiary, it is considered too narrow to address the entire theme of subsidiary entrepreneurship. *Therefore, there seems to be a clear gap in the subsidiary-related literature in terms of developing a more holistic conceptualisation and measurement of MNC subsidiary entrepreneurship* (Birkinshaw, 1997; Wright, 1999; Dess et al., 2003; Birkinshaw et al, 2005; Boojihawon et al, 2007). Examining the notion of entrepreneurship at the subsidiary level requires that it is

¹⁵ Subsidiary initiatives have the potential to enhance the MNC's local responsiveness, global integration and worldwide learning capabilities (Birkinshaw, 1997).

viewed as a broader concept that may be exhibited through various and different types of initiatives, irrespective of their nature (radical versus incremental), orientation (local versus international) and locus of the opportunity (internal versus external).

Also, literature on subsidiary initiative has tended to confine entrepreneurship to particular types of subsidiaries, for example excluding sales-only subsidiaries (Birkinshaw, 1997, 1999), and has largely focused on small samples of North American subsidiaries (Birkinshaw, 1997, 1999). Consequently, building concrete knowledge on the theme of subsidiary entrepreneurship requires a “comprehensive understanding of the initiative phenomenon in other MNC settings”, and “in a larger sample of subsidiaries from different countries” (Birkinshaw, 1997, p. 227).

In examining the notion of subsidiary entrepreneurship as a broader concept, this thesis takes a “resource-based” view (RBV) of the individual subsidiary. While Birkinshaw’s (1996, 1997) work on subsidiary initiative was one of the first to shed light on the significance of subsidiary-specific resources and capabilities (Birkinshaw, 1996, 1997, Birkinshaw and Hood, 1998; Birkinshaw, 1999), further academic work is still required to explore and explain the development of resources and capabilities at the subsidiary level (Rugman and Verbeke, 2001; Schmid and Schurig, 2003). The following paragraphs address more explicitly this issue.

2.3.2.1 A resource-based view of the multinational subsidiary

As has been explained in Section 2.2.2 the resource-based view (RBV) of the firm (Wernerfelt, 1984; Prahalad and Hamel, 1990; Barney, 1991; Grant, 1991), the dominant perspective in strategic management, has offered great potential to the study of the MNC. The RBV essentially considers firms as bundles of resources and capabilities that can generate competitive advantage (Barney 1991; Conner, 1991; Teece et al, 1997). *Resources* are stocks of tangible and intangible factors owned or controlled by the subsidiary¹⁶, that allow it to develop and employ capabilities in order to improve its efficiency and effectiveness (Daft, 1983; Barney 1991; Capron and Hullan, 1999). Resource-based theory postulates that competitive advantage stems from “unique” resources that create “value” in the marketplace. The “value” of a resource depends upon its efficiency and effectiveness, while “uniqueness” derives from resource rarity (i.e. no or few other firms have the particular resource), non-imitability (other firms cannot imitate or acquire it) and non-

¹⁶ Such factors may include assets, organisational processes, firm attributes, stocks of knowledge, human capital, etc.

substitutability (there are no equivalent resources available) (Barney 1991; Hunt and Morgan, 1995).

Capabilities are the subsidiary's capacity to deploy resources and combinations of resources, through an iterative process, in order to achieve intended ends (Amit and Schoemaker, 1993; Capron and Hulland, 1999). In that respect, capabilities link resources so that the latter can be employed in an advantageous manner (Day, 1994). Capabilities are deeply embedded in organisational routines and practices, hence cannot be traded or easily imitated (Rumelt, 1984; Wernerfelt, 1984; Dierickx and Cool, 1989; Barney, 1991; Conner, 1991; Day, 1994). Literature on firm-level capabilities has particularly focused on the so-called "dynamic capabilities" as key drivers of competitive advantage (Teece et al., 1997; Grant, 1996). These essentially relate to a dynamic enhancement of firm-level activities (Amit and Schoemaker, 1993; Teece et al., 1994; Hayes and Pisano, 1994), hence determine an organisation's ability "to learn, adapt, change and renew over time" (Teece et al., 1994, p. 20). This definition of "dynamic capabilities" fits particularly well with the dynamic nature of entrepreneurial phenomena¹⁷.

While MNC-related research traditionally focused on the corporate parent as the key source of capabilities and competitive advantage within the MNC (Bartlett and Ghoshal, 1989; Roth and Morrison, 1990; Birkinshaw and Morrison, 1995; Dunning, 1995), other studies also acknowledged that strategic resources and capabilities can exist at the periphery, i.e. within foreign subsidiaries (Gupta and Govindarajan, 1991; Roth and Morrison, 1992; Birkinshaw, 1996; Rugman and Verbeke, 2001). Nonetheless, limited attention has been given to the resource-based view of the multinational subsidiary, though Birkinshaw and Hood (1998) and Rugman and Verbeke (2001) are key exceptions. This deficiency can be partly attributed to inherent difficulties relating to the level of analysis: while the resource-based logic assumes that resources and capabilities are developed and held at a firm level, in the particular context of the MNC some resources may reside at the corporate, while others at the subsidiary-level (Birkinshaw, 1994). Hence, differentiating between parent and subsidiary-specific resources and capabilities might not always be an easy task, particularly for intangible resources and capabilities (Birkinshaw, 1994).

The present study aligns with "subsidiary-focused" research acknowledging the existence of distinctive subsidiary-specific resources and capabilities (Birkinshaw, 1996, 1997; Birkinshaw and Hood, 1998). Such resources and capabilities might to a large extent drive

¹⁷Nonetheless, literature has identified two other categories of organisational capabilities: these include functional capabilities (i.e. relating to a firm's functional activities) (Grant, 1991) and strategic capabilities (i.e. pertaining to the conception and implementation of strategy) (Barney, 1991).

entrepreneurial phenomena at the subsidiary level. For example, subsidiaries may engage in entrepreneurial activities to overcome limitations of their resources, to make their resources more valuable, or to employ their resources in unique ways (Birkinshaw et al., 2005). Also, given that capabilities reside in an organisation's corporate culture (Teece, 1982), a subsidiary's entrepreneurial posture might in essence comprise specific "entrepreneurial" capabilities.

From a resource-based perspective, a study of subsidiary-specific resources and capabilities should place considerable emphasis on the subsidiary's network embeddedness and knowledge as strategic resources. Alternatively, subsidiary networking - described as a tendency to develop business relationships and obtain resources through embeddedness in business networks (Granovetter, 1973; Gulati, 1998) - on one hand, and subsidiary learning - defined as a propensity to actively obtain and use knowledge (Moorman, 1995; Slater and Narver, 1995) - on the other hand, can both be viewed as critical subsidiary capabilities. The above logic implies that elements of the network perspective and organisational learning theory can be combined under the RBV and the related dynamic capabilities approach. The last section of this chapter (Section 2.4) comments more explicitly on how these theories can be linked together to provide a resource-based framework for studying the theme of subsidiary entrepreneurship.

2.3.2.2 Network embeddedness as a strategic resource

While the RBV has traditionally focused on internal firm resources (Wernerfelt, 1984; Dierickx and Cool, 1989; Barney, 1991), research has recently extended the resource-based approach to include inter-firm relationships as a source of firm-level competitive advantage (Håkansson and Johanson, 1993; Dyer and Singh, 1998; Srivastava et al., 1998). From a resource-based perspective, the subsidiary's network is created through a path-dependent process and is, therefore, idiosyncratic and difficult to imitate (McEvily and Zaheer, 1999; Andersson et al., 2002). While the subsidiary's network can be seen as a resource in itself (Andersson et al., 2002; Lecocq and Yami, 2002), it also provides to the subsidiary access to non-imitable and non-substitutable resources (Gulati, 1999; Gulati et al., 2000).

In considering the subsidiary's network embeddedness as a strategic resource (Andersson and Pahlberg, 1997), the present thesis incorporates elements of the network perspective (Granovetter, 1992; Gulati, 1998) under a "resource-based" view of the multinational subsidiary. In accordance with network theory, a corporation's business network consists of all actors that have a certain extent of influence on its activities (Forsgren and Johanson,

1992). In the particular case of the multinational subsidiary, assets in the form of relationships are developed with actors both inside and outside the multinational system (Ghoshal and Westney, 1993). However, an individual subsidiary maintains close, intense, and frequent relationships only with a limited number of network partners (Forsgren and Johanson, 1992; Holm et al., 1995; Håkansson and Snehota, 1997; Andersson and Forsgren, 2000). Subsidiaries maintaining such types of relationships are considered to be embedded in their business networks (Andersson and Forsgren, 1995, 1996). A resource-based approach of the multinational subsidiary would thus bring into light the importance of the subsidiary's network embeddedness as a strategic resource (Srivastava et al., 1998; Andersson et al., 2002; Lecocq and Yami, 2002), that is created through a path-dependent process and is, therefore, idiosyncratic and difficult to imitate (Dyer and Singh, 1998; McEvily and Zaheer, 1999; Andersson et al., 2002). In addition, through its embeddedness in business networks, the subsidiary has access to key resources and capabilities residing outside its restricted organisational boundaries (Gulati, 1999; Gulati et al., 2000; Andersson et al., 2002).

Literature on MNC subsidiaries has acknowledged the importance of the subsidiary's network for the creation of new knowledge and critical capabilities at the subsidiary level (Håkansson and Snehota, 1997; Andersson et al., 1999; Andersson et al., 2000; Schmid and Schurig, 2003). Subsidiary network embeddedness, as a strategic resource, and subsidiary networking, as a critical capability, have also been linked to subsidiary innovative behaviour (Von Hippel, 1988; Håkansson, 1989; Andersson et al., 2005). Topical research in the field of entrepreneurship further tends to consider network embeddedness as a key element of the entrepreneurial process (Jack and Anderson, 2002). Consequently, studying entrepreneurial phenomena at the subsidiary level requires a systematic examination of the subsidiary's networking activity and embeddedness in business networks.

As mentioned above, in considering the individual subsidiary as the unit of analysis, two distinctively different business networks need to be examined: the subsidiary's internal/corporate network, consisting of relationships developed within the multinational system, and the external network of the subsidiary, comprising relationships in the local and international markets (Andersson and Forsgren, 1995).

Internal (corporate) network

As supported by authors who conceptualise the MNC as an intra-organisational network (Hedlund, 1986; Bartlett and Ghoshal, 1989), a foreign subsidiary is embedded in intra-

MNC relationships. Andersson and Forsgren (1995, 1996) use the term “corporate embeddedness” to refer to intra-corporate relationships, i.e. a subsidiary’s relationships both with the parent company and with other MNC subsidiaries. Besides providing unique and valuable resources (Zaheer, 1995; Andersson et al., 2001; Miller and Parkhe, 2002), the corporate parent also plays an important role in subsidiary capability development (Schmid and Schurig, 2003). Subsidiaries further engage in important interactions with other subsidiaries within the multinational system (Forsgren et al, 1992; Forsgren and Pahlberg, 1992; Ghoshal and Bartlett, 1991), such as internal customers, internal suppliers and/or internal R&D units. These internal network partners can prove key sources of new knowledge and ideas (Bartlett, 1986) and thus enhance the subsidiary’s capabilities. However, recent research has suggested that other entities within the multinational network often appear to be less relevant than the parent (Asakawa and Lehrer, 2003).

External network

External partners are considered to be an increasingly important resource for the development of critical capabilities within the foreign subsidiary (Andersson and Forsgren, 1996; Andersson and Pahlberg, 1996; Andersson et al., 1999, 2002; Sölvell and Birkinshaw, 1999; Holm and Pedersen, 2000; Moore, 2001). External non-corporate network partners, including suppliers (Dosi, 1988; Lindstrand, 2003), customers (Håkansson, 1989; Laage-Hellman, 1989; Schmid and Schurig, 2003), distributors, research institutes (Taggart, 1989), professional organisations and regulators and other policy-makers, may play an important role as sources of innovation and new business practices (Von Hippel, 1988; Håkansson, 1989; Laage-Hellman, 1989; Powell et al., 1996; Tsai and Ghoshal, 1998). External relationships seem particularly relevant when the resources and capabilities provided by the parent do not satisfy the requirements of the local environment. Researchers have suggested that relationships with external partners are more important for the development of capabilities than internal corporate relationships (Ensign et al, 2000; Furu, 2000).

2.3.2.3 Knowledge as a strategic resource

Literature is increasingly considering knowledge as a strategic resource (Nelson and Winter, 1982) and the assimilation of specialised knowledge as the essence of organisational capabilities¹⁸ (Dierickx and Cool, 1989; Nonaka and Takeuchi, 1995; Conner

¹⁸ Knowledge refers to the ability of the firm to capture, integrate and use information to achieve intended ends (Autio et al., 2000).

and Prahalad, 1996). Recent work in the RBV distinguishes between “tangible” and “knowledge-based” resources (Kogut and Zander, 1992; Nonaka and Takeuchi, 1995; Conner and Prahalad, 1996). Knowledge-based resources generally pertain to the “manipulation” and “transformation” of tangible resources to generate value (Teece et al., 1997, p. 509), and are essentially defined by three properties: “tacitness”, i.e. the extent to which knowledge is codifiable (Polanyi, 1966; Nonaka and Takeuchi, 1995), “context specificity”, i.e. the extent to which knowledge is contextualised (Nelson and Winter, 1982), and “dispersion”, i.e. the extent to which knowledge is concentrated or dispersed (Weick and Roberts, 1993). From a resource-based perspective, firms represent “clusters” of both tangible and knowledge-based resources, which essentially generate firm-level value (Barney and Zajac, 1994; Teece et al., 1997).

The network conceptualisation of the MNC has brought to light the latter’s intrinsic ability to assimilate, integrate and create knowledge through its portfolio of subsidiaries (Bartlett and Ghoshal, 1989; Birkinshaw, 1997; Zander, 1999; Frost, 2001; Frost et al., 2002; Feinberg and Gupta, 2004). Indeed, exploiting locally generated knowledge on an international basis constitutes a major source of competitive advantage within MNCs (Ghoshal and Bartlett, 1990; Kogut and Zander, 1995; Nohria and Ghoshal, 1997; Rugman and Verbeke, 2001; Ambos et al, 2006). Hence, the implicit assumption is that knowledge creation can also take place at the subsidiary level¹⁹, through both internal (e.g. investments in R&D) and external (e.g. relationships with network partners) sources (Foss and Pedersen, 2002).

Consequently, a resource-based view of the multinational subsidiary would bring into light the importance of knowledge as a strategic resource, and the subsidiary’s propensity to actively obtain and use knowledge (Moorman, 1995; Slater and Narver, 1995) – i.e. the subsidiary’s learning orientation – as an important subsidiary capability (Nonaka, 1994). Extensive MNC literature has particularly focused on intra-firm learning as a key source of competitive advantage (Nonaka and Takeuchi, 1995; Szulanski, 1996; Birkinshaw et al., 1998) and firm-level innovation (Bartlett and Ghoshal, 1989; Lewin and Massini, 2003; Venaik et al., 2005). Consequently, a resource-based view of the multinational subsidiary should also examine the subsidiary’s learning orientation as an internal capability that can be linked to the theme of subsidiary entrepreneurship.

¹⁹ Knowledge creation by subsidiaries has been operationalised in various forms such as ‘world product mandates’ (Birkinshaw, 1996) and ‘centres of excellence’ (Holm and Pedersen, 2000; Frost et al., 2002)

2.3.3 Environmental influence on subsidiary activities

Early theories of organisational ecology assumed that organisational activity essentially reflects the characteristics of the environment in which it takes place (Aldrich and Pfeffer, 1976; Hannan and Freeman, 1977; Pfeffer and Salancik, 1978). MNC research has adopted this perspective by proposing that each subsidiary operates under a unique set of environmental conditions that significantly determine or constraint its activities (Ghoshal and Bartlett, 1991; Ghoshal and Nohria, 1989; Rosenzweig and Singh, 1991; Westney, 1994; Rosenzweig and Nohria, 1995), and to which it has to adapt in order to be effective (Birkinshaw and Hood, 1998).

Early studies linked the subsidiary's business environment to its role within the MNC (Bartlett and Ghoshal, 1986; Ghoshal and Nohria, 1989; Jarillo and Martinez, 1990; Rosenzweig and Singh, 1991). However, most of these studies tended to treat the environment in a rather general way, without specifically considering its complexity, dynamism or resource richness (Andersson et al, 2002). Also, while early research has typically focused on the role of the external environment in driving organisational change (Tushman and Anderson, 1986), little attention was given to the dynamic effect of the subsidiary's changing local environment on subsidiary capability development (Young et al., 1994). Most recent research has sought to address this gap, through stressing the importance of the local environment for subsidiary evolution (Birkinshaw and Hood, 1998), and also its significant role in determining the quality of resources and the competence level of foreign subsidiaries (Benito, 2000; Forsgren et al, 2000; Holm and Pedersen, 2000; Benito et al, 2003; Holm et al, 2003).

Consequently, studying the particular theme of subsidiary entrepreneurship as a key driver of subsidiary-initiated development requires the examination of factors shaping the subsidiary's external environment (Hood and Young, 1994; Birkinshaw and Hood, 1998; Hood and Taggart, 1999; Verbeke et al, 2007). Nonetheless, literature examining the effects of the external environment on firm-level entrepreneurship has mainly considered characteristics of the local environment (Ghoshal and Nohria, 1989; Jarillo and Martinez, 1990; Rosenzweig and Singh, 1991; Covin and Slevin, 1991; Porter, 1992; Bartlett and Ghoshal, 1993; Zahra and Covin, 1995; Zahra et al. 1997; Zahra et al, 2000). Similarly, research on subsidiary initiative has mostly examined characteristics of the host-country and the subsidiary's local market (Birkinshaw et al., 1998; Birkinshaw and Hood, 1998; Birkinshaw, 1999). Although both the subsidiary's local and international environments may influence its entrepreneurial activities (Zahra et al, 1999), and in dissimilar ways

(McDougall et al, 2003; Young et al, 2003), no research has explicitly differentiated local from international effects on subsidiary entrepreneurship (Dimitratos et al, 2004).

Consequently, a resource-based framework for studying the theme of subsidiary entrepreneurship should incorporate variables reflecting the potential significant impact of the subsidiary's external environmental, both local and international, on subsidiary-level resources and capabilities (Teece, 1986; Bartlett and Ghoshal, 1989; Luo and Peng, 1999). The following paragraphs examine the role of the environment in traditional and more topical international business literature.

2.3.3.1 The traditional location sub-paradigm

The importance of environmental influences on MNC corporate strategy and structure has been widely acknowledged in the international business literature (Prahalad and Doz, 1987; Bartlett and Ghoshal, 1989). Early studies generally acknowledged the relevance of favourable and munificent local environments for increased MNC resource commitment and national adaptation (Bartlett and Ghoshal, 1989). Nonetheless, early literature paid considerable attention to the importance of location advantages in determining the initial entry decisions of MNCs (Dunning, 1988; Mudambi, 1995), and tended to disregard the influence of environmental factors on the scope and competence level of subsidiaries (Benito et al., 2003).

The location decision of MNCs has traditionally been addressed in international business literature through the well-known "eclectic paradigm" proposed by Dunning (1977). Dunning's (1977) OLI paradigm provided an integrative approach for determining the extent and pattern of foreign-owned activity. This paradigm posits that multinational activities are driven by three sets of advantages, namely ownership (O), location (L), and internalisation (I). Ownership advantages are firm-specific advantages, originating from resources owned or controlled directly by the firm, hence constituting its "competitive strengths" (Rugman and Gestrin, 1993). Location-specific advantages are based on resources, networks, institutional characteristics, or other advantages that pertain to a country. Internalisation advantages emerge when a firm eliminates the transaction costs associated with market interactions through internalising specific activities (Buckley and Casson, 1976). In essence, the configuration of these three sets of advantages determines the MNC's decision to carry out foreign activities (Dunning, 1977, 1981, 1988, 1993).

Whilst acknowledging that the above three aspects may interact in influencing the MNC's location decision, the "environmental determinism" approach would mainly focus on the location sub-paradigm. Location- or country-specific advantages (L) are defined as "the national factor endowments of a nation" (Rugman and Gestrin, 1993). This sub-paradigm maintains that when the immobile, natural or created endowments of a foreign country are more favourable than those of a domestic location, MNCs will seek to expand and exploit their firm-specific advantages by undertaking foreign activities in the foreign country. Hence, key role of a host location in to enable MNCs to exploit their home country – based assets through drawing on complementary host country-based resources. Such host-country assets might include cost advantages, labour productivity, market size and potential, risk factors, the nature of competition, financial and taxation policies (Dunning, 1988).

Essentially, the location advantage element (L) distinguishes international from domestic organisations. Firms chose to internationalise when they perceive advantages in the transfer of moveable resources abroad and their combination with resources of the foreign country (Dunning, 1988). Nevertheless, certain disadvantages towards local firms might also be present. While MNCs tend to rely on advantages of scale in order to overcome such liabilities of foreignness, most recent research tends to focus on the mobility of knowledge and its combination with less mobile resources in foreign locations as a key source of firm-specific advantages (Dunning, 2000).

2.3.3.2 Recent approaches to the location decision

As explained above, the location behaviour of MNCs has traditionally been analysed in international business literature using Dunning's (1977) OLI framework. The eclectic paradigm has always recognised the importance of location advantages of countries as a key determinant of the foreign production of MNCs (Dunning, 1998). Nonetheless, the emergence of the knowledge-based economy has shifted the basis of advantage towards a firm's ability to create and manage a knowledge portfolio (Markusen, 1996; McCann and Mudambi, 2004). Hence, a more dynamic approach of the location decision should be followed (Dunning, 2000). More specifically, MNCs need to take into consideration not only traditional factor endowments, but also other important location factors, such as the accumulation of knowledge in a particular location (Enright 1991, 1998; Malmberg et al., 1996), the learning abilities of local, regional or national milieux (Markusen, 1996; Charles and Bradley, 1997), and spatially-related innovation (Nelson, 1993; Freeman, 1995; Antonelli, 1998; Sölvell and Zander, 1998).

Hence, while location-related theories initially sought to explain the location decision of firms, more recent studies have been mainly concerned with spatial concentration and clustering of economic activity (Porter 1994, 1996; Enright 1991, 1998). In that respect, the more dynamic aspects of a particular location have been brought into light, which are essentially combined with more traditional endowments to lead to the development of geographical clusters (Hill and Brennan, 2000). The geographical clustering of economic activity is to a great extent driven by innovation and technology spillovers (Saxenian 1994; Almeida and Kogut, 1997; McCann and Mudambi, 2004), and has generally been attributed to economies of agglomeration²⁰ (Marshall, 1920). Indeed, the role of spatially-related agglomerative economies is being increasingly recognised as an important source of firm-specific learning and innovating capabilities, hence rendering the location decision of firms a parameter of strategic importance (Dunning, 2000).

Consequently, given the relevance of location variables for the development of firm-specific knowledge-based capabilities, topical research has suggested the extension of the eclectic paradigm to incorporate elements of the resource and capabilities-based view of the firm (Madhok and Phene, 2001). Nonetheless, little attention has been given to spatial concentration and location-related factors in the resource-based view of the MNC, and more specifically in the resource-based view of the multinational subsidiary. In addressing this gap, the present thesis particularly focuses at the subsidiary level (while most location theory has taken a MNC-wide approach), and examines dynamic characteristics of the host-country location and the broader international environment.

2.4 Linking the three theoretical perspectives

As has been argued throughout this chapter, *the overarching theory upon which the present thesis will draw is the resource-based view (RBV)*. The other two approaches that facilitate theoretical development, namely the resource-dependence theory (RDT) to describe parent-subsidiary and subsidiary-subsidiary relationships, as well as elements of the location theory to consider environmental effects, both fit to the basic assumptions of the RBV. Thus, these two theoretical perspectives can be combined under the resource-based logic to provide a comprehensive theoretical framework that examines the under-investigated theme of subsidiary entrepreneurship. The following paragraphs explain the similarities between the three theoretical perspectives and their integration into a resource-based framework.

²⁰ Economies of agglomeration have been associated with the presence of externalities such as information spillovers, skilled local labour and local non-traded inputs (Marshall, 1920).

In particular, the RDT can be theoretically linked to the RBV, because of the similarity in the essence of their fundamental concepts (Medcof, 2001). According to the RBV, competitive advantages originate from “unique” and “valuable” firm-level resources and capabilities. As has been argued by topical research (Medcof, 2001; Luo, 2003), the concept of “value” in the RBV resembles to the notion of “importance” in RDT. From a resource-based approach, resources and capabilities are “valuable” when they drive competitive advantage at the firm level, and hence are “important” to the firm. The more important these are for firm competitive advantage, the more the firm depends on them and the more they provide a basis for relative organisational power. Along the same line of thought, the concept of resource “uniqueness” is very close to the concept of “alternatives” in RDT (Medcof, 2001). A unique resource can be the basis of organisational power, given that there are no or limited alternatives for it (Pfeffer and Salancik, 1978). Dependence of the MNC on exchanges of “unique” resources with a particular subsidiary can increase the influence of the latter on the MNC’s strategic decisions. As such, the development of subsidiary-specific resources and capabilities may increase the subsidiary’s power within the multinational system.

In addition, the focus on network embeddedness and networking (Forsgren, 1989), as well as knowledge and organisational learning as significant resources and capabilities held at the subsidiary level (Nonaka and Takeuchi, 1995; Bresnan et al., 1999) - supported by the RBV and related capabilities approach - can offer a more precise description of “critical” resources and capabilities than is usually the case in the RDT. Indeed, in the traditional resource-dependence literature, the environment and its resources are defined in terms of resource areas rather than dynamic business relationships and knowledge flows (Venaik et al., 2005). Nonetheless, the importance of intra- and inter-organisational network relationships and knowledge transfers are increasingly considered important sources of new capabilities and power (Forsgren and Pahlberg, 1992; Holm and Pedersen, 2000; Moore, 2001).

The “environmental determinism” perspective can also be linked to the RBV and the RDT. Under the RDT, external resource characteristics and environmental conditions, i.e. the environmental setting in which the firm acquires and exploits external resources, can affect the firm’s external dependence (Pfeffer and Salancik, 1978). From a resource- and capabilities-based view, these external resource characteristics and environmental conditions in which the firm builds, exploits and upgrades its resources and capabilities (Teece et al., 1997) essentially affect intra-firm resource development, allocation, and use. Hence, aligning resources and capabilities with environmental opportunities and threats

supports existing subsidiary competencies and reinforces the development of new critical capabilities (Bartlett and Ghoshal, 1989; Birkinshaw et al., 1998), i.e. can create stronger competitive advantage (Tallman, 1992).

It is obvious from the above analysis that elements of the resource-dependence and location theories can be integrated under a resource-based view of subsidiary entrepreneurship. While the resource-dependence logic essentially examines the influence of intra-MNC relationships (parent-subsidiary and subsidiary-subsidiary) on entrepreneurial phenomena at the subsidiary level, the latter may also be determined by dynamic characteristics of the external environment. Consequently, following Birkinshaw and Hood's (1998) approach, later espoused by Paterson and Brock (2002), three key sets of factors seem to be particularly relevant when studying subsidiary entrepreneurship: first, *subsidiary-specific resources and capabilities*; second, *elements of the corporate setting in which the subsidiary operates* (as defined by the parent-subsidiary and subsidiary-subsidiary relationships); and third, *characteristics of the subsidiary's external environment*. These three sets of factors essentially co-determine subsidiary entrepreneurship (Figure 2.4). Hence, a holistic framework for examining entrepreneurial phenomena at the subsidiary level should give considerable emphasis to each of these three sets of factors.

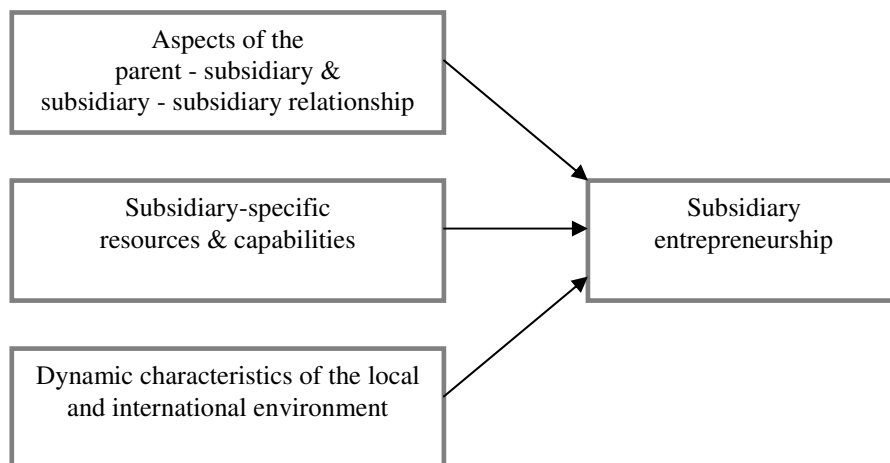


Figure 2.4: Framework for studying the theme of subsidiary entrepreneurship

2.5 Conclusion

This chapter sought to provide a review of the multinational subsidiary literature that relates to the theme of subsidiary entrepreneurship. In particular, the concept of entrepreneurship at the subsidiary level has been defined as a subsidiary-driven path to development. Drawing upon Birkinshaw and Hood's (1998) model of subsidiary evolution, it has been suggested that three distinct perspectives are relevant to exploring the theme of subsidiary entrepreneurship: "headquarter assignment", "subsidiary choice" and "environmental determinism". The first perspective, analysed through the resource dependence theory (RDT), highlights the influence of aspects determining the parent-subsidiary relationship on subsidiary entrepreneurship. The second perspective, based on the resource- and capabilities-based view of the firm (RBV), seeks to identify unique and valuable subsidiary-specific resources and capabilities that drive subsidiary entrepreneurship. Subsidiary networking and organisational learning are identified as strategic capabilities at the individual subsidiary level. The third perspective addresses environmental concerns and draws on location theory to examine environmental effects on subsidiary entrepreneurship.

In focusing at the individual subsidiary as the unit of analysis, the present thesis takes a "subsidiary-focused" view of the MNC. However, as has been argued in this chapter, factors identified within each of these three aforementioned perspectives, "headquarter assignment", "subsidiary choice" and "environmental determinism", need to be considered simultaneously in a holistic examination and conceptualisation of subsidiary entrepreneurship. As such, a comprehensive framework for studying entrepreneurial phenomena at the subsidiary level needs to consider the relative influence of three particular sets of factors: subsidiary-specific resources and capabilities, aspects of the parent-subsidiary and subsidiary-subsidiary relationship, and characteristics of the external environment. These three sets of factors can be integrated constructively under a resource-based view of the multinational subsidiary.

Chapter 3:

Literature on Entrepreneurship: Opportunity Identification within Entrepreneurial Organisations

3.1 Introduction

The previous chapter (Chapter 2) drew on subsidiary-related literature in international business to provide a detailed account of the factors that shape entrepreneurial phenomena at the subsidiary level. The present chapter goes one step further and focuses on the particular entrepreneurial phenomenon of opportunity identification (OI), theme which is both central to the field of entrepreneurship (Shane and Venkataraman, 2000; Gaglio and Katz, 2001; Ardichvili et al., 2003), and under-investigated within subsidiary-related research. Hence, the purpose of the present chapter is two-fold: *first*, to provide a thorough review and evaluation of entrepreneurship literature on OI, and *second* to apply this literature to the particular context of an entrepreneurial organisation.

The structure of the present chapter is as follows: It starts with a brief review of the perspectives on opportunity that have been expressed throughout the years in order to provide an integrative and comprehensive definition of the OI concept. It then goes on to analyse the different theoretical perspectives relating to OI - the “functional”, the “personality”, the “behavioural” and a synthesis of perspectives under the resource-based view (RBV) - along with the main factors that have been linked with the notion of OI under each perspective. Subsequently, the theme of OI is examined from a corporate perspective to identify key factors in the corporate entrepreneurship literature that could lead towards the development of a model of firm-level OI. The chapter concludes through applying this model to the context of an international entrepreneurial firm, drawing on relevant literature under the more topical domain of international entrepreneurship.

3.2. Views on entrepreneurial opportunity

Understanding and explaining the OI process is a critical research objective within the field of entrepreneurship (Shane and Venkataraman, 2000; Gaglio and Katz, 2001; Ardichvili et al., 2003). In establishing the domain of entrepreneurship research, Venkataraman (1997) stressed the need for a deeper understanding of entrepreneurial opportunities and their sources. Shane and Venkataraman (2000, p. 218) further defined the field of entrepreneurship as encompassing “*the study of sources of opportunities; the processes of*

discovery, evaluation, and exploitation of opportunities; and the set of individuals who discover, evaluate, and exploit them". Hence, the concept of opportunity lies at the heart of entrepreneurship research.

Nonetheless, the notion "opportunity" describes a wide range of phenomena that may initially appear shapeless, but become developed through time (Ardichvili et al., 2003). Opportunities may emerge as "imprecisely-defined" market needs, or "under-employed" resources and capabilities (Kirzner, 1997). In other terms, an opportunity can be defined as a possibility to satisfy a market need through a creative combination of resources that generates superior value (Schumpeter, 1934; Kirzner, 1973; Casson, 1982). Venkataraman (1997) relevantly posited that an entrepreneurial opportunity essentially consists of a set of ideas, attitudes and actions that drive the creation of new goods and services, for which there are no existing markets. More recently, Eckhardt and Shane (2003) defined entrepreneurial opportunities as "situations in which new goods, services, raw materials, markets and organising methods can be introduced through the formation of new means, ends, or means-ends relationships" (Eckhardt and Shane, 2003, p. 336).

The present section provides a brief overview of the views that have been expressed thus far with respect to entrepreneurial opportunity. Drawing upon different streams of economic literature pertinent to entrepreneurial opportunity, namely the market as an allocative process, the market as a discovery process, and the market as a creative process, Sarasvathy et al. (2003), based on the earlier work of Buchanan and Vanberg (1991), describe three distinctive but not mutually exclusive views on entrepreneurial opportunity. The three views, namely *the allocative view* (mainly relating to "opportunity recognition"), *the discovery view* (mainly relating to "opportunity discovery") and *the creative view* (mainly relating to "opportunity creation") model entrepreneurial opportunity as a function, a process or a set of decisions respectively (Sarasvathy et al, 2003).

The origins of the allocative process view lie in the equilibrium-based theories of economics (Arrow, 1962; Akerlof, 1970); the discovery process view is manifested in the asymmetric information approach taken by Austrian economists (Knight, 1921; Hayek, 1945); while the creative process is based on the notion of creativity in human behaviour (Schumpeter, 1934). Buchanan and Vanberg (1991, p.170) contrast the aforementioned three views of economic theory as follows: "the market as an allocative process, responding to the structure of incentives that confront choice-makers; the market as a discovery process, utilising localised information; or the market as a creative process that exploits man's imaginative potential".

The following paragraphs examine the theoretical foundations behind each of the three views of entrepreneurial opportunity: allocative, discovery and creative. As will become clear from the analysis below and more explicit in the following section, there is an obvious shift in theoretical development from the more static traditional “allocative view” to the more dynamic and topical “creative view”. Table 3.1 summarises the key assumptions underpinning each of the three views on entrepreneurial opportunity.

3.2.1 The allocative view: ‘opportunity recognition’

The most traditional view of entrepreneurial opportunity, drawing upon neoclassical economic theory, focuses on the allocative efficiency of markets and its implications for opportunity recognition (Sarasvathy et al., 2003). The allocative efficiency of markets essentially pertains to the optimal utilisation of scarce resources and hence considers opportunities as possibilities of reallocating and using existing resources in a more efficient manner (Sarasvathy et al., 2003). Allocative efficiency basically characterises perfectly competitive markets²¹ (Sarasvathy et al., 2003). Disequilibria are short-term phenomena of suboptimal resource allocation (Arrow, 1962), while markets are brought back to equilibrium through the “recognition” of profitable opportunities. Consequently, no opportunities are present at the equilibrium stage, since all resources have been optimally allocated.

As presented in Table 3.1, key assumptions behind the allocative view are: *first*, the focus on the system and not on individuals or firms; *second*, the availability and random distribution of information in the economic system, eliminating any systematic advantages derived from superior knowledge, and suggesting that opportunity recognition is a truly random process; *third*, the equilibrium state of markets, which is maintained in the long-run through the “recognition” of profitable opportunities (Sarasvathy et al., 2003).

Considerable debate within the allocative view has centered on the possibility of innovation. Given that the first does not allow for systematic information benefits, some researchers (Villard, 1958; Kamien and Schwartz, 1975) have viewed the potential for innovation as unlikely. Contradicting these views, Arrow (1962) argued that the incentive to innovate can exist even in perfectly competitive markets, and further proposed dispersed knowledge as

²¹ Perfectly competitive markets are markets where resources are optimally allocated to production and all economic agents have perfect knowledge about available alternatives.

the main cause of suboptimal resource allocation²² and market disequilibria that create opportunities. Nonetheless, the allocative view essentially views markets in more static terms, through focusing on the notion of equilibrium, and hence does not seem particularly suitable for studying dynamic entrepreneurial phenomena.

3.2.2 The discovery view: ‘opportunity discovery’

While the traditional allocative view perceives markets in static terms through the notion of equilibrium, the discovery view represents a more *dynamic approach* in considering the market process as a continuous supply of new information and a constant discovery of inaccuracies in prior expectations (Sarasvathy et al, 2003).

The discovery view draws on the conceptual work of Knight (1921), who emphasised the implications of uncertainty for economic action (Knight 1921; Hayek, 1945). In particular, this approach considers opportunities to arise from information asymmetries that create uncertainties regarding the true value of resources and the resulting value of their combination into outputs (Knight, 1921). Given that entrepreneurial opportunities depend on information asymmetries, entrepreneurs’ actions are not always infallible. Opportunity discovery is essentially a result of this inability to form accurate expectations about complex and dynamic situations²³ (Knight, 1921).

While the theoretical foundations of the discovery view lie on the earlier work of Austrian economists (Knight, 1921; Hayek, 1945, 1948), Kirzner’s (1973) conceptual contribution took the traditional “resource allocation perspective” one step further. Whilst Kirzner (1973) acknowledged that opportunities are discovered due to suboptimal resource allocation and as possibilities for resource redeployment (McGrath and Venkataraman, 1994), he further argued that “*it is the successful identification of relevant ends and means (rather than the efficient utilisation of means to achieve ends) which makes the ‘right’ decision*” (Kirzner, 1973, p.139). Kirzner’s (1979, 1997) theory of “entrepreneurial alertness” explained how individuals can benefit from knowledge and information gaps arising in the market, and further introduced the role of “surprise” in the opportunity discovery process²⁴ (Kirzner, 1997).

²² Arrow’s (1962) was to a large extent based on the earlier work of Austrian economists (Hayek, 1945; Knight, 1921), emphasising the random distribution of knowledge in the economic system.

²³ Situations calling for prediction are not obvious, since they are “enacted” by individuals (Weick, 1979).

²⁴ According to Kirzner’s theory, individuals are genuinely “surprised” when they discover unexpected opportunities (Kirzner, 1997).

As presented in Table 3.1, key assumptions behind the discovery view are: *first*, the focus is on the discovery process, *second*, this process is essentially driven by information asymmetries amongst economic agents, and *third*, opportunity discovery basically involves the identification of means and ends, rather than the efficient utilisation of new means to achieve given ends (Sarasvathy et al., 2003). In brief, the “Kirznerian view” of opportunity assumes that the imperfect nature of information gives rise to opportunities, which are essentially identified by entrepreneurs on the basis of informational advantages and through other complementary resources (Venkataraman, 1997; Kirzner, 2000; Sarasvathy et al., 2003).

3.2.3 The creative view: ‘opportunity creation’

As explained in the previous paragraph, the “opportunity discovery” perspective is largely based on the concept of uncertainty and its implications for economic activity. Knight (1921) emphasised a particular type of uncertainty, the so-called “true uncertainty”, i.e. uncertainty for which there is no existing distribution and thus no meaning in attaching probabilities to the opportunity vectors (Table 3.1). This conceptualisation of this “Knightian true uncertainty” provided the basis of the more topical “creative view” of entrepreneurial opportunity.

Indeed, the origins of the creative view are clearly more recent than the older views of the market as a “discovery process” and the even older and established view of the market as an “allocative process”. Buchanan and Vanberg (1991, p.170) argue that *“the perceptual vision of the market as a creative process offers more insight and understanding than the alternative visions that elicit interpretations of the market as a discovery process, or, more familiarly, as an allocative process”*.

The creative view relies heavily on the subsequent work of Schumpeter (1934), and thus has been referred to as “the Schumpeterian view” of opportunity. Schumpeter’s (1934) conceptual development assumed that opportunities emerge from the entrepreneur’s internal disposition to initiate changes in the economy. Entrepreneurs do not “discover” opportunities, rather they “create” them by capitalising on technological change and innovation, through a process of “creative destruction” (Schumpeter, 1934).

Drawing upon Schumpeter’s logic, the “creative” view essentially assumes that human behaviour can be inherently creative (Buchanan and Vanberg, 1991). Buchanan and Vanberg (1991) further argue that this perspective follows a “non-teleological” approach of

entrepreneurial opportunity, i.e. suggests that ends (final goals) cannot be defined a priori (see Table 3.1), rather they emerge through human activity (Buchanan and Vanberg, 1991). Following the same rationale, more recent empirical work on entrepreneurial activity (Sarasvathy, 2001) has led to the development of a similar “non-teleological theory” of entrepreneurship. This theory establishes an alternative to predictive (causal) rationality that underlies entrepreneurial decisions, namely “effectuation”. This paradigm essentially argues that opportunities do not pre-exist (either to be recognised or to be discovered), instead they are created through a process of dynamic interaction between actors in the economy, in their attempt to materialise their aspirations and values (Buchanan and Vanberg, 1991; Sarasvathy et al., 2003)

In that respect, Sarasvathy et al. (2003) propose that an advantage of the creative view is exactly this absence of a definite goal, suggesting that the outcome of the creation process is open to human activity. Rather than being discovered, new relationships between means and ends emerge through a process that generates new economic value. Sarasvathy et al. (2003, p. 156) relevantly argue that “*opportunities do not pre-exist - either to be recognised or to be discovered- instead they get created as the residual of a process*”. Hence, although elements of an opportunity may be discovered, opportunities themselves are created (Ardichvili et al., 2003). Based on the same assumption, the notions of creativity and entrepreneurship have often been used alternatively (Meyer et al., 2002; Winslow and Solomon, 1993), while other authors have defined “opportunity identification” as being an inherently creative process (Christensen, 1989).

Table 3.1: Views on Entrepreneurial Opportunity			
Views on Opportunity	The allocative view	The discovery view	The creative view
What is an opportunity	Possibility of putting resources to good use to achieve given ends	Possibility of correcting 'errors' in the system and creating new ways of achieving given ends	Possibility of creating new means as well as new ends
Focus	Focus on system	Focus on process	Focus on decisions
Approach to OI	Opportunities 'recognised'	Opportunities 'discovered'	Opportunities 'created'
Domain of application	When both supply and demand are known	Only one or the other (supply or demand) known	When both supply and demand are unknown
Distribution of opportunity vectors	Opportunity vectors are equally likely	Existent, but unknown probability of opportunity vectors	Probabilities for opportunity vectors are completely nonexistent
Assumptions about information	Complete information available at both aggregate and individual levels	Complete information at the aggregate level, but distributed imperfectly among individual agents	Only partial information even at the aggregate level, and ignorance is key to opportunity creation
Assumptions about expectations	Homogeneous expectations both at the micro and macro levels	Homogeneous expectations at the macro level; heterogeneous expectations at the micro level	Heterogeneous expectations at both micro and macro levels

Adapted from Sarasvathy et al (2003)

3.3 Opportunity Identification (OI) defined

The previous section (Section 3.2) provided Shane and Venkataraman's (2000) definition of the domain of entrepreneurship as encompassing "the study of sources of opportunities; the processes of discovery, evaluation, and exploitation of opportunities; and the set of individuals who discover, evaluate, and exploit them" (Shane and Venkataraman, 2000, p. 218). It is therefore clear that the process of opportunity identification (OI) lies at the heart of entrepreneurial activity. Entrepreneurial action originates from opportunities that are initially identified and subsequently exploited by individual entrepreneurs and entrepreneurial organisations; without this identification, entrepreneurial activity is suspended.

Despite its criticality, there seems to be little agreement amongst researchers as to how the particular notion of OI can be defined. In line with the three views on opportunity that were explicated in previous section (Section 3.2), OI can be described as a concept that encompasses three distinct processes: opportunity "recognition", opportunity "discovery"

and opportunity “creation” (Christensen et al., 1989; Conway and McGuinness, 1986; Singh et al., 1999).

1. *Opportunity recognition/perception* essentially refers to sensing or perceiving existing market needs and/or underemployed resources. When both sources of supply and demand exist, the opportunity for bringing them together has to be “recognised”.
2. *Opportunity discovery* pertains to the discovery of a “fit” between particular market needs and specified resources. When only one side exists (either supply or demand), the nonexistent side has to be “discovered”.
3. *Opportunity creation* refers to creating a new “fit” between needs and resources in the form of a new business concept. When neither supply nor demand exist in an obvious manner, then one or both need to be “created” (Hills, 1995; De Koning, 1999).

The aforementioned three processes are distinct in nature but not mutually exclusive. Table 3.1 contrasts the three views of opportunity and the resulting approaches to OI as recognition, discovery and creation respectively. Approaches based on the view of the market as an allocative process emphasise the “recognition” of opportunities in terms of improved utilisation of given means to achieve given ends; approaches based on the view of the market as a “discovery process” emphasise the discovery of possibilities to correct “errors” in the system as new ways to achieve given ends; and finally, approaches based on the view of the market as a “creative process” emphasise human behaviour that creates new means and new ends.

Sarasvathy et al. (2003) have proposed a way to integrate these three views through acknowledging their context-dependence. In other words, each view of opportunity and OI is most appropriate under different conditions, problems and decision parameters. For example, when resources are clearly specified and goals are given, the “allocative” view would fit better. In contrast, when the situation is characterised by great uncertainty and ambiguity, a “creative” approach might be more suitable. In essence, Sarasvathy et al. (2003) argue against the superiority of any one of the three views. Nonetheless, Buchanan and Vanberg (1991) had previously argued in favour of the “creative” view, explaining that it offers a more profound understanding of entrepreneurial opportunities. The superiority of the “creative” view might originate (as explained previously) from its non-teleological approach of entrepreneurial opportunity (i.e. the OI process is open to human activity).

Relevantly, Ardichvili et al (2003) recently argued that the “creation” of a business concept that matches market needs with resources must logically follow both a “perception” and

“discovery” of the respective needs and resources. As such, these authors consider “creation” as a notion superior to “perception” and “discovery”, in that it involves redirecting and recombining resources in order to create and deliver greater value. In that respect, “opportunity creation” has been linked more closely to “radical innovation” than the other two approaches (Ardichvili et al., 2003).

The present thesis defines the notion of OI as encompassing two distinct but not mutually exclusive processes: “*opportunity discovery*” (i.e. the Kirznerian view) and “*opportunity creation*” (i.e. the Schumpeterian view). This definition of OI is based on various reasons: *First*, the static nature of the “allocative view” (Kirzner, 1973; Schultz, 1975), based on the equilibrium assumption, seems rather restrictive in examining entrepreneurial phenomena. In contrast, the two more topical approaches of “opportunity discovery” and “opportunity creation” are more dynamic in nature, given that they explain the identification of new means, ends and/or new means-ends relationships (Shane and Venkataraman, 2000). *Second*, while the “allocative approach” takes the existence of markets as given, the two subsequent views explain the emergence of markets as an outcome of entrepreneurial activity (Casson, 1998). *Third*, this study refers to the identification of “entrepreneurial” opportunities. Accordingly, Lee and Venkataraman (2006) contrast “entrepreneurial” with “non-entrepreneurial” opportunities in that the former generally involve higher levels of uncertainty. Hence, this study acknowledges that the dynamic approach of OI as “discovery” and “creation” is more suitable for addressing high levels of uncertainty than the static “allocative” view. Fourth, as will be more explicitly analysed in Section 3.6, the theoretical underpinnings of the “discovery” and “creation” view can be integrated under the resource-based view (RBV), which is the main theoretical focus of the present thesis.

In brief, the present thesis considers OI as encompassing both the “discovery” and the “creation” of entrepreneurial opportunities. The difference between opportunity “discovery” and opportunity “creation” has been paralleled in entrepreneurship literature to the difference between “causation” and “effectuation” (Sarasvathy and Simon, 2000; Sarasvathy, 2001; Sarasvathy, 2003). Whereas “causation” basically involves a selection amongst given alternatives, “effectuation” is mainly concerned with the generation of the alternatives themselves. The “opportunity discovery” view assumes that opportunities can lead to the achievement of given “ultimate ends”, whereby entrepreneurs discover and correct “errors” through their entrepreneurial activities (Buchanan and Vanberg, 1991; Sanz-Velasco, 2006). In comparison, the “opportunity creation” view assumes that “ends” are not given beforehand, but are essentially “created”. As such, the “creative” view has

often been linked to more radical innovation than the “discovery” view (Ardichvili et al., 2003).

3.4 Theoretical perspectives on Opportunity Identification

A thorough examination of the entrepreneurship literature reveals several dominant theoretical perspectives that have profoundly influenced the scope and legitimacy of existing research (Stevenson and Sahlman, 1989). Most early approaches of entrepreneurship originated from the field of economics and were mainly concerned with conceptualising the entrepreneur’s interaction with the economic environment (Casson, 1982; Hebert and Link, 1988). These theoretical approaches essentially described the notion of entrepreneurship as an economic function, hence comprised the “*functional perspective*”. Subsequent entrepreneurship research was dominated by increased efforts to define the individual entrepreneur through identification particular “entrepreneurial traits”. Key premise behind this “*personality perspective*” was the assumption that entrepreneurs are characterised by a unique set of stable personality attributes that essentially predispose them to entrepreneurial activity (Greenberger and Sexton, 1988). Nonetheless, the focus on particular personality characteristics has received intense criticism over the recent years (Gartner, 1988; Shaver, 1995), primarily because it represents a static approach to entrepreneurship. Most recently, a valid attempt to explain dynamic entrepreneurial phenomena has been provided by the “*behavioural perspective*”. As Gartner (1988) had earlier suggested, research should not concentrate on who entrepreneurs are, rather on what they do. Nevertheless, from a “*behavioural perspective*”, an entrepreneur’s personality characteristics may be acknowledged as supplementary to entrepreneurial behaviour.

This section presents the theoretical perspectives that have emerged in entrepreneurship literature, the *functional*, the *personality* and the *behavioural perspective*, and relates these to the particular theme of OI. However, as will be more explicitly analysed in Section 3.6, these three perspectives can be combined under a more integrative approach that holistically captures the theme of OI.

3.4.1 The functional perspective

Early theoretical approaches of entrepreneurship drew on economic theory to explain entrepreneurial activity as an economic function (Casson, 1982). The “entrepreneurial function” essentially encompassed activities and behaviour characteristic of

entrepreneurship. The focus of this “functional” perspective has been the entire economic environment (Coase, 1937), while entrepreneurial phenomena were explained on the basis of the entrepreneur’s interaction with the economic system (Knight, 1921; Casson, 1982).

The standard neoclassical approach to entrepreneurship suggested that opportunities are independent of the entrepreneur (Shane, 2000) and therefore available to everyone. Given the random distribution of knowledge in the economic environment (Hayek, 1945), entrepreneurial phenomena were understood on the basis of costs for collecting information and relevant incentives (Casson, 1998). In that respect, economic actors were viewed as having different costs (Amit et al., 1993), and different incentives to identify disparate opportunities (Bull and Willard, 1993), based on economic conditions.

Consequently, entrepreneurial activity is explained within the “functional perspective” through considering costs relating to particular entrepreneurial decisions (Casson, 1995), as well as respective incentives and rewards. The following paragraphs explain how cost-related and incentive-based theories can be linked to the theme of entrepreneurship in general and OI in particular.

Transaction costs and entrepreneurship

The traditional transaction cost theory of economics was built on the aforementioned assumptions of information subjectivity and uncertainty in economic activity (Williamson, 1975, 1985). Since information is dispersed throughout the economic system (Hayek, 1945), different actors will perceive different costs and therefore have differing expectations about the value of an opportunity. Therefore, traditional transaction cost theory seems primarily relevant in explaining the pursuit of particular opportunities versus others, by focusing on their respective transaction costs.

Nonetheless, more recent research has further linked transaction costs with entrepreneurship in general and entrepreneurial discovery in particular. Foss, Foss, Klein and Klein (2006) developed the concept of “entrepreneurship as judgment”, which is essentially driven by the existence of transaction costs. This view originates from early considerations of entrepreneurial phenomena in economics (Knight, 1921; Mises, 1949; Casson, 1982). Entrepreneurship is perceived as judgmental decision-making under conditions of uncertainty. Judgment essentially refers to making decisions when the range and likelihood of possible outcomes is unknown (what has been previously referred to as “Knightian uncertainty”). The notion of entrepreneurship as judgment implies an obvious link with transaction cost economics. Given that economising in transaction costs influences resource

value (Foss and Foss, 2005; Foss et al, 2006), entrepreneurs are expected to actively search for new ways of reducing transaction costs. The same authors acknowledge that entrepreneurship involves more than reducing transaction costs (Foss et al, 2006; Kim and Mahoney, 2006), such as identification of opportunities with value-creating potential (Conner, 1991). Yet, Foss et al (2006) argue that these two aspects, i.e. reducing transaction costs and dynamic search for new resource uses, are highly interrelated.

The conceptual work of Foss et al (2006) further suggests that transaction costs can be neatly linked to entrepreneurial discovery. An economy that is initially in a state of equilibrium, thereby entrepreneurial activity has ceased, is disordered by an unanticipated event (Hayek, 1945). When transaction costs (such as contractual costs, costs of searching for alternative partners, etc.) are present, adjustments to reach the equilibrium are not instantaneous (Barzel, 1997). Rather, entrepreneurs themselves equilibrate markets through the identification of opportunities. Foss et al (2006) conclude that economising on transaction costs and entrepreneurship are intertwined, while transaction costs essentially shape the process of entrepreneurial discovery.

Agency theory and incentive structure

In neoclassical economics, entrepreneurs are viewed as maximising agents with bounded rationality (Williamson, 1975, 1985), while entrepreneurship is the outcome of exogenous differences across agents (individual heterogeneity), and/or of the incentive system (agents encountering different incentives). Agency theory can thus prove useful in examining entrepreneurial phenomena.

Agency theory describes firm characteristics based on the extent of congruence in the incentives of principals and agents (Jensen and Meckling, 1976; Holstrom and Tirole, 1989). Thus, agency theory relies on incentive structures instead of costs for explaining firms. The building blocks are similar to those of transaction cost economics, as explained above. Entrepreneurial opportunities arise when information is distributed asymmetrically across individuals (Hayek, 1945) and entrepreneurial agents transform informational advantages into opportunities. Given information asymmetry, uncertainty, and conflicting objectives, appropriate incentive structures can promote or suppress the identification of entrepreneurial opportunities²⁵.

²⁵ For example, due to information asymmetry, principal - agent conflicts, and misaligned incentives, individuals may have an incentive to discover or create particular opportunities but not others.

At an organisational level, an existing firm may not have the right incentive structure to promote OI or may prefer not to incur the costs of changing an existing incentive structure to address new opportunities. Jones and Butler (1992) have suggested that solving internal agency problems, i.e. aligning interests between principals and agents through appropriate incentive structures, can promote firm-level entrepreneurial activity. The same authors identify decreasing returns to entrepreneurship, with increasing organisational complexity, due to the agency costs of organising additional transactions within the firm.

Extrinsic motivation

Much of the literature combining economics and entrepreneurship also relies on extrinsic motivation (i.e. financial reward) as a key factor driving entrepreneurial activity (Baumol, 1990; Langan-Fox and Roth, 1995; Kuratko et al, 1997). Potential financial reward is the possibility of financial gain that motivates particular individuals to identify opportunities (Venkataraman, 1997). Schumpeter (1961) had already acknowledged financial reward as an important motive for involvement in entrepreneurial activity. Abbey and Dickson (1983) found the level of rewards to positively relate to number of undertaken innovations. Campbell (1992) further proposed an economic theory of entrepreneurship, in which individuals become entrepreneurs on the basis of the related economic benefit. In addition, research has suggested a positive association between financial reward and creativity (Woodman et al, 1993), while creativity has been strongly linked to innovation (Cummings and O'Connell, 1978). In a similar vein, Shepherd and DeTienne (2005) recently posited that the anticipation of financial benefits can enhance an individual's ability to generate a greater number of opportunities.

3.4.2 The personality perspective

More recent research on OI has moved away from the traditional "functional" approach to consider the entrepreneur's personality characteristics as the key driver behind OI. Within this "personality perspective", researchers have tried to identify particular personal traits that characterise successful entrepreneurs (McClelland, 1961; Timmons, 1999). Kirzner (1973) introduced the notion of "entrepreneurial alertness" as a special predisposition to perceive changes and identify related opportunities. Venkataraman (1997) and Shane (2000) later stressed how prior knowledge and experience might explain why some individuals, and not others, identify opportunities.

The personality perspective has drawn to a great extent on psychological theory. Traditionally, research on the psychology of entrepreneurs focused on the cognitive traits, such as risk propensity, need for achievement, and self-confidence, that may differentiate entrepreneurs from non-entrepreneurs (McClelland, 1961; Brockhaus, 1980; Begley and Boyd, 1987; Shaver and Scott, 1991; Forlani and Mullins, 2000). Empirical studies focused on identifying such distinctive psychological traits, however, seem to have failed in producing convincing results (Brockhaus and Horowitz, 1986; Low and MacMillan, 1988). More recently, research has shifted attention from the cognitive traits to the cognitive processes and mechanisms, based on which entrepreneurs collect, select and process information, to identify opportunities in the external environment (Baron, 1998; Nicholls-Nixon et al., 2000; Shane and Venkataraman, 2000).

The following paragraphs describe how an important stream of literature on entrepreneurship has related an individual entrepreneur's alertness, creativity and prior knowledge and experience to the theme of OI. Also, the more topical cognitive perspective is examined and linked to entrepreneurial behaviour, although the later is more explicitly analysed under the "behavioural" approach to OI.

Entrepreneurial alertness

The concept of "entrepreneurial alertness" was first introduced by Kirzner (1973) to explain the recognition of entrepreneurial opportunities. An individual's entrepreneurial alertness was explained as a special predisposition to perceive changes and identify related opportunities (Kirzner, 1973). Along the same line of thought, Harvey and Evans (1995) proposed that each individual approaches the entrepreneurial process with a unique set of pre-existing skills and capabilities, which essentially shape their level of "entrepreneurial preparedness"²⁶.

On the same basis, Ray and Cardozo (1996) further argued that OI is preceded by and positively relates to increased alertness to information, i.e. a state of "entrepreneurial awareness". The latter notion was defined as "a propensity to notice and be sensitive to information about objects, incidents, and patterns of behaviour in the environment, with special sensitivity to maker and user problems, unmet needs and interests, and novel

²⁶ More specifically, the same authors identified two main elements comprising an individual's level of entrepreneurial preparedness: tangible and intangible personal attributes and business skills (Harvey and Evans, 1995).

combinations of resources” (Ray and Cardozo, 1996). Nonetheless, other studies have failed to prove a positive relationship between alertness and OI (e.g. Buzenitz, 1996).

Creativity

Ardichvili et al. (2003) recently proposed that particular personality traits, such as creativity, are critical determinants of entrepreneurial alertness. Creativity has generally been shown to relate to successful OI. Schumpeter (1934) was the first to argue that creative entrepreneurs identify opportunities that others do not see. Kay (1986) later posited that creativity plays an important role in entrepreneurial decision-making. Winslow and Solomon (1993) essentially treated creativity and entrepreneurship as similar notions, while Hills et al. (1997) stressed that individual entrepreneurs need to be creative (particularly when they have no links to opportunity sources).

A growing body of more topical literature has been examining the links between creativity and OI (Hills et al., 1999; Lumpkin et al., 2004; Ward, 2004). Accordingly, many authors have proposed creativity-based models of OI (e.g. Csikszentmihalyi, 1996; Lumpkin et al., 2004). For example, Lumpkin et al. (2004) draw on Shane and Venkataraman’s (2000) primary components of OI to develop their five-stage model of opportunity discovery and formation.

Prior knowledge and experience

Prior knowledge and experience, relating to an increased ability of recognising the value of new information, learning, and applying it to new profitable ends (Cohen and Levinthal, 1990), have been emphasised as key drivers of the OI process (Venkataraman, 1997). Von Hippel (1994) and Fiet (1996) point out that individuals tend to perceive information that relates to their existing knowledge, while new information often needs to be complemented with prior knowledge to be valuable (Shane and Venkataraman, 2000). Drawing on the argument of Austrian economics that entrepreneurship exists due to information asymmetries amongst actors (Hayek, 1945), Venkataraman (1997) and Shane (1999, 2000) maintain accordingly that entrepreneurs identify only those opportunities that relate to their prior knowledge. This idiosyncratic prior knowledge creates a “knowledge corridor” that allows specific individuals to identify only certain opportunities (Hayek, 1945; Ronstadt, 1988). From a learning perspective, such prior knowledge essentially relates to the “absorptive capacity” required to exploit new information and generate innovative ideas (Cohen and Levinthal, 1990). In that respect, prior knowledge and experience have not only

been linked to increased OI, but also to the identification of more innovative opportunities (Gobbo and Chi, 1986; Frederick, 1991; Fiet, 2002).

Prior knowledge may be the outcome of work experience (Evans and Leighton, 1989; Cooper et al, 1994), or education (Gimeno et al., 1997). Experienced entrepreneurs tend to have access to a broader set of opportunities and opportunity sources, based on their past experiences (Cyert and March, 1963; Fiet et al, 2000; Shane, 2003). Prior knowledge gained from education, referred to as human capital, facilitates the accumulation and assimilation of new knowledge, and thus provides an expanded opportunity set (Gimeno et al., 1997). In addition, prior knowledge can accrue through direct experiential learning or through second-hand experience (Huber, 1991).

Three major dimensions of prior knowledge have been found to relate to the process of OI: *first*, prior knowledge of markets, including information about suppliers, sales techniques, etc. (Von Hippel, 1988); *second*, prior knowledge of ways to serve markets, which involves, for example, a new technology that can change a production process, allow for the creation of a new product, generate new sources of supply, or make possible new ways of organising (Schumpeter, 1934); and *third*, prior knowledge of customer problems, which relates to enabling customers to benefit from innovation (Shane, 2000). In a similar vein, Sigrist (1999) proposes two types of prior knowledge as particularly relevant to OI: *first*, knowledge in a domain that is of particular interest to the entrepreneur, and *second*, knowledge that is accumulated over the years, in many cases through interaction with other actors. As Sigrist (1999) further postulates, it is the integration of these two types of prior knowledge that leads to OI.

Cognition

The cognitive body of research contributes to the understanding of entrepreneurial phenomena (Mitchell et al, 2002) through explaining how an individual's mental makeup is related to an increased ability of identifying and exploiting entrepreneurial opportunities. From a cognitive point of view, entrepreneurial innovation can be considered as a process of building and refining a set of knowledge structures that transform an initial intuition into a viable new product or service, a new production process or a new way to serve the market (Schumpeter, 1936). Research suggests that the various ways in which a person processes information might relate to the ability of OI (Shane, 2000).

Busenitz and Barney (1997) demonstrated that entrepreneurs use particular cognitive mechanisms (i.e. heuristics and biases) in their decision making, which essentially

determine their OI ability. Along the same line of thought, Baron (1998) found entrepreneurs to be more likely than non-entrepreneurs to use such cognitive heuristics and biases (e.g. overconfidence, self-serving bias, counterfactual thinking, etc.) due to the conditions that the former encounter (high uncertainty, novelty, time pressure, and stress). Corbett (2002, 2005) explored the concept of cognitive processing style and found that approaches that were more “intuitive” and less “analytical” related to increased OI. In a similar vein, more topical research tends to examine different cognitive approaches to creativity that relate to the OI process (Lumpkin et al., 2004; Ward, 2004).

3.4.3 The behavioural perspective

As argued above, a more comprehensive approach to conceptualising the nature of entrepreneurial activity is provided by the “behavioural perspective”. Until recently, most of the research investigating the notion of OI has focused on the personal characteristics of entrepreneurs (McClelland, 1961; Timmons, 1999). This approach to entrepreneurship has been widely criticised mainly because it tends to underestimate the extent to which entrepreneurial abilities can be acquired through learning (Deakins, 1998). Moreover, as has been argued by Lee and Venkataraman (2006), it diverts attention from the importance of structural parameters in entrepreneurial activity, such as the entrepreneur’s position in social networks.

Earlier on, Gartner (1988) had supported a “behavioural” approach in arguing that entrepreneurship research should concentrate on entrepreneurs’ activities rather than their personality characteristics. Nonetheless, the behavioural perspective does not ignore the personality characteristics of the entrepreneur; rather it considers them as supplementary to entrepreneurial behaviour. As such, the “behavioural” approach to OI essentially focuses on factors driving the behaviour of the individual entrepreneur. The following paragraphs deal more explicitly with learning and networking as key aspects of entrepreneurial behaviour, and further link these aspects the notion of OI.

Learning and Opportunity Identification

Within the early theoretical discussions on opportunity and the process of entrepreneurship, the concepts of dispersion of knowledge and utilisation of information (Hayek, 1945) have been prevalent. Knight (1921) had already viewed learning as an important element of the dynamic nature of entrepreneurial activity. Schumpeter (1936) defined entrepreneurial

innovation as a process of building new knowledge structures. More topical research, as explained above, has focused on cognitive mechanisms to explain entrepreneurial phenomena. From a cognitive point of view, entrepreneurship is considered as a process of building and refining knowledge structures. However, an individual's existing knowledge is not synonymous with learning. Knowledge is a static concept that is activated through cognitive mechanisms and heuristics. In contrast, learning is a dynamic process, based on cognitive mechanisms, through which knowledge is created (Corbett, 2005, 2007). As such, learning is gaining acceptance as an integral element of entrepreneurial activity. Minniti and Bygrave (2001, p.7) state accordingly, "*entrepreneurship is a process of learning, and a theory of entrepreneurship requires a theory of learning*".

When applied to the concept of entrepreneurship, learning has often been concerned with the effectiveness in identifying and acting upon entrepreneurial opportunities (Shane and Venkataraman, 2000; Corbett, 2002, 2005, 2007; Politis, 2005). Ravasi and Turati (2005) suggest that between the identification of an opportunity and its successful exploitation resides an important learning process. Entrepreneurial innovation is essentially driven by "self-reinforcing learning cycles" that lead entrepreneurs to dedicate increasing resources to the exploration of specific opportunities versus others (Ravasi and Turati, 2005).

Accordingly, researchers (Politis, 2005; Cope, 2005) have introduced the notion of "entrepreneurial learning", as the dynamic type of learning that relates to entrepreneurial action. Studying entrepreneurial learning has generally been conceived of as investigating the distinctive ways in which entrepreneurs acquire, accumulate and utilise knowledge (Agndal, 1999; Minniti and Bygrave, 2001) to identify opportunities. Cope (2005) further argues that entrepreneurial OI relates to "higher-level" learning, i.e. the entrepreneurs' ability to engage in radical innovation (Argyris and Schön, 1978; Mezirow, 1991). Other researchers have referred to this type of learning as "double-loop" (Argyris and Schön, 1978), "transformational" or "generative" learning (Nevis et al., 1995; Appelbaum and Goransson, 1997; Cope, 2005), as opposed to "lower level", "adaptive" learning (Miner and Mezirow, 1996). Particularly, Argyris and Schön (1978) describe their "double-loop" learning as a continuous interaction between an individual's knowledge base and the OI process, leading to increased alertness to new opportunities. In a similar vein, Schildt et al (2005) use the concepts of "explorative" and "exploitative" learning to contrast the entrepreneurial search for new opportunities with more risk-averse learning that leverages existing knowledge.

Nonetheless, while a large body of entrepreneurship research has linked entrepreneurial learning with OI at the individual entrepreneur level, fewer studies have explicitly examined the notion of learning as an important constituent of firm-level entrepreneurship (Zahra et al., 1999). Given that the OI process may involve both individual and team-related activities (Singh et al, 1999), an organisation's learning propensity might also relate to its ability for OI.

Organisational learning emphasises the improvement of practices and expansion into new areas by creating new knowledge (Senge, 1990), producing novel perspectives (Fiol and Lyles, 1985), and detecting and correcting misalignments in existing routines (Argyris, 1990). Learning organisations are “skilled at creating, acquiring, and transferring knowledge, and at modifying their behaviour to reflect new knowledge and insights” (Garvin, 1993, p.80). These attributes can strengthen a firm's ability to identify and effectively exploit entrepreneurial opportunities (Lumpkin and Lichtenstein, 2005). Nonetheless, an organisation's ability to acquire knowledge is essentially determined by its prior knowledge (Cohen and Levinthal, 1990; Szulanski, 1996), what has been described above as its “absorptive capacity” (Cohen and Levinthal, 1990; Todorova and Durisin, 2007). In that sense, organisational learning is “path dependent”²⁷ (Cohen and Levinthal, 1990), given that a firm's ability to identify certain opportunities might also be determined by its earlier choices (Autio et al., 2000).

Learning within entrepreneurial organisations has been found to resemble more what has been described above as “higher level”, “generative” learning, as opposed to “lower level”, “adaptive” learning (Fiol and Lyles, 1985; Miner and Mezias, 1996). While the latter type of learning (i.e. “adaptive”) essentially allows an organisation to perform a repetitive task in an increasingly efficient way (Cyert and March, 1963; Nelson and Winter, 1982), the outcome of the former type (i.e. “generative” learning) involves a change in the knowledge structures that maintain novelty in organisational action (Lyles and Schwenk, 1992). Nonetheless, a more balanced approach has been proposed, encompassing elements of both “generative” and “adaptive” learning, given that the exploitation of new ideas provides a solid basis for initiating exploration activities (Mintzberg and Waters, 1982).

²⁷ What a firm learns in one period essentially defines its feasible set in the following (Cohen and Levinthal, 1990).

Networking and Opportunity Identification

While the distribution and utilisation of knowledge has been a central theme in both early (Hayek, 1945; Knight, 1921; Schumpeter, 1936) and more recent theoretical discussions on opportunity and entrepreneurship (Venkataraman, 1997; Shane, 2000), other researchers have suggested that the prime determinant of entrepreneurship is the entrepreneur's network position (Burt, 1992). Aldrich and Zimmer (1986) argued accordingly that the entrepreneur is embedded in a social network that plays a critical role in the entrepreneurial process. A number of studies confirm the important and diverse roles of entrepreneurs' networks²⁸ in influencing entrepreneurial phenomena.

Theoretical interest in understanding the role of social networks in influencing entrepreneurial decisions (Starr and MacMillan, 1990; Borch, 1994) can be traced back to the seminal work of Jacobs (1961), who introduced the notion of "social capital". Researchers have increasingly focused on social capital theory, i.e. on interpersonal relationships in social networks that provide access to information and know-how (Burt, 1997; Nahapiet and Ghoshal, 1998; Lin, 2001; Adler and Kwon, 2002), and its relevance to entrepreneurial phenomena. In particular, research has stressed the importance of entrepreneurs' social networks with respect to innovation (Powell et al., 1996), opportunity identification (Singh et al., 1999; Singh, 2000), and opportunity exploitation (Aldrich and Wiedenmayer, 1993).

Network-based research in entrepreneurship has typically focused on three key aspects: network content, governance, and structure (Hoang and Antoncic, 2003). *Network content* refers to the interpersonal and inter-organisational relationships that provide access to particular types of resources; *network governance* involves the distinctive governance mechanisms that coordinate the resource exchange; while *network structure* is defined as the pattern of direct and indirect ties between actors. These three aspects are explicitly analysed below and further linked to the theme of OI.

Network content

Involvement in social networks influences the entrepreneurial process through providing access to different types of valuable resources. With the exception of studies focusing on the role of networks to access physical capital (Zimmer and Aldrich, 1987; Bates, 1997), most research has centered on intangible resources, such as information, advice, and

²⁸ Social networks are essentially defined by a set of actors (individuals or organisations) and a set of linkages between actors (Brass, 1992).

emotional support (Johannisson, 1996; Bruderl and Preisendorfer, 1998). In a similar vein, other researchers postulate that social networks are particularly important for accessing resources and reducing the cost of resources that are essential to entrepreneurial activity (Cromie et al, 1994; Johannisson, 2000). A number of studies have also proved that entrepreneurs tend to use their network contacts in order to gather information and identify entrepreneurial ideas (Singh et al., 1999; Hoang and Young, 2000). At a firm-level, Stevenson and Jarillo (1990) have argued that organisations facilitating the development of informal internal and external social networks, and therefore promote resource sharing, exhibit increased levels of entrepreneurial behaviour.

Network governance

Johannisson and Peterson (1984) have argued that personal networks - an entrepreneur's most valuable asset - incorporate elements of trust. Trust between partners is generally considered a critical element of the network exchange that further enhances the quality of resource flows (Larson, 1992; Lorenzoni and Lipparini, 1999). Trust affects the depth and richness of exchange relations, particularly with respect to the exchange of information (Lorenzoni and Lipparini, 1999; Hite, 2000). Owing to its positive impact on information flows and inter-firm network endurance (Lipparini and Lorenzoni, 1993), trust has been related to the enhancement of innovative behaviour (Hausler et al., 1994).

Other researchers have also defined network governance through the reliance on "implicit and open-ended contracts" that are supported by social mechanisms, such as power and influence (Brass, 1984; Thorelli, 1986; Krackhardt, 1990). These distinctive elements of network governance can create cost advantages in comparison to coordination through market or bureaucratic mechanisms (Thorelli, 1986; Jarillo, 1988; Starr and Macmillan 1990; Lipparini and Lorenzoni, 1993; Jones et al., 1997). As such, network governance mechanisms might imply better utilisation of inter-firm networks, which are important for accessing information to identify entrepreneurial opportunities (Singh et al., 1999).

Network structure

An important aspect of the network perspective within entrepreneurship research pertains to the impact of social structures on entrepreneurial phenomena²⁹. Network embeddedness (Granovetter, 1985), defined through the intensity and frequency of network relationships,

²⁹ As explained above, network structures are defined by the pattern of (direct and indirect) ties between actors.

has recently been considered as key element of the entrepreneurial process (Jack and Anderson, 2002).

Granovetter's (1973) notion of weak ties describes the extent to which actors gain access to new information and ideas through ties that reside outside of their immediate cluster of contacts. His classic theory on the "strength of weak ties" (Granovetter, 1973) suggests that weak ties are generally more likely to provide unique information, given that most individuals have more weak than strong ties. Empirical research on entrepreneurship has drawn on Granovetter's (1973) perspective to examine the effects of network ties on the OI process. In particular, Hills et al. (1997) empirically proved the importance of network density for increased alertness to opportunities, while Singh et al. (1999) proved the importance of weak ties for increased OI. Nonetheless, Uzzi (1996, 1997) adopted a somewhat different approach, in suggesting that a "balanced network", consisting of both weak and strong ties, may be more valuable³⁰.

Granovetter (1973) further argued that weak ties are "bridges" to information sources not necessarily included in an individual's strong-tie network. In the related literature, weak ties have often been associated with idea generation, whereas strong ties tend to be related to problem solving (Henderson and Cockburn, 1994; Eisenhardt and Tabrizi, 1995; Hansen, 1999). Similar to the benefits of weak ties, the advantages of "bridging structural holes" have been stressed in network literature³¹ (Burt, 1992). Opportunity identification and exploitation have generally been associated with holding a "bridging" position in a network. In that respect, this structural network approach can bring new potential to entrepreneurship research (Burt, 2000).

3.5 Models of OI in the entrepreneurship literature

The previous section examined the three dominant theoretical perspectives on the nature of entrepreneurial phenomena (Stevenson and Sahlman, 1989), namely the "functional", the "personality" and the "behavioural" perspective. The notion of OI, lying at the heart of entrepreneurship research, can thus be examined through the lens of one or a combination of these three perspectives.

³⁰ The same author further argued that network embeddedness could under certain conditions prove a constraint, for example due to the unexpected withdrawal of a key network player or over-embeddedness (Uzzi, 1997)

³¹ Through bridging structural holes, actors can benefit from developing ties that link these otherwise "unconnected" actors (Burt, 1992).

Numerous models of OI have emerged in the entrepreneurship literature. Based on disparate, often conflicting assumptions drawing on the aforementioned three approaches, these models give rise to specific factors as drivers of the OI process. Table 3.2 indicates such factors that have been identified in existing literature, and further classifies them under the three broad perspectives on entrepreneurship.

Some of these factors have been combined in different models seeking to explain the notion of OI. Examples of integrative models are present in the entrepreneurship literature that essentially point out several variables as antecedents of the OI process. Most of these models depict OI as a staged process (Christensen et al, 1989; Bhava, 1994). One of the most comprehensive models of OI was recently introduced by Ardichvili, Cardozo and Ray (2003). Their model identifies three sets of factors as determinants of an individual's "entrepreneurial alertness" to business opportunities: personality traits (creativity and optimism), prior knowledge and experience, and social networks, while it considers entrepreneurial alertness as a prerequisite for OI. The same authors view OI as a process of perception, discovery and creation (Ardichvili et al, 2003). Another integrative model proposed by Hills et al. (1999) and later adapted by Lumpkin et al (2004), is essentially a creativity-based framework (Csikszentmihalyi, 1996) that incorporates two distinct phases of OI: opportunity discovery and opportunity formation.

Nonetheless, while attempts to provide a comprehensive model of OI have contributed greatly to the understanding of the OI phenomenon, they yet seem inadequate in offering a holistic view of the process for three main reasons: *First*, each model tends to focus only on some aspects of the OI process, depending on the theoretical approach followed (Ardichvili, Cardozo and Ray, 2003), and hence does not provide a holistic and integrative view of all the key factors that drive OI along with their interrelatedness. *Second*, there seems to be no agreement amongst entrepreneurship researchers on the definition and operationalisation of the OI concept (Ardichvili et al, 2003). *Third*, existing models describe the OI process as relating to the individual entrepreneur, rather than as an organisation-wide phenomenon. However, as will be explicitly analysed in the following sections, the notion of OI can be particularly relevant not only for individual entrepreneurs, but also for entrepreneurial organisations (Hamel and Prahalad, 1989; McGrath et al, 1996), and thus merits further investigation.

Table 3.2: Variables linked to Opportunity Identification	
Key Variables	Authors
Functional Perspective	
Extrinsic motivation / Financial reward	Schumpeter, 1976; Baumol, 1990; Kuratko, Hornsby & Naffziger, 1997; Venkataraman, 1997; Shepherd & DeTienne, 2005
Personality Perspective	
Entrepreneurial alertness	Kirzner, 1973, 1979; Kaish & Gilad, 1991; Busenitz, 1996; Ray & Cardozo, 1996; Gaglio & Katz, 2001
Prior knowledge & experience	Hayek, 1945; Venkataraman, 1997; Shane, 1999, 2000
Human capital	Cooper, Gimeno & Woo, 1994; Ucbasaran, Westhead & Wright, 2001,2003; Davidsson & Honig, 2003; Dimov & Shepherd, 2005
Cognition	Sigrist, 1999; Alvarez & Busenitz, 2001; Baron & Ensley, 2003; Gaglio, 2004; Baron, 2004; Baron & Ward, 2004
Creativity	Long & McMullen, 1984; Amabile, 1988; Hills, Shrader & Lumpkin, 1999
Behavioural Perspective	
Learning	Corbett, 2002, 2005; Dimov, 2003; Ravasi & Turati, 2005
Social networks	Birley, 1985; Low & MacMillan, 1988; Hills et al, 1997; Floyd & Wooldridge, 1999; Singh, Hills, Hybels & Lumpkin, 1999; De Koning, 1999

3.6 The Resource Based View of OI: A synthesis of perspectives

The previous sections (Sections 3.4 and 3.5) have described the three main schools of thought regarding the nature of entrepreneurial phenomena with a particular focus on the theme of OI. The “functional perspective” considers OI as a result of the entrepreneur’s interaction with the economic environment; the “personality perspective” focuses on the personality traits of the individual entrepreneur and how these are linked to the identification of entrepreneurial opportunities; the “behavioural perspective” extends the “personality perspective” to examine OI as a result of an individual entrepreneur’s activity. While these three approaches are based on different theoretical assumptions, they are not necessarily mutually exclusive. In fact, they could be viewed as providing complementary insights that shed light into the theme of OI. Factors found in the economic environment and others linked to the personality and behaviour of the entrepreneur might co-determine the process of OI.

In examining the theme of OI, this thesis takes an integrative approach. In particular, it draws on the well-established resource-based view (RBV) as the connective link amongst the aforementioned distinctive theoretical perspectives. As has been argued in the previous

chapter (Chapter 2), a resource-based approach of entrepreneurship essentially considers it as a process of identification, acquisition and accumulation of resources to take advantage of perceived opportunities (Bergmann-Lichtenstein and Brush, 2001). Hence, even when considered through the resource-based logic, the process of OI still lies at the heart of entrepreneurial activity.

Early work on the RBV acknowledged entrepreneurship as an inherent but complex element of the resource-based framework (Conner, 1991; Rumelt, 1987). However, although the RBV has become a dominant paradigm in strategic management (Peteraf, 1993), most resource-based research has largely failed to address entrepreneurial phenomena (Chandler and Hanks, 1994; Barney, 2001). Nonetheless, researchers (Alvarez and Busenitz, 2001) have recently suggested that understanding such phenomena could offer new potential to the resource-based approach. The present study espouses this view in considering the particular notion of OI through the lens of the resource-based perspective. Prior to examining how the resource-based logic fits with entrepreneurship theory in providing a resource-based view of OI, a brief discussion on the basic assumptions behind the RBV is given. Although the basic premises of the resource-based approach have already been analysed in the previous chapter (Chapter 2 on subsidiary literature), a brief recapitulation is necessary to facilitate further analysis.

In particular, the resource-based approach assumes that advantages derive from “unique” and “valuable” resources (Penrose, 1959; Wernerfelt, 1984, 1995; Rumelt, 1984; Barney, 1991; Amit and Schoemaker, 1993; Peteraf, 1993). Barney (1991) explains accordingly that resource “value” depends on the particular resource’s effectiveness in exploiting opportunities, while resource “uniqueness” is based on resource rarity (few other agents have the specific resource), imperfect imitability (other agents cannot acquire or imitate the resource) and non-substitutability (no equivalent resources are present). In that respect, resources are both heterogeneous across actors and imperfectly mobile (Barney 1991; Hunt and Morgan, 1995).

Topical research into the RBV of entrepreneurship has stressed the commonalities between entrepreneurship theory and the resource-based perspective (Alvarez and Busenitz, 2001). To begin with, the concept of heterogeneity is a common aspect in both the resource-based and entrepreneurship logic. While resource-based theory suggests that heterogeneity is necessary but not sufficient for sustainable advantage, heterogeneous resources are also a precondition for entrepreneurship (Kirzner, 1997). In entrepreneurship theory, opportunities are based on individuals’ disparate beliefs about the relative value of resources, when these

are combined into outputs (Schumpeter, 1934; Kirzner, 1979; Shane and Venkataraman, 2000). Entrepreneurial advantages (Rumelt, 1987; Alvarez and Barney, 2000) essentially emerge when individuals act upon these un-exploited opportunities (Kirzner, 1979; Casson, 1982). However, although the resource-based logic mainly focuses on the heterogeneity of resources, entrepreneurship theory centers on the heterogeneity of beliefs about the value of resources. In dealing with this inconsistency, Alvarez and Busenitz (2001) propose that beliefs about the value of resources are essentially resources themselves.

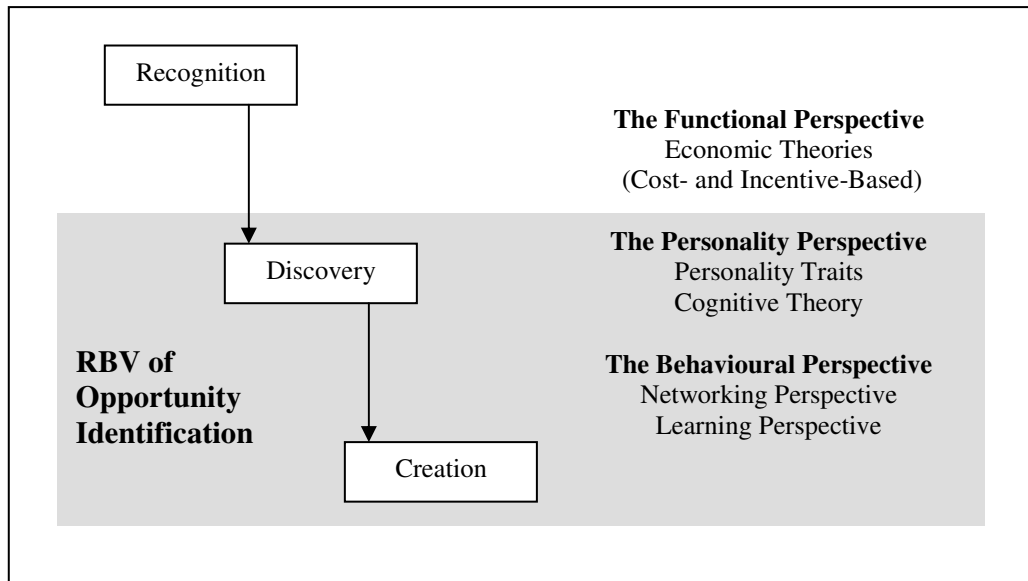
In addition, the resource-based theory focuses on non-imitable resources, i.e. resources that are difficult to imitate, while this attribute lies on the assumptions of causal ambiguity, path dependence and social complexity (Barney, 1986; 1991). These three elements can be neatly linked to the entrepreneurship logic. *First*, causal ambiguity might be the essence of entrepreneurship because, as Alvarez and Busenitz (2001) explain, “when the reasons for heterogeneity are poorly understood, these reasons are often entrepreneurial in nature and thus difficult to imitate” (Alvarez and Busenitz, 2001, p. 767). *Second*, path dependency means that sustainable advantage is a history/path - dependent process (Nelson and Winter, 1982; Barney, 1991). Early on, Schumpeter (1934) had posited that innovative behaviour requires a certain amount of pre-existing capabilities. The ability to identify opportunities might be to a great extent determined by earlier decisions (Autio et al., 2000). *Third*, acknowledging that socially complex resources and capabilities are sources of sustained heterogeneity (Barney, 1995), Alvarez and Busenitz (2001) argued that entrepreneurial resources and capabilities (driving opportunity identification and exploitation) are socially complex assets.

Topical research has also linked elements of the “personality” and “behavioural” perspectives on entrepreneurial phenomena with the RBV. *First*, Alvarez and Busenitz (2001) have expanded traditional resource-based theory to include the cognitive ability of entrepreneurs as a resource that promotes the identification of opportunities. *Second*, sources of competitive advantage may relate to knowledge creation (Barney, 1991) and entrepreneurial learning (Cope, 2005), which constitute dynamic processes leading to OI. *Third*, the mobilisation of resources through social relationships (Burt, 1997; Nahapiet and Goshal, 1998; Lin, 2001; Adler and Kwon, 2002) can also prove a source of sustainable advantage. The entrepreneur’s ability to develop trusting relationships, i.e. networking, is created through a path-dependent process, is characterised by social complexity, and is thus difficult to imitate. Consequently, entrepreneurship theory can be neatly linked with the resource-based logic. *A resource-based view of entrepreneurial phenomena, though*

modestly attempted to date, could potentially bring new insights in both theoretical perspectives (i.e. entrepreneurship and resource-based theory).

As argued in the beginning of the present section, this study takes a “resource-based view” of OI, phenomenon that lies at the heart of entrepreneurial activity. In particular, the resource-based perspective is used as a synthesising framework for bringing congruence to the various schools of thought regarding entrepreneurial phenomena (Section 3.4). Figure 3.1 demonstrates what is defined in this thesis as the “resource-based view of OI”. *First*, the notion of OI has been explained in Section 3.3 as comprising two distinct but not mutually exclusive processes: opportunity “discovery” and opportunity “creation”. *Second*, in an analogous manner, the resource-based perspective of OI is considered to incorporate elements of the “personality” and “behavioural” perspectives. Specific personality traits and entrepreneurial behaviour are considered key resources. Such resources are combined or developed over time to generate unique and valuable capabilities (Bergmann-Lichtenstein and Brush, 2001). The ability to identify entrepreneurial opportunities is considered such a capability, valuable both to individual entrepreneurs and to entrepreneurial organisations. Figure 3.1 thus depicts how the resource-based approach can act as a unifying framework under which the “personality” and the “behavioural perspective” of OI are expected to co-determine the discovery (i.e. the “Kirznerian view”) and creation (i.e. the “Schumpeterian view”) of entrepreneurial opportunities.

Consequently, the RBV can be linked to entrepreneurship theory and particular the “personality” and “behavioural” perspectives on OI. However, entrepreneurial phenomena pertain not only to individual entrepreneurs, but also to entrepreneurial organisations. Such organisations, through their particular entrepreneurial characteristics and behaviour, are more likely to actively engage in OI. Therefore, the study of OI at the firm-level requires a theoretical framework that can be easily applied at both the individual and firm-level. Such a concern is fully addressed through the resource-based framework. Nonetheless, the resource-based theory is essentially a firm-level theory, considering firm-level resources and capabilities as drivers of firm-level competitive advantage (Barney 1991; Conner 1991; Teece et al, 1997). Therefore, the study of OI at the firm-level could draw on the RBV as a unifying approach. Under the RBV, an entrepreneurial firm’s unique bundle of resources can be considered to increase its ability to identify a greater number of and more innovative opportunities. This firm-level ability to continuously identify new opportunities can prove a solid basis for sustainable competitive advantage in the entrepreneurial firm (Alvarez and Busenitz, 2001).



Source: the author

Figure 3.1: The RBV of OI as assumed in the present thesis

3.7 Opportunity Identification within entrepreneurial firms

The previous section argued that entrepreneurial phenomena can be relevant both to individual entrepreneurs and entrepreneurial organisations. This section will focus on an important subfield of entrepreneurship research that deals exactly with the incidence of entrepreneurship within established organisations, namely corporate entrepreneurship. This firm-level approach is consistent with classical economics in which the individual entrepreneur is regarded as a firm. Schumpeter (1942) shifted attention away from the individual entrepreneur by arguing that entrepreneurship eventually would be dominated by firms that are capable of devoting more resources to innovation. Also, it is increasingly recognised that entrepreneurial activities are not relevant only for entrepreneurial start-ups or small- and medium-sized firms, but entrepreneurship can also take place within larger organisations (Ahuja and Lampert, 2001). Corporate entrepreneurship is indeed central to the survival, renewal and growth of established corporations (Guth and Ginsberg, 1990; Kuratko et al., 1990; Stopford and Baden-Füller, 1994; Zahra and Covin, 1995; Lumpkin and Dess, 1996; Zahra et al., 1999; Ahuja and Lampert, 2001; Miles and Covin, 2002; Dess et al., 2003). Nonetheless, though interest in corporate entrepreneurship remains high, limited understanding has been achieved within its domain (Miles and Covin, 2002).

Given that entrepreneurship can also be present in established organisations, the notion of OI seems to be particularly relevant not only from an individual entrepreneur's perspective but also for an entrepreneurial organisation. In fact, several researchers have acknowledged that organisations need to constantly identify new opportunities, beyond existing competencies, in order to survive and prosper (Hamel and Prahalad, 1989; McGrath et al, 1996). Therefore, OI seems to be an important element of and in essence the stimuli for corporate entrepreneurship; entrepreneurial activities, whether they relate to an individual entrepreneur, or an entrepreneurial organisation, originate from the identification of relevant opportunities. Consequently, the concept of OI should be explicitly studied within the context of corporate entrepreneurship and be informed by relevant literature.

This purpose of this section is to examine key aspects of the literature on corporate entrepreneurship that seem particularly useful for studying the notion of OI - along with its antecedents and outcomes - within entrepreneurial firms.

3.7.1 Factors linked to firm-level entrepreneurship

Corporate entrepreneurship literature tends to emphasise the multi-dimensional nature of the notion of entrepreneurship. In order to capture the organisational processes and mechanisms that firms utilise when behaving in an entrepreneurial manner, researchers tend to use the notions of entrepreneurial posture (Covin and Slevin, 1991), entrepreneurial orientation (Lumpkin and Dess, 1996), entrepreneurial style (Naman and Slevin, 1993), entrepreneurial management (Stevenson and Jarillo, 1990), entrepreneurial strategy-making (Dess, Lumpkin, and Covin, 1997) or, most often, Miller's (1983) term of entrepreneurship.

Entrepreneurship researchers have typically used the term "entrepreneurial orientation" to refer to an entrepreneurial firm's strategic orientation, capturing specific entrepreneurial aspects of decision-making styles, methods, and practices (Lumpkin and Dess, 1996). These researchers have drawn on the earlier work of Miller and Friesen (1982) and Khandwalla (1977) to essentially conceptualise "entrepreneurial orientation" as the combination of three particular dimensions: *innovativeness*, *proactiveness*, and *risk-taking*. *First*, the "innovativeness" dimension reveals a tendency to engage in and support new ideas, novelty, experimentation, and creative processes, hence representing a departure from existing practices (Guth and Ginsberg, 1990; Lumpkin and Dess, 1996). *Second*, "proactiveness" refers to a posture of anticipating and acting on future needs in the marketplace, thereby creating a first-mover advantage (Miller, 1983; Lumpkin and Dess, 1996). Embracing such a forward-looking perspective, proactive firms are usually the first to benefit from emerging

opportunities. *Third*, “risk-taking” involves the readiness to commit significant resources to exploit opportunities or engage in activities and strategies the outcome of which is highly uncertain (Miller, 1983; Morris, 1998; Keh et al., 2002). Other studies have also included the dimensions of autonomy and competitive aggressiveness (Lumpkin and Dess, 1996) to describe firm-level entrepreneurship³².

While firm-level entrepreneurship has been described as comprising multiple dimensions, research has depicted differences in firm-level entrepreneurship as the result of two main sets of factors. The first set of factors pertains to the *internal environment of the firm*, i.e. its organisational characteristics, while the second considers factors in the *external environment* and their impact on firm-level entrepreneurial activity.

Internal / organisational factors

Research has typically emphasised the internal organisational environment as being a key determining factor of firm-level entrepreneurial behaviour. Organisational characteristics relating to the pursuit of entrepreneurial activity have typically included: communication openness (Kanter, 1984), control mechanisms (Sathe, 1985), organisational structure (Covin and Slevin, 1991; Naman and Slevin, 1993) and managerial support (Stevenson and Jarillo, 1990; Kuratko et al., 1993).

First, *open communication*, as a way of information and resource sharing, is considered an important element of innovative behaviour (Kanter, 1984; Pinchot, 1985). Communication, defined by its amount and quality, has proved central to the success of entrepreneurial initiative in large corporations (Peters and Waterman, 1982; Zahra, 1991). Second, the existence of *control mechanisms* has been found to affect firm-level entrepreneurship in diverse ways. While Kuratko et al. (1993) have stressed the importance of control with respect to promoting firm-level entrepreneurial efforts, other researchers (MacMillan et al., 1984; Zahra, 1991) have identified an inhibiting effect linked to the excessive use of formal controls. A third dimension that has been related to firm-level entrepreneurship is the existence of a supportive *organisational structure* (Burgelman and Sayles, 1986; Guth and Ginsberg, 1990; Covin and Slevin, 1991; Zahra, 1991, 1993; Hornsby et al., 1993). Accordingly, relevant literature tends to consider loose intra-organisational boundaries as critical for promoting firm-level entrepreneurial activity (Hornsby et al, 1990). The fourth

³² Autonomy essentially refers to independent action, free of organisational constraints, that generates an idea and brings it through to completion. Competitive aggressiveness refers to a firm’s propensity to directly and intensely challenge its competitors in order to outperform them in the market (Lumpkin and Dess, 1996).

dimension, *managerial support*, indicates the willingness of managers to facilitate and promote entrepreneurial activities within the firm (MacMillian et al., 1984; Sykes and Block, 1989; Sathe, 1989; Stevenson and Jarillo, 1990; Kuratko et al., 1993; Pearce et al., 1997). This support can take many forms, for example championing innovative ideas, providing necessary resources and expertise, or promoting an entrepreneurial culture within the firm.

The above factors, both individually and in combination, have been considered as important driving factors of firm-level entrepreneurial efforts. Accordingly, Burgelman's (1983) research has shown intra-organisational factors to influence the types of entrepreneurial activities a firm pursues.

External / environmental factors

The external environment has traditionally been viewed as a key determinant of entrepreneurial activity at both an individual and an organisational level (Miller, 1983; Khandwalla, 1987; Covin and Slevin, 1991). In explaining and predicting corporate entrepreneurship activities and their outcomes, researchers tend to examine a set of external environmental factors (Zahra, 1991, 1993). In particular, literature has identified particular environmental characteristics as favourable to firm-level entrepreneurship, while others have been found to pose adverse effects.

Environmental munificence has generally been identified as a factor conducive to firm-level entrepreneurship (Khandwalla, 1987; Guth and Ginsberg, 1990; Zahra, 1991, 1993). Also, environmental munificence has been considered as a multidimensional construct, incorporating four elements: dynamism, technological opportunities, industry growth, and demand for new products (Zahra, 1993). *First*, dynamism, relating to the perceived volatility and continuous change in the market, can be seen as conducive to the involvement in entrepreneurial activities, since it tends to create new opportunities in the market (Zahra, 1991). Firms operating in dynamic environments need to be proactive in pursuing these opportunities (Covin and Covin, 1990) and also engage in radical innovation (Utterback, 1994). *Second*, technological change creates new possibilities (Tushman and Anderson, 1986), to which firms often respond through adopting an entrepreneurial posture (Khandwalla, 1987; Guth and Ginsberg, 1990). *Third*, while growing markets provide opportunities for increased entrepreneurial activity, the perceived recession of a market may also urge companies to undertake corporate renewal initiatives. Fourth, demand for new

products is essentially a demand-driven factor encouraging firm-level entrepreneurship (Zahra, 1993).

While some studies have considered environmental munificence to encourage firms in adopting an entrepreneurial posture (Khandwalla, 1987; Guth and Ginsberg, 1990; Zahra, 1991), others have shown the lack of munificence, i.e. environmental *hostility*, to create threats that stimulate entrepreneurial behaviour at the firm level (Miller and Friesen, 1983; Covin and Slevin, 1991; Hitt et al, 1997; Lumpkin and Dess, 2001).

Indeed, munificent environments are contrasted to hostile environments, which are essentially characterised by unfavourable conditions, such as adverse change and intense competition (Miller, 1993; Zahra, 1993; Morris, 1998). However, research suggests that environmental hostility can also stimulate firm-level entrepreneurial activity (Zahra, 1993), through creating threats for the organisation (Zahra, 1991). Firms encountering unfavourable change are likely to explore new ways of dealing with such negative effects through engaging in entrepreneurial activities (Miller, 1983; Morris, 1998; Zahra, 1991, 1993). In that respect, environmental hostility has been found to relate to a strong entrepreneurial posture (Covin and Slevin, 1991).

3.7.2 Effects of corporate entrepreneurship

Corporate entrepreneurship is initiated in established organisations for purposes of profitability and growth (Covin and Slevin, 1991; Zahra 1991, 1993; Zahra and Covin, 1995), strategic renewal (Guth and Ginsberg, 1990), firm-level innovativeness (Baden-Füller, 1995), new knowledge accumulation (McGrath et al., 1994), and international success (Birkinshaw, 1997). Hence, corporate entrepreneurship is considered key element of successful organisations (Peters and Waterman, 1982; Kanter 1984; Pinchot 1985).

In particular, each of the three distinctive dimensions of a firm-level entrepreneurial posture - innovativeness, proactiveness, and risk-taking - appears to have a positive effect on firm-level performance. Innovative companies, creating and introducing new products and technologies, have been generally considered as engines of economic growth (Schumpeter, 1934; Brown and Eisenhardt, 1998), given their superior financial performance. Proactive companies tend to leverage their first-mover advantages, allowing them to address high-end markets (Zahra and Covin, 1995). The link between risk-taking and performance is less obvious; while implementing strategies that have already proved successful generally leads

to satisfactory performance, risky strategies may be more profitable in the long-term³³ (March, 1991; McGrath, 2001).

Nonetheless, other studies have proposed that the relationship between corporate entrepreneurship and performance should be viewed in the context of internal/organisational and external/environmental factors (Miller and Friesen, 1983; Covin and Slevin, 1989; Dess et al., 1997). Lumpkin and Dess (1996) suggest accordingly that the performance implications of entrepreneurial orientation are context-specific, i.e. they depend on the conditions of the external environment as well as intra-firm characteristics. Therefore, a profound understanding of the effects of corporate entrepreneurship on firm-level performance might be better achieved through a configurational approach (Lumpkin and Dess, 1996; Dess et al., 1997). The logic of this approach rests on the premise that firms aligning their internal characteristics with the conditions of the external environment tend to outperform their counterparts (Ketchen et al., 1993). Empirical research has supported this proposition, through proving that the effect of firm-level entrepreneurship on performance varies across disparate environmental conditions (Covin and Slevin, 1989; Naman and Slevin, 1993; Zahra and Covin, 1995; Zahra, 1993) and intra-firm resources and capabilities (Brush et al., 2001).

3.8 Towards a model of firm-level Opportunity Identification

The previous section provided a review of relevant literature on corporate entrepreneurship, which constitutes an important subfield of entrepreneurship research. Particular factors in the internal/organisational and external/environmental context were identified as relevant to firm-level entrepreneurship. A thorough examination of the above factors might prove that they also relate to the particular notion of OI, which is the focus of the present thesis. For example, firms with a strong entrepreneurial posture tend to actively scan their environment for new opportunities (Covin and Miles, 1999). Consequently, *although the theme of OI within established organisations has not been examined per se, it could draw on relevant literature in the field of corporate entrepreneurship, highlighting the relevance of both organisational and environmental factors on firm-level entrepreneurial phenomena.*

Models dealing with the notion of entrepreneurship within established organisations tend to consider factors both internal and external to the firm, along with their effect on firm-level

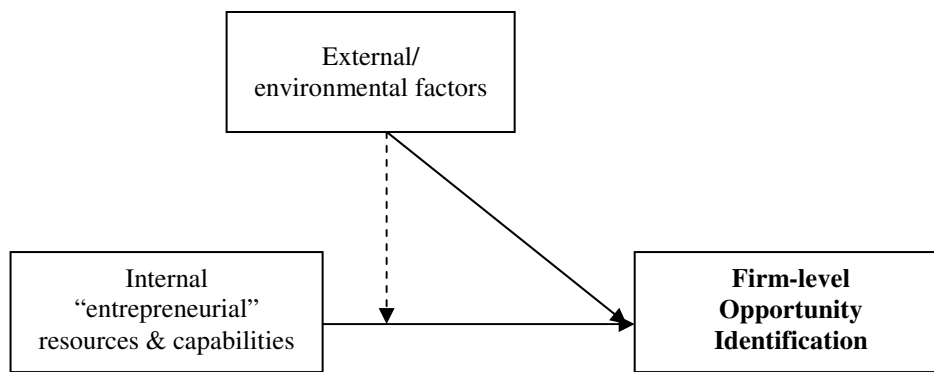
³³ Risky strategies entail great performance variation, i.e. some projects fail while other success, and thus may increase profitability in the long-run (March, 1991; McGrath, 2001).

performance. Zahra and O'Neil (1998) point out that factors in the internal/organisational and the external environment interact, challenging managers to respond in an entrepreneurial manner. Lumpkin and Dess (1996) have proposed a general framework for studying the concept of entrepreneurial orientation within organisations. Their framework suggests that, while entrepreneurial orientation is directly linked to performance, certain organisational and environmental factors influence this relationship. Lumpkin and Dess (1996) further posit that models studying the entrepreneurship – performance relationship should account for both direct and indirect effects amongst the different sets of factors.

Consequently, critical insight from the review of corporate entrepreneurship literature has been that a model seeking to examine the notion of OI as an important element of entrepreneurial behaviour at the firm-level, should consider factors both in the firm's internal and external environments. A comprehensive model of firm-level OI should therefore include these two sets of factors and examine primarily direct, but also indirect effects.

Moreover, as has been explained in Section 6, this thesis draws on the RBV as the unifying framework for studying the notion of opportunity identification. Section 6 explicates how particular resources can be combined and developed over time to generate unique and valuable capabilities, such as the capability to identify entrepreneurial opportunities. As mentioned in Section 3.6, the OI ability relates both to individual entrepreneurs and to entrepreneurial organisations. Although resources and capabilities can be both individual-specific and firm-specific, this study focuses solely on the firm level. To this end, the RBV provides a cohesive framework for identifying key “entrepreneurial” resources and capabilities at the firm-level (Young et al., 2000) that drive OI. Besides, OI has been considered as a critical firm-level capability in itself (Alvarez and Busenitz, 2001).

To conclude, a preliminary model of firm-level OI need to incorporate two key sets of factors: *first*, resources and capabilities held at the firm level that might relate to an increased ability of identifying entrepreneurial opportunities, what could be termed as “entrepreneurial” resources and capabilities; and *second*, particular factors in the firm's external environment, which might pose a direct (positive or negative) effect on firm-level OI, or moderate the relationship between firm-level resources and capabilities and OI (Figure 3.2).



Source: the author

Figure 3.2: Framework for studying firm-level OI

3.9 Opportunity Identification within international firms

The previous sections (Sections 3.6, 3.7 and 3.8) explained how the notion of OI can be particularly relevant at the firm-level. Literature on corporate entrepreneurship has essentially dealt with such entrepreneurial phenomena within existing organisations. However, a new field of literature has emerged fairly recently to examine the theme of entrepreneurship within international and internationalising organisations, i.e. organisations with an international scope of activities and those seeking to expand internationally (Oviatt and McDougall, 1994).

The domain of international entrepreneurship emerged through the constructive integration of two distinctive fields of literature: entrepreneurship and international business (McDougall and Oviatt, 2000). Similar to entrepreneurship, international entrepreneurship involves the discovery, evaluation and exploitation of market opportunities; similar to international business, it focuses on firms with an international scope of activities. As defined by McDougall and Oviatt (2000, p. 903), international entrepreneurship is essentially *“a combination of innovative, proactive and risk-seeking behaviour that crosses national borders and is intended to create value in organisations”*. Hence, this definition incorporates entrepreneurial activity in large and established international organisations (Ahuja and Lampert, 2001), which is essentially manifested through innovative, proactive and risk-taking behaviour (Covin and Slevin, 1989).

More recently, McDougall and Oviatt (2003, p. 7) revised their definition of international entrepreneurship to include *“the discovery, enactment, evaluation, and exploitation of*

opportunities - across national borders - to create future goods and services”, which essentially proves the centrality of the OI process. In a similar vein, Dimitratos and Plakoyiannaki (2003, p.189) view international entrepreneurship as an organisation-wide phenomenon, involving “*the exploitation of opportunities in the international marketplace to generate value*”. Zahra et al. (2005) most recently suggested that international entrepreneurship is about OI and exploitation in foreign markets. Consequently, understanding how international entrepreneurial organisations identify and exploit opportunities is central to the development of the domain of international entrepreneurship. Nonetheless, although research has acknowledged the importance of OI for international organisations, relevant theoretical and empirical research is scarce (Dimitratos and Jones, 2005).

In addressing the above gap, the present study sheds light into the theme of OI within international entrepreneurial organisations. Organisations with an international scope of activities may be exposed to a larger set of opportunities due to their dual focus on both their domestic and international markets (Zahra and Gravis, 2000; Zahra and Dess, 2001). As such, OI constitutes a major theme of research within the field of international entrepreneurship (Zahra and George, 2002; Dimitratos and Plakoyiannaki, 2003; McDougall and Oviatt, 2003; Dimitratos and Jones, 2005; Jones and Coviello, 2005).

In conclusion, the notion of OI is particularly relevant within international firms. Drawing on the preliminary framework that was introduced in Section 3.8, two particular sets of factors need to be considered as key determinants of firm-level entrepreneurship: “entrepreneurial” resources and capabilities within the international firm, and also conditions in the firm’s local and international environments. In that respect, the resource-based paradigm can assist in explaining how, within the context of an international entrepreneurial culture, resources and capabilities are developed and leveraged by international firms in order to promote firm-level OI. As mentioned above, international firms might by definition have access to a larger opportunity set, since potential sources of such opportunities might reside at both a local and international level (Zahra and Gravis, 2000; Zahra and Dess, 2001).

The following paragraphs provide an overview of existing literature on international entrepreneurship, focusing on intra-firm and environmental factors as critical determinants of firm-level entrepreneurial phenomena, and hence OI, along with the effects of entrepreneurship for international firms.

Characteristics of an international entrepreneurial firm

McDougall and Oviatt's (2000, p. 903) definition of international entrepreneurship, provided above, has relied on Covin and Slevin's (1989) conceptualisation of firm-level entrepreneurship as a combination of innovative, proactive and risk-taking behaviour. In that respect, literature on international entrepreneurship seems to acknowledge the multidimensional nature of the entrepreneurship construct. Firms adopting an "international entrepreneurial posture" expand into international markets through exploiting their unique entrepreneurial competencies (Autio et al., 2000; McDougall et al., 1994).

More topical research on the field of international entrepreneurship has proposed six key dimensions that capture an international firm's entrepreneurial culture in a more holistic and comprehensive manner: *market orientation, learning orientation, networking orientation, innovation propensity, risk attitude, and motivation* (Dimitratos and Plakoyiannaki, 2003). In particular, market orientation refers to the posture and behaviour that the firm adopts in order to create superior value for its customers (Narver and Slater, 1990). Learning orientation refers to the propensity of the firm to actively obtain and use knowledge (Moorman, 1995; Slater and Narver, 1995), while networking orientation refers to the extent to which the firm obtains resources through network creation and social embeddedness (Granovetter, 1973; Gulati, 1998). A firm's innovation propensity relates to its tendency to espouse new and creative ideas, products, or processes in order to serve the host market (Lumpkin and Dess, 1996), risk attitude refers to the extent to which the firm is prepared to undertake significant and risky resource commitments in foreign markets (Miller and Friesen, 1978), and motivation relates to the process of initiation, direction and energisation of human behaviour towards adopting an entrepreneurial posture (Geen and Shea, 1997).

Following a resource-based view, the above firm-level characteristics could be viewed as "unique" and "valuable" resources and capabilities held by an international firm that influence its ability to identify entrepreneurial opportunities, hence constitute "entrepreneurial" firm-specific resources and capabilities. Consequently, in promoting firm-level entrepreneurial phenomena, the above six dimensions might also drive OI within international entrepreneurial firms. As has been explained, the particular notion of OI has only been studied at the individual entrepreneur level and not as a firm-level phenomenon. Hence, the present thesis argues that these six dimensions driving firm-level entrepreneurial phenomena might also relate to the key factors that drive OI by an individual entrepreneur

(presented in Table 3.2). Table 3.3 illustrates how these firm-level dimensions relate to individual-level characteristics and thus might actually drive subsidiary OI.

Entrepreneurial characteristics	Drivers of OI at the individual entrepreneur level
<ul style="list-style-type: none"> ▪ Market Orientation ▪ Learning Orientation 	<ul style="list-style-type: none"> ▪ Prior Knowledge & Experience (Hayek, 1945; Venkataraman, 1997; Shane, 2000) ▪ Learning (Corbett, 2002, 2005; Dimov, 2003; Ravasi & Turati, 2005) ▪ Cognition (Sigrist, 1999; Alvarez & Busenitz, 2001; Baron & Ensley, 2003; Gaglio, 2004; Baron & Ward, 2004)
<ul style="list-style-type: none"> ▪ Networking Orientation 	<ul style="list-style-type: none"> ▪ Social Networks (Birley, 1985; Low & MacMillan, 1988; Floyd & Wooldridge, 1999; Singh, Hills, Hybels, & Lumpkin, 1999; De Koning, 1999)
<ul style="list-style-type: none"> ▪ Innovation Propensity ▪ Risk-Attitude 	<ul style="list-style-type: none"> ▪ Entrepreneurial Alertness (Kirzner, 1973, 1979; Kaish & Gilad, 1991; Busenitz, 1996; Ray & Cardozo, 1996; Gaglio & Katz, 2001) ▪ Creativity (Long & McMullen, 1984; Amabile, 1988; Hills, Shrader & Lumpkin, 1999)
<ul style="list-style-type: none"> ▪ Motivation 	<ul style="list-style-type: none"> ▪ Extrinsic Motivation / Financial Reward (Schumpeter, 1976; Baumol, 1990; Kuratko, Hornsby, and Naffziger, 1997; Shepherd and DeTienne, 2005)

Environmental conditions and international entrepreneurship

International entrepreneurship literature has also suggested that the alignment of entrepreneurship with environmental conditions might be critical to superior international performance. Studies have typically used the concepts of *hostility* and *uncertainty* to capture environmental effects on entrepreneurship (Keats and Hitt, 1988; Lawless and Finch, 1989). Covin and Slevin (1989, p.75) defined hostile environments as “characterised by precarious industry settings, intense competition, harsh, overwhelming business climates, and the relative lack of exploitable opportunities”. Uncertainty is typical in environments characterised by fast rate of change and innovation, along with dynamism and unpredictability in the actions of competitors and customers (Lawrence and Lorsch, 1967; Thompson, 1967; Dess and Beard, 1984; Miller and Dröge, 1986).

An innovative posture, which is linked to entrepreneurship, is a common response of successful firms in hostile environmental conditions (Miller and Friesen, 1983). Also, proactiveness, which is another constituent of entrepreneurship, has been found to positively associate with performance in hostile contexts (Lumpkin and Dess, 2001). An

unfriendly domestic environment may shift the attention of firms away from opportunities in the home market and induce them to seek attractive prospects abroad (Zahra et al, 1997).

As regards environmental uncertainty, researchers have generally proved its positive association with firm-level entrepreneurship (Balabanis and Katsikea, 2003; Miller, 1983; Miller and Friesen, 1982). Uncertainty in the domestic country can induce firms to internationalise in order to counteract against unfavourable local conditions (Das, 1994; Zahra et al, 1997). This behaviour may also apply to entrepreneurial firms, given that uncertainty in the home country directs such firms to international activities (McDougall et al. 1994; Oviatt and McDougall, 1994).

It is obvious from the above analysis that entrepreneurial activities of international firms may be influenced by environmental conditions in both their local and international settings (Zahra et al, 1999). Although these two different environmental contexts, i.e. local and international, may have disparate characteristics and hence pose differing effects on entrepreneurial phenomena (McDougall et al, 2003; Young et al, 2003), relevant research appears to have focused mainly on the effects of the local environmental on firm-level entrepreneurship (Covin and Slevin, 1991; Zahra and Covin, 1995; Zahra et al. 1997; Zahra et al, 2000). The present study addresses this gap through considering uncertainty and munificence at both a local and international level.

Effects of international entrepreneurship on performance

Despite few studies suggesting the opposite (Hart, 1992; Miller and Friesen, 1982), it is generally accepted that entrepreneurship can have a positive influence on firm-level performance (Covin and Slevin, 1991; Zahra, 1991, 1993; Zahra and Covin, 1995). However, although entrepreneurship drives value creation in both domestic and international markets, few empirical studies have explicitly focused on the entrepreneurship - performance relationship (Zahra, 1993; Zahra et al., 1999; Andersson et al., 2001; Hornsby et al., 2002; Dess et al., 2003), particularly within the context of an international entrepreneurial firm (Dimitratos et al., 2004).

As argued in Section 3.7.2, researchers have acknowledged that the relationship between entrepreneurship and performance is context-specific (Covin and Covin, 1990; Zahra and Covin, 1995; Lumpkin and Dess, 1996; Dess et al., 1997). Firms that adopt an entrepreneurial posture in hostile environments enjoy superior performance (Covin and Slevin, 1991; Miller, 1993; Zahra and Covin, 1995), while those failing to exhibit entrepreneurial behaviour under conditions of uncertainty may experience a decline in

performance (Covin and Covin, 1990). However, despite studies investigating the moderating effect of environmental variables on the entrepreneurship - performance association (Covin and Slevin, 1989; Naman and Slevin, 1993; Lumpkin and Dess, 2001), the respective examination within the field of international entrepreneurship has remained limited. While few exceptions have found a positive relationship (Zahra and Garvis, 2000; Dimitratos et al, 2004; McDougall and Oviatt, 2000), Zahra and Garvis (2000) further established the presence of “diminishing returns” to the excessive pursuit of entrepreneurial activities in international markets under conditions of extreme hostility. Nonetheless, the effect of entrepreneurship on international performance of the firm deserves further investigation (Dimitratos et al., 2004).

Consequently, in examining the phenomenon of OI within international entrepreneurial firms, the present study also considers performance implications. Hence, apart from identifying key factors that drive firm-level OI, this thesis will further examine the effect of OI on firm performance.

3.10 Conclusion

This chapter focused on the particular entrepreneurial phenomenon of opportunity identification (OI) as a central notion within the field of entrepreneurship (Shane and Venkataraman, 2000; Gaglio and Katz, 2001; Ardichvili et al., 2003). In particular, it provided a review of relevant literature in the fields of entrepreneurship and international entrepreneurship to shed light into the under-investigated theme of OI within international entrepreneurial organisations. The notion of OI was defined as comprising of two distinctive but not mutually exclusive processes: opportunity “discovery” (the “Kirznerian view”) and opportunity “creation” (the “Schumpeterian view”); “discovery” was linked to the identification of more incremental opportunities, while “creation” was linked to radical OI. This chapter also analysed the different theoretical perspectives relating to OI: the “functional”, the “personality” and the “behavioural”. Subsequently, the resource-based view (RBV) was introduced as a unifying framework under which the “personality” and the “behavioural” perspectives of OI are expected to co-determine the discovery and the creation of entrepreneurial opportunities. Finally, a thorough review of relevant literature in the fields of corporate entrepreneurship and international entrepreneurship was provided in order to develop a preliminary framework for studying firm-level OI. This framework essentially incorporates two key sets of factors: specific “entrepreneurial” resources and

capabilities held at the firm level that might relate to an increased ability of OI, and also particular factors in the firm's external environment, both local and international.

The following chapter (Chapter 4) draws on the above framework in order to apply the notion of OI to the particular context of the multinational subsidiary. To this end, literature in the distinctive fields of international business and entrepreneurship is synthesised - under the more topical field of international entrepreneurship - to examine the under-investigated phenomenon of firm-level OI within a totally new context, that of the multinational subsidiary.

Chapter 4:

Synthesis of Literature: Opportunity Identification in Multinational Subsidiaries

4.1 Introduction

This chapter integrates literature in the distinctive fields of international business and entrepreneurship in order to examine the topical theme of OI within an entire new context, that of the multinational subsidiary. In that respect, the present chapter acts as a connective link between the two previous literature chapters (Chapter 2 reviewing literature on subsidiary entrepreneurship and Chapter 3 reviewing entrepreneurship literature on OI) and develops a conceptual framework for studying OI, its antecedents and outcomes, at the subsidiary level.

The structure of this chapter is as follows: *Section 4.2* highlights the significance of the theme of OI in both subsidiary-related and entrepreneurship literature, through reviewing some of the key gaps that were identified in the previous chapters. *Section 4.3* synthesises relevant literature in the two fields to produce a resource-based framework for studying the particular theme of OI within the context of the multinational subsidiary. This preliminary framework facilitates exploration into the under-investigated theme of subsidiary OI and provides significant input to the next chapters. *Section 4.4* summarises the key points made in this chapter.

4.2 Studying OI within multinational subsidiaries

The present thesis brings together notions from the distinct fields of international business and entrepreneurship in order to examine the topical theme of OI in an entirely new context, that of the multinational subsidiary. On one hand, MNC literature, despite having acknowledged the possible corporate-wide benefits of subsidiary entrepreneurship (Bartlett and Ghoshal, 1989; Birkinshaw, 1997; McEvily and Zaheer, 1999; Birkinshaw and Hood, 2001), seems to have paid inadequate attention to entrepreneurial phenomena at the subsidiary level (Paterson and Brock, 2002; Young and Tavares, 2004; Birkinshaw et al, 2005; Boojihawon et al, 2007), and most particularly to OI. On the other hand, entrepreneurship literature, though recognising the centrality of OI in entrepreneurial activity (Shane and Venkataraman, 2000; Gaglio and Katz, 2001; Ardichvili et al., 2003), has not examined this particular notion at a corporate level (Dimitratos and Jones, 2005).

Consequently, and given its criticality to organisational survival and growth (Hamel and Prahalad, 1989; McGrath et al, 1996), the theme of OI needs to be studied within the context of the multinational subsidiary.

In examining the particular theme of entrepreneurial OI within the context of the multinational subsidiary, this study draws mainly on the resource-based view (RBV), which by itself constitutes an innovative approach both in terms of the subsidiary-related and the firm-level entrepreneurship research. Indeed, while most topical subsidiary literature has been focusing its attention on subsidiaries that provide critical resources and capabilities to the entire multinational system (McEvily and Zaheer, 1999; Andersson and Forsgren, 2000; Holm and Pedersen, 2000; Rugman and Verbeke, 2001; Frost et al., 2002; Andersson et al., 2002), additional work is required to explore and explain the development of resources and capabilities at the subsidiary level (Rugman and Verbeke, 2001; Schmid and Schurig, 2003). In the entrepreneurship literature, while researchers have suggested that understanding entrepreneurial phenomena could bring new insights to the resource-based approach (Alvarez and Busenitz, 2001), little effort has been made to examine such phenomena within a resource-based framework (Barney, 2001).

In addressing the above key gaps, the present thesis integrates subsidiary literature on entrepreneurship (Chapter 2) and entrepreneurship literature on OI (Chapter 3) in order to develop a resource-based framework for studying the theme OI, its antecedents and consequences, at the subsidiary level. The development of this framework is thoroughly explained in the following section.

4.3 Conceptual framework for studying subsidiary OI

In examining the particular theme of subsidiary OI, this study focuses on two distinctive aspects³⁴:

First, it focuses on the *extent to which subsidiaries identify opportunities*. In that respect, opportunities are considered to encompass all prospects or possibilities that can be useful to the subsidiary's activities, irrespective of their scope and impact. This aspect of OI addresses the need for a more holistic conceptualisation of subsidiary entrepreneurship (Birkinshaw, 1997; Wright, 1999; Dess et al., 2003; Birkinshaw et al, 2005; Boojihawon et al, 2007), as a phenomenon encompassing both critical and "trivial initiatives" (Birkinshaw,

³⁴ Based on relevant recommendations in the entrepreneurship literature (Amabile, 1990; Shane, 2000; Fiet, 2002; Shepherd and DeTienne, 2005).

1997). Indeed, Birkinshaw's (1997) conceptualisation of subsidiary initiative excludes "trivial initiatives", given that they represent limited-scope activities that have implications for the individual subsidiary only. However, literature on corporate entrepreneurship tends to encompass a broader spectrum of entrepreneurial activities, which might relate not only to the creation of new business activities, but also to the transformation and renewal of existing organisations (Stopford and Baden-Füller, 1994). Hence, subsidiary entrepreneurship might comprise not only radical change and innovation, but also less fundamental but still significant improvements that continuously take place at the subsidiary level (Andersson and Pahlberg, 1997). Freeman has described these latter activities as "incremental innovations" (Freeman, 1987).

Second, this study examines the particular *identification of radical opportunities at the subsidiary level*. The focus on radical OI is essentially based on Schumpeter's (1934) notion of "opportunity creation", a concept relating to new resource combinations, rather than optimisation of existing resources (Schumpeter, 1934; Ripsas, 1998; Ardichvili et al., 2003)³⁵. Radical OI is generally associated with opportunities that represent a clear departure from existing practices, for example opportunities on new products, processes and technologies that have a tremendous impact on economic performance (Poynter and White, 1989; Roth and Morrison, 1992; Dunning, 1994) and drive economic growth (Schumpeter, 1934; Brown and Eisenhardt, 1998). The consideration of radical OI at the subsidiary-level is critical, given that different antecedents and outcomes may be associated with this particular concept.

The following paragraphs synthesise subsidiary-related and entrepreneurship literature in order to develop a comprehensive conceptual framework for studying the particular theme of OI, its antecedents and consequences, within the context of the multinational subsidiary.

4.3.1 Antecedents of OI at the subsidiary level

As has been thoroughly explained in Chapter 2 (Chapter on subsidiary literature), three key sets of factors seem to be particularly relevant when examining the theme of subsidiary entrepreneurship: *first*, subsidiary-specific resources and capabilities; *second*, elements in the corporate setting in which the subsidiary operates (as defined by the parent-subsidiary and subsidiary-subsidiary relationships); and *third*, characteristics of the external (local and international) subsidiary environment. As has been explicitly argued in Chapter 2, these

³⁵ More details on "incremental" versus "radical innovation" are provided in Chapter 3, Section 3.3 which defines the notion of OI within the context of the present study.

three sets of factors essentially co-determine entrepreneurial phenomena at the subsidiary level (Birkinshaw and Hood, 1998; Paterson and Brock, 2002).

As regards the first set of factors, subsidiary literature has placed considerable emphasis on *subsidiary networking* (Forsgren et al., 1995; Andersson and Pahlberg, 1997; Håkansson and Snehota, 1997; Furu, 2000) and *subsidiary learning* (Birkinshaw, 1996; Holm and Pedersen, 2000; Frost et al., 2002) as critical capabilities at the subsidiary level that can be linked to entrepreneurial behaviour. As regards the second set of factors, literature has focused on aspects of the parent-subsidiary and subsidiary-subsidiary relationship that are considered “valuable” (from a resource-based perspective) and “important” (from a resource-dependency perspective) pertaining to subsidiary entrepreneurship. These factors are *subsidiary autonomy* (Ghoshal and Bartlett, 1988; Birkinshaw, 1997, 2000; Birkinshaw et al., 1998; Hood and Taggart, 1999), and the *subsidiary's role* within the multinational system (Prahalad and Doz, 1981; Bartlett and Ghoshal, 1989; Birkinshaw, 1997). These dimensions comprise the subsidiary's power base within the multinational system and essentially define the subsidiary's ability to build up resources and capabilities beyond the control of the parent. Finally, regarding the third set of factors, external resource characteristics and environmental conditions in which the subsidiary builds and exploits its resources and capabilities can have a significant impact on subsidiary entrepreneurship. Such environmental considerations focus not only on *traditional factor endowments* (Rugman and Gestrin, 1993; Dunning, 1988), but also on *dynamic externalities* (Malmberg et al., 1996; Sölvell and Zander, 1998) stemming from spatial concentration and clustering of economic activity.

Consequently, the three aforementioned sets of factors essentially determine subsidiary entrepreneurship. Considering that entrepreneurship originates from opportunities that are being identified at the firm-level (Birkinshaw, 1997), the same factors might also relate to the particular concept of subsidiary OI. Hence, subsidiary-specific resources and capabilities, elements in the corporate (MNC) setting in which the subsidiary operates and characteristics of the subsidiary's external (local and international) environment might to a great extent drive or inhibit subsidiary OI. Figure 4.1 illustrates the critical input of subsidiary-related literature in identifying key drivers of OI at the subsidiary level.

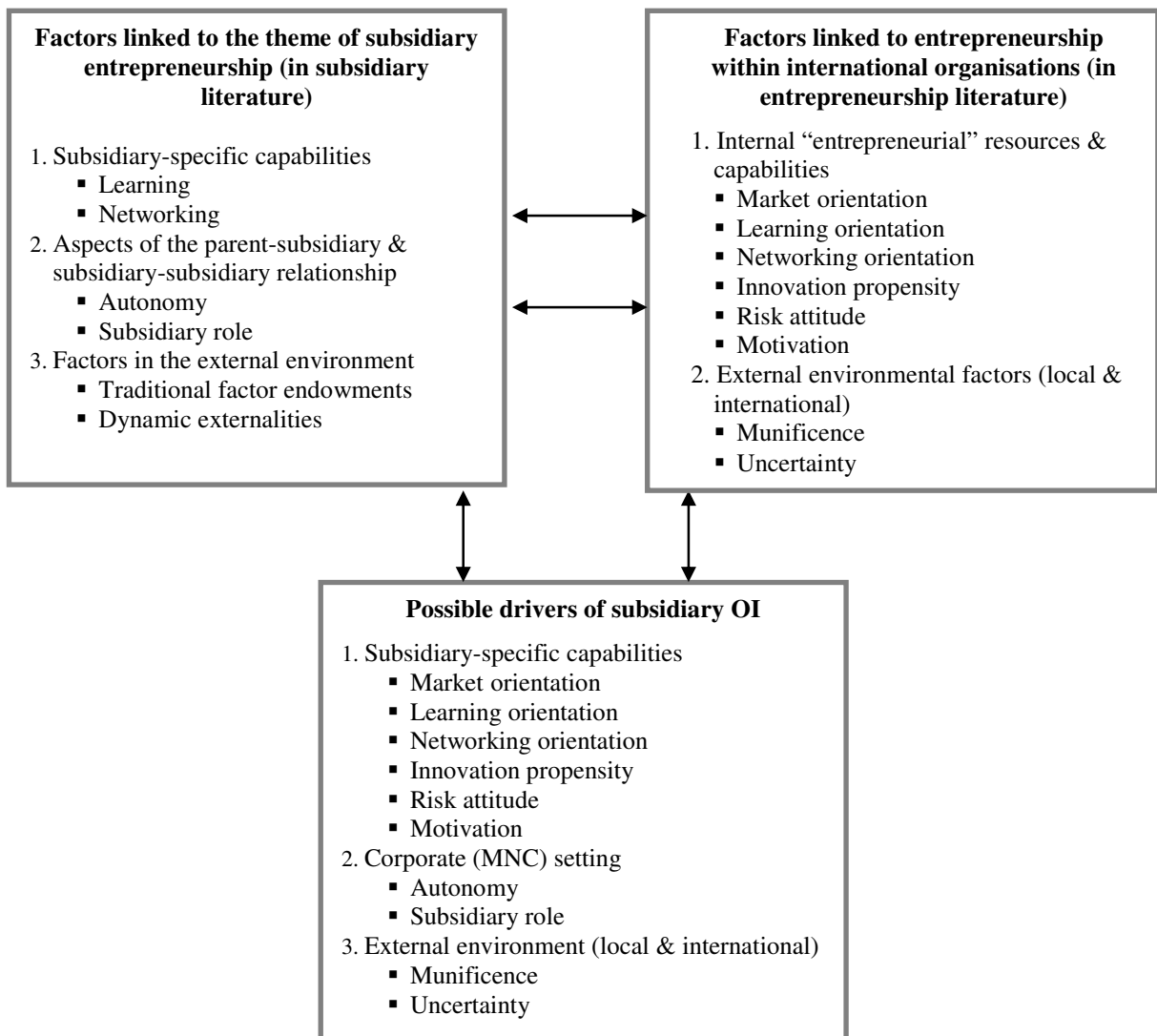


Figure 4.1: Synthesis of subsidiary-related and entrepreneurship literature

As has been analytically explained in Chapter 3 (Chapter on Entrepreneurship Literature), studying the notion of OI within international firms requires the examination of two key sets of factors: internal “entrepreneurial” resources and capabilities held at the firm level, but also external factors in the local and international environments.

More recent research on “international entrepreneurial organisations” has identified six key dimensions that could be considered as entrepreneurial characteristics at the subsidiary-level: *market orientation*, *learning orientation*, *networking orientation*, *innovation propensity*, *risk attitude*, and *motivation* (Dimitratos and Plakoyiannaki, 2003). These dimensions, though linked to firm-level entrepreneurship, also relate to literature studying OI at the individual entrepreneur-level (see Table 3.3 in Chapter 3 for linking firm-level to

individual-level drivers of OI). In that respect, examining the notion of OI at the subsidiary level would involve examining the extent to which these characteristics drive the subsidiary OI process.

As mentioned above, international entrepreneurship literature also highlights the importance of the external environment with respect to firm-level entrepreneurship. In particular, two factors in the firm's external environment are typically examined in empirical studies that consider environmental effects (Covin and Slevin, 1989; Zahra, 1991, 1993): *environmental munificence* and *environmental uncertainty*. Figure 4.1 illustrates the critical input of entrepreneurship literature in the identifying key drivers of OI at the firm level.

Consequently, a synthesis of relevant literature on MNC subsidiaries and entrepreneurial organisations brings into light the conceptual framework presented in Figure 4.2. This framework essentially examines the notion of OI at the subsidiary level. In investigating the relationships between OI and the aforementioned sets of factors (subsidiary, corporate, and environment-related), *this research essentially draws on the RBV as a unifying framework*. Subsidiary-specific characteristics driving the OI process are considered “entrepreneurial capabilities”, in the sense that they constitute rare, valuable, non-substitutable and difficult to imitate competencies (Wernerfelt, 1984; Dierickx and Cool, 1989; Barney, 1991) that affect the subsidiary's ability to identify opportunities. The corporate setting in which the subsidiary operates is essentially defined by intra-MNC resource dependencies that determine the relative power amongst the various entities. Therefore, aspects of the parent-subsidiary and subsidiary-subsidiary relationship, such as the subsidiary's autonomy and role (in terms of intra-MNC knowledge flows), reflect its power base within the multinational system. From a resource-based perspective, these two factors allow the subsidiary to access “unique” and “valuable” resources, which drive the subsidiary's OI ability. Finally, environmental munificence and uncertainty of the local and international environments can provide or deprive the subsidiary of resources critical for the development of internal capabilities (Benito et al., 2003), such as that of OI. Hence, *“entrepreneurial capabilities” at the subsidiary level and “critical resources” found in the subsidiary's corporate setting³⁶ and the external environment might co-determine the extent to which OI takes place at the subsidiary level* (Figure 4.2).

However, though different types of indirect effects - such as moderating, mediating and interaction effects - might also be present between the key constructs of the conceptual

³⁶ As explained previously, the corporate setting essentially refers to the parent-subsidiary and subsidiary-subsidiary relationships, which (from a resource-based perspective) provide to the individual subsidiary access to “unique” and “valuable” resources.

model (Lumpkin and Dess, 1996), only direct effects are examined. Testing for different types of indirect effects goes beyond the scope of the present research, as it would entail making a different set of assumptions. As will be proposed in the final paragraphs of the current thesis (Chapter 8), investigating the existence of such indirect effects might be the objective of future research in the same area.

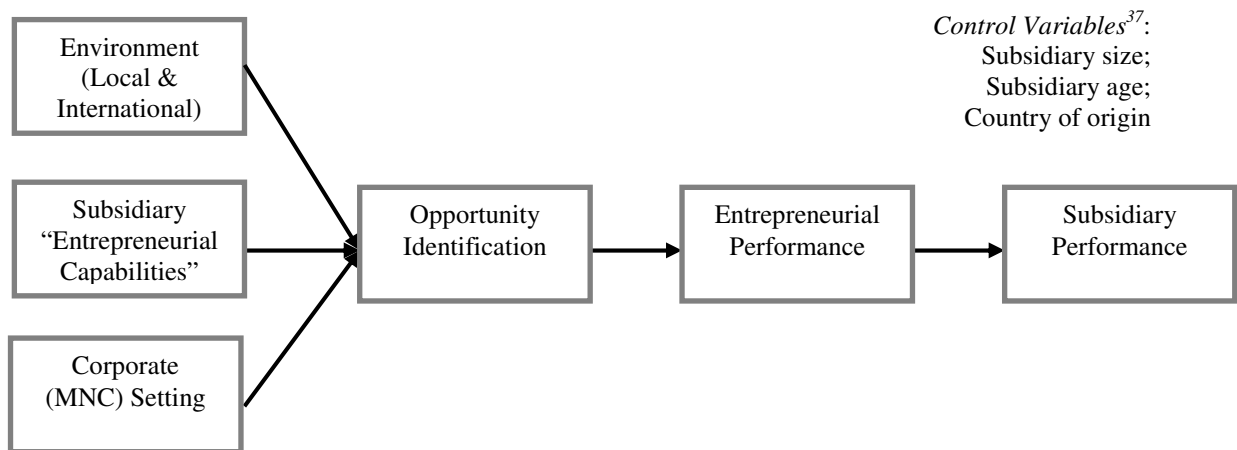


Figure 4.2: The conceptual framework of the research

4.3.2 Outcomes of OI at the subsidiary level

This study further examines the extent to which OI at the subsidiary level relates to the actual output of subsidiary entrepreneurship (Figure 4.2). Chapter 3 (Chapter on Entrepreneurship Literature) has explained how the concept of OI lies at the heart of entrepreneurial activity (Shane and Venkataraman, 2000; Gaglio and Katz, 2001; Ardichvili et al., 2003). In essence, entrepreneurial activity stems from opportunities that are identified and subsequently exploited at the subsidiary level (Birkinshaw, 1997). However, between the identification of an opportunity and its exploitation lies a critical opportunity evaluation and development process (Ardichvili et al, 2003). This means that not all identified opportunities are exploited to produce entrepreneurial output, i.e. increased exploration might not necessarily relate to increased exploitation. Some opportunities might not be profitable enough; some might require additional resources beyond the subsidiary's control;

³⁷ These three control variables (defined in Section 4.3.3) refer to the entire framework. Hence, as will be explained in Chapter 7 (Quantitative research and hypothesis testing), during the SPSS analysis they were incorporated in every regression model, while during the LISREL analysis they were input when testing the entire model altogether.

while some might not be favoured by the parent corporation. Consequently, increased subsidiary OI might not translate to increased subsidiary entrepreneurial activity.

Given that entrepreneurial activity at the subsidiary level refers to the actual output of subsidiary entrepreneurship, this study uses the term “*entrepreneurial performance*”. It is therefore assumed that subsidiary “entrepreneurial performance” essentially stems from the exploitation of entrepreneurial opportunities at the subsidiary level. Two principal reasons can be offered to explain why subsidiary OI might not always result in increased subsidiary entrepreneurial performance. *First*, literature has suggested that “exploitation” activities tend to “drive out” activities of “exploration” and creation (March, 1991, Hedlund and Ridderstråle, 1992; Levinthal and March, 1993; Birkinshaw and Ridderstråle, 1999). Hence, different resources and capabilities may be required for exploration versus exploitation at the subsidiary level. However, literature has also suggested that organisations cannot be engaged solely in exploitation or exploration; they rather need to find an appropriate balance (March, 1991). *Second*, the established structure of the MNC may favour opportunities originating in highly-influential parts of the organisation at the expense of those from the periphery (Burgelman and Grove, 1996; Hamel, 1996). Consequently, subsidiaries may not always be given the autonomy and required resources to exploit opportunities and for reasons beyond the subsidiary’s control (Birkinshaw and Ridderstråle, 1999). In that respect, Yamin (2002) underlines the importance of “autonomous behaviour” for exploratory activities to take place.

Consequently, the conceptual framework presented in Figure 4.2 also examines the relationship between OI and opportunity exploitation, as manifested through the subsidiary’s *entrepreneurial performance*, i.e. entrepreneurial activities that have been undertaken at the subsidiary-level. The latter might have a local or an international orientation and could be strategic or more operational in nature. Irrespective of their scope and magnitude, such “entrepreneurial activities” are essentially manifestations of subsidiary entrepreneurship.

Moreover, while subsidiary OI might drive entrepreneurial performance at the subsidiary level, it is worth further investigating the extent to which such entrepreneurial output can actually have a positive impact on *overall subsidiary performance*³⁸ (Figure 4.2). While entrepreneurship literature has generally proposed a positive effect of entrepreneurship on organisational performance (Covin and Slevin, 1991; Zahra 1991, 1993; Zahra and Covin,

³⁸ Subsidiary performance, as used in the context of the present study, essentially refers to the effectiveness of the subsidiary in pursuing its own and the MNC objectives in the host country.

1995; Baden-Füller, 1995; Lumpkin and Dess, 1996; Birkinshaw, 1997; Zahra and Garvis, 2000; McDougall and Oviatt, 2000; Zahra et al., 2001), few studies have explicitly focused on the entrepreneurship - performance relationship (Andersson et al., 2001; Dess et al., 2003; Hornsby et al., 2002; Dimitratos et al., 2004), and hence empirical evidence is scant.

Particularly within the context of the multinational subsidiary, surprisingly little has been written about the assessment of subsidiary performance (Andersson et al., 2001). Traditionally, studies touching upon this theme have tended to compare the latter with the performance of local firms (Caves, 1982; Globerman and Meredith, 1984). However, no study appears to have directly examined the effect of entrepreneurial phenomena on subsidiary performance. Also, while most studies tend to measure subsidiary performance based on financial aspects (such as profit rate and return on equity), a large part of the benefits of subsidiary OI and entrepreneurship tend to be non-financial in nature and thus difficult to quantify³⁹. Entrepreneurship researchers have argued accordingly that subjective criteria (i.e. satisfaction of managers with performance) may need to be weighted more heavily when estimating firm-level performance (Lumpkin and Dess, 1996)⁴⁰. Studies within the field of international business have also successfully relied on such self-reported measures of performance (Roth and Morrison, 1990; Roth et al., 1991).

Consequently, as illustrated in Figure 4.2, studying firm-level OI should also incorporate an overall examination of its bottom-line impact on subsidiary performance (through the intervention of entrepreneurial performance). Indeed, differences in performance can also eventually arise from the quality of opportunities and the creativity of the exploitation modes (Zahra et al., 2005). In accordance to the resource-based approach, distinctive “entrepreneurial capabilities” held at the subsidiary level, as well as “critical resources” residing in the subsidiary’s corporate setting (essentially accessed through intra-corporate relationships) and the external environment *might also lead to increased subsidiary performance*.

4.3.3 Control variables

Finally, it is important to note that the present research aligns with previous subsidiary-related and entrepreneurship studies in controlling against the three following factors:

³⁹ This point will be further analysed in Chapter 6 analysing the findings of the qualitative research.

⁴⁰ The operationalisation of subsidiary performance in the present thesis is explicitly examined in the following Chapter (Chapter 5 on research methodology, Section 5.4.5.9).

subsidiary age (Frost, 2001), subsidiary size (Zahra et al., 2000), and subsidiary country of origin (Birkinshaw, 1999).

Subsidiary age is generally used as a control variable in relevant studies (Zahra et al., 2000), as it is considered to influence a firm's entrepreneurial activities (Pinchot, 1985; Zahra 1991; Zahra, Dharwadkar and George, 2000). It is generally accepted that subsidiaries of younger age tend to adopt entrepreneurial behaviour in order to adapt to their local conditions (Franko, 1974). Following the same logic, as subsidiaries become more established, their level of entrepreneurial activity may reduce due to "inertia" in their decision making processes (Zahra et al, 2000). However, other studies have found a positive link between subsidiary age and its decision-making autonomy (Harzing, 1999; Taggart and Hood, 1999), while the latter might lead to more entrepreneurial initiatives at the subsidiary level (Ghoshal and Bartlett, 1988; Gupta and Govindarajan, 1994; Birkinshaw et al, 1998). Nonetheless, the earlier study of Young et al. (1985) found no clear link between the age of a subsidiary and its degree of decision-making autonomy.

Subsidiary size is also included as a control variable given its association with corporate innovation in the entrepreneurship literature (Zahra, 1993). However, there seems to be no agreement on the potential effect of subsidiary size on subsidiary entrepreneurship (Zahra et al, 2000). Size is expected to be related to the amount of autonomy the subsidiary has (Hedlund, 1981; Chang and Taylor, 1999), as well as to greater resource flows (Egelhoff, 1988; Roth et al., 1991; Foss and Pedersen, 2002), which can increase subsidiary entrepreneurship. In that respect, relevant literature has confirmed a significant positive correlation between firm size and innovation (Camison-Zornoza et al, 2004). On the other hand, Gates and Egelhoff (1986) found that increased size is positively associated with the use of financial controls, which essentially reduce subsidiary entrepreneurship (Barringer and Bluedorn, 1999).

The present study also controls for a *country of origin effect* (Zahra et al, 2000). As will be further explained in Chapter 5 (Section 5.4.2 on sampling considerations), subsidiaries of different countries of origin are included in the analysis. Zahra, Jennings, and Kuratko (1999, p.6) argue accordingly that "it is now time for important comparative studies that use data from multiple countries and cultures" when studying corporate entrepreneurship. This view is corroborated by other researchers⁴¹ (Harzing, 2000; Zahra and George, 2002). Entrepreneurship research has indeed suggested that a subsidiary's country of origin can

⁴¹ Zahra and George (2002) further identify an over-reliance on U.S. samples within corporate entrepreneurship studies.

influence its role and responsibilities within the MNC (Bartlett and Ghoshal, 1990; (Papanastassiou and Pearce, 1997). Literature has mainly attributed differences across subsidiaries of different countries of origin to dissimilarities in the respective levels of autonomy and centralisation (Hedlund, 1981; Negandhi and Baliga, 1981; Martinez and Jarrillo, 1989), differences in national cultures (Morris et al., 1994), and also home-country environmental disparities (Douglas and Rhee, 1989). However, there seems to be scarcity of literature examining country-of-origin effects on the theme of subsidiary entrepreneurship in general and the particular theme of subsidiary OI. This issue will be analysed more explicitly in Chapter 7 (Section 7.5.6 on the findings of the quantitative analysis).

4.3.4 Relevant research objectives

Summarising what has been discussed previously (Sections 4.3.1 and 4.3.2), this study sheds light into the antecedents and consequences of subsidiary OI (Figure 4.2), while it seeks to combine such factors within a resource-based framework. In terms of antecedents, it seeks to identify distinctive subsidiary capabilities, aspects relating to the parent-subsidiary and subsidiary-subsidiary relationship (determining the subsidiary's corporate setting), as well as conditions in the external (local and international) environment that drive subsidiary OI (see relevant Research Objectives 1 and 2). In terms of consequences, it seeks to examine the impact of OI on subsidiary entrepreneurship (entrepreneurial performance) and on the subsidiary's bottom-line performance - through the intervention of entrepreneurial performance - (see relevant Research Objective 3).

Hence, the following research objectives can be derived:

1. What are the “entrepreneurial capabilities” in MNC subsidiaries that drive subsidiary OI?
2. What are critical factors in the subsidiaries' corporate (MNC) setting⁴² and the external environment (local and international) that influence subsidiary OI?
3. How does subsidiary OI affect subsidiary entrepreneurial activity (entrepreneurial performance) and overall subsidiary performance (through the intervention of entrepreneurial performance)?

⁴² It should be noted that, when referring to the corporate setting, this study essentially considers aspects of the parent-subsidiary and subsidiary-subsidiary relationship. In order to differentiate these from intra-subsidiary capabilities, the former are regarded as elements of the subsidiary's corporate (i.e. MNC) context.

In addressing the above research objectives, the present study will also control for subsidiary size, age and country of origin.

4.4 Conclusion

The present chapter synthesised subsidiary-related and entrepreneurship literature to develop a comprehensive resource-based framework for studying the topical theme of OI, its antecedents and outcomes, within the context of the multinational subsidiary. *In terms of antecedents*, this framework essentially identifies the relevance of three key sets of factors: subsidiary-specific capabilities, aspects of the parent-subsiidiary and subsidiary-subsiidiary relationship, as well as characteristics of the external environment. *In terms of outcomes*, it places the notion of OI within the broader context of subsidiary entrepreneurship to primarily examine the impact of the former on subsidiary entrepreneurial performance (entrepreneurial activity), as well as its overall effect on subsidiary performance (through the intervention of entrepreneurial performance).

The following chapter explains analytically the research methodology that was followed in order to address the three key research objectives of the present study.

Chapter 5: Research Methodology

5.1 Introduction

This chapter explains the research methodology used in the present study to investigate the theme of subsidiary OI and entrepreneurship. The overall goal guiding the methodology of this research is to achieve consistency between the philosophical approach underpinning the study and its key research objectives (Easterby-Smith et al, 1997), as these have been defined at the end of the previous chapter (Chapter 4, Section 4.3.3).

The present chapter is structured as follows:

Section 5.2 provides a discussion on general research philosophy considerations, involving the appropriateness of the positivist versus the constructivist paradigm, based on the debate over induction versus deduction, and the respective preference of qualitative versus quantitative research methods. The philosophical stance taken by the present study is explained and a brief outline of the overall research process is provided.

Section 5.3 presents the qualitative research process, justifying the particular selection of the exploratory case-study approach and providing a detailed analysis of the procedures followed for selecting cases, collecting and analysing case-study data.

Section 5.4 analyses the quantitative research process, with particular emphasis on the development of the survey instrument, key sampling considerations. and the particular quantitative data analysis procedures followed.

Section 5.5 provides a short summary of the above methodological considerations.

5.2 Research Philosophy

This section elaborates on the philosophical stance of the present research. Easterby-Smith et al (1997) identify three reasons why the exploration of philosophy may be significant with particular reference to research methodology: *First*, it can help the researcher clarify the overall research strategy, i.e. refine and specify the research methods to be used in the study. This includes the type of evidence gathered and its origin, the way in which evidence is interpreted, and how it helps answer the research questions posed. *Second*, knowledge of research philosophy can enable and assist the researcher to evaluate different methodologies and methods and avoid inappropriate use and unnecessary work by identifying the

limitations of particular approaches at an early stage. *Third*, it may help the researcher be creative and innovative in either selection or adaptation of research methods.

In addressing philosophical issues, the present chapter will explore the philosophical paradigm underpinning the present study, its theoretical orientation (induction versus deduction) and thus the need for qualitative versus quantitative research methods.

5.2.1 Positivism versus constructivism

An important consideration in terms of the study's research philosophy is the identification of an appropriate theoretical paradigm as the underlying basis for conducting scientific investigation. A theoretical paradigm is essentially "*a loose collection of logically held-together assumptions, concepts, and propositions that orientates thinking and research*" (Bogdan and Biklan, 1982, p. 30). Similarly, a paradigm has been defined as the "*basic belief system or world view that guides the investigation*" (Guba and Lincoln, 1994, p. 105).

Research philosophy includes three main considerations: ontology, epistemology and methodology, which are essentially the three elements of a philosophical paradigm. *Ontology* relates to the nature of reality, i.e. the essential assumptions that are made regarding the basic elements of reality (Parkhe, 1993), their character and configuration (Guba and Lincoln, 1994). *Epistemology* examines the character and basis of knowledge or the characteristics of the relationship between the reality and the researcher (Parkhe, 1993). *Methodology* is the procedure carried out by a researcher to explore that reality (Guba and Lincoln, 1994; Parkhe, 1993).

In examining theoretical paradigms, this study assumes the organising idea of a continuum, with positivism lying at one end and constructivism at the other. Each position is described with reference to ontology, epistemology and research purpose (Carson et al., 2001; Jean Lee, 1992; Healy and Perry, 2000; Kidd, 2002; Guba and Lincoln, 2000). These two opposing paradigms are analysed in an attempt to place the philosophical approach of the present research (Table 5.2.1), which will be described in Section 5.2.4.

Positivism⁴³ asserts that an objective reality is out there to be found, and epistemologically this can be accomplished with obvious degrees of certainty and through employing objective scientific methods (Carson et al., 2001; Jean Lee, 1992; Long et al., 2000; Neuman, 2003). This reality is composed of discrete elements whose character can be

⁴³ Positivism is the traditional approach of the physical sciences, while it is also dominant in established social sciences disciplines, such as psychology and economics (Gabriel, 1990; Kidd, 2002).

recognised and classified (Hirschman, 1986; Cohen, 1992, 1994; Guba and Lincoln, 1994; McClelland, 1997; Nancarrow et al., 2001). Hence, the primary mode of the research inquiry of positivism is *theory-testing based on deduction* (Layder, 1993). The use of this hypothetico-deductive approach allows for statistical testing and generalisation (Guba and Lincoln, 1994). Principal data collection techniques under this paradigm include quantitative experiments and sample surveys that are outcome-oriented and assume natural laws and mechanisms. Finally, data collection for positivism is carried out with the researcher being remote from the phenomena under investigation (Anderson, 1986).

Constructivism, lying at the other end of the continuum, provides a methodology for investigating the beliefs of individual respondents rather than investigating a tangible external reality (Hunt, 1991). This paradigm has relativist ontology in that it assumes that reality is subjective and multiple, i.e. each person has his/her own reality (Carson et al., 2001; Jean Lee, 1992; Long et al., 2000; Neuman, 2003; Roy, 2001). Epistemologically, the achievement of objectivity is rejected, and emphasis is placed on individual understanding of particular viewpoints (Morgan and Smircich, 1980). Within the constructivist paradigm, perception by itself is not reality⁴⁴; the actual interest is hence in the values underlying perceptions and which come to surface through a process of induction. The *theory-building inductive method* of constructivism requires the researcher to be a “passionate participant” (Guba and Lincoln, 1994, p. 112) during the fieldwork, i.e. participate in a process of interaction with the respondent (Anderson, 1986) and develop subjective knowledge in this interaction (Anderson, 1986, Guba and Lincoln, 1994).

⁴⁴ Perceptions are important because they assist in examining a complex reality, but perceptions or multiple realities cannot be the focus of constructivist research. Constructivism is interested in the values lying beneath perceptions.

Table 5.2.1: Basic belief systems of the two opposing paradigms		
Assumption	Positivism	Constructivism
Ontological <i>What is the nature of reality?</i>	<ul style="list-style-type: none"> ▪ Reality is objective and singular, external to the researcher (naïve realism) 	<ul style="list-style-type: none"> ▪ Reality is subjective and multiple as seen by participants in a study (critical relativism)
Epistemological <i>What is the relationship of the researcher to that researched?</i>	<ul style="list-style-type: none"> ▪ Researcher is independent from that being researched (objectivist stance) 	<ul style="list-style-type: none"> ▪ Researcher interacts with that being researched (subjectivist stance)
Axiological <i>What is the role of values?</i>	<ul style="list-style-type: none"> ▪ Value-free and unbiased ▪ The choice of what to study and how to study it is determined by objective criteria 	<ul style="list-style-type: none"> ▪ Value-dependent and biased ▪ The choice of what to study and how to study it is determined by human beliefs and interests
Rhetorical <i>What is the language of the research?</i>	<ul style="list-style-type: none"> ▪ Formal and impersonal, use of accepted quantitative words 	<ul style="list-style-type: none"> ▪ Informal and personal, use of accepted qualitative words
Methodological <i>What is the process of research?</i>	<ul style="list-style-type: none"> ▪ Deductive process ▪ Context-free generalisations leading to prediction, explanation and understanding ▪ Accurate and reliable through validity and reliability ▪ Mainly quantitative 	<ul style="list-style-type: none"> ▪ Inductive process ▪ Hermeneutical/ dialectical logic ▪ Theories developed for understanding ▪ Accurate and reliable through verification ▪ Mainly qualitative

Source: adapted from Creswell (2003), based on Guba and Lincoln (1994), Riege (1997), Denzin and Lincoln (2000)

5.2.2 Qualitative versus quantitative methods

An important issue emerging from the above distinction between the two philosophical paradigms is the *appropriateness of quantitative versus qualitative research methods*. While both advantages and disadvantages have been associated with these two distinct methodological approaches (Table 5.2.2), the particular research focus of each study essentially determines the methodological choice.

Qualitative research explores topics in more depth and detail than quantitative research and is particularly relevant when the research goal is to explore a topic or an idea. Quantitative research is more helpful when there is a need to determine certain facts, or correlations between facts. In that respect, while qualitative research mainly addresses “how” or “why” types of questions, a quantitative approach provides an answer to the “what” question (Yin, 2003). Also, whilst quantitative research methods are usually applied based on a model simplifying reality, qualitative methods are by nature reflecting that reality. Quantitative methods are particularly helpful when conducting research on a broader scale, since results

obtained through a well conducted statistical testing are safer to generalise, whereas results of qualitative research may depict the reality in more detail, but have limited generalisability.

Table 5.2.2: Qualitative versus Quantitative Research Methods		
Criteria	Quantitative Methods	Qualitative Methods
Basic beliefs about the nature of reality	<ul style="list-style-type: none"> ▪ There is one objective reality that is not dependent on human interpretation 	<ul style="list-style-type: none"> ▪ There are multiple realities; reality is not purely objective, and does not exist independent of the humans who interpret it
Main paradigm types	<ul style="list-style-type: none"> ▪ Positivism 	<ul style="list-style-type: none"> ▪ Constructivism
Common research methods	<ul style="list-style-type: none"> ▪ Experiment ▪ Survey 	<ul style="list-style-type: none"> ▪ Grounded theory ▪ Action research ▪ Ethnography ▪ Case study
Quality assurance	<ul style="list-style-type: none"> ▪ Reliability: internal and external ▪ Validity: construct, context ▪ Sampling: random and deliberate 	<ul style="list-style-type: none"> ▪ Construct validity, confirmability, internal validity/credibility, external validity/transferability, reliability/dependability ▪ Sampling: purposeful
Key differentiating characteristics	<ul style="list-style-type: none"> ▪ Primarily deductive process used to test pre-specified concepts, constructs, and hypotheses that make up a theory 	<ul style="list-style-type: none"> ▪ Primarily inductive process used to formulate theory
	<ul style="list-style-type: none"> ▪ More objective: provides observed effects (interpreted by researchers) of a problem or condition 	<ul style="list-style-type: none"> ▪ More subjective: describes a problem or condition from the point of view of those experiencing it
	<ul style="list-style-type: none"> ▪ Number-based 	<ul style="list-style-type: none"> ▪ Text-based
	<ul style="list-style-type: none"> ▪ Less in-depth but more breadth of information across a large number of cases 	<ul style="list-style-type: none"> ▪ More in-depth information on a few cases
	<ul style="list-style-type: none"> ▪ Fixed response options 	<ul style="list-style-type: none"> ▪ Unstructured or semi-structured response options
	<ul style="list-style-type: none"> ▪ Statistical tests are used for analysis 	<ul style="list-style-type: none"> ▪ No statistical tests
	<ul style="list-style-type: none"> ▪ Can be valid and reliable: largely depends on the measurement device or instrument used 	<ul style="list-style-type: none"> ▪ Can be valid and reliable: largely depends on skill and rigour of the researcher
	<ul style="list-style-type: none"> ▪ More generalisable 	<ul style="list-style-type: none"> ▪ Less generalisable

Source: the author based on a review of relevant literature

While quantitative research methods (or positivist philosophies) and qualitative methods (or post-positivist philosophies) are often seen as opposing and polarised views, they are frequently used in conjunction (Webb, 1989). According to Letourneau and Allen (1999), post-positivist approaches “give way” to both qualitative and quantitative methods. This

approach has been described as “critical multiplism” (Guba and Lincoln, 1998)⁴⁵. Clarke (1998) emphasises accordingly that the qualitative and quantitative paradigms are not as diverse or mutually incompatible as often conveyed. In that respect, both qualitative and quantitative research methods can provide valuable contribution to scientific knowledge; it is only the nature of their contribution that is different. Hence, they should be regarded as complementary, not competing methods, and should be chosen depending on which method is more likely to provide a more comprehensive, clearer, more complete and above all more descriptive of reality answer to the research question.

Following what has been discussed above, while research may particularly focus on one main approach, several techniques can be employed, often mixing quantitative and qualitative methods (Onwuegbuzie and Leech, 2004). Such *mixed methodological approaches* tend to view qualitative and quantitative methods as a continuum rather than a dichotomy (Newman et al, 2003). In that respect, particular research questions may involve interconnected qualitative and quantitative components or aspects, such as questions including “what and how” or “what and why” (Creswell, 2007). Nonetheless, prior to selecting a research approach (qualitative, quantitative or mixed methods), an in-depth understanding of their respective strengths and weaknesses, along with their underlying philosophy should be obtained. Section 5.2.4 explains and justifies the choice of the mixed methods approach as most suitable for addressing the research purposes of the present study.

5.2.3 Induction versus deduction

A mixed methods approach, viewing qualitative and quantitative methods as a continuum, would also consider a genuine separation between the two processes of induction and deduction unlikely⁴⁶. Richards (1993, p. 40) suggests that “both (prior theory and theory emerging from the data) are always involved, often simultaneously”, and that “it is impossible to go theory-free into any study”. Other researchers (Miles and Huberman, 1994) also conclude that induction and deduction are linked research approaches. As Parkhe (1993) has argued, pure induction might prevent the researcher from benefiting from

⁴⁵ “Critical” implies that, as in positivism, the need for rigour, precision, logical reasoning and attention to evidence is required, while “multiplism” refers to the fact that research can generally be approached from several perspectives (Guba and Lincoln, 1998).

⁴⁶ Induction emphasises theory generation from data (theory building), while deduction focuses on the extraction of hypotheses from theory and hypotheses testing on data (theory testing) (Glasser and Strauss, 1967; Strauss, 1987).

existing theory, just as pure deduction might prevent the development of new and useful theory. Parkhe (1993, pp. 252, 256) argues that “both extremes are untenable and unnecessary” and that the process of ongoing theory advancement requires “continuous interplay” between the two.

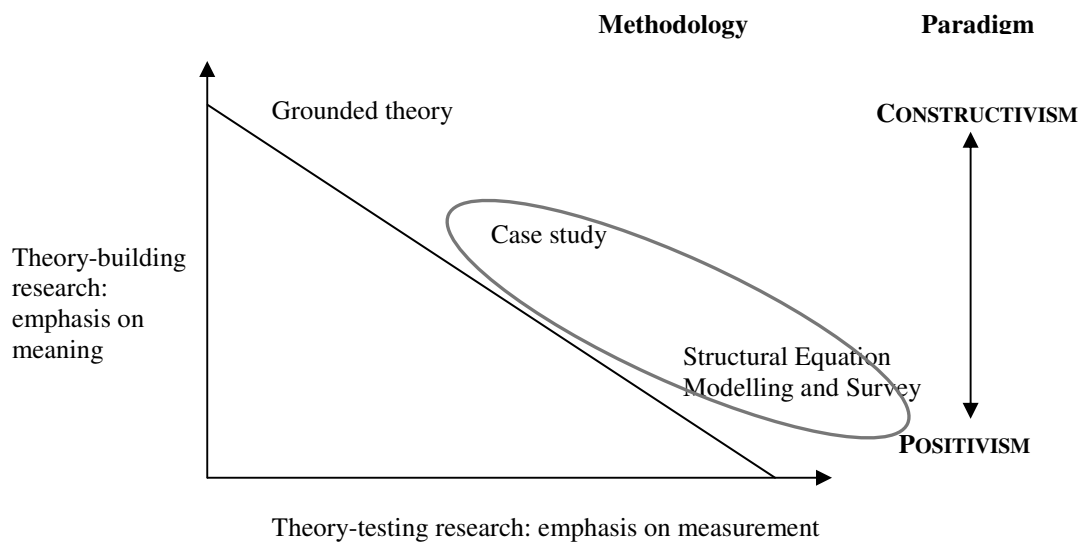
5.2.4 The philosophical stance of the present study

This section draws on what has been discussed previously - explaining the underpinnings of the positivist versus constructivist paradigm (Section 5.2.1), justifying a corresponding preference in quantitative versus qualitative methods (Section 5.2.2) based on a deductive versus inductive logic (Section 5.2.3) - to explain the philosophical approach taken within the context of the present study.

This study follows a multi-paradigm approach in addressing its research objectives. Figure 5.2.4 illustrates the philosophical stance of this study as incorporating elements of both *theory-building* and *theory-testing* research. In that respect, the present study avoids the two opposing paradigms of quantitative positivism and qualitative constructivism and follows a more balanced approach that combines qualitative and quantitative research (Newman et al, 2003). Indeed, the nature of this study’s research questions is such that combines “how” and “what” types of questions⁴⁷, hence rendering a mixed methods approach necessary.

In particular, *qualitative research* is needed to explore the theme of subsidiary OI in more detail, given that previous research is scarce both in the subsidiary- and MNC-related, as well as in the corporate entrepreneurship literature. Consequently, *a more qualitative, theory-building approach needs to be followed as a first stage of this study’s research methodology*. Such an approach can provide key insights into the broader theme of subsidiary entrepreneurship, and also focus on the particular concept of subsidiary OI. In addition, the use of qualitative research methods for studying the theme of OI has been recommended by researchers in the field of subsidiary entrepreneurship (Gaglio and Katz, 2001; Gartner and Birley, 2002; Eckhardt and Shane, 2003). Some of the research on subsidiary development and entrepreneurship has also employed primarily qualitative studies (e.g. Birkinshaw, 1996, 1997; Birkinshaw and Ridderstråle, 1999).

⁴⁷ The research objectives have been presented in Section 5.1.



Source: the author, adapted from Healy and Perry, 2000

Figure 5.2.4: The philosophical stance of the present research

At this point it is important to make an important clarification as to the use of prior theory in the present study’s qualitative research. Although pure induction – as achieved through a qualitative approach – might ignore previous theoretical issues, this thesis aligns with research acknowledging the pivotal role of some prior theory in the design of a qualitative study and the analysis of qualitative data (Miles and Huberman, 1994; Neuman, 1994; Perry and Coote, 1994; Yin, 1993). Miles and Huberman (1994) have emphasised the importance of “pre-structured research” for qualitative research, especially in areas where some understanding has already been achieved, but where more theory building is required before theory testing can be done. This assumption aligns with the particular needs of the present research, given that the topic of subsidiary OI has been under-investigated.

Consequently, whilst following a first stage of exploratory qualitative research into the theme of OI, some prior theory was taken into consideration prior to conducting qualitative research and during the analysis of the qualitative data. This issue will be explained in more detail in the section describing the exploratory qualitative research process (Section 5.3).

Quantitative research is also needed in order to address the objectives of the present study. In particular, causal relationships between subsidiary, corporate and environmental characteristics on one hand and subsidiary OI on the other, as well as the effect of

subsidiary OI on subsidiary performance, can only be established through statistical testing. In addition, the *generalisability required by this study* in its effort to study OI across different types of subsidiaries (in terms of industry, size, age, country of origin and value-adding activity) can only be achieved through a large-scale quantitative research. The need for a quantitative approach is also reinforced by the fact that much of the research conducted on multinational subsidiaries has been primarily based upon quantitative methods (e.g. Bartlett and Ghoshal, 1986; Birkinshaw et al, 1998). Besides, entrepreneurship research on OI stressed the need for future empirical research under a quantitative study (Ardichvili et al, 2003). In that respect, including a deductive, theory-testing approach is considered critical for addressing the objectives of this research.

Consequently, as depicted in Figure 5.2.4, the present study follows a mixed methods approach, encompassing elements of theory-building (through exploratory case-study research) and theory-testing (through a large-scale quantitative research). Whilst mixed methodologies have been employed in international business studies (Ghoshal and Bartlett, 1988; Birkinshaw, 1997, 1999; Bresnan et al, 1999), most topical entrepreneurship research on OI has also stressed the benefits of applying a multi-method approach (Caracelli and Greene, 1997).

5.2.5 Selection of particular research methods

The previous section explained why a “mixed methods” approach is critical for addressing the purposes of the present research. This section clarifies the particular choice of specific qualitative and quantitative methods, based on a careful consideration of their respective merits and demerits, within the context of the present study. The key factor driving the selection of research methods has been the achievement of the best methodological fit between research goals and research method strategies (Bryman, 1992; Patton, 1990). Nonetheless, other parameters were also taken into consideration, such as external constraints (basically cost and time), as well as the researcher’s capabilities (Ghauri and Grønhaug, 2002). Table 5.2.5 provides a general outline of the basic research methods considered, while the following paragraphs justify the particular choice of the case-study method and the survey research as most appropriate for addressing the goals of the present study.

Table 5.2.5: Evaluating different research methods

Research Methods	Merits	Demerits
Survey	<ul style="list-style-type: none"> ▪ Generalisability of findings (large samples can be tested) ▪ Particularly useful for hypotheses testing ▪ Easy and inexpensive to administer ▪ Offers anonymity 	<ul style="list-style-type: none"> ▪ Not in-depth, hence not useful for studying complex or conceptual issues (limited information captured) ▪ Responses may be biased by the questions ▪ Statistical validity and reliability concerns ▪ Problems with low-response rates
Experiment	<ul style="list-style-type: none"> ▪ Robust control of variables possible ▪ Causality can be established 	<ul style="list-style-type: none"> ▪ High cost in terms of time and money ▪ Legal and ethical constraints ▪ Recruiting subjects is not easy ▪ Artificial
Grounded Theory	<ul style="list-style-type: none"> ▪ Systematic generation of new theory from data (interactive nature between data collection and analysis) ▪ Analyse experiences from the standpoint of those who live it ▪ Context-based and process-oriented 	<ul style="list-style-type: none"> ▪ Perspective-based methodology (perceptions vary) ▪ Difficult when conceptualising complex phenomena, requires strong research capabilities ▪ Not recommended for description ▪ Subject to researcher bias (requires ability to maintain analytic distance) ▪ Generalisability questionable
Case Study	<ul style="list-style-type: none"> ▪ Provides in-depth and holistic perspective ▪ Multi-faceted; can show different perspectives ▪ Can show how processes work over time and give insight into cause and effect ▪ Can serve both exploratory, descriptive and explanatory purposes ▪ Can supplement statistics or survey results 	<ul style="list-style-type: none"> ▪ Limited generalisability; not representative of entire populations ▪ Time-consuming and expensive to administered ▪ Subjective ▪ Data analysis depends heavily on the analytical skills of the researcher ▪ Particularly difficult when dealing with rich and complex data
Ethnography	<ul style="list-style-type: none"> ▪ In-depth and holistic description ▪ Can identify causalities 	<ul style="list-style-type: none"> ▪ Bias of the researcher (liable to subjective interpretation towards perspectives of the researcher's own culture) ▪ Requires strong research capabilities ▪ Time-demanding
Action Research	<ul style="list-style-type: none"> ▪ Findings have perfectly practical implications ▪ Provides unique insights 	<ul style="list-style-type: none"> ▪ Requires full access to the organisation (difficult to achieve) ▪ Perceived as improving mainly practitioner and not academic knowledge ▪ Time-demanding

5.2.5.1 The case study method

In terms of qualitative research, the case study method was chosen as most appropriate for addressing the research purposes of this study mainly for three reasons:

First, the case study research involves the examination of a phenomenon in its natural setting (Eisenhardt, 1989). Hence, it is particularly appropriate for research in new topic areas, where the focus is on understanding ‘how’ or ‘why’ questions concerning a

contemporary set of events (Yin, 2003). Given the lack of research in the particular topic of subsidiary OI, the exploratory case study approach was deemed most suitable. This particular research method facilitated the immersion in the organisational context of the investigated multinational subsidiaries and the collection of rich data from multiple sources of evidence. Viewed in this light, the case study perspective provided a systematic and holistic view of activities and factors associated with subsidiary OI (Bonoma, 1985; Carson et al., 2001; Ghauri and Grønhaug, 2002).

Second, given that the exploratory case study research mainly aims at theory building rather than hypotheses testing (Eisenhardt, 1989), this particular method appeared most appropriate for addressing the primary exploratory purposes of this research. In particular, the exploratory case study approach, conducted as the first stage of the research methodology, provided useful insights relevant to the under-investigated theme subsidiary OI (Eisenhardt, 1989; Gummesson, 2005) and greatly assisted in the development and refinement of the conceptual model.

Third, the case study method is generally considered well suited to international business research, where data is collected from cross-border and cross-cultural settings (Marschan-Piekkari and Welch, 2004). Given that this research focuses on subsidiaries of different countries of origin, using case study research was considered most appropriate for dealing with cross-national variation.

Selecting single versus multiple case studies

One important consideration when conducting case study research involves the selection of single versus multiple case studies. Each of these two approaches is best applicable under particular research conditions. Single case study research is most suitable when the particular case is: critical or unique or when the researcher is able to access a previously remote phenomenon; critical for testing a well formulated theory; exploratory study or pilot study, shown to be representative of a large population (McKinney, 1966; Smith, 1988; Yin, 1989). On the other hand, multiple case studies provide a purposive sample and the potential for generalisability of findings (Miles and Huberman, 1994, Patton, 1990), as they increase the scope of the investigation and the degrees of freedom (Bonoma, 1985; Eisenhardt, 1989; Miles and Huberman, 1984; Parkhe, 1993; Patton, 1990). Triangulation of data in the context of multiple case studies provides differing research sites and data sources to satisfy theory generation and verification (Denzin, 1978; Deshpande, 1983;

Patton, 1990) through a more rigorous and complete replication logic approach (Parkhe, 1993; Tsoukas, 1989; Yin, 1993).

Consequently, the analytic benefits of a multiple- rather than a single-case study approach were considered substantial for the under-investigated topic of subsidiary OI in various types of subsidiaries. A single-case study approach would not provide as strong and generalisable findings for the purpose of refining the conceptual model and building particular research hypotheses. Thus, multiple case study research was preferred, as it is generally considered more robust than the single case study method (Herriott and Firestone, 1983; Yin, 1984).

5.2.5.2 The mail survey method

In terms of quantitative research, the mail survey method was selected as most appropriate for addressing the purposes of the present study mainly for the following reasons:

First, survey research is particularly useful for hypotheses testing. The findings of the exploratory case study research, synthesised with some prior theory, brought into light specific research hypotheses, which could only be tested through survey research.

Second, the generalisability offered by a large-scale survey research was required for examining the notions of subsidiary OI and entrepreneurship across different types of subsidiaries, in terms of industry, size, age, country of origin and value-adding activity (Birkinshaw, 1997; Zahra et al, 1999; Zahra and George, 2002).

Third, the mail survey method is generally considered the most cost-effective data-collection method when conducting research in cross-cultural settings (Dawson and Dickinson, 1988).

Fourth, mail surveys are generally preferred for studying entrepreneurship at a firm-level (Aldrich 1992; Aldrich and Baker 1997; Gartner and Birley, 2002). While research techniques and data collection methods have evolved over the years, surveys still dominate (Aldrich and Baker, 1997; Bartholomew and Smith, 2006).

Selecting paper versus web-based survey

One important consideration when conducting survey research involves *the selection of a particular survey mode*. A great deal of the literature on implementing survey methods tends to *compare the traditional paper-based approach to the most contemporary web-*

based survey. Whilst web-based surveys are generally comparable to mail surveys in most respects (Klassen and Jacobs, 2001; Boyer et al, 2002), there are a few key advantages and challenges that should be evaluated. The final choice depends on the particular characteristics and context of each study⁴⁸ (see Table 1 in Appendix 1 for an evaluation of the two survey modes based on a number of criteria, as these have emerged through an extensive review of relevant literature). The traditional mail survey method was preferred as most suitable for addressing the purposes of this study for the following reasons:

First, literature on the differences in response rates between paper and web-based surveys is contradicting; whilst some studies have generally proved comparable rates, other studies show increased response rates for the mail survey (Schuldt and Totten, 1994; Couper, 2000; Couper et al, 2000; Crawford et al, 2001), particularly when targeting large samples (Schaefer and Dillman, 1998) (as is the case of the present study). Nonetheless, additional research in that respect is required to prove the advantage of the web-based approach.

Second, there is a critical challenge when conducting web-based research in terms of the comfort of the respondent with using the internet and internet-based tools. This links to a general concern over using web-based surveys relating to a form of bias in the responding sample (Bradley, 1999; Hoek et al, 2002) and increased non-response error (Kittleson, 1997; Berge and Collins, 1996).

Third, the web-based survey constrains question formats. In particular, the questionnaire developed for this study contained two semantic differential scales (entrepreneurial orientation and environmental scales⁴⁹), format which was not provided for in the widely used survey sites (e.g. SurveyMonkey).

Fourth, web-based surveys are generally preferable for smaller and simpler questionnaires (Dillman, 2000). In the case of the present study, the questionnaire was relatively long⁵⁰ (8 pages in total, with 7 pages of questions) and contained particular definitions accompanying many of the questions. Bringing the questionnaire visually into the computer screen would entail inherent difficulties (e.g. not knowing how close the end of the questionnaire is and only being able to see one question at a time (Dillman et al, 1998); changing the screen many times would make the questionnaire look even longer; certain definitions would have

⁴⁸ In general, web-based surveys have been linked to the following advantages: cost effectiveness, increased efficiency through automated data collection and organisation, data completeness and time savings due to reduced survey turn-around time (Kiesler and Sproull, 1986; Parker, 1992; Bachmann et al, 1996; Berge and Collins, 1996; Schmidt, 1997; Weible and Wallace, 1998; Dillman, 2000; Roster et al, 2004).

⁴⁹ These scales were drawn from literature and employed in their semantic differential form as means of addressing common method variance concerns.

⁵⁰ Though within the limit of manageable questionnaire size proposed by Dillman (Dillman, 2000).

to appear on the screen many times (once for every question) and thus giving a general feeling of repetition).

Fifth, while cost considerations favouring the web-based mode are certainly important, they should definitely not be the driving factor in choosing one method over the other (Boyer et al, 2002).

5.2.6 The research process of the present study

Figure 5.2.6 presents the research process followed by the present study and Table 5.2.6 the timeline of the research. As has been explained above, the first stage of the research methodology involved conducting *exploratory case studies* in foreign-owned “entrepreneurial” subsidiaries for purposes of hypotheses building. Based on a review of existing literature in the fields of international business (Chapter 2) and entrepreneurship (Chapter 3), relevant prior theory was taken into consideration during the qualitative phase (particularly for developing the interview guide and analysing the qualitative data). Section 5.3 of the present Chapter explains in detail the exploratory case research process. Exploration into the topic of subsidiary OI and entrepreneurship (result of the qualitative research) assisted to the development of specific research hypotheses and the refinement of the purely theory-driven conceptual model (developed in Chapter 4). Also, the findings of the case-study research provided significant input in the development of the survey instruments (second stage of the research methodology).

The second stage of the research methodology involved conducting a large-scale survey to foreign-owned subsidiaries located in the UK. Section 5.4 discusses in-depth particular issues related the implementation of the mail survey. Quantitative data analysis entailed hypotheses testing through multiple regression models (examining the three sets of relationships independently) using the SPSS software. Given that nature of the conceptual model (involving multiple dependence relationships simultaneously) and the characteristics of the data collected (sufficient sample size and large number of constructs with multiple items per construct), the most topical Structural Equation Modelling (SEM) approach was considered superior to regression analysis. To this end, the researcher spent considerable effort learning the LISREL software⁵¹ and developing a concrete structural model. Data analysis using the SEM method was conducted in order to test the entire model (including

⁵¹ Through self-training, and also attending a three-way workshop on SEM with LISREL, given by K. Jöreskog, and F.Y. Wallentin in AUEB, Greece, January 16-18, 2007.

all sets of dependence relationships) simultaneously⁵² (Section 5.4.5). The last stage of the research methodology involved comparing the results across the two data analysis methods (multiple regression and SEM) and drawing generalisable conclusions to address the research objectives of this study.

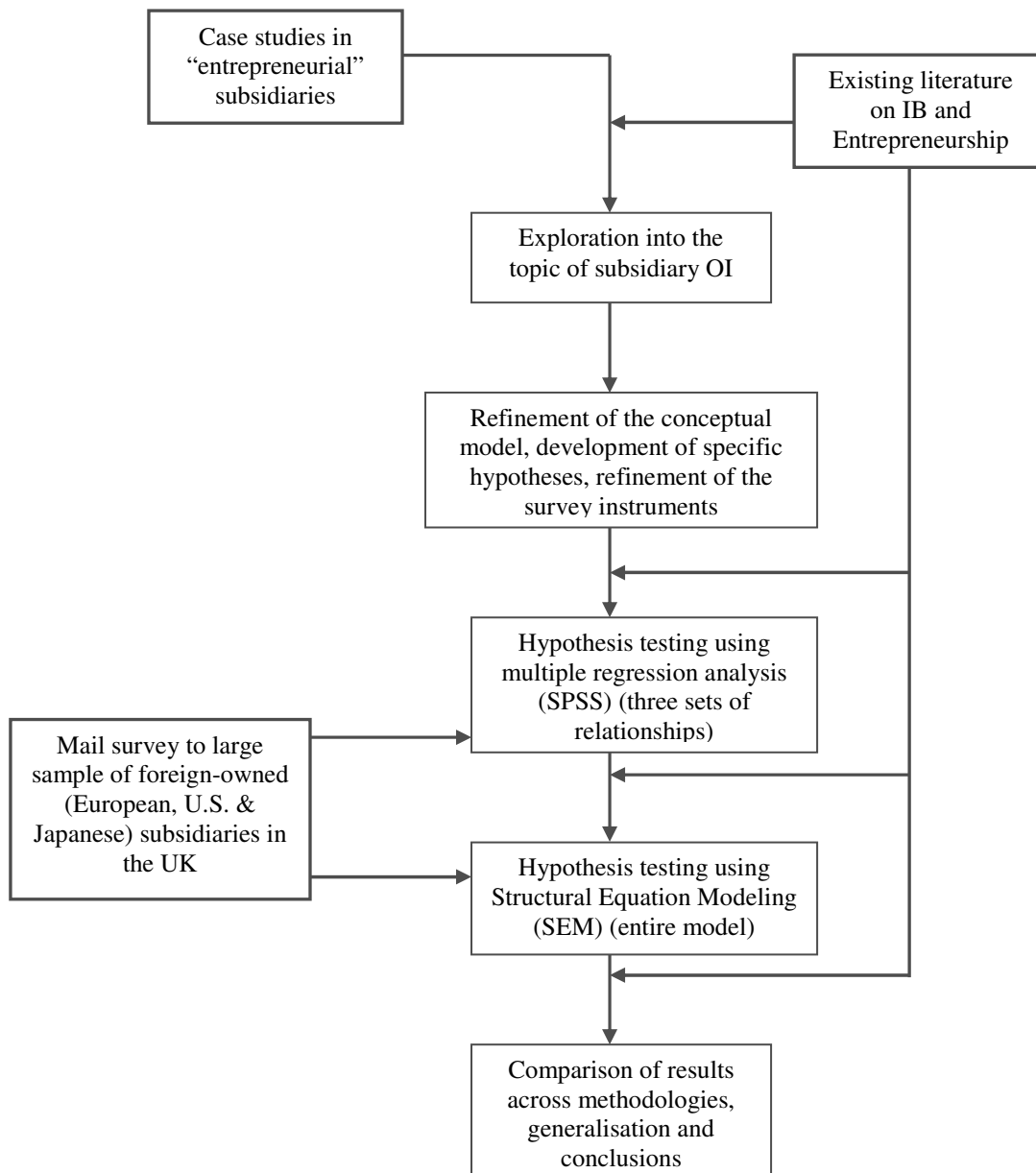


Figure 5.2.6: The research process of the present study

⁵² During data analysis using the SEM method, the researcher relied heavily on the advice and expertise of Dr Pavlos Vlachos, Lecturer of Marketing, who has a long experience of working with the LISREL software.

Table 5.2.6: Timeline of the research	
November 2004 – July 2005: Exploratory case-studies	
November 2004 – December 2004	“Drift” phase: study of archival data and documentation, observation in subsidiary sites and general discussions with subsidiary employees
January 2005 – April 2005	“Design” phase: 20 in-depth interviews with key subsidiary informants, occupying different organisational positions, and at several points in time
May 2005 – July 2005	“Probing” phase: follow-up discussions with interview participants, presentation of interview transcripts and draft reports to interviewees
July 2005 – May 2006: Large-scale postal survey	
August 2005 – September 2005	Pilot-testing of the questionnaire with 20 subsidiary managers
September 2005	Contacted selected subsidiary sample by telephone in order to verify postal details and notify them about posting the questionnaire
October 2005 – November 2005	First postal wave of questionnaires, rendering a total of 126 usable responses
January 2006 – February 2006	First round of follow-up phonecalls
February 2006 – March 2006	Second postal wave of questionnaires, rendering a total of another 79 usable responses
March 2006 – April 2006	Second round of follow-up phonecalls
April – May 2006	Third postal wave of questionnaires, rendering a total of another 65 usable responses

5.3 Qualitative Research: Exploratory Case Studies

The first stage of this study's research methodology involved conducting multiple case studies in foreign-owned subsidiaries based in the UK. In particular, exploratory case studies were preferred over the other two types (descriptive and explanatory⁵³), given the scarcity of relevant literature in the fields of international business and corporate entrepreneurship. Exploratory studies are particularly useful when little extant knowledge exists and hence there is limited empirical data to form a sound basis for making predictions (Bryman and Burgess, 1995; Easterby-Smith et al, 2001; Ghauri and Grønhaug, 2002). Exploratory type of research was needed in order to address the "what" types of research questions (Yin, 2003), as presented in Section 5.1.

The exploratory case-study research process that was followed in the present study is illustrated in Figure 5.3. The first step of the process entailed clearly defining the research objectives (provided in Section 5.1), identifying particular criteria for purposeful case selection and subsequently selecting the cases - multinational subsidiaries "worthy of further investigation" (Patton, 1990, p. 181) (Section 5.3.1).

Subsequently, a semi-structured Interview Guide was developed (see Appendix 2), which was based on the research objectives and a review of relevant literature. As has been explained previously (Section 5.2.4), some prior theory was taken into consideration prior to conducting the qualitative research and during the analysis of the qualitative data. Indeed, conducting case study research in a methodologically sound way requires a preliminary identification of prior theory in the area of research (Lincoln and Guba, 1985, Miles and Huberman, 1994; Neuman, 1994; Perry and Coote, 1994; Yin, 2003). In that respect, prior theory can be viewed as additional evidence that can be used to triangulate on the external reality of the case-study research.

Consequently, although the interviews commenced with unstructured questions, some probe questions were also incorporated in the interview protocol to ensure that interviewees' perceptions about critical issues identified in prior theory were raised (Section 5.3.2). Also, the analysis of the qualitative data was based to some extent on prior theoretical considerations that have been raised in the literature review chapters (Chapters 2 and 3).

Following the development of the interview guide, in-depth face-to-face interviews were conducted with subsidiary members and data were analysed initially at a single-case and

⁵³ A descriptive approach is suitable for providing an accurate account of events and situations, while an explanatory approach is used to establish causal relationships between variables (Bryman and Burgess, 1995; Easterby-Smith et al, 2001; Ghauri and Grønhaug, 2002; Yin, 2003).

subsequently at a cross-case level (Miles and Huberman, 1994; Patton, 1990) (Section 5.3.3).

The following sections explicitly analyse the case selection (Section 5.3.1), data collection (Section 5.3.2) and data analysis (Section 5.3.3) procedures.

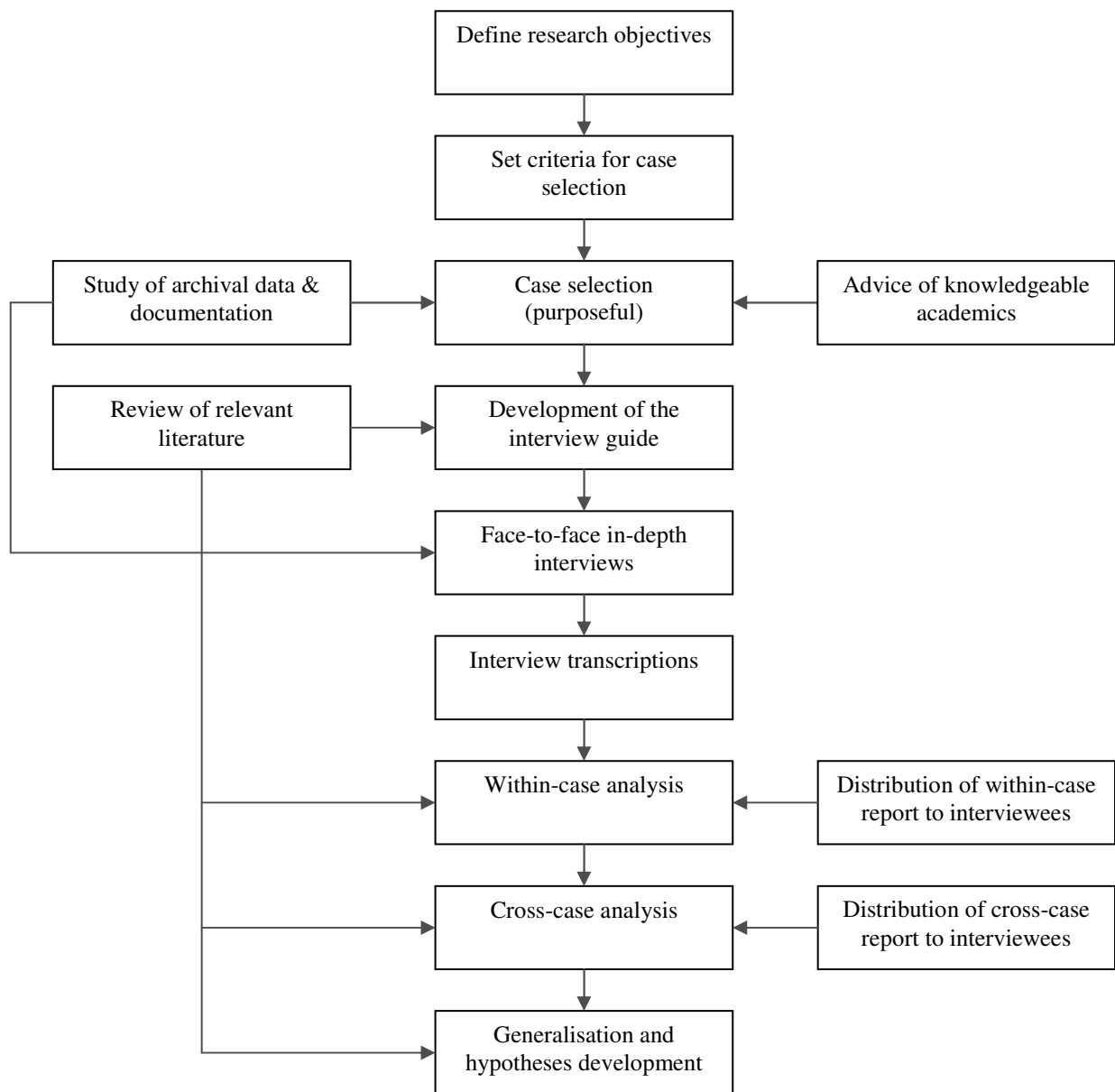


Figure 5.3: The exploratory case-study research process

5.3.1 The selection of cases

The underlying principle for deciding on the case study firms was *selecting “information rich cases”*, namely multinational subsidiaries, worthy of in-depth investigation (Patton, 1990, p. 181). Yin (1994, pp. 45-50) advises that “multiple cases” should be regarded as “multiple experiments” and not “multiple respondents in a survey”, hence replication logic and not sampling logic should be used for multiple-case studies. Other researchers support this method of case selection and highlight the inappropriateness of random sampling. For example, Eisenhardt (1989, p. 537) states that the “*random selection of cases is neither necessary, nor even preferable*”.

In particular, the selection of cases in the present study was based on the following three criteria, which will be more explicitly analysed in the following paragraphs:

1. The selected subsidiaries should have exhibited some degree of entrepreneurial behaviour.
2. The subsidiaries had to be selected in order to demonstrate considerable variety in terms of their value adding activity, industry and country of origin⁵⁴. This criterion was used in order to allow for some generalisability in the findings.
3. The subsidiaries had to be geographically accessible for in-person interviews.

Regarding the number of cases to include in a multiple case-study analysis, Eisenhardt (1989) recommends that cases should be added until “*theoretical saturation*” is reached. In a similar vein, Lincoln and Guba (1985, p.204) recommend sampling selection “*to the point of redundancy*”. Similarly, Patton (1990) does not provide an exact number or range of cases that could serve as guidelines for researchers, claiming that “there are no rules” for sample size in qualitative research (Patton, 1990, p. 181). Nonetheless, Eisenhardt (1989, p. 545) recommends the study of between four and ten cases.

The number of cases in the present study was determined by theoretical sampling, in which cases were added until the incremental learning derived became negligible (Glaser and Strauss, 1967; Sutton and Callahan, 1987). In other words, the addition of new case studies stopped when theoretical saturation was reached (Eisenhardt, 1989). In particular, six cases were included in this study, number which is generally considered to form an adequate basis for qualitative analysis (Diesing, 1971).

⁵⁴ Given that the research design was conducted in 2004 and objective of the survey research (second phase of the research methodology) was to examine country-of-origin effects across the triad-regions (Europe, U.S. and Japan), the subsidiaries were deliberately selected so that at least one represented each respective region.

First criterion: The six subsidiaries chosen for the purposes of the exploratory case study research had exhibited some degree of entrepreneurial behaviour, hence were characterised as “entrepreneurial subsidiaries”⁵⁵. These subsidiaries were particularly chosen on the basis of advice from knowledgeable academics⁵⁶. Given that objective of the research was to identify particular subsidiary “entrepreneurial characteristics” that promote subsidiary OI, representative cases of “entrepreneurial” subsidiaries had to be selected. The same logic has been followed by Birkinshaw’s (1997) study on subsidiary initiative⁵⁷.

In particular the six investigated subsidiaries (Table 5.3.1) were chosen for the following reasons: Zeus was selected based on its excellent track record of new product development; Apollo was selected given its apparent ability to proactively and continuously transform itself as a site; Ares was chosen based on its superior research capabilities and its successful drug discovery output; Hermes was selected based on its superior R&D and internal transformation capabilities; Poseidon was chosen based on its superior product localisation capabilities; Heracles was chosen given its superior performance in technological and manufacturing process innovation.

Second criterion: The selection of cases for conducting the exploratory research was based on the logic of sampling for maximum variety (Cook and Campbell, 1979), thus incorporating subsidiaries from different countries of origin, operating in different industries and involved in various value-adding activities. This aspect of the case study design facilitated the generalisability of the findings in a wide spectrum of multinational subsidiaries.

Third criterion: In acknowledging that the multiple-case study research requires extensive resources, this research also sought to address cost and time concerns by geographically restricting the selected subsidiaries in the area of Scotland. While geographical proximity also ensured full access to the investigated subsidiaries, the particular choice of Scottish subsidiaries did not appear to influence this study’s research objectives.

Table 5.3.1 illustrates key characteristics of the investigated subsidiaries including industrial sector, subsidiary focus, subsidiary size and country of origin. The six

⁵⁵ Nonetheless, the present study also included an additional case of a seventh “non-entrepreneurial” subsidiary. Whilst only one interview with the subsidiary’s Managing Director was conducted, it assisted greatly in detecting the lack of particular “entrepreneurial characteristics” in this subsidiary.

⁵⁶ The selection of the six Scottish “entrepreneurial” subsidiaries was based on the advice of Neil Hood, Professor of Business Administration and Policy (who sadly passed away in 2006), and Stephen Young, Professor of International Business, prominent academics with a profound knowledge of the Scottish context.

⁵⁷ Birkinshaw (1997) argues that this logic does not impart a bias to the results.

multinational subsidiaries operate in distinct industrial sectors (chemicals, technology and services, pharmaceutical, financial solutions, printers and related products manufacturing, pharmaceutical related manufacturing), are involved in a wide range of value-adding activities (R&D, product localisation, materials procurement and purchasing, manufacturing, product distribution, marketing and sales, and customer service), are headquartered in different countries (U.S., Japan, Switzerland), and are of different size (ranging from 350 to 3,000 employees).

Though subsidiary size was not a key criterion for selecting cases, it appears that the studied subsidiaries are medium to large-sized (size measured in terms of number of full-time subsidiary employees). This was an effect of selecting prominent subsidiaries within geographical proximity to the area of Glasgow. However, given the exploratory nature of the case-study research, this was not considered to impair the objectives of the present study. Generalisation of the proposed relationships to a broader set of subsidiaries (including small- and medium-sized companies) was achieved in the second phase of the research methodology through a large-scale survey.

Subsidiary	Industrial Sector	Main Value-Adding Activities	Size	Country of Origin
Zeus	Chemicals	<ul style="list-style-type: none"> ▪ R&D ▪ Manufacturing ▪ Global Technical Marketing ▪ Global Product Management 	~ 670 employees	Switzerland
Apollo	Technology & Services	<ul style="list-style-type: none"> ▪ CRM ▪ Technical Support ▪ Customer Support ▪ Global Procurement ▪ Supply Chain Management 	~ 3,000 employees	U.S.
Ares	Pharmaceutical	<ul style="list-style-type: none"> ▪ Research & Discovery 	~ 350 employees	U.S.
Hermes	Financial Solutions	<ul style="list-style-type: none"> ▪ R&D ▪ Operations Management ▪ Product Management 	~ 500 employees	U.S.
Poseidon	Printers & Related Products Manufacturing	<ul style="list-style-type: none"> ▪ Customer Support ▪ Customer Service ▪ Product Management ▪ Product Evaluation 	~ 500 employees	Japan
Heracles	Pharmaceutical Related Manufacturing	<ul style="list-style-type: none"> ▪ Custom Manufacturing ▪ Small-scale Development 	~ 400 employees	U.S.

5.3.2 The collection of data

The data collection process lasted nine months, i.e. from November 2004 till July 2005, and matched the three stages of Bonoma (1985) and Carson et al (2001); notably “drift”, “design” and “probing”. This stage-by-stage process of data collection can be linked to the concept of “*stream of research*” (Davis et al., 1985) that combines a variety of data sources over time in order to facilitate the study of processual phenomena (Carson and Coviello, 1996).

Stage 1: The first stage of the data collection, the “*drift*” stage (Bonoma, 1985), lasted two months and provided useful insights into the international operations and value-adding activities of the investigated multinational subsidiaries. This phase was heavily based on the study of archival data and documentation, observation in subsidiary sites and general discussions with subsidiary employees. The impressions and insights gained were converted into detailed field notes on the same day of the data collection, as the 24-hour rule of Eisenhardt and Bourgeois (1988) recommends. Overall, this “*soaking in*” phase in the data collection process enhanced insights into the organisational contexts of the investigated subsidiaries and facilitated the subsequent systematic collection of verbal reports through in-depth interviews with key actors (during the second phase of the data collection process) (Van Maanen, 1988).

Stage 2: The second phase of the data collection process lasted four months and provided the main body of data linked to the objective of this study. This “*design*” phase essentially involved in-depth interviews with key organisational members.

In particular, *a total of 20 detailed, in-depth interviews were conducted with key informants, who covered the width and depth of the organisational structure, at several points of time in order to obtain a rich picture of the investigating phenomenon (Costello, 2002).* The identification of respondents was based on a snowballing technique and followed recommendations by Huber and Power (1985) for improving the accuracy of retrospective reports.

In particular, the first interview was conducted with each subsidiary’s Managing Director, while subsequent interviews were carried out with other two or three purposively-selected subsidiary organisational members (upper and lower management positions). Table 5.3.2 presents the interviewees’ organisational position per investigated subsidiary. Conducting the first interview with each subsidiary’s Managing Director was considered critical for two main reasons: *first*, given the nature of the topic, an organisational representative with a

broader perspective on subsidiary cultural and strategic issues would provide a coherent and solid picture of particular subsidiary characteristics that drive subsidiary entrepreneurship and OI, as well as identify particular aspects of the subsidiary's corporate context and the external environment that influence subsidiary OI. Also, a member of subsidiary top-level management would provide a more valid perspective on subsidiary performance considerations. *Second*, establishing an early contact with the Managing Director would prove decisive in securing subsequent access to other subsidiary management and employees, who would be identified as most appropriate for conducting additional interviews. Regarding the selection of subsequent subsidiary respondents, it is important to note that these were identified based on the initial interview with the subsidiary's Managing Director. In particular, two or three additional managers and/or employees were interviewed based on the particular examples of subsidiary OI that were discussed with the Managing Director and depending on the subsidiary's main activities. Each interview was individually conducted and lasted between one-and-a-half and two hours. Upon agreement with the interviewees, all interviews were tape-recorded.

Table 5.3.2: List of Subsidiary Interviewees

Subsidiary	Interviewee Organisational Position
Zeus	<ol style="list-style-type: none"> 1. Managing Director 2. Head of Quality Management & Technical Marketing Centre 3. Global Product Manager, Local Head of Communications & Community Relations 4. Head of R&D
Apollo	<ol style="list-style-type: none"> 5. Managing Director 6. Europe, Middle East & Africa (EMEA) Project Manager 7. Innovations Programme Coach
Ares	<ol style="list-style-type: none"> 8. Managing Director 9. Manager, Department of Pharmacology 10. Human Resources Manager
Hermes	<ol style="list-style-type: none"> 11. Managing Director 12. R&D Director 13. Six-Sigma Process Consultant, Business Operations 14. Chief Technology Officer
Poseidon	<ol style="list-style-type: none"> 15. Managing Director, VP for Customer Support 16. Manager, European Technical Support Centre 17. Manager, Product Support Division
Heracles	<ol style="list-style-type: none"> 18. Managing Director 19. Company Capital Projects Manager 20. Plant Manager

A *semi-structured interview guide* was developed (see Appendix 2), inviting respondents to elaborate on themes related to subsidiary, corporate and environmental contexts and how these might affect subsidiary entrepreneurship and OI. According to Mintzberg (1979), such a design stage of the data collection allows for superior understanding of themes and relationships emerging from on-site data collection and initiates reflection on qualitative data. Also, the semi-structured interview guide incorporated mainly open-ended questions in order to allow interviewees to express their own views and not to guide them through their thinking.

The interviews began with general open-ended questions on the broader theme of subsidiary entrepreneurship. Interviewees were asked to provide examples of entrepreneurial activities that their subsidiaries had undertaken over the past years (see Interview Guide, Part B, in Appendix 2). Based on the respondent's answers, key aspects of subsidiary entrepreneurship were identified. In particular, insights were gained into how the term entrepreneurship was used within the context of each subsidiary and what types of activities subsidiary management considered as manifestations of subsidiary entrepreneurship. Interviewees were then asked to elaborate on specific entrepreneurial activities and indicate particular organisational members involved. These questions related to the first research objective, i.e. identifying specific subsidiary entrepreneurial characteristics, and further assisted in the identification of subsequent respondents.

Subsequently, the interview started to focus more of the particular theme of subsidiary OI. Interviewees were asked to elaborate on how the aforementioned entrepreneurial activities had emerged, i.e. on the associated ideas/opportunities (see Interview Guide, Part C, in Appendix 2). This question brought into discussion the theme of OI. Particular questions were asked, for example how these opportunities were identified and what factors contributed or obstructed to their identification. Respondents were then asked to explain how entrepreneurial opportunities generally emerge within their subsidiary, to what extent, and what internal and external factors contribute/obstruct to their identification. In most cases, particular examples of subsidiary OI were provided by interviewees and further discussed with the interviewer. Through time, the interview process became more structured in order to ensure that particular issues would be covered (at least to an extent). For example, interviewees were asked to elaborate on the relationship of their subsidiary with the parent corporation/ other subsidiaries of the MNC/ other organisations (in the local and international environment) and to what extent such a relationship/interaction had contributed to the identification of entrepreneurial opportunities at the subsidiary level (see Interview Guide, Part C, Questions 9, 10, 11, in Appendix 2). These questions related to the

first and second research objectives, i.e. identifying particular subsidiary entrepreneurial characteristics, along with factors in the subsidiary's corporate context and external environment, that promote subsidiary OI.

The final part of the interview brought into the discussion particular performance considerations (see Interview Guide, Part D, in Appendix 2). More specifically, interviewees were asked to elaborate on the effects of entrepreneurship on their subsidiary's performance and also to indicate particular aspects of performance that they referred to. These questions addressed the third research objective of this study.

The interviews were taped and subsequently transcribed, and notes were also taken and written up immediately after the interviews. A total of approximately 400 pages of data were collected.

Stage 3: The third stage referred to the late phase of the case study project and lasted three months. In this “*probing*” phase, follow-up discussions with interview respondents, observation and archival data were used as a means of investigating further the notion of OI in the investigated subsidiaries, and refine the understanding developed at the design stage of the data collection process. In addition, interviewees were presented with interview transcripts and draft reports (of the single and cross-case findings) and were welcomed to provide their comments.

5.3.3 The analysis of data

The analysis of the qualitative data was based on an *inductive logic* and drew on recommendations by Glaser and Strauss (1967), Strauss and Corbin (1998), and Miles and Huberman (1994). In particular, single case analysis preceded cross-case analysis (Miles and Huberman, 1994; Patton, 1990). In addition, data emerging from within and cross-case study analysis procedures were analysed following the *constant comparative analysis approach* (Eckstein, 1975; George, 1979; Lijphart, 1975). According to this method, as the research proceeded, new data were collected, and were constantly compared to prior data and theory in terms of categories and concepts. When new data yielded novel or inconsistent information, conceptual categories and emerging theory were modified to reflect changes on data. This process was repeated until theoretical saturation was reached, that is until no new categories/concepts were generated out of the comparison of more recent data with prior data and theory.

Qualitative data were analysed using the procedures recommended by Miles and Huberman (1994), which emphasise the use of tables and diagrams for reducing and visualising data. As noted above, the replication logic (which was used for the selection of cases) also proved critical for rigorous analysis of the case study data. In particular, during the analysis process, data were systematically arranged into categories by means of the N6 data management software. Specifically, both interviews and field notes were transcribed and subsequently indexed, using the indexing function. Regarding the single case analysis, key concepts were identified and appropriate nodes and sub-nodes were created (corresponding to themes and concepts), that were arranged in hierarchical trees. Data from multiple respondents within each subsidiary were compared and input into the appropriate nodes (through text searches and combinations). The output of the single case analysis was essentially a set of tables, each one referring to a key theme/concept, whilst obvious relationships amongst key themes and concepts were also established.

Regarding the cross-case analysis procedures, tables were prepared with the cases placed along the horizontal axis and the key themes/concepts on the vertical axis. Cases were re-analysed in turn and constantly compared to previous cases, until theoretical saturation was reached. The tables produced are explicitly analysed in Chapter 6 (in the respective sections on subsidiary “entrepreneurial capabilities” that drive OI; factors in the corporate context that affect OI; environmental influences on OI; effect of OI on entrepreneurial output, and effect of entrepreneurship on subsidiary performance).

Integrity of the case study research

In dealing with criticisms for the lack of methodological rigour and the possibility of bias (Patton, 1990; Yin, 1989), case study researchers have developed a number of different approaches for increasing the integrity of qualitative research (Riege and Nair, 1996). The present study sought to validate the quality of the case study empirical evidence and achieve integrity in conducting case-study research through applying much of the numerous techniques recommended in literature (Miles and Huberman, 1994; Yin, 2003). For a detailed account of the techniques that need to be followed for conducting case-study research in a methodologically sound way see Table 2 in Appendix 1.

In particular, relevant theory in the fields of international business and entrepreneurship was used to structure the interview guide (Eisenhardt, 1989; Oppenheim, 2000). Also, in evaluating the findings of the case study research, *data- and between method- triangulation* was applied by collecting and comparing insights from multiple informants (within each

subsidiary) and using multiple methods (interviews, data from observations and archival data) (Denzin, 1989). In particular, archival data and company documents were used either to support or to disconfirm the material collected from the interviews and field notes.

Reliability was established through the development of a retrievable case study database (Yin, 1989), and a case study protocol, which included the use of “table shells” to record data (Miles and Huberman, 1984). These outlines ensured that data collection was focused on the concept of subsidiary entrepreneurship and the particular process of OI, verified that the same information was being collected for all cases, and assisted in data analysis.

Construct validity was established by using multiple sources of evidence (i.e. informants at different levels with various perspectives), the creation of a chain of evidence at the end of each case study, and through circulation of the case study report and interview transcripts to respondents (Yin, 1984; Kirk and Miller, 1986; Healy and Perry, 2000).

Internal validity was established through a pattern matching logic (pattern matching was accomplished through literal replication) and explanation building through interpretation and sequential inclusion of cases in order to establish causal relationships.

External validity was established through using theory in single case studies and using literal replication logic in multiple case studies in order to establish generalisability in the findings. Finally, the index system used during data analysis, which was generated from the process of content analysis, was discussed with knowledgeable scholars (Yin, 1989). In particular, advice from three academics⁵⁸ was sought in order to gain additional insights on they key issues/concepts that had emerged and also eliminate researcher subjectivity concerns.

⁵⁸ During the case-study analysis, valuable advice was provided by Dr. Pavlos Dimitratos, Lecturer of International Business, Dr. Emmanuella Plakoyiannaki, Lecturer of Marketing and Management, and Stephen Young, Professor of International Business, who took the time to review the interview transcripts and discuss with the researcher the key themes that had emerged.

5.4 Quantitative Research: Large-scale mail survey

The second stage of this study's research methodology involved conducting a large-scale mail survey to foreign-owned subsidiaries based in the UK. Figure 5.4 illustrates the survey research process of the present study. The following sections analyse in detail the steps of the process.

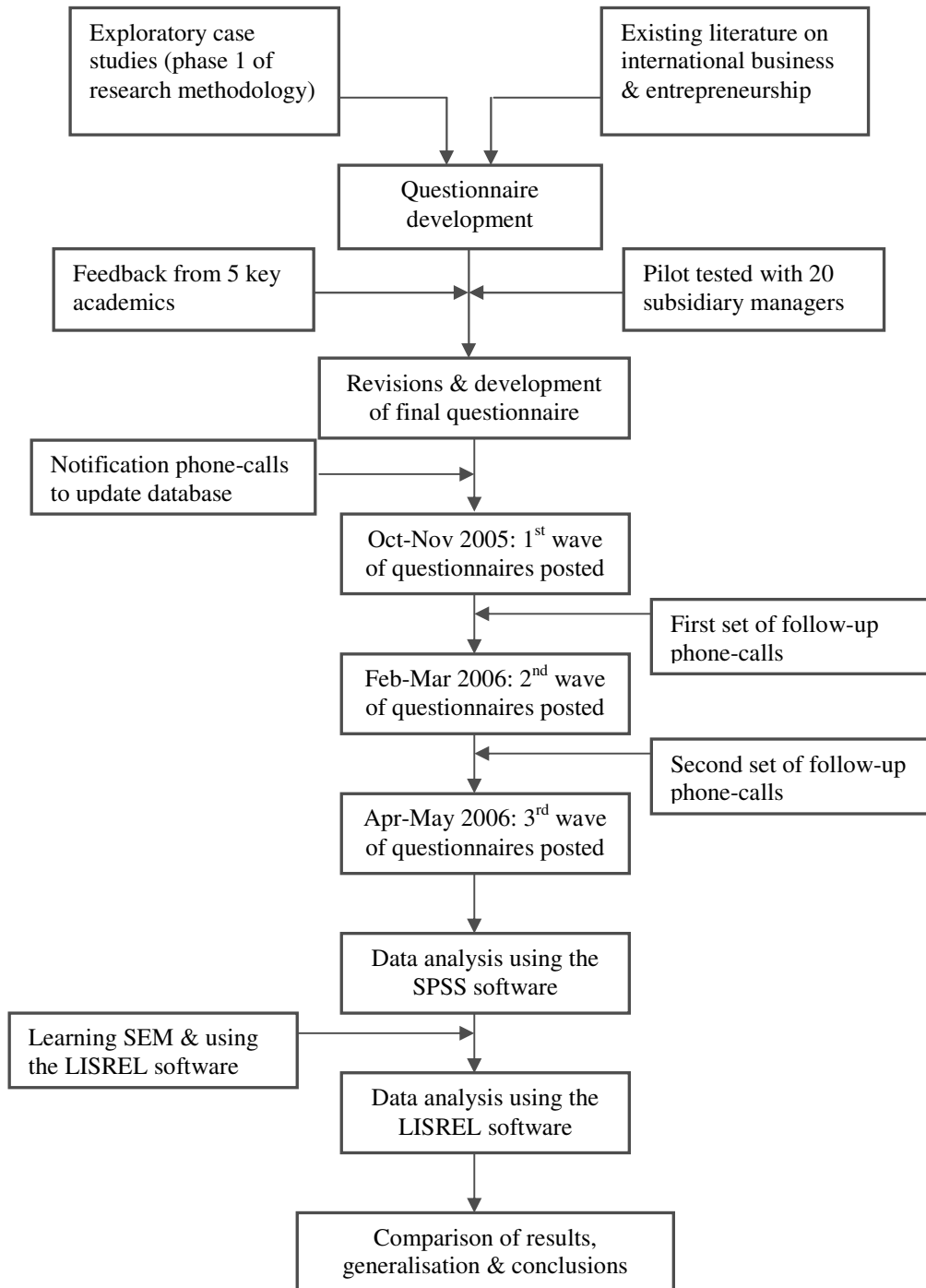


Figure 5.4: The survey research process

5.4.1 Development of the questionnaire

The input of the exploratory case study research (first step of the research methodology) has been critical in the development of the survey instruments. In particular, given the scarcity of entrepreneurship research on firm-level OI and the lack of relevant research in the particular context of the individual subsidiary as the unit of analysis, the qualitative research greatly assisted in the induction of specific research hypotheses. Nonetheless, as has been thoroughly explained in the previous section, the case study's inductive logic was to some extent supplemented with the use of prior theory (Lincoln and Guba, 1985, Miles and Huberman, 1994; Neuman, 1994; Perry and Coote, 1994; Yin, 1994). Also, existing literature in the fields of international business and entrepreneurship also had a significant contribution to the development of the questionnaire, particularly in enhancing construct validity and reliability through providing pre-existing scales⁵⁹.

As presented in Figure 5.4, feedback was sought from five key academics in the fields of international business, entrepreneurship and strategy to refine the questionnaire⁶⁰. Their suggestions basically entailed improvements in wording and advice on the layout of the questionnaire. Following a major revision, the questionnaire was pilot-tested with twenty managers of foreign-owned subsidiaries based in the UK; ten of these managers were working in the subsidiaries that participated in the exploratory case-study research, with whom the researcher had built particularly strong contacts, while the other ten managers were contacted based on the advice of the above academics⁶¹. The pilot-testing of the questionnaire was conducted during 2005 through emailing an electronic copy to each subsidiary manager, explaining the purpose of the task and then receiving an electronic reply with his/her comments and discussing any important issues over the phone. The pilot study led to a few questions being rephrased and some alternations in the sequence of the questions, hence ensuring clarity and relevance. Particularly for the questionnaires that were completed by managers in the subsidiaries that had participated in the exploratory case-study research, responses in the pilot-questionnaires were compared to those expected (based on the insights gained during the interviews with these managers); when substantial

⁵⁹ Chapter 7, Section 7.2.1 explicitly analyses the scales used to measure the constructs of this study and the extent to which these were drawn from previous studies or adapted based on the insights of the exploratory case-study research.

⁶⁰ In particular, advice was provided by J. Birkinshaw, Professor of Strategic and International Management; S. Zahra, Professor of Entrepreneurship; H. Tuselmann, Professor of International Business; S. Young, Professor of International Business; and S. Lioukas, Professor of Business Strategy.

⁶¹ It is important to note that, for purposes of pilot-testing the questionnaire, 15 managers from "entrepreneurial" and 5 managers from "non-entrepreneurial" subsidiaries were contacted. The names of these managers are not provided in the present thesis for confidentiality reasons.

differences were encountered, amendments to working were made. In most cases, however, responses were very similar. Through this iterative process of redrafting, pilot-testing and redrafting, the final questionnaire was developed.

The final questionnaire for this study (see Appendix 3b) was eight pages long and contained seven pages of pre-structured questions. Although relatively long, its size still lies within the proposed limit for manageable questionnaire size (Dillman, 2000). In particular, the questionnaire contained six discrete parts: profile of the subsidiary, subsidiary characteristics, entrepreneurial activity, subsidiary performance, opportunity identification and subsidiary environment. Given the length of the questionnaire, it was considered essential to be carefully designed in order to maximise appeal and ease of completion. Substantial consideration was placed in reducing the complexity of the questions and thereby minimise the amount of time and effort required to complete the questionnaire. Also, though results on the effect of coloured questionnaires on response rates are inconsistent (Greer and Lohtia, 1994; Gullahorn and Gullahorn, 1963; Jobber and Sanderson, 1983; Matteson, 1974; Pressley and Tullar, 1977; Pucel et al., 1971), the questionnaire included two different colours. Finally, in order to increase its credibility, the questionnaire included the logo of the ESRC, which was the sponsor of the large-scale survey.

5.4.2 Sampling decisions

Prior to posting the first wave of questionnaires, particular sampling issues had to be taken into account. Indeed, an important first step in conducting the survey research involved the particular selection of a representative sample of subsidiary companies. The selection of a sample of foreign-owned subsidiaries involved two key decisions: *first*, the consideration of FDI levels in the UK by geographical origin and thus the selection of specific countries having the most significant relative contribution to inward investment in the UK, and *second*, the particular selection of a sample of foreign subsidiaries in the UK originating from these high-contributing countries.

5.4.2.1 Evaluation of FDI in the UK based on geographical origin

Regarding the first consideration, a critical decision was *the selection of an appropriate method to measure and compare FDI in the UK based on its geographical origin*. There are various methods for measuring inward investment; most of them either focus on the number

of projects or the financial value. The financial measurement method was preferred as depicting more accurately the relative volume of inward investment, given that the number of projects might also include a large number of small projects and thus could provide a misleading picture.

As regards the financial value method, measurements can be either of stocks or flows. *FDI stocks* measure the level of cumulative FDI stock of capital investment by foreign companies at a single point of time, taking into account both new investment and disinvestment (United Nations Conference on Trade and Investment, UNCTAD). *FDI flows* are new investments by foreign enterprises made during a period of time – either by calendar or tax year. While much inward investment is included in the FDI flow statistics, not all of it will be. For example, if an inward investor decided to expand its facilities in the UK but used local finance, this would not appear in FDI flow statistics as it involves no inflow of money to the country (UK Trade and Investment).

In considering the two aforementioned methods of evaluating the financial value of inward investment in the UK, *FDI stock levels were preferred in the present study, since they are generally perceived as a more valuable and reliable measure of inward investment activity* (UK Trade and Investment). Table 5.4.2.1 presents the volume of FDI stocks (in millions of pounds) in the UK by geographical origin for the years 1995 – 2003. Whilst FDI stocks generally provide a more stable picture than FDI flows, this aspect was enhanced through considering average levels of stocks across the nine-year period 1995 – 2003. It should be noted that, since the research design of the present study was conducted during the year 2004, complete and most up-to-date data were provided by the Office for UK National Statistics, Business Monitor till the year 2003.

Based on Table 5.4.2.1, the countries exhibiting the highest level of stock flows (in terms of their financial value) to the UK are the European Union and the U.S., with average stock levels amounting to 97,643 and 95,965 million pounds respectively. While the contribution of the European Union countries in the financial value of inward investment in the UK is high, three countries exhibit particularly elevated stock levels: *France, Germany* and the *Netherlands*. Consequently, subsidiaries from these three European countries and also the U.S. were selected as most representative. In terms of other developed countries, apart from Western Europe and North America, Japan appears to also contribute highly to the flow of investment stocks in the UK. Whilst Australia is close, Japan was also selected on the basis of previous studies comparing subsidiary activity amongst the members of the triad-regions, i.e. U.S., Europe and Japan (e.g. Behrman and Fischer, 1980; Ohmae, 1985; Li and

Guisinger, 1992; Roth and Morrison, 1992; Birkinshaw and Morrison, 1995; Brouthers et al, 2000; Arora and Fosfuri, 2000; Harzing, 2000; Rugman, 2000; Luo, 2003; Harzing and Noorderhaven, 2006). Accordingly, the sample of this study was chosen to include subsidiaries that are based in the UK and whose country of origin is *Europe (France, Germany and the Netherlands), the U.S. and Japan*.

Table 5.4.2.1: FDI stocks in the UK, by geographical origin, 1995-2003
(millions of pounds)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average
Developed countries										
<i>Western Europe</i>										
European Union	43,493	43,774	44,927	69,248	107,249	136,686	150,995	142,397	140,020	97,643
Austria	412	280	79	334	253	565	385	1,003	317	403
Belgium / Luxembourg	2,170	1,233	1,856	2,810	4,143	4,055	4,538	6,750	7,715	3,919
Denmark	1,127	850	927	1,560	1,971	2,758	3,955	2,358	2,452	1,995
Finland	352	334	444	729	921	1,042	1,084	767	819	721
France	8,289	9,147	13,880	16,265	19,797	48,947	35,213	37,195	38,090	25,203
Germany	8,854	9,508	10,078	11,573	36,250	26,140	29,731	37,737	32,197	22,452
Greece	-	-	-	-	47	-	92	89	86	35
Ireland	686	703	1,837	2,807	3,098	3,474	4,209	4,544	4,546	2,878
Italy	1,223	988	824	1,406	1,540	2,415	6,522	5,788	4,587	2,810
Netherlands	17,173	18,692	12,131	28,227	33,891	41,565	60,920	39,512	43,546	32,851
Portugal	-	-	-	-	179	-	129	97	115	58
Spain	164	78	247	463	1,015	475	606	2,303	2,838	910
Sweden	2,908	1,871	2,521	2,910	4,144	3,929	3,613	4,254	2,713	3,207
<i>Other Western Europe</i>										
Man Island	-	-	-	2,465	1,780	2,774	4,366	3,393	2,359	1,904
Norway	665	1,571	1,866	1,559	560	854	832	1,019	871	1,089
Switzerland	7,523	10,164	10,422	7,444	8,516	9,091	9,341	9,717	13,108	9,481
<i>North America</i>										
Canada	2,652	3,517	4,129	4,090	7,070	9,307	8,693	8,718	10,912	6,565
United States	55,129	55,956	70,270	93,419	93,469	101,245	136,967	124,597	132,632	95,965
<i>Other developed countries</i>										
Australia	6,021	6,169	6,003	5,938	5,450	9,875	10,997	8,309	14,160	8,102
Japan	5,542	5,888	6,562	7,387	5,174	10,545	10,900	11,791	11,716	8,389
New Zealand	1,506	1,538	1,351	1,554	1,055	780	149	134	147	913
South Africa	665	578	743	1,228	767	969	757	250	387	705

Source: The Office for National Statistics, *Business Monitor MA4: Foreign Direct Investment*

5.4.2.2 Selection of the subsidiary sample

Regarding the second consideration of selection of foreign subsidiaries from the triad-regions (Europe, U.S. and Japan), a large database was constructed containing the entire population of subsidiaries from the aforementioned countries of origin that are located in the UK. This database consisted of different sources (the German Chamber of Commerce, the French Chamber of Commerce, the U.S. Chamber of Commerce, the Japanese Chamber of Commerce, Dun and Bradstreet) and incorporated a total number of 14,508 subsidiaries, corresponding to the entire population of French, German, Dutch, Japanese and U.S. subsidiaries located the UK.

In the particular case of the present study, given a population of 14,508 subsidiaries (European - French, German and Dutch - U.S. and Japanese subsidiaries located in the UK), a $\pm 7\%$ precision level and a 95% confidence level, a sample of a least 201 subsidiaries was required⁶². Assuming a conservative overall response rate of 10% for the present study would translate into a need to target a minimum of 2,010 subsidiaries across the triad-regions⁶³. Another 10% was added to the sample size in order to compensate for potential non-response (Glenn, 2003).

As presented in Table 5.4.2.2, the population of foreign-owned subsidiaries in the UK is different for each country of origin. However, given that objective of this study was to examine OI and entrepreneurship within foreign-owned subsidiaries located in the UK, but also to identify any related country of origin – effects, it was considered necessary to follow the *disproportionate sampling method*. This means that European (French, German and Dutch), U.S. and Japanese subsidiaries were not sample proportionately to their relative population in the UK; rather equal samples of subsidiaries from each triad-region were selected in order to allow for cross-triad-region comparisons. Following a proportionate sampling method would mean, for example, targeting a small number of Japanese subsidiaries and hence rendering a biased final sample that would incorporate mainly U.S. subsidiaries. Statistical analysis on these data would essentially be applicable only to U.S. subsidiaries located in the UK, hence not supporting the objectives of the present study to

⁶² Sample size was determined based on combinations of commonly used criteria, such as precision confidence levels, and variability (Glenn, 2003). Sample sizes were derived using the following equation:

$$n = \frac{N}{1 + N(e)^2}$$

,where n = required sample size, N = size of population and e= level of precision or sampling error, i.e. the range in which the true value of the population is estimated to be

⁶³ Though response rates may vary across subsidiaries of different countries of origin, a 10% is a conservative lower bound, since no lower rate has been reported in previous studies.

examine OI across foreign-owned subsidiaries in the UK. This need to study corporate entrepreneurship issues across different countries has been corroborated by many international business and entrepreneurship researchers (e.g. Birkinshaw, 1997; Zahra, Jennings, and Kuratko, 1999; Harzing, 2000; Brock, 2000; Paterson and Brock, 2002).

As illustrated in Table 5.4.2.2, 750 subsidiaries from each country-triad were randomly selected, adding up to a total sample of 2,250 subsidiaries. As concerns the European subsidiaries, equal samples were randomly selected from each of the three countries: France, Germany and the Netherlands (i.e. 250 per European country). The way that the disproportionate sampling approach was applied in this study complies with widely accepted sampling guidelines suggesting that each major group in the sample would require a minimum of 100 cases, while each minor subgroup would need a sample of 20 to 50 elements (Sudman, 1976).

Table 5.4.2.2.: Subsidiary Sampling*			
Subsidiary Country of Origin	Population in the UK (≈nr of subsidiaries)	Sample Selected	Sample Selected/ Population
France	1,161	250	22%
Germany	1,322	250	19%
Netherlands	811	250	31%
EUROPE	3,294	750	23%
Japan	1,000	750	75%
USA	10,214	750	7%
Total	14,508	2,250	16%

**Subsidiaries were selected randomly using the disproportionate sampling method*

5.4.3 The survey data collection process

As illustrated in Figure 5.4, the collection of the survey data started with a pre-contact phonecall and included three postal waves and two rounds of follow-up phone-calls in-between.

During September 2005, the selected subsidiaries were contacted by telephone in order to verify their postal details, such as the company's address and the name of the key informant within each subsidiary, i.e. in most cases the Managing Director or a Senior Manager involved in the main value-adding activity of the subsidiary. This was considered necessary

given that the databases used in the particular study could have been outdated⁶⁴. Although in most cases accessing the key informant was not feasible and postal details were provided by secretaries and employees in the reception, some preliminary information was sought for in order to ensure that the contacted subsidiary was eligible for the purposes of the present study. In particular, verification of the name of the contacted company, whether the company was a subsidiary of a foreign MNC and of the subsidiary's specific country of origin was attempted. This was deemed necessary in order to increase the actual sample size, i.e. subsidiaries that were contacted and were suitable to answer the survey. Nonetheless, in many cases the subsidiary employees contacted over the phone were reluctant to provide any preliminary information; hence some questionnaires were posted without verification of the postal details and the name of the key informant.

The first wave of paper questionnaires was posted during October – November 2005. A cover letter accompanying each questionnaire explained the purpose of the study, provided assurance regarding the confidentiality of the collected data and also offered a report of the study's findings. The cover letter was personalised by including the name of the key respondent (where applicable) and also by using the personal signature of a well-known academic involved in the study. In addition, a pre-addressed freepost envelope was included to enable respondents to return the completed questionnaire free of charge. All the above practices were employed given their general recognition as best practices for conducting mail survey research (Dillman, 2000). The first wave of mail questionnaires rendered a total of 126 usable responses.

Allowing the contacted subsidiaries enough time to respond, i.e. 4 – 5 weeks, (Dillman, 2000), meant that the first round of follow-up phonecalls would be conducted during the end of December. However, given that December is a month of holidays, it was considered most appropriate to commence the follow-up phase after the Christmas break, i.e. the second week of January. The purpose of the follow-up phone-calls was to make a personal contact with the key respondent (when possible), explain the purposes of the study and the benefits it would deliver if his/her subsidiary participated and further discuss the study with those who seemed interested. Nevertheless, since the key respondent employed a top management position, in many cases it was not feasible to establish personal contact over the phone; rather the person reached was the respondent's secretary who was asked whether they had received the questionnaire, explained the purposes of the study and the importance of the subsidiary's participation and finally courteously asked to remind the key respondent

⁶⁴ According to Harzing (1997), this is common in international mail surveys.

to complete the questionnaire. Although the outcome of the follow-up phonecalls was successful to a certain extent, and required an enormous amount of time and effort, they were considered worthwhile given the low response rates achieved. The first round of follow-up phonecalls was conducted during January – February 2006.

The second postal wave of questionnaires was sent during February - March 2006, producing another 79 usable questionnaires. An additional round of follow-up phonecalls was conducted during March and April, followed by the third and final postal wave. This last postal wave took place in-between April and May 2006 and contributed a total of 65 usable responses. The following section describes in detail response rates and subsidiary sample characteristics.

Having completed the core data collection process, the possibility of conducting a second smaller-scale survey on the respective respondent-subidiaries' headquarters was considered. Particular studies on multinational subsidiaries have used this approach (of targeting matched pairs of subsidiary and headquarter respondents) in order to corroborate responses to the survey questionnaires and enhance the validity of the subsidiary-level constructs (e.g. Ghoshal and Nohria, 1989; Kim and Mauborgne, 1993; Birkinshaw, 1997; Birkinshaw and Hood, 2000). However, following the advice of knowledgeable academics and subsidiary management, *the outcome of this method was considered uncertain in the context of the present study*. In particular, some of the responding subsidiaries reported to regional headquarters in the UK and hence the parent corporation was in no position to provide reliable information on the respective subsidiaries. Also, the questionnaire incorporated questions regarding the subsidiary's entrepreneurial culture that management in the corporate headquarters might not be appropriate to answer. Finally, targeting the key respondent within each subsidiary's parent was indeed a problematic task, given the already low response rates and that cooperation from both subsidiaries and the respective parent would be required. Consequently, the present research had to rely on the implicit assumption - generally accepted in subsidiary-related research - that headquarters and subsidiary managers' perceptions converge with each other (Birkinshaw et al, 2000).

Given that the option of matched pairs of subsidiary and headquarter respondents was rejected, *the present study sought to establish inter-rater reliability through including a second subsidiary respondent in 10% of the responding sample*. In particular, a second copy of the survey questionnaire was also posted to a second senior subsidiary manager, involved in one of the subsidiary's main functions. This process was followed according to protocols established by previous research (Sandberg, 1986; Robinson, 1999; Robinson and

McDougall, 2001). Completed responses, which were received from the second group of 26 managers, were significantly correlated with those of the Managing Directors (or other senior primary respondents) for each of the study's variables ($p < 0.001$). In particular, the perceptions of the two respondents (within each subsidiary) exhibited an inter-rater reliability of 93.1%, which is well within the acceptable range⁶⁵.

Finally, a general concern when conducting survey research relates to *non-response bias*. In order to check for non-response bias, the responses of early versus late respondents are usually compared (Armstrong and Overton, 1977). In the particular case of the present study, given the three separate postal waves, the responses received from each wave were compared with responses from the other two waves by testing for mean differences on all of the variables included in the hypotheses. F-statistic tests did not reveal any significant differences between first, second and third-wave responses⁶⁶ (F-values were a result of one-way ANOVA tests with statistical significance at 0.01, 0.05 and 0.10), suggesting that non-response bias is not a problem in this study. Also, to establish the *representation of the sample*, responding and non-responding subsidiaries were compared based on their age and size (full-time employees). T-test comparisons revealed no significant differences between the two groups (responding versus non-responding subsidiaries) along these dimensions.

5.4.4 Response rates and sample characteristics

A significant challenge in conducting survey research is to identify ways to increase response rates. Despite a growing body of knowledge on the topic and related efforts, response rates appear to constantly decline in the course of time (Jobber et al, 1991; Baruch, 1999; Harzing and Noorderhaven, 2006). Particularly low levels of response rates are experienced in studies involving high-level organisational representatives, such as Managing Directors and other members of senior management (Hambrick et al, 1993; Baruch, 1999). Also, response rates have been found to differ considerably across countries (Bartholomew and Smith, 2006), and particularly across North American, European, and Asian countries (Dawson and Dickinson, 1988). For example, Jobber et al (1991) found response rates to be higher for American than Japanese subsidiaries; Baruch (1999) corroborated higher response rates in U.S. firms, while Dawson and Dickinson (1988) found that French firms tend to respond poorly to mail surveys. Response rates may also

⁶⁵ The overall level of inter-rater agreement was assessed by calculating Pearson correlations across all variables for each pair of respondents (Jones et al., 1983).

⁶⁶ Small changes in the appearance of the questionnaire allowed for distinction between the three postal waves.

vary depending on firm size. Whilst larger firms may be over-researched and thus negatively predisposed towards surveys (Baruch, 1999), new or small firms may also exhibit low response rates due to lack of organisational slack (Bartholomew and Smith, 2006).

The response rates of the present study are provided in Table 5.4.4.1. It is obvious that response rates vary per country (as identified by Harzing, 1997, 1999), ranging from 14% to 21%. The overall response rate across the entire sample of subsidiaries is 16%. The achieved rates are comparable to other recent studies involving large-scale surveys and targeting top management (Gatignon et al, 1997; Powell and Dent-Micallef, 1997; Dickson and Weaver, 1997; Capron, 1999; Harzing and Noorderhaven, 2006). Compared to such studies, the response rates of the present study are highly satisfactory.

Country of origin	Sample Selected	Actual Sample*	Responses Received	Usable responses**	Response Rates***
France	250	203	29	29	14%
Germany	250	202	38	38	19%
Netherlands	250	209	43	42	21%
EUROPE	750	614	111	109	18%
Japan	750	580	87	80	15%
USA	750	576	90	81	16%
Total	2,250	1,770	287	270	16%

* *Subsidiaries suitable to complete the questionnaire (i.e. samples after excluding companies that were not subsidiaries, subsidiaries that had discontinued their operation in the UK, subsidiaries that were under another country's ownership and subsidiaries that could not answer the questionnaire because they were only single person companies)*

** *Listwise deletion of cases due to incomplete information*

*** *Response rates calculated based on responses received*

It is also important to highlight the fact that this research employed various methods for increasing response rates: inclusion of a freepost return envelope (Jobber, 1986; Yammarino et al, 1991; Jobber and O'Reilly, 1998; Dillman, 2000); personalisation of the cover letter (Dillman, 2000); promised respondent anonymity (Jobber and Saunders, 1993); telephone follow-up/pre-contacts (Yammarino et al, 1991; Jobber and Saunders, 1993; Green et al, 1998; Jobber and O'Reilly 1998; Greer et al, 2000; Dillman, 2000); and existence of a credible sponsorship (Jobber and O'Reilly, 1998; Green et al, 1998; Greer et al, 2000).

In general, the following factors are considered to have influenced the response rates of this study:

First, many of the subsidiaries that declined participation in the study indicated that they had a corporate policy not to participate in mail surveys, since the number of questionnaires had become overwhelming. The general problem of research saturation has been acknowledged in relevant literature (Harzing, 1997; Harzing and Noorderhaven, 2006).

Second, the questionnaire was addressed to high-level subsidiary management, hence lower response rates were expected (Hambrick et al, 1993; Baruch, 1999).

Third, though carefully designed to be attractive and easy to complete, the questionnaire was relatively long, which might have affected response rates (Dillman, 2000).

Fourth, response rates have been found to be heavily influenced by the interest of the respondents in the topic (Vehovar et al, 2002). Hence, respondent non-interest might have been another reason for choosing not to complete the survey.

Fifth, the financial budget of this research was limited. Consequently, the only incentive offered for completing the questionnaire was a report of the study's findings. However, the impact of this tactic (i.e. offering a report of the findings) on response rates has generally been questioned in relevant literature (Fox et al, 1988, 1989, 1998).

Before concluding with the present section it is important to provide a profile of the data collected. Supportive of this study's research objective to examine entrepreneurship and OI across a large number of different types of foreign-owned subsidiaries in the UK, the subsidiary sample exhibits considerable variation. In particular, it is represented by subsidiaries of different countries of origin (Table 5.4.4.1), different size (Table 5.4.4.2) and age (Table 5.4.4.3), as well as subsidiaries operating in different industries (Table 5.4.4.4) and involved in different types of value-adding activities (Table 5.4.4.5).

Table 5.4.4.2: Distribution of subsidiary sample by size (nr of employees)		
<i>Number of employees</i>	<i>Number of subsidiaries</i>	<i>Percentage of subsidiaries</i>
1-49	119	44%
50-99	40	15%
100-199	32	12%
200-499	39	14%
500+	40	15%
<i>Total</i>	<i>270</i>	<i>100%</i>

Table 5.4.4.3: Distribution of subsidiary sample by age (nr of years established)		
<i>Years established</i>	<i>Number of subsidiaries</i>	<i>Percentage of subsidiaries</i>
0-9	49	18%
10-19	96	36%
20-39	91	34%
40-99	27	10%
100+	7	3%
<i>Total</i>	<i>270</i>	<i>100%</i>

Table 5.4.4.4: Distribution of subsidiary sample by main industry*		
<i>Main Industry</i>	<i>Number of subsidiaries</i>	<i>Percentage of subsidiaries</i>
Chemicals and Pharmaceuticals	27	10%
Rubber, Plastic, Glass and Ceramics	24	9%
Metal Works and Metal Production	16	6%
Mechanical Engineering	19	7%
Electrics, Electronics, Communication Equipment and Precision Instruments	57	21%
Vehicles	22	8%
Business Services / Wholesaling / Logistics Operations	73	27%
Financial Services	16	6%
Energy and Utilities	16	6%
<i>Total</i>	<i>270</i>	<i>100%</i>

*Based on SIC codes

Table 5.4.4.5: Distribution of subsidiary sample by value adding activity		
<i>Main Value Adding Activity</i>	<i>Number of subsidiaries</i>	<i>Percentage of subsidiaries</i>
Research and Development (R&D)	8	3%
Product Design	14	5%
Materials Procurement and Purchasing	3	1%
Manufacturing Operations	95	35%
Product Distribution	38	14%
Marketing and Sales Activities	81	30%
Customer Service	32	12%
<i>Total</i>	<i>270</i>	<i>100%</i>

5.4.5 Quantitative data analysis procedures

Statistical analysis of the survey data was required in order to test the particular hypotheses⁶⁷ and hence produce generalisable findings. Quantitative analysis was conducted using two distinct multivariate techniques: *multiple regression analysis* and *structural equation modeling (SEM)*. The employment of these two distinct methods was considered essential due to the relative benefits of each technique:

On one hand, multiple regression analysis is a generally accepted and widely understood method for evaluating the relationship between a single dependent and multiple independent variables. Regression analysis is generally easy and speedy to implement, while it provides a reliable insight on the significant relationships existing amongst key constructs. On the other hand, given the nature of the conceptual model, i.e. involving multiple sets of dependence relationships that needed to be tested simultaneously, the most topical Structural Equation Modelling (SEM) approach was considered superior for examining the entire model altogether⁶⁸. Consequently, both methods were employed individually, and subsequently results were compared, while any discrepancies were accounted for. The particular procedures followed within each method are explicitly analysed in the following paragraphs.

5.4.5.1 Multiple Regression Analysis

Survey data were initially input into and analysed using the SPSS software. Prior to conducting multivariate analysis, “*simple empirical assessments that detail the critical statistical properties of the data*” were applied, as recommended by researchers (Hair et al, 2006, p.35). First, the type and potential impact of missing data was assessed. In particular, missing data analysis was treated with excluding all incomplete cases from subsequent analysis. This was deemed the most suitable and efficient choice, given that the number of remaining cases (a sample size of 270 subsidiaries after listwise deletion of missing data) would be sufficient for the selected multivariate analysis techniques⁶⁹ (Hair et al, 2006).

⁶⁷ The research hypotheses are presented in Chapter 6, through a constructive synthesis of the qualitative research findings and relevant literature review.

⁶⁸ Besides, as will be further explained in Chapter 7 on quantitative analysis, the sample size was sufficient to allow for employing the SEM method.

⁶⁹ That is for both multiple regression analysis and structural equation modelling. In particular, the minimum ratio of observations to variables is 5:1 but the preferred ratio is 15:1. Another simple rule of thumb is $N (\text{cases}) \geq 50 + 8m$ (m is the number of IVs) for testing the multiple correlation (Hair et al, 2006).

Second, data were investigated for univariate, bivariate and multivariate outliers. All metric variables were examined to identify extreme observations with standard scores above 4 (univariate outliers), scatterplots with confidence intervals at a specified alpha level were investigated (bivariate outliers), and the Mahalanobis D^2 measure was employed (multivariate outliers). Third, the main assumptions of multivariate analysis were tested, i.e. data normality, homoscedasticity and linearity.

First, with respect to *data normality* (i.e. variable distributions approximate normal distributions), univariate and multivariate normality was examined through histograms of residuals (with a visual check for a distribution approximating the normal distribution) and normal probability plots, as well as the statistical tests of Shapiro-Wilks and a modification of the Kolmogorov-Smirnov test. Each statistical test calculated the significance for the differences from a normal distribution. In cases of small differences from the normal distribution, data transformations were attempted, which did not seem to affect the regression results - given that regression is rather robust with respect to normality - (Hair et al, 2006).

Second, regarding the assumption of *homoscedasticity* (i.e. the dependent variable exhibits equal levels of variance across the range of predictor variables), an examination of the residual plots⁷⁰ and simple statistic tests (such as the Levene test for homogeneity of variance) revealed no particular pattern of increasing or decreasing residuals.

Third, as concerns *linearity* (of the relationship between dependent and independent variables), residual plots were examined to identify any nonlinear patterns in the data. Residuals for the independent variables exhibited no non-linear relationships with the dependent variables. Consequently, the data was deemed suitable for multiple regression analysis.

Prior to proceeding with the multivariate regression analysis, key descriptive statistics of the sample data were evaluated. Also, particular effort was spent in refining the individual constructs of this study and examining the reliability of the respective measurement scales (Hair et al, 2006). Particularly for the constructs that were measured based on multiple items, factor analysis was conducted in order to reduce data to either a small number of variables or a set of uncorrelated measures for subsequent use in the multivariate analysis⁷¹

⁷⁰ Independence of error terms was examined by plotting the residuals against any possible sequencing variable, in order to identify if there was any consistent pattern of residuals.

⁷¹ Orthogonal rotation methods were preferred as most widely used and most suitable for purposes of data reduction (Hair et al, 2006).

(Hair et al, 2006). As will be explained in Section 4.4.6.2, reducing the number of items also assisted in enhancing the overall model fit during the LISREL analysis.

For the purposes of hypothesis testing, *multiple regression analysis* was employed as a widely used technique for examining dependence relationships. Fundamental purpose of the multiple regression analysis is to predict a dependent variable with a set of independent (predictor) variables and also assess the degree and character of this relationship. However, given that this method allows for examination of the relationship between a single dependent variable and several independent variables, the conceptual model was decomposed in three sets of dependence relationships, which were individually examined using different regression models. The *first* set of relationships pertained to the effect of particular subsidiary, corporate and environmental factors on subsidiary OI; the *second* set of relationships related to the effect of subsidiary OI on its entrepreneurial performance (output); the *third* set of relationships examined the impact of entrepreneurial performance (output) on the overall subsidiary performance. Finally, multicollinearity was assessed in all regression equations through two commonly used measures: tolerance and the Variance Inflation Factor (VIF).

The results and findings of the multivariate regression analysis are analysed explicitly in Chapter 7 of the present research.

5.4.5.2 Structural Equation Modelling

As explained above, regression analysis conducted by means of the SPSS software essentially decomposed the conceptual model in three sets of dependence relationships, while independent regressions were run for each set. Therefore, the results of each regression pertained to the particular relationships examined by each model. Based on this weakness of the multiple regression analysis to depict and test *all dependence relationships simultaneously*, the Structural Equation Modelling (SEM) method was considered most appropriate for analysing the data of the present study.

SEM, as a multivariate technique, *is particularly suitable for estimating causal models with multiple independent and dependent constructs*, i.e. when dependent variables become independent variables in subsequent dependence relationships (Hair et al, 2006). This method has the ability to examine the structure of relationships amongst multiple variables expressed through a series of equations, similar to a series of multiple regression equations.

These equations depict all relationships amongst the constructs (dependent and independent variables) involved in the analysis in one model.

Consequently, SEM was considered most appropriate for the purposes of the present study due to its ability to:

1. Estimate multiple and interrelated dependence relationships.
2. Represent observed concepts in these relationships (i.e. items measuring each construct) and to correct for measurement error in the estimation process.
3. Define one single model to explain the entire set of relationships.

The following paragraphs explain analytically the procedures used for estimating, testing and evaluating the “goodness-of-fit” of the proposed research model.

Data Preparation and Method of Estimation

In estimating and testing the proposed research model, the two-step procedure suggested by Anderson and Gebring (1988) was followed. *First*, the properties of the measurement models were examined and, following adequate positive feedback based on theoretical grounds and empirical benchmarks, the research hypotheses proposed by the conceptual model were tested. The *Maximum Likelihood* (ML) estimation method was used to estimate the parameters of the models, since ML is superior in terms of bias in parameter estimates (Cortina et al, 2001) and ML-based fit indices outperform those obtained from other methods (Hu and Bentler, 1999). However, the ML estimation method assumes that data are univariate and multivariate normal (Baumgartner and Homburg, 1996). Since univariate normality is essential but not sufficient for establishing multivariate normal distribution (Newsom, 2005), tests for both univariate normality and multivariate normality were conducted.

Establishing Measurement Validity and Reliability

For demonstrating the adequacy of the measurement model, unidimensionality/consistency (indicators having one underlying construct and adequate model fit), reliability (indicators that are comparatively free of measurement error), and validity (construct manifestations actually measuring what they should) were examined (Ping, 2002).

1. *Unidimensionality/consistency* was assessed through confirmatory factor analysis (Sirdeshmukh et al, 2002) and examination of the measurement model fit, i.e. its ability to reproduce the data (Kenny, 2003).

2. *Reliability* was investigated using both the coefficient alpha (Cronbach's α), and the latent variable model - based Composite Reliability index (Fornell and Larcker, 1981). The latter measure is preferred in SEM, because it estimates reliability on the basis of actual measurement loadings (White et al, 2003). On the other hand, Cronbach's α underestimates reliability essentially being a weak lower bound reliability estimate (Green et al, 1977). For some authors: (e.g. Ping 2002, p.8), "...it may be sufficient to report coefficient alpha because at worst it provides a conservative estimate of reliability".
3. *Convergent validity* was examined through the conservative measure of Average Variance Extracted (AVE) (Fornell and Larcker, 1981) and also based on the magnitude of factor loadings and the magnitude of accompanying t-values (Anderson and Gerbing, 1988; Bagozzi et al, 1991).
4. *Discriminant validity* was investigated by demonstrating that each construct AVE is larger than its correlation with other constructs. According to Fornell and Larcker (1981) this technique seems to be the most stringent one.

Assessing Model Fit

Research to date recommends using more than one "goodness-of-fit" measures for assessing SEM models, so as to minimise the likelihood of making Type I or II errors (Bollen, 1989; Ping, 2004). These should include (Tanaka, 1993; Newsom, 2005):

1. *Absolute fit measures* (χ^2 , GFI, AGFI, Hoelter's CN, AIC, BIC, ECVI, RMR, SRMR) which are simply derived from the fit of the obtained and implied covariance matrices and the minimisation function.
2. *Comparative or relative fit measures* (IFI, TLI, NFI) which compare the proposed model to a null model in which all of the correlations or covariances are zero (the null model should always have a very large chi-square (poor fit).
3. *Parsimonious fit measures* (PGFI, PNFI, PCFI) which penalise models that are less parsimonious, so that simpler theoretical processes are favoured over more complex ones (Newsom 2005).
4. *Fit indices that are based on the non-centrality parameter* (RMSEA, CFI, RNI, CI).

While the use of multiple indices of differing types is generally proposed, *typically using three to four fit indices provides adequate evidence of model fit* (Hair et al, 2006). Hence, not all of these indices should be reported because of the redundancy amongst them.

This study tests measurement and structural model fit through employing *absolute fit indices, relative fit indices* and *non-centrality parameter fit indices*. It should be noted that parsimonious fit indices are not used due to the existing debate pertaining to their use (Newsom, 2005). More specifically, Newsom (2005) suggests that parsimonious fit indices are most suitable when selecting between competing models. *Therefore, besides the chi-square (χ^2) statistic, this research employs the CFI, IFI, RMSEA and standardised RMR fit indices.*

The chi-square (χ^2) and RMSEA have been generally proposed as typical criteria in evaluating the statistical significance and substantive meaning of a theoretical model (Schumacker and Lomax, 2004). However, the chi-square (χ^2) statistic is influenced by sample size and hence may be misleading when testing large samples. In particular, the larger the sample size, the more likely the rejection of the model and the more likely a Type II error (rejecting something true). In very large samples, even tiny differences between the observed model and the perfect-fit model may be found significant. Consequently, with a reasonable sample size (>200) and good approximate fit as indicated by other fit tests (e.g. CFI, RMSEA) the significance of the chi-square test may be discounted and hence a significant chi-square is not a reason by itself to modify the model (Hair et al, 2006).

In addition, instead of the chi-square statistic, this research employs the *relative chi-square* (also called normal chi-square), which is essentially the chi-square fit index divided by the respective degrees of freedom, in an attempt to make it less dependent on sample size. Carmines and McIver (1981, p.80) state that relative chi-square should be in the 2:1 or 3:1 range or less is acceptable. Ullman (2001) says 2 or less reflects good fit. Kline (1998) says 3 or less is acceptable.

All measures overestimate goodness of fit for small samples (<200), though RMSEA and CFI are less sensitive to sample size than others (Fan et al, 1999). Consequently, these two measures, along with IFI were preferred for purposes of the present research as the most stable fit indices (Gerbing and Anderson, 1993; Newsom, 2005). Finally, according to Hu and Bentler (1999), the standardised RMSR should always be used to assess model fit.

In evaluating the fit of the proposed models, this research is based on the most recent recommendations of Hair et al (2006), which apply to the characteristics of the particular models (i.e. sample size above 250 and number of observed variables above 30). In general, index cut-off values are adjusted based on model characteristics; simpler models and smaller samples should be subject to more strict evaluation than are more complex models with larger samples (Hair et al, 2006). For concluding adequate model fit in this research,

relative χ^2 should be less than two, CFI and IFI should be greater than the .90 benchmark, while RMSEA and standardized RMSR should be lower than .06 and .08 respectively so as to have acceptable models (Hu and Bentler, 1999; Schumacker and Lomax, 2004; Hair et al, 2006).

5.4.6 Procedures for dealing with common method variance

A major threat for the validity of conclusions drawn in behavioral sciences seems to be the effect of method variance. According to Bagozzi and Yi (1991, p. 426) “...*method variance refers to variance that is attributable to measurement error rather than to the construct of interest*”. Generally speaking variance in measures used in behavioural sciences can be attributed to three sources: variance due to the constructs of interest (trait variance), variance due to systematic error and finally variance due to random error. Though both components of measurement error are importance, the systematic component seems to be a particularly serious problem since it poses a rival explanation for the correlation observed between manifest variables (Podsakoff et al, 2003).

Podsakoff et al. (2003) suggest that common method bias is a major source of systematic measurement error and thus it has to be addressed procedurally. In this research study there has been an effort to address common method bias based on these suggestions. Procedurally two potential sources of common method bias were addressed: 1) item characteristic bias effects and 2) measurement context bias effects.

Pertaining to the first, *item ambiguity* was addressed through relying on pre-existing scales, seeking feedback from knowledgeable academics and pilot testing the survey instrument with a sample of 20 subsidiaries. The results of this procedure suggested the existence of some ambiguous items which were re-phrased to address respondents' concerns.

Common method bias effects due to *item characteristics* also pertain to common scale formats. In order to avoid such concerns over common method bias, both *Likert and semantic differential – types of scales were employed* for measuring the constructs of interest. More specifically the constructs of innovation propensity, risk attitude, proactiveness, environmental munificence and environmental uncertainty were measured using semantic differential scales, whereas the other constructs were measured in 1-5 Likert - type of scales. Also, particular questions required respondents to tick boxes, while other questions asked them to circle appropriate numbers. In questions when a particular list of decisions/activities was provided, these were given in mixed sequence (for example mixing

operational and strategic issues) so as to avoid common method bias. In addition, while innovation propensity, risk attitude and proactiveness were measured through 1 to 5 semantic differential scales, with 1 indicating low levels and 5 indicating high levels of the particular constructs, this was not the case with environmental variables.

In particular, environmental munificence was measured through a semantic differential scale with 1 indicating high levels of the construct and 5 indicating low levels of the construct (low levels of environmental munificence and hence high levels of environmental hostility). The other environmental variable measured in the same page of the questionnaire, i.e. environmental uncertainty, was measured with a semantic differential scale with 1 indicating low levels and 5 indicating high levels of the particular construct. Also, to guard against common method bias, some of the variable questions were phrased in terms of tangible actions that subsidiary management had taken (i.e. autonomy and entrepreneurial performance scales), while other questions were more attitudinal in nature (i.e. innovation propensity, risk attitude, proactiveness).

Finally, the measurement context effect bias was dealt with by contacting respondents in different locations (all over the UK) and in different time periods (three distinct postal waves). Including a second subsidiary respondent in 10% of the sample (a total of 26 second responses received) assisted in avoiding common method variance problems that might have resulted from the use of a single data source (Podsakoff and Organ, 1986).

5.5 Conclusion

This chapter described the research methodology followed in the present study in order to examine the topic of subsidiary OI and entrepreneurship. The methodological approach followed is summarised in Table 5.5 below:

Table 5.5: Summary of this study's methodological approach	
Paradigm	<ul style="list-style-type: none"> ▪ Multi-paradigm approach ▪ Incorporates elements of both theory-building and theory-testing
Research design	Mixed methods: <ul style="list-style-type: none"> ▪ Qualitative: exploratory case study research following an <i>inductive</i> logic for <i>hypothesis development</i> ▪ Quantitative: large-scale survey research following a <i>deductive</i> logic for <i>hypothesis testing</i>
Data collection	<ul style="list-style-type: none"> ▪ Qualitative data: on-site observations, archival data, 20 in-depth interviews ▪ Quantitative: responses from 270 subsidiaries (second subsidiary respondent in 10% of the sample)
Data analysis	<ul style="list-style-type: none"> ▪ Qualitative: within and cross-case analysis using the constant comparative method and content analysis ▪ Quantitative: Multiple regression analysis and Structural Equation Modelling

In particular this study followed a multi-paradigm approach in addressing its research objectives, incorporating elements of both theory-building and theory-testing research. Exploratory case-study research was particularly useful for examining the under-investigated topic of subsidiary OI and entrepreneurship (given the scarcity of relevant empirical literature) and as a sound basis for drawing specific research hypotheses. The case-study research was followed by a large-scale mail survey, allowing for the statistical testing of the derived hypotheses and also enhancing the generalisability of the findings. Statistical analysis entailed two distinct approaches: first, examining each set of dependence relationships individually (using the SPSS software) and second, testing the entire model of interdependencies simultaneously (SEM using the LISREL software). The findings of the qualitative research are presented in the following chapter (Chapter 6), while the results of the statistical analysis and hypothesis testing are explained in Chapter 7.

Chapter 6: Qualitative research and hypothesis development

6.1 Introduction

The present chapter presents the findings of the case-study research that was conducted during the first phase of this study's research methodology. As explained in the previous chapter, the exploratory nature of these case studies assisted in building a more profound understanding of the theme of OI within multinational subsidiaries, given the scarcity of relevant empirical work. In particular, the input of the exploratory case study research in addressing the following research objectives was significant:

1. What are the “entrepreneurial capabilities” in MNC subsidiaries that drive subsidiary OI?
2. What are critical factors in the subsidiaries' corporate (MNC) setting and the external environment (local and international) that influence subsidiary OI?
3. How does subsidiary OI affect subsidiary entrepreneurial activity (entrepreneurial performance) and overall subsidiary performance (through the intervention of entrepreneurial performance)?

The purpose of the present chapter is twofold: *First*, it clarifies the definition of the term entrepreneurship as applied to the context of the multinational subsidiary. *Second*, it contributes significantly to the refinement of the conceptual framework that was developed in Chapter 4 through a synthesis of relevant literature. In that respect, the present chapter justifies the appropriateness of the exploratory case-study method through proving its valuable input in the adaptation of the conceptual model and the development of specific research hypotheses, which are tested in the following chapter (Chapter 7).

The structure of the chapter is as follows: *Section 6.2* provides a brief overview of the six “entrepreneurial subsidiaries” that have been selected for purposes of the exploratory case-study research. *Section 6.3* explores into the topic of entrepreneurship within the context of the multinational subsidiary: a more comprehensive definition of subsidiary entrepreneurship is provided, being relevant to all types of subsidiaries. *Sections 6.4, 6.5 and 6.6* focus on the particular notion of OI at the subsidiary level, and identify factors in the subsidiary, corporate and environmental settings respectively, that are proposed as important drivers of subsidiary OI. *Section 6.7* examines the impact of OI on subsidiary

entrepreneurship (entrepreneurial performance), while *Section 6.8* examines broader effects on the subsidiary's bottom-line performance. This chapter concludes (*Section 6.9*) by presenting the refined conceptual model of OI in multinational subsidiaries, upon which the present thesis is based.

6.2 Overview of the six 'entrepreneurial' subsidiaries

The underlying principle for deciding on the case study firms has been to select "*information rich cases*", namely multinational subsidiaries, worthy of in-depth investigation (Patton, 1990, p. 181). As explained in Section 5.3.1, the selection of cases in the present study has been based on the following three criteria:

First, the selected subsidiaries have exhibited some degree of entrepreneurial behaviour, hence can be characterised as "entrepreneurial subsidiaries"⁷². In particular, Zeus has a significant track record of new product development; Apollo has been constantly transforming itself as a site; Ares has superior research capabilities and a noteworthy drug-discovery output; Hermes possesses superior research and development (R&D), as well as internal transformation capabilities; Poseidon is characterised by superior product localisation abilities; and Heracles has a significant output of technological and manufacturing process innovation.

Second, the selected subsidiaries cover a wide spectrum of industries, value-adding activities and countries of origin, in order to allow for some generalisability in the findings (Table 6.1). Indeed, the six subsidiaries operate in distinct industrial sectors (chemicals, technology and services, pharmaceutical, financial solutions, printers and related products manufacturing, pharmaceutical related manufacturing), are involved in a wide range of value-adding activities (R&D, product localisation, materials procurement and purchasing, manufacturing, product distribution, marketing and sales, and customer service), are headquartered in different countries (U.S., Japan, Switzerland), and are of different size (ranging from 350 to 3,000 employees).

Third, the six subsidiaries have been identified within the geographical area of Scotland for proximity reasons⁷³.

⁷² Nonetheless, the present study also included an additional case of a seventh "non-entrepreneurial" subsidiary. Whilst only one interview with the subsidiary's Managing Director was conducted, it assisted greatly in detecting the lack of particular "entrepreneurial characteristics" in this subsidiary.

⁷³ They had to be geographically accessible for in-person interviews.

Table 6.1 The Investigated Multinational Subsidiaries				
Subsidiary	Industrial Sector	Value-Adding Activity	Size	Country of Origin
Zeus	Chemicals	<ul style="list-style-type: none"> ▪ R&D ▪ Manufacturing ▪ Global Technical Marketing ▪ Global Product Management 	~ 670 employees	Switzerland
Apollo	Technology & Services	<ul style="list-style-type: none"> ▪ CRM ▪ Technical Support ▪ Customer Support ▪ Global Procurement ▪ Supply Chain Management 	~ 3,000 employees	U.S.
Ares	Pharmaceutical	<ul style="list-style-type: none"> ▪ Research & Discovery 	~ 350 employees	U.S.
Hermes	Financial Solutions	<ul style="list-style-type: none"> ▪ R&D ▪ Operations Management ▪ Product Management 	~ 500 employees	U.S.
Poseidon	Printers & Related Products Manufacturing	<ul style="list-style-type: none"> ▪ Customer Support ▪ Customer Service ▪ Product Management ▪ Product Evaluation 	~ 500 employees	Japan
Heracles	Pharmaceutical Related Manufacturing	<ul style="list-style-type: none"> ▪ Custom Manufacturing ▪ Small-scale Development 	~ 400 employees	U.S.

The following paragraphs provide a short review of each individual subsidiary:

The first subsidiary, *Zeus*, operates in the chemicals industry. Zeus is an important research and development (R&D) centre, as well as production site for the entire multinational corporation. The parent company is headquartered in Basel, Switzerland and has facilities in more than one hundred and twenty countries across the globe. Zeus is over fifty years old and is the largest and most modern classical organic pigment manufacturing facility in the world. Of the twenty one thousand tones annual output from the site, about fifty-five percent is exported. Its classical pigments are used primarily in the inks market to colour inks, paints and plastics. In addition, it manufactures pigments for use in papermaking, textile printing and home and personal care products. Zeus has a significant record of new product development: over thirty five percent of the subsidiary's sales comes from products launched within the last five years. In addition, the site has an excellent safety record, having improved the UK Chemical Industries Association's target for thirteen consecutive years. As the largest private employer in its area, the site has very strong links with the local community and regularly supports local community projects. Of the approximately six hundred and seventy employees, most are recruited from local universities.

The second subsidiary, *Apollo*, belongs to the technology and services industrial sector. The parent company is headquartered in New York, U.S. Apollo started operating as a purely manufacturing location with approximately one thousand employees in 1952. At that stage, the subsidiary operated as a production centre with no major responsibilities and decision-making autonomy. Through the 1970s and particularly in the 1980s, the site grew up to about two thousand employees and started interfacing with customers – particularly after sales type of technical support – and undertaking some development work. The site kept constantly transforming and, going into 2000, Apollo actually changed from a totally manufacturing to a predominantly services-based campus. The subsidiary no longer produces anything on site; instead it mainly supports the parent company's solution and global services business. At the same time, Apollo operates as a customer centre in the UK, being responsible for customer relationship management (CRM) for the entire Europe, Middle East and Africa (EMEA) geography. The subsidiary's size has increased to three thousand employees, a large proportion of which are multilingual.

The third subsidiary, *Ares*, operates in the pharmaceutical industry and is basically a drug discovery research centre focusing on specific therapeutic areas. It is a subsidiary of a large U.S. pharmaceutical company, employing twelve thousand people worldwide. In 1996, a significant investment on site transformed the subsidiary's focus into drug discovery research. Manufacturing was closed down, while new chemistry and biology facilities were constructed. The site grew rapidly from less than one hundred scientists to approximately three hundred people working in discovery research. Ares also employs another forty to fifty people in the support and administration functions, adding up to a total of three hundred and fifty employees on site. The subsidiary's headquarters used to be in the Netherlands but recently moved to the U.S., in order to be closer to their main market. Currently, about fifty percent of the top management team is based in the Netherlands, while the other fifty percent is based in the U.S. Ares is one of the two principal research sites worldwide. Each site has different responsibilities and a particular focus on distinct therapeutic areas, based on its superior research capabilities.

The fourth subsidiary, *Hermes*, operates in the financial solutions industry. The subsidiary is predominantly a research and development (R&D) centre, with a business focus on ATM cash machines. The subsidiary basically designs and develops new versions of cash machines, while adding new functionality to the self service terminals, such as anti-fraud and cash recycling services. Hermes became the principal design plant for ATMs during the 1970s. Prior to that, the subsidiary was a purely manufacturing location, and control for product design was held at the corporate headquarters. Following its transformation to an

R&D centre, the subsidiary grew from around seventy employees to currently four hundred engineers on site dealing with innovation, plus another one hundred people involved in product management and other administrative functions. The parent corporation, headquartered in the U.S., is not involved in any type of R&D activity. Most of the R&D is let out of the particular subsidiary, which is the oldest part of the organisation working in the cash machine field. The parent corporation, within its financial services division, has manufacturing sites in Canada, China and most recently in Brazil and India.

The fifth subsidiary, *Poseidon*, operates in the printers and related products manufacturing sector. The subsidiary is part of the European business of a large Japanese MNC, founded in 1881. The Japanese MNC entered Europe in 1987, initially through setting up a UK manufacturing and distribution company. The subsidiary started as a manufacturing site for the parent organisation in Scotland for legislation reasons. Subsequently, the parent company set up a European head-office in London to deal predominantly with sales and marketing in 1994, of which Poseidon became a subsidiary. Globally, the European head-office now represents fifty percent of the overall turnover of the multinational operation. Apart from the UK, the parent company also has manufacturing plants in Thailand, China and Japan. Poseidon is involved in manufacturing and selling the company's products, basically printers, facsimiles and related solutions. However, the subsidiary's focus has changed significantly from a traditional engineering and manufacturing site to a customer support and fulfilment location, employing more than five hundred people. Although the subsidiary has been involved in driver development and software development, it is not heavily involved in actual product design, whereas the most important part of its activities focuses around product localisation for the European market. As such, Poseidon is mainly focused on providing customised customer solutions, rather than new product development. The later takes place predominantly in Japan. Also, the subsidiary, through its expertise, is responsible for providing technical support and information systems support both for the MNC's internal and external customers throughout the Europe, Middle East and Africa (EMEA) region.

The sixth subsidiary, *Heracles*, operates in the pharmaceutical-related contract manufacturing sector. The subsidiary started operating in 1977 as a greenfield operation of a large U.S. pharmaceutical company. Throughout the years, the subsidiary changed ownership as it was sold twice to different U.S. pharmaceutical organisations, in 1994 and 1997 respectively. The subsidiary is currently owned by a French multinational, which took over the subsidiary's former U.S. parent in 2000. Currently, the worldwide corporate headquarters are in Paris, while the headquarters for the particular line of business, i.e.

pharmaceutical solutions, are based in the U.S., since most of the customers are U.S. companies. Heracles now specialises in custom manufacturing, while it is also involved in some small-scale product development. The site manufactures a wide range of products for many of the world's top pharmaceutical corporations, as well as a large number of emerging pharmaceutical and biotechnology companies. The site has four independent production facilities and manufactures a range of pharmaceutical ingredients, chemical products and advanced intermediate products used in a range of medicines and human health treatments. Heracles is a major local employer, having a total of four hundred employees on site.

The following sections, though incorporating tables that explicitly deal with each subsidiary, essentially focus on the findings of the cross-case analysis. This was considered appropriate for the following two reasons: *First*, it is during cross-case analysis that stronger analytical findings can be produced, far beyond a “mindless description of separate cases” (Adams and White, 1994, p. 573). *Second*, focusing on the results of the cross-case analysis addresses the research objectives of the present study without purposelessly extending the length of this thesis.

6.3 How do the investigated subsidiaries define entrepreneurship?

The present research examines the broader theme of subsidiary entrepreneurship. As has been thoroughly explained in Chapter 2 (subsidiary literature), a great deal of research on subsidiary entrepreneurship has focused around the notion of “subsidiary initiative” (Birkinshaw, 1997, 2000). Birkinshaw (1997, p. 207) defined subsidiary initiative as “essentially an entrepreneurial process” manifested through one or a set of autonomous actions “undertaken with a view to expanding the subsidiary’s scope of responsibility” (Birkinshaw, 2000, p.8). This definition of subsidiary initiative, thus, describes it as a discrete entrepreneurial activity at the subsidiary level, but with international impact (Birkinshaw, 1997). As is evident in the above definition, most of the research on subsidiary initiative tends to consider such activities through focusing on their implications to the entire multinational corporation. Subsidiary initiatives are viewed as opportunity-exploiting projects with benefits for the entire MNC, rather than limited-scope activities that are of interest to the subsidiary unit only (Birkinshaw and Ridderstråle, 1999), i.e. “trivial initiatives” (Birkinshaw, 1997, p. 211).

An “initiative-based” definition of subsidiary entrepreneurship indeed acknowledges it as an activity that can take place within the context of the individual subsidiary. However, as

has been argued in Chapter 2 (Section 2.3.2), this definition is too narrow and tends to disregard important aspects of the subsidiary's entrepreneurial activity. Indeed, literature on entrepreneurship (Chapter 3, Section 3.3) considers the value-adding potential of activities linked to both incremental and radical innovation. Consequently, examining the notion of entrepreneurship at the subsidiary level requires that it is viewed as a broader concept that may be exhibited through various and different types of initiatives, irrespective of their magnitude and scope. Following Andersson and Pahlberg's (1997) rationale around technological development and innovation, subsidiary entrepreneurship can be considered as comprising not only of radical change and innovation, but also of less fundamental but still significant improvement that continuously takes place at the subsidiary level⁷⁴. Such "incremental innovations" (Freeman, 1987) may have a significant impact on the subsidiary's operations.

Consequently, a more holistic and comprehensive examination of the phenomenon of subsidiary entrepreneurship is necessary (Birkinshaw, 1997; Wright, 1999; Dess et al., 2003; Birkinshaw et al, 2005). To this end, clarifying its definition, as viewed through the lens of subsidiary management, has been a critical early objective of the exploratory case study research. *What does entrepreneurship actually mean to the individual subsidiary?* The exploratory cross-case analysis shed light into this question.

Management in the six investigated subsidiaries was specifically asked whether they actually use the term entrepreneurship within their organisation, and to provide illustrative examples of entrepreneurial activities that were undertaken at the subsidiary level (see Interview Guide, Part B, in Appendix 2). Based on their answers, it is obvious that the studied "entrepreneurial subsidiaries" do not officially use the term "entrepreneurship" in their day-to-day business vocabulary. Although they seem to be familiar with the word and understand its meaning, they tend to view it more as an academic notion. Therefore, although they view themselves as being "entrepreneurial" and they indeed exhibit "entrepreneurial behaviour", they prefer to use different terms when referring to this particular concept. Most of the investigated subsidiaries tend to use the term "innovation" when describing both their entrepreneurial culture and output. Essentially, they describe innovation as pertaining not only to product innovation, but also innovation covering their entire sphere of business activity. For example, subsidiary management talks about business and manufacturing process innovation, innovation in work practices, innovation in terms of

⁷⁴ The difference between "incremental" versus "radical" innovation could, to an extent, be paralleled with the notions of opportunity "discovery" versus opportunity "creation", as explained in Chapter 3, Section 3.3.

transforming the subsidiary's culture. Indeed, the notion of "innovation" has been strongly linked to the concept of entrepreneurship in literature (Drucker, 1985; Lumpkin and Dess, 1996).

Table 6.2 indicates the terms used by subsidiary management when referring to the concept of "entrepreneurship" and also illustrates examples of what they identify as manifestations of subsidiary entrepreneurship⁷⁵. Consequently, the findings of the cross-case analysis prove that, while subsidiary entrepreneurship encompasses different types of initiatives (Birkinshaw and Ridderstråle, 1999), it is essentially a broader concept. Subsidiary management considers entrepreneurship as involving product innovation, product localisation, incremental changes in products, technology innovation, changes in manufacturing and business processes, changes in the organisational structure and culture. Such entrepreneurial activities can have an international impact (INT'L), a local orientation (LOC), or both. Kogut (1991) relevantly highlighted the importance of this "local entrepreneurship" in eventually becoming "internationally useful" (Kogut, 1991, p.60).

To conclude, *subsidiary entrepreneurship, as a broader notion, encompasses innovative, proactive and risk-taking behaviour; is manifested through both radical innovation and incremental but continuous change; and, in both cases, it brings value-creating potential to the individual subsidiary.* Hence, subsidiary entrepreneurship can be relevant to all types of subsidiaries, irrespective of their value-adding activity. This last point is important, since literature on subsidiary initiative tends to confine entrepreneurship to particular types of subsidiaries, for example excluding sales-only subsidiaries (Birkinshaw, 1997, 1999).

⁷⁵ The use of different words within each subsidiary to refer to the term "entrepreneurship" did not affect the questionnaire design. The questionnaire was structured independently, given that the term "entrepreneurship" was not incorporated in any of the questions to avoid possible misunderstanding / confusion of the respondents.

Table 6.2: What is subsidiary entrepreneurship?

Subsidiary	Term used within subsidiary	Manifestations of subsidiary entrepreneurship
Zeus	<p style="text-align: center;">Innovation</p> <p style="text-align: center;"><i>“We more use the word innovation... entrepreneurship certainly is not a term that we use... innovation is a fundamental part of our culture in here, and that’s in everything we do”</i></p>	<ul style="list-style-type: none"> ▪ Modification of existing products and introduction of new product forms (LOC & INT’L) ▪ Subsidiary-initiated radical change in manufacturing processes (LOC) ▪ Improvement of internal communication processes (LOC) ▪ Changes in computer-based management systems (LOC & INT’L) ▪ Restructuring projects - changes in cost structure and organisational structure - (LOC) ▪ Change in intra-subsidiary culture to promote innovative thinking and idea contribution (LOC & INT’L)
Apollo	<p style="text-align: center;">Innovation / Reinvention</p> <p style="text-align: center;"><i>“Innovation is bringing ideas together and releasing business value as a result of it... whether you call it innovation, entrepreneurship or whatever else, to me it is all the same thing”</i></p>	<ul style="list-style-type: none"> ▪ Technological innovation (LOC & INT’L) ▪ Business process innovation (LOC) ▪ Leads software transformation activities as a pilot site on behalf of the parent company (LOC & INT’L) ▪ Initiative to launch a structured innovation programme (LOC & INT’L) ▪ Launch of a worldwide database for idea submission and evaluation (LOC & INT’L)
Ares	<p style="text-align: center;">Innovation</p> <p style="text-align: center;"><i>“Although we recognise the qualities of entrepreneurship, we would tend to describe them more in terms of innovation... at the end of the day, I see that they’re both about seizing opportunities”</i></p>	<ul style="list-style-type: none"> ▪ New product innovation (LOC & INT’L) ▪ Established new areas for drug discovery research (LOC & INT’L) ▪ Improvement of internal business processes and work practices (LOC) ▪ Innovative organisational restructuring (LOC) ▪ Process innovation to increase speed to market (LOC)
Hermes	<p style="text-align: center;">Innovation / Thought Leadership</p> <p style="text-align: center;"><i>“We use more the word innovation than entrepreneurship. Entrepreneurship in our terms is more about business development, like a new venture. But within our organisation... we tend to talk more about technology innovation and link it to the business, which is about entrepreneurship”</i></p>	<ul style="list-style-type: none"> ▪ New product innovation (LOC & INT’L) ▪ Technology innovation (LOC & INT’L) ▪ Localisation of existing products (LOC) ▪ Business process innovation (LOC & INT’L) ▪ Cultural change internally to repeat innovation (LOC) ▪ New external communication processes (LOC)
Poseidon	<p style="text-align: center;">Continuous Improvement</p> <p style="text-align: center;"><i>“We don’t use the term entrepreneurship; we talk about continuous improvement... we are always looking to improve and change things... it’s partly everybody’s job, continuous improvement of processes and approaches, this is partly what we expect people to be doing”</i></p>	<ul style="list-style-type: none"> ▪ Product localisation (LOC) ▪ Providing innovative customer solutions (LOC & INT’L) ▪ New software development used worldwide (LOC & INT’L) ▪ Development of a worldwide knowledge-sharing platform (LOC & INT’L) ▪ Business and manufacturing process innovation (LOC)
Heracles	<p style="text-align: center;">Innovation / Creative Thinking</p> <p style="text-align: center;"><i>“I think entrepreneur is an individual that sees a business opportunity, while innovation is where the team, perhaps, comes together to give an innovative, entrepreneurial spirit and I would say that we are innovative rather than entrepreneurial...”</i></p>	<ul style="list-style-type: none"> ▪ Technological innovation (LOC & INT’L) ▪ Manufacturing process innovation (LOC) ▪ Business process reengineering (LOC) ▪ Innovative reengineering of plants (LOC)

6.4 ‘Entrepreneurial capabilities’ at the subsidiary level

As has been explained in Chapter 3, the notion of OI lies at the heart of entrepreneurship. In essence, entrepreneurial activity stems from opportunities that are identified and subsequently exploited at the subsidiary level (Birkinshaw, 1997). As such, the identification of opportunities is the starting point of subsidiary entrepreneurship. Accordingly, Birkinshaw’s (1997) definition of entrepreneurial initiatives described the latter as activities “*beginning with the identification of an opportunity and culminating in the commitment of resources to that opportunity*” (Birkinshaw, 1997, p.207).

Consequently, a key objective of the exploratory case study research has been to identify particular “entrepreneurial capabilities” at the subsidiary level (Birkinshaw, 1996, 1997; Birkinshaw and Hood, 1998) that relate to an increased ability of OI⁷⁶. In order to address this issue, subsidiary managers were asked to elaborate on specific entrepreneurial activities that their subsidiaries had undertaken, and particularly on the entrepreneurial opportunities that led to such activities; how these opportunities emerged and what internal factors contributed (or obstructed) to their identification (see Interview Guide, Part C, in Appendix 2). Analysis of the interview transcripts was conducted (as explained in Chapter 5, Section 5.3.3) following the constant comparative analysis method (Eckstein, 1975; George, 1979; Lijphart, 1975), i.e. interview data were constantly compared to prior data and theory in terms of categories and concepts, so as to produce valid categories of “entrepreneurial capabilities” at the subsidiary level.

The following paragraphs essentially deal with the first objective of this research, i.e. to identify particular “entrepreneurial capabilities” at the subsidiary level that may drive subsidiary OI. Management in the six investigated subsidiaries particularly emphasised the relevance of the following internal factors with respect to the identification of entrepreneurial opportunities.

6.4.1 Innovation propensity

As described in Section 6.2, Zeus and Hermes engage in R&D activity, while Ares is a purely research site. These subsidiaries are actively involved in new product innovation, which they see as integral part of their output. For example, through investment in technological innovation, Zeus has achieved an excellent record for new product

⁷⁶ This is essentially the first research objective of the present thesis (Section 6.1), i.e. what are the “entrepreneurial capabilities” in MNC subsidiaries that drive subsidiary OI?

introduction. In particular, during the past three years more than thirty-five percent of the subsidiary's sales volume came from new products, i.e. products less than five years old. During the last three to five years, Hermes secured more than two hundred and fifty patents, corresponding to almost one patent per employee on-site per year, while a significant ten percent of those patents was converted into marketable products. Ares invests heavily in drug research and has clearly outperformed competition in terms of drug development candidates produced on site on a three to six year basis.

Nonetheless, innovation seems to be a key word in all the six investigated subsidiaries. In fact, as has been explained above, subsidiaries tend to identify the term innovation with that of entrepreneurship. Innovation at the subsidiary level can range from purely scientific innovation and new product development to incremental but still important improvements in internal processes and business practices, all of which are elements of a strong innovative intra-subsi-diary culture. Accordingly, literature has differentiated "innovation output" - which basically refers to tangible innovation - from "innovation culture", in essence being the stimuli for the development of "output" (Nelson and Winter, 1982; Dosi, 1988). Along the same line of thought, Manu (1992) acknowledged a broad scope for what has been defined as "innovation orientation", encompassing innovative efforts with respect to products, markets, processes, technology, and market entry. This orientation essentially refers to the subsidiary's tendency to promote new and creative ideas, products, and processes⁷⁷ (Lumpkin and Dess, 1996).

During the interviews, subsidiary management emphasised the importance of building and maintaining a strong culture of continuous innovation for supporting entrepreneurial activities at the subsidiary level. On one hand, an innovative culture was considered critical for promoting idea generation on-site. Similarly, Venaik et al. (2005) recently defined innovation as the extent to which the subsidiaries engage in idea generation and OI in order to improve their business activities. Hence, a strong innovation propensity at the subsidiary level might enhance the subsidiary's ability of OI. On the other hand, these innovative ideas generated on-site are actually fed back into the innovation process, thereby constituting themselves building blocks of the subsidiary's innovative culture. In other words, while promoting a culture of innovation is critical for idea generation and OI, these ideas and opportunities actually form the basis of the subsidiary's innovation culture. A typical observation has been that of Zeus:

⁷⁷ For a more explicit operationalisation of the "innovation propensity" construct see Chapter 7, Section 7.2.1.

“Creating opportunities requires a specific kind of innovative mindset, an innovative environment on site that we try to build and sustain. This means that we have innovative ideas, and these create opportunities to do things differently from the past; this is basically what drives our whole innovation process” (Zeus)

6.4.2 Risk attitude

Literature has identified a risk-taking attitude as an important element of an organisation’s entrepreneurial orientation (Covin and Slevin, 1991; Lumpkin and Dess, 1996). As defined in Chapter 3, risk-taking refers to the extent to which an organisation is willing to undertake significant and risky resource commitments and actions with uncertain outcomes (Miller and Friesen, 1978; Keh et al., 2002). The results of the cross-case research corroborate the relevance of a risk-taking culture with respect to increased OI at the subsidiary level.

In particular, Zeus, Ares, Hermes and Heracles acknowledge the importance of promoting an internal “calculated risk-taking culture”. Management in these subsidiaries explains how they constantly “need to assess the level of risk that they are prepared to take”. The subsidiaries acknowledge the need for adopting what they call a “balanced risk-taking approach”, which basically allows entrepreneurial ideas to emerge without creating performance issues in the long-term. In that sense, there are some areas in which they need to be particularly careful when it comes to risk-taking, since these are critical to the subsidiary’s business activities. The following quotes of subsidiary management are indicative of such a risk-taking posture:

“We do encourage people to take risks. Not in the area of environmental health and safety, this is clearly not the area that we take risks. In most of the other areas, however, we do encourage risk taking because we recognise its importance in generating ideas. It [risk taking] has to be a cultural thing. One of the things that I say to my managers is that if they are not making mistakes, then they are not taking enough risks...” (Zeus)

“It is a big challenge for us but we have to reward failure as well as success from time to time. Of course if you make the same mistake several times, then that’s a performance issue. We have to manage that, but at the same time we do have to allow people to try something different. We have to be clear to them in what areas they can make mistakes and what areas they can’t. When it comes to customer service, then that’s an area that we don’t want to make any mistakes. You have to be more cautious, you have to assess the risk more. But when you get further down in other areas then you can take more risks” (Poseidon)

From the quotes above, it is evident that an intra-subsiary risk-taking environment is primarily supported through increased tolerance to making mistakes. The latter allows for more experimentation on site that can be conducive to radical approaches. The investigated subsidiaries provide examples of cases where radical employee ideas were implemented but eventually failed. In that sense, a risk-taking culture appears to relate not only to increased OI, but also to the identification of more radical opportunities at the subsidiary level. Subsidiary management characteristically cites:

“If we are not able to allow people to take a risk and implement some of their ideas and see if it fails then we can switch off radical idea generation” (Zeus)

“One of the most important things to be innovative or entrepreneurial is to be able to manage risk and failure, because where you are looking at radically new issues there is greater chance of failure than of success. We have that mindset in everything we do” (Ares)

6.4.3 Proactiveness

During the interviews, subsidiary management further explained how important entrepreneurial opportunities had emerged within the subsidiary boundaries through a continuous process of sensing changing market conditions and proactively addressing market needs. Literature has defined such an attitude as an internal “proactive posture” (Lumpkin and Dess, 1996). Subsidiary proactiveness is viewed by management as interwoven with superior market and industry-specific knowledge. In other words, superior knowledge of customer needs and problems, as well as general industry trends, is considered central in a truly proactive subsidiary culture. Accordingly, Bartlett and Ghoshal (1998) have asserted the relevance of organisational learning for developing an internal capability of sensing and rapidly responding to change. This is evident in the following quotes:

“Knowledge of our market and industry is extremely useful in terms of being ahead of most companies in their thinking and in their implementation of practice” (Hermes)

Consequently, a subsidiary-level proactive posture seems to be important for identifying market opportunities prior to competition. Management in the investigated subsidiaries explains how their willingness to be ahead of the market and industry developments requires an increased alertness to new opportunities, as these arise. Management quotes respectively:

“It’s better to dictate the agenda rather than follow-up the agenda. Our site is very much looking ahead and saying: what’s the strategy, what new products do we want to develop, what new technologies. So we look at our business in totality and try to be proactive. If we would wait to follow the market then it would be too late” (Apollo)

“We have to be ahead of what’s actually happening, market developments or industry developments; this allows us to proactively look for opportunities” (Ares)

6.4.4 Motivation

Encouraging subsidiary employees to think creatively and to actively participate in idea contribution was identified by subsidiary management as an important element of an internal culture of “continuous innovation”. Entrepreneurship literature has indeed acknowledged the importance of activating employee behaviour towards innovation (Covin and Slevin, 1991; Geen and Shea, 1997). An individual’s propensity to act entrepreneurially has further been considered a result of motivation (McLelland, 1967; Kets de Vries, 1977). With respect to activating such innovative behaviour, the six subsidiaries have established formal or informal innovation programmes.

In particular, Zeus, Apollo and Hermes took the initiative to structure formal innovation programmes. While the latter were initiated as locally-focused efforts aiming at promoting creative thinking and idea generation on-site, they were further adopted by other sites internationally, once proved successful. In that sense, these programmes essentially represent examples of local initiatives with a more international scope⁷⁸. Employee participation in such innovation programmes has been significant. For example, Zeus reports a participation percentage of forty-five percent, indicating that almost half of its employees have offered at least one idea within the past year.

Ares, Poseidon and Heracles, even though they have not established formal innovation programmes on site, they emphasise their informal efforts in promoting an internal environment of innovation. Such efforts mainly focus on appraising and rewarding idea contribution as part of formal employee assessment schemes, or through special awards for innovative ideas. Different types of extrinsic motivation for innovative thinking have been applied at both the individual and team level. Such findings align with a large part of the economics-driven literature on entrepreneurship (Chapter 3, Section 3.4.1) that essentially

⁷⁸ Hence could relate to Birkinshaw’s (1997) notion of “hybrid” initiatives as emerging from opportunities pursued internally but with a more international scope (Chapter 2, Section 2.3.2).

links financial rewards with an increased ability of OI (Abbey and Dickson, 1983; Venkataraman, 1997; Shepherd and DeTienne, 2005).

Consequently, from the analysis above, it is obvious that employee motivation constitutes an integral part of the subsidiaries' innovation culture. Hence, although energising subsidiary employees to behave in an entrepreneurial manner can promote OI at the subsidiary level, the results of such efforts are essentially manifested through a strong "innovation culture" at the subsidiary level (as described in paragraph 6.4.1). This is asserted in the following quotes:

"What is important in an innovative environment is recognising people's contributions and those that haven't made the contribution seeing others being recognised. This drives forward a whole set of behaviours... These are elements of building the kind of environment that encourages people to be innovative" (Zeus)

"What we try and do is delegate as much down to the teams as possible... it's their job to come up with new ideas... the philosophy is very much that everyone on site is encouraged to come up with new ideas, that's the kind of culture we want... and this is recognised and rewarded through the system"(Ares)

6.4.5 Market learning

During the interviews with subsidiary management, the concept of learning emerged as a key element of subsidiary entrepreneurship. The six studied subsidiaries emphasise the importance of acquiring knowledge through a multiplicity of sources, both internal and external to the multinational system. In accordance with Foss and Pedersen (2002), internal knowledge stems from intra-subsidary efforts for knowledge advancement, for example internal R&D, while external knowledge essentially represents knowledge that is acquired through the subsidiary's involvement in business relationships.

Indeed, Zeus, Ares and Hermes, the three subsidiaries that are strongly involved in R&D activities, particularly emphasise the importance of their knowledge creation capabilities and clearly link these to an increased capability for entrepreneurial OI. Apollo, Poseidon and Heracles, though not directly involved in R&D, also appear to have a strong learning-oriented culture. An important aspect of their learning orientation involves acquiring knowledge through engaging in different types of relationships, what research has identified as "network knowledge" (Forsgren et al., 2000; Foss and Pedersen, 2002). Accordingly, a large part of the subsidiary's learning orientation is exhibited through participation in

business networks, which will be more thoroughly explained in Section 6.4.6 dealing with the investigated subsidiaries' networking activity.

Entrepreneurship literature has paid considerable attention to the importance of a strong learning orientation with respect to the identification of entrepreneurial opportunities (Kirzner, 1973, 1979; Shane and Venkataraman, 2000; Corbett, 2002; Politis, 2005). The results of the cross-case analysis corroborate the importance of subsidiary learning for increased OI. However, acquiring knowledge per se does not necessarily lead to the identification of entrepreneurial opportunities; the investigated subsidiaries emphasise the importance of disseminating such knowledge internally (Slater and Narver, 1995), and exploiting it to their advantage (Moorman, 1995). As subsidiary management characteristically argues, this is what makes the detection of opportunities possible:

“Acquiring the right knowledge is important for innovation, or entrepreneurship as you might call it, it is important for generating ideas. However, it is not only having the right knowledge that is important, but also how innovative we are with that knowledge, how we use it to identify opportunities” (Zeus)

The present section has thus far explained how the investigated subsidiaries' learning orientation seems to promote an internal ability of OI. However, the cross-case findings also shed light into another significant aspect of the subsidiaries' learning posture. In particular, the investigated subsidiaries' learning efforts essentially focus around acquiring superior knowledge of trends and conditions in the local and international markets, while such market-related knowledge is further applied to satisfy market needs. Consequently, irrespective of whether subsidiary knowledge is generated internally or acquired externally and whether is it disseminated and exploited at a local or international level, *the subsidiary's learning orientation seems to be driven by and to essentially fulfil a strong “market focus”*.

Consequently, as was evidenced during the interviews with subsidiary management, market orientation and learning orientation are closely linked to each other, since one provides scope for the other. Entrepreneurship literature tends to emphasise these two elements as distinct constituents of an organisation's international entrepreneurial culture (Dimitratos and Plakoyiannaki, 2003). Nonetheless, Cadogan et al. (1999) empirically corroborate that these two dimensions are to a great extent overlapping. Accordingly, Baker and Sinkula (1999) argue that market orientation provides scope to an organisation's learning efforts towards specific markets. *Therefore, a synthesis of relevant literature and the findings of the cross-case analysis gave rise to the notion of “market learning”*. “Market learning”, as

defined in the present thesis, basically refers to the subsidiary's learning efforts that focus on specific markets (Von Hippel, 1988), ways to serve markets, (Schumpeter, 1934), and customer problems (Shane, 2000). Subsidiary management cites characteristically:

“Knowing your market is extremely important when it comes to implementing innovation; if you don't know what is going on out there you cannot find ways to improve it”(Poseidon)

“Implementing innovation requires not only that we know our customers and what they want, but also our competitors, who they are and what they are doing” (Apollo)

Zeus, Apollo, Poseidon and Heracles, given their marketing and customer support activities, tend to learn through their direct interaction with key customers. Ares and Hermes, though not interfacing with customers directly, seem to satisfy their “market learning” focus through a constant effort of gathering market-related information from sales and marketing sites, with which they maintain close relationships. In addition, the studied subsidiaries place considerable effort in integrating such market- and customer-related knowledge within their boundaries so as to create and deliver superior customer value. In many cases, market information is also collected and shared within the MNC.

“We place considerable effort in gathering market information, which is then constructed into a variety of reports and reporting mechanisms. We discuss this [market information] with our global marketing sites and this is fed back into the innovation process” (Apollo)

Hence, the investigated subsidiaries' learning orientation is supportive of a strong market-focused culture. This superior knowledge of and increased sensitivity to market needs can be described as a heightened “market alertness”, which opens up a broader scope of opportunities for the investigated subsidiaries. Therefore, a “market learning” orientation can enhance the subsidiaries' ability to identify entrepreneurial opportunities. This is manifested in the following quotes:

“We have developed a profound knowledge of our market, we know our market and industry very well, we know our competitors' strengths and weaknesses, we know who our customers are and what they want... and this by itself brings in a lot of ideas and creates tremendous opportunities” (Apollo)

6.4.6 Subsidiary networking

As has been mentioned above, the investigated subsidiaries identify opportunities either through their internal efforts or through some type of interaction with other parties, both

internal and external to the multinational system. Such internal and external partners can prove important sources of innovation and new business practices at the subsidiary level (Young and Tavares, 2004), and further enhance critical subsidiary capabilities (Schmid and Schurig, 2003), such as that of OI. Though management in the six investigated subsidiaries stresses different aspects of their networking activity as most critical for OI, the latter concept has generally been considered to promote subsidiary OI. Tables 6.3a and b summarise how the investigated subsidiary's networking activity links to OI.

Networking with customers

An important aspect of the investigated subsidiaries' networking orientation focuses around building long-term relationships and partnerships with local and international customers. Subsidiary management considers networking with customers as an important element of the subsidiary's innovation process. Through continuous interaction with their customers, the studied subsidiaries have developed a so-called "customer-related know-how"⁷⁹. Management in Zeus cites accordingly:

"A big part of what we believe in the innovation platform is absolutely making sure we have strong involvement with customers" (Zeus)

During the interviews, three different types of customer input on the OI process were identified: *First*, OI may be a customer-initiated process, essentially a response to existing customer requirements. Though less frequent and mainly linked to incremental OI, this type of customer input encompasses opportunities that have emerged directly from identified customer problems and/or needs. *Second*, opportunities may also be created through the subsidiary's internal innovation efforts (basically technological advancement) aiming at delivering superior customer value. These types of opportunities tend to be more radical in nature. *Third*, OI may take place as a joint effort between the individual subsidiary and some of its key customers, with the purpose of achieving potential synergies through the identification of win-win opportunities. The following quotes of management are indicative of how the investigated subsidiaries' networking activity with key customers tends to influence the OI process:

"Sometimes the customer says: here is the problem that I want to solve, you've got reputation and we want to join with you in solving it. Other times it is us who say: we have developed this technology and we believe it solves this problem or it offers this value to

⁷⁹ This means that they consider themselves knowledgeable of who their customers are, how they use the product, what their particular needs and problems are.

your company, and we then take the initiative. Sometimes it can be simply realising together that we've got to look at new possibilities, something that we can't define exactly, but we agree to see together what synergies we've got... It really depends on the customer" (Zeus)

Although subsidiary management provides examples of all three types of customer input into the OI process, the subsidiary's internal innovation efforts are particularly emphasised. More specifically, the possession of superior knowledge about their market and industry allows subsidiaries to identify more breakthrough opportunities, beyond existing customer needs. Alignment with existing market requirements generates "incremental" types of opportunities, whereas "radical OI" requires totally new ideas for which the subsidiaries have *"to build a case and sell them in the market"* (Zeus). The significance of the subsidiaries' internal innovation efforts is evident in the following quotes:

"We don't tend to get a lot of surprises from our customers... they don't really tell us something that we don't know already... in actual fact, a big proportion of our projects are born out of R&D rather than being market specifications, but what we find is that marketing usually identify with them quite strongly...this market relevance is a concern that has been gradually diminishing with time, but I think we have to be careful not to go too far from the market" (Zeus)

"In a technology industry if you ask your customers what they want, they'll tell you what they've always wanted, because not a lot of them tend to think strategically in technology terms... Customers only want incremental improvements of what they've already got or what they already know about, so you've got to be very careful that you don't assume that innovation is just simply step-wise improvements of what you've already built, because what you get is an evolutionary change, it won't be revolutionary change..." (Hermes)

Nonetheless, while subsidiary management emphasises that radical innovation originates from ideas identified internally, market relevance seems to be latent within their internal innovation efforts. Management characteristically acknowledges:

"We don't just have good ideas that nobody wants, we have good ideas that somebody will buy" (Poseidon)

Finally, subsidiary management provides examples of opportunities that were identified through a joint process, i.e. in cooperation with key customers. These include, for example, customer involvement in the innovation programmes, establishment of long-term partnerships with customers aiming to *"bring to the table new and fresh ideas, new ways of doing things"* (Apollo). The following quotes are indicative:

“There are also cases when we have used customer X and customer Y to get ideas off them and bring them back to the table. So whenever our people are out visiting customer sites or large global customers, innovation is always mentioned somewhere and it is always fed back to our innovation process... what they do compared to what we do... and what we can do together” (Apollo)

Table 6.3a: Subsidiary networking activity and OI

Subsidiary	Customers	Suppliers	Corporate HQs & Sister Subsidiaries
<i>Zeus</i>	<ul style="list-style-type: none"> ▪ Subsidiary-driven OI but with market relevance (radical OI) ▪ OI as a response to predefined customer needs/problems (incremental OI) ▪ Joint OI to look together at new possibilities 	<ul style="list-style-type: none"> ▪ Not mentioned during the interviews 	<ul style="list-style-type: none"> ▪ Exchange information & experiences, share ideas that can promote OI ▪ Idea generation at an international level (during global management meetings) ▪ Most important for “idea selling” within the MNC & opportunity exploitation
<i>Apollo</i>	<ul style="list-style-type: none"> ▪ Mainly subsidiary-driven OI through interaction with key customers ▪ Involve customers in the innovation’s programme 	<ul style="list-style-type: none"> ▪ Sharing experiences & knowledge promotes OI 	<ul style="list-style-type: none"> ▪ Sharing knowledge & experience ▪ MNC-wide idea contribution ▪ OI also at an MNC level ▪ “Internal lobbying” important to support subsidiary innovativeness
<i>Ares</i>	<ul style="list-style-type: none"> ▪ Gain knowledge & experience in new areas ▪ Joint OI (co-partnership opportunities) 	<ul style="list-style-type: none"> ▪ Sharing experiences & knowledge promotes OI 	<ul style="list-style-type: none"> ▪ Sharing knowledge & experiences with other sites promotes OI ▪ Strong networking with research sites ▪ Input from marketing & sales sites influences OI
<i>Hermes</i>	<ul style="list-style-type: none"> ▪ Mainly subsidiary-driven OI through interaction with key customers ▪ Customer problems generate incremental ideas, radical ideas come from internal R&D ▪ Match latest technology with customer needs 	<ul style="list-style-type: none"> ▪ Gain experience & expertise in new areas through interaction with the technology suppliers 	<ul style="list-style-type: none"> ▪ Sharing knowledge & expertise important for OI ▪ Strong cooperation with marketing & sales sites for OI ▪ Cross-site teams for OI & exploitation
<i>Poseidon</i>	<ul style="list-style-type: none"> ▪ OI as a response to identified customer needs/problems ▪ Joint OI with key customers ▪ Important part of OI is market driven 	<ul style="list-style-type: none"> ▪ Not mentioned during the interviews 	<ul style="list-style-type: none"> ▪ Networking with the sales organisations to gain customer knowledge & identify ideas ▪ Joint OI with sales & marketing sites
<i>Heracles</i>	<ul style="list-style-type: none"> ▪ OI as a response to identified customer needs/problems (incremental OI) ▪ Partnerships for joint OI 	<ul style="list-style-type: none"> ▪ Joint OI (technology innovation) 	<ul style="list-style-type: none"> ▪ Networking with other UK sites brings in knowledge & expertise ▪ Build strong relationships with the parent to support their innovation process

Networking with suppliers

When elaborating on the importance of their networking activity - with partners of their direct value chain - for increased OI, the studied subsidiaries tend to emphasise their interaction with key customers more than with important suppliers. Nonetheless, Apollo, Ares, Hermes and Heracles provide examples of ideas that have emerged through cooperation with their suppliers, and in particular the technology suppliers. More specifically, Apollo, Ares and Hermes explain how access to their suppliers' expertise and experience has led to the identification of entrepreneurial opportunities at the subsidiary level, while Heracles reports an example of a case of joint OI. The following quotes are indicative of subsidiary management's views:

"Most ideas come internally, but some with partnerships with our suppliers, the technology suppliers. For example, we set up a business partnership with our technology suppliers from Japan... we funded R&D that they did and we ended up creating a device that would be more suitable for the global marketplace" (Hermes)

"A lot of our people who have come up with innovations are dealing with the suppliers... there are cases when we have actually learnt from their expertise and this has fed into our site more ideas" (Ares)

Networking within the MNC

Another aspect of the subsidiary's networking behaviour that was mentioned during the interviews with subsidiary management was the subsidiary's interaction with other entities within the multinational system. The objective of the cross-case analysis was to determine the extent to which the investigated subsidiaries interact with their multinational parent and sister subsidiaries, as well as the degree to which such interaction influences the identification of opportunities at the subsidiary level (see Interview Guide, Part C, in Appendix 2).

Some of the studied subsidiaries consider that networking within the MNC has influenced OI at the subsidiary level directly through promoting idea generation and idea sharing across sites. In particular, Apollo, Ares and Poseidon emphasise how their networking activity with other entities within the multinational system promotes OI, basically through the exchange of technology knowledge and market experience. Given that these subsidiaries are involved in different value-adding activities, there seems to be no pattern suggesting high levels of intra-MNC networking for subsidiaries involved in certain types of activities.

Apollo is developing a MNC-wide innovation platform, where the contribution of ideas and identification of opportunities takes place at an international level. Hence, participation in its multinational network provides Apollo with a broader spectrum of opportunities. Ares emphasises how interaction within the MNC enables knowledge sharing particularly with other research sites, but also allows the subsidiary to gain important input from the marketing and sales sites, which further enhances its OI ability. Poseidon finds networking with marketing and sales sites important for gaining superior customer-related knowledge, while there have been cases of joint OI across sites.

The following quotes are indicative of how intra-MNC networking can promote OI at the subsidiary level:

“As regards our relationships with other sites, they are really good, it’s more of a personal network that has been built up, and this is very important in terms of producing new knowledge and ideas” (Ares)

“Managers from all the sites globally are sitting around the table... this interaction takes place frequently... and it is another great opportunity to start generating ideas” (Zeus)

“We have a corporate technology council, with contributions from all sites, which basically identifies emerging business opportunities: where do we see the world going and where do we need to be investing as an organisation” (Apollo)

However, not all of the investigated subsidiaries acknowledge the direct impact of intra-MNC networking on increased OI. Although they seem to maintain healthy relationships with other entities of their multinational system, particularly within their locality (UK level), such relationships are not always considered important sources of opportunities. For example, Zeus and Heracles consider networking with the parent corporation more important for opportunity exploitation rather than OI. Zeus and Apollo emphasise the importance of their “internal lobbying” strategy, which involves maintaining close linkages with key people within the parent corporation and in particular with the corporate headquarters. *“Staying well-connected with people in key positions at the corporate headquarters”* (Apollo) allows these subsidiaries to “sell” their ideas within the MNC, gain visibility and also greater support for implementing their entrepreneurial projects. This “internal lobbying” strategy also increases the visibility of the subsidiary within the multinational system, thereby enhancing its decision-making autonomy. As will be explained in Section 6.5.1, which deals more thoroughly with the notion of subsidiary autonomy, increased autonomy levels might in the long term have a positive impact on the

subsidiary's ability to identify more opportunities. Regarding its "internal lobbying" strategy, management in Apollo cites accordingly:

"The way that our site has planned its networking strategy is really clever... we use 'internal lobbying' as a key strategy to persuade... to make our case stronger and sell our local ideas... also to get into people's offices and learn about their strategy... this has been important to maintain this site's reputation and gain more support from the parent and more freedom to operate" (Apollo)

Consequently, subsidiary networking with the multinational system can have a significant impact on OI both directly and indirectly; directly through idea contribution and joint OI both at a local and international level; and indirectly through increasing the subsidiary's visibility within the multinational system and thus impacting on the subsidiary's autonomy levels.

Table 6.3b: Subsidiary networking activity and OI

Subsidiary	Academic & research institutions	Government organisations	Professional & trade associations	External consultants
<i>Zeus</i>	<ul style="list-style-type: none"> ▪ Knowledge advancement ▪ Fresh and innovative ideas 	<ul style="list-style-type: none"> ▪ Gain information on legislation/regulation trends that promote OI ▪ Support innovation 	<ul style="list-style-type: none"> ▪ Exchange industry-specific knowledge & experience that promotes OI 	<ul style="list-style-type: none"> ▪ Not mentioned during the interviews
<i>Apollo</i>	<ul style="list-style-type: none"> ▪ Joint research ▪ Knowledge advancement 	<ul style="list-style-type: none"> ▪ Information exchange ▪ Practical support to innovation 	<ul style="list-style-type: none"> ▪ Exchange industry-specific knowledge & experience that promotes OI 	<ul style="list-style-type: none"> ▪ Not mentioned during the interviews
<i>Ares</i>	<ul style="list-style-type: none"> ▪ Access to knowledge & research tools (mainly linked to radical OI) 	<ul style="list-style-type: none"> ▪ Information on emerging trends ▪ Developing ideas together, e.g. technology initiatives ▪ Support to innovation 	<ul style="list-style-type: none"> ▪ Exchange information that promote OI 	<ul style="list-style-type: none"> ▪ Recommendations that improved their OI process
<i>Hermes</i>	<ul style="list-style-type: none"> ▪ Important technological advancements promote OI 	<ul style="list-style-type: none"> ▪ Information on emerging trends 	<ul style="list-style-type: none"> ▪ Exchange knowledge & ideas 	<ul style="list-style-type: none"> ▪ Recommendations that improved their OI process
<i>Poseidon</i>	<ul style="list-style-type: none"> ▪ Not mentioned during the interviews 	<ul style="list-style-type: none"> ▪ Support to innovation 	<ul style="list-style-type: none"> ▪ Exchange industry-specific knowledge & ideas 	<ul style="list-style-type: none"> ▪ Provide new approaches & "out of the box" ideas
<i>Heracles</i>	<ul style="list-style-type: none"> ▪ Knowledge advancement ▪ Joint OI very important 	<ul style="list-style-type: none"> ▪ Information on emerging trends ▪ Developing ideas together, e.g. technology initiatives ▪ Support to innovation 	<ul style="list-style-type: none"> ▪ Not mentioned during the interviews 	<ul style="list-style-type: none"> ▪ Not mentioned during the interviews

Networking with academic and research institutions

A great deal of the investigated subsidiaries' networking activity involves cooperating with academic and research institutions at a local level (Taggart, 1989). Such interaction can range from project-based collaborations to long-term partnerships, while it mainly aims at knowledge exchange and technological advancement. In fact, the investigated subsidiaries emphasise that the most radical opportunities are identified and created as a result of their internal innovation efforts, promoted through collaboration with academic institutions.

In particular, the investigated subsidiaries that engage in R&D activities tend to establish strong "knowledge" and "research partnerships" with local academic institutions and research bodies. In many cases, these knowledge partnerships have been the key driver behind joint idea generation. The studied subsidiaries that do not engage in R&D activities draw superior knowledge from their interaction with academic institutions to promote their internal innovation efforts. More specifically, management in Ares, Hermes and Heracles, views the formation of strong linkages with local academic institutions as one of the strongest points of their subsidiaries' innovativeness, that essentially expands their opportunity set. Subsidiary management talks about "*having the academics beside the industry in order to pull out new and fresh ideas*" (Heracles).

The following quotes are indicative of the importance that subsidiary management places on networking with the academic community for idea generation:

"One thing we have realised is that we really need to get out there and collaborate with the academic community, because that's where a lot of ideas are. We definitely discover things ourselves, but if you compare what we can discover with what is out there, it's like comparing a tennis ball with the moon" (Ares)

"What we gain in terms of working with universities and industrial research bodies is that we are gaining new knowledge and applying it to our current products... we are seeing ahead and we are giving ourselves the chance to be in technologies which may or may not work... this is where breakthrough opportunities can be found" (Heracles)

Networking with government organisations

The studied subsidiaries also tend to form close relationships with government organisations, such as local authorities and regulatory bodies, mainly within their locality. Through such type of "political networking", the subsidiaries primarily obtain useful information and advice on legislation changes, regulation trends and other parameters that

can in many cases lead to the identification of relevant opportunities. Management quotes accordingly:

“Rather than understanding what the customer is doing, it is much more important that we understand where the legislation is going... What we do is trying to have routes and contacts into various regulatory bodies so that we are continually being updated and also know when there’s new legislation coming through. We are very active in that particular area...” (Zeus)

Heracles and Ares also provide examples of joint initiatives with local government organisations. Such undertakings have mainly been in the form of technology initiatives and are basically described as a cooperative process of OI and development in new areas. Management in Heracles cites characteristically:

“...We have approached this agency because we are thinking of developing ideas with them and we have done so in the past, with a successful result” (Heracles)

Moreover, subsidiary management explains how this type of “political networking” has been particularly critical for gaining substantial support. More specifically, Zeus, Apollo, Ares, Poseidon and Heracles acknowledge the significance of building and maintaining healthy relationships with local government organisations and investment agencies for securing financial support in entrepreneurial projects that the parent corporation was not convinced about. In essence, such support has allowed subsidiaries to experiment more with slack resources, hence enhance their entrepreneurial thinking and alertness to new opportunities, and further successfully undertake entrepreneurial activities. This aspect of the subsidiary’s networking activity is evident in the following quotes:

“Our ability to network with the key decision makers in those areas is critical... we are big players within X [government organisation]. So we’re quite active in terms of that... we feel that we have a partner to help with the finance and they are willing to take a risk with our innovation platform project” (Heracles)

Networking with professional and trade associations

Management in Zeus, Apollo, Ares, Hermes and Poseidon also emphasised their subsidiaries’ interaction with professional and trade associations, mainly at a local but also at an international level. This networking activity mainly involves the exchange of industry-specific knowledge, which can eventually be the stimuli for OI. Through their membership in such organisations - for example the UK Chemical Industry Association, the World

Health Organisation, the Product Development Management Association, etc. – these subsidiaries obtain useful knowledge and advice, while they learn from sharing critical experiences. The above are illustrated in subsidiary management's words:

"We're quite active in terms of participating in professional associations... this allows us to share experiences and learn from the experiences of other chemical companies in Scotland..." (Zeus)

"There is a professional association that we are members of... with practitioners involved in presenting best class practice and we have a discussion, a sharing of ideas, and that is a new group that is dispersed across parts of Europe and the United States..." (Apollo)

"Clearly we have close links and pay great attention to such professional organisations... so we are able to get a fairly clear idea as to what the emerging trends are from a variety of sources and that's purely in the UK" (Ares)

Networking with external consultants

Finally, another aspect of the investigated subsidiaries' networking activity refers to their cooperation with external consultants. This aspect did not come out as strongly during the case study research. Nonetheless, it is worth-mentioning that Ares, Hermes and Poseidon explain how particular recommendations from external consulting partners actually improved their OI process and assisted them in "thinking out of the box". Some of these recommendations involved for example, increasing the speed of the subsidiary's innovation process, managing more effectively the subsidiary's collaborations with academic and research institutions and restructuring the organisation so as to facilitate new product innovation.

As subsidiary management in Poseidon characteristically mentions:

"We were working with a local company, consultants, to advise us, work with us and also to provide us different ideas, to try and expand our thinking a bit. We have a certain way of thinking and we want to broaden that, to get external people to spark ideas. Our experience in this area has been very positive" (Poseidon)

Recapitulating: network partners as sources of opportunities

The previous paragraphs explained how the investigated subsidiaries' networking behaviour can be linked to the identification of opportunities at the subsidiary level. The subsidiaries'

networking activity involves interaction with various partners, both internal to the multinational system, and also external organisational entities (Andersson and Forsgren, 1995). Such internal and external network partners can prove important sources of opportunities and novel ideas at the subsidiary level (Anderson and Pahlberg, 1997; Young and Tavares, 2004).

While both internal and external partners can be relevant with respect to OI, not all of these network partners seem to be equally important as sources of opportunities. Table 6.4 demonstrates the relative importance of the subsidiary's distinct network partners for OI at the subsidiary level. A general insight is that intra-MNC network partners may be less relevant to OI than external partners. Existing literature has suggested accordingly that relationships with external partners may be more important for the development of subsidiary capabilities than internal corporate relationships (Ensign et al, 2000; Furu, 2000). Extending this argument, it can be argued that OI, as an important subsidiary capability (Alvarez and Busenitz, 2001), may be promoted through the effective utilisation of external "network resources" (Gulati, 1999). As has been argued in the previous section, networking within the MNC might be more important for opportunity exploitation rather than OI, or it could mainly have a long-term effect on the subsidiary's OI ability (through its impact on autonomy levels).

As regards external sources of opportunities, customers seem to play a key role as sources of ideas and opportunities at the subsidiary level (Schmid and Schurig, 2003), followed by collaborations with academic and research institutions. Also, subsidiary management tends to consider customers more important sources of new ideas and practices than suppliers, with the exception of the technology suppliers. Finally, there seems to be no pattern linking the investigated subsidiaries' value-adding activity with their inclination to use particular types of network partners as main sources of ideas.

Table 6.4: Relative importance of “network sources” of opportunities at the subsidiary level						
Network partners	<i>Zeus</i>	<i>Apollo</i>	<i>Ares</i>	<i>Hermes</i>	<i>Poseidon</i>	<i>Heracles</i>
Customers	***	***	***	**	***	**
Suppliers	n/a	**	**	**	n/a	*
Intra-MNC (corporate HQs & sister subsidiaries)	*	***	**	*	***	*
Academic & research institutions	*	**	***	***	n/a	***
Government organisations (regulatory bodies, etc)	*	**	*	*	*	*
Professional & trade associations	*	**	*	**	*	n/a
External consultants	n/a	n/a	*	*	*	n/a

Source: the author, based on Miles and Huberman’s (1994) recommendation of using case-ordered descriptive matrices in qualitative research

*Note that the number of * essentially reflects the relative importance of each opportunity source (as identified by subsidiary management), i.e. the more the *, the greater the significance of each network source*

6.5 Factors in the corporate setting

The literature-based conceptual framework for studying OI at the subsidiary level (introduced in Chapter 4) emphasised aspects of the corporate setting in which the subsidiary operates - as defined by the parent-subsidiary and subsidiary-subsidiary relationships - that can have a significant impact on the subsidiary’s OI ability. In that respect, key objective of the present research⁸⁰ has been to identify particular factors in the subsidiary’s corporate setting that may essentially influence subsidiary entrepreneurial phenomena (Birkinshaw, 1997, 2000; Birkinshaw et al., 1998; Birkinshaw and Hood, 1998), and particularly OI.

In order to address this question, subsidiary managers were asked to identify factors in the subsidiary’s corporate (MNC) context, i.e. pertaining to aspects of the subsidiary’s relationship with the parent corporation and sister subsidiaries, that influence the subsidiary’s OI ability. To this end, they were requested to provide specific examples of the

⁸⁰ This objective is incorporated in the second research question (see Section 6.1), i.e. what are critical factors in the subsidiaries’ corporate (MNC) setting that influence subsidiary OI?

way and the extent to which such factors had promoted or impeded the identification of opportunities at the subsidiary level (see Interview Guide, Part C, in Appendix 2). During the interviews, three aspects were pinpointed as relating to the theme of subsidiary OI: the subsidiary's autonomy, its credibility within the multinational system, and also the exchange of knowledge and skills between corporate (MNC) entities. These three aspects, along with their proposed effects on subsidiary OI are analysed in the following paragraphs.

6.5.1 Levels of autonomy

Significant research in the MNC has proved a positive relationship between subsidiary autonomy and innovation (Ghoshal and Bartlett, 1988; Gupta and Govindarajan, 1994). As Prahalad and Doz (1987) have pointed out, decentralising decisions to the local subsidiary leads to increased flexibility in terms of responding to unexpected opportunities. Corroborating a large part of the relevant literature, the results of the cross-case analysis also highlight the importance of the subsidiary's decision-making autonomy with respect to the identification of opportunities at the subsidiary level.

To begin with, an important insight of the cross-case analysis refers to the relationship between the investigated subsidiaries' nature of value-adding activity and their autonomy levels. In particular, it seems that subsidiaries with superior R&D capabilities, such as Hermes and Ares, enjoy higher levels of decision-making autonomy than subsidiaries dealing more with manufacturing and customer-related type of activities. While some researchers have accounted such differences on the technological independence of R&D subsidiaries (Pearce, 1999; Taggart and Hood, 1999), other studies contradict this finding by suggesting that the strategic importance of R&D activities justifies a need for increased parental control (Bartlett and Ghoshal, 1989; Martinez and Jarillo, 1991). Nonetheless, it is also interesting to highlight the particular case of Zeus. The subsidiary, though involved in R&D activities, has been experiencing decreasing levels of autonomy during the past three years. Subsidiary management attributes its decrease in autonomy to negative external environment conditions (Björkman, 2003), beyond the subsidiary's control, which tend to favour MNC centralisation. As management in Zeus characteristically argues:

“When you go into tough times, what happens is that control gets drawn to the centre”
(Zeus)

With respect to the investigated subsidiaries' decision-making autonomy, another important insight of the cross-case analysis is that subsidiary management differentiates between

decisions that are more local in nature and decisions with a corporate-wide scope. Such a differentiation of autonomy types based on the nature of the decision has been adopted by many researchers (Hedlund, 1981; Vachani, 1999; Edwards et al., 2002). The studied subsidiaries appear to enjoy complete autonomy for decisions concerning their locality, what management identifies as “local autonomy”. For decisions that have considerable impact on the corporate strategy, subsidiary management talks more of the subsidiary’s “ability to influence” rather than “complete decision-making autonomy”. Hence, with respect to their “strategic decision-making autonomy”, subsidiary management has the ability to “bring considerable influence”, i.e. be involved in the development of the corporate-wide strategy.

In addition, during the interviews with subsidiary management, two important subsidiary-level tactics were highlighted as critical for increasing the subsidiary’s autonomy levels:

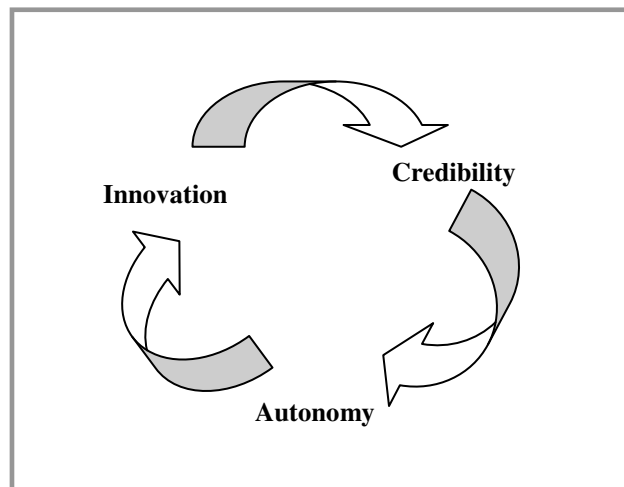
First, as has been explained in Section 6.4.6, the subsidiaries can adopt what they call an “internal lobbying strategy”. This is an important networking strategy assumed at the subsidiary level, aiming at building close relationships with the multinational parent and other key sites. The investigated subsidiaries following this strategy place considerable effort in bringing their ideas forward in the form of proposals to the corporate headquarters and corporate-wide decision committees, they try to “sell their ideas” and receive the necessary support for idea exploitation. Such an intra-MNC networking strategy can increase the subsidiary’s visibility within the multinational system and hence provide to the individual subsidiary more degrees of decision-making freedom.

Second, the investigated subsidiaries use their innovation efforts as a means to gain more credibility within the MNC and promote their decision making autonomy. Figure 6.1 depicts the innovation – credibility – autonomy reinforcing cycle within the multinational subsidiary. The cycle essentially illustrates that, while subsidiary autonomy is critical for innovation (Ghoshal and Bartlett, 1988; Gupta and Govindarajan, 1994), the subsidiary’s innovative output, through promoting its credibility and reputation within the multinational system, can lead to increased levels of subsidiary autonomy. Therefore, innovation leads to autonomy, in the same way that autonomy can create innovation. This is evident in many of the quotes of subsidiary management:

“Innovation gives us more freedom to operate, which is something we value very strongly. But on the other hand, this freedom provides greater flexibility to align out resources the way we believe is best, and if we could not have this [freedom to operate], our innovative output would drop” (Zeus)

“Innovation is great for our site because it helps us build credibility and reputation within the company as a site for bringing something new. The parent sees the results of our innovation and this brings more autonomy in making decisions” (Ares)

As regards the effect of autonomy on the subsidiary’s OI ability, a positive relationship is generally perceived. Accordingly, Table 6.5 quotes management’s thoughts on the positive effects of subsidiary autonomy on OI. Nonetheless, literature on subsidiary entrepreneurship has contradicting findings. For example, Birkinshaw (1996, 1997) showed how different levels of autonomy might link to different types of entrepreneurial initiatives. Taggart (1997) found autonomy to be insufficient by itself for subsidiary innovation, while Young and Tavares (2004) have suggested that autonomy needs to be linked with subsidiary resources and capabilities in order to create entrepreneurial output. However, previous empirical research mainly examined the effect of subsidiary autonomy on entrepreneurship in general and not on the particular notion of subsidiary OI (which is the objective of the present study).



Source: the author

Figure 6.1: The innovation – credibility - autonomy reinforcing cycle at the subsidiary level

Table 6.5: Subsidiary autonomy and OI			
Subsidiary	Decision-making autonomy	Tactic employed to increase autonomy levels	Perceived impact on OI
<i>Zeus</i>	<ul style="list-style-type: none"> ▪ Mainly local autonomy but also ability to influence corporate decisions ▪ Decreased autonomy levels based on purely external (UK) environmental factors 	<ul style="list-style-type: none"> ▪ Internal lobbying ▪ Innovation 	<ul style="list-style-type: none"> ▪ Positive “If we are not given the necessary degrees of freedom we cannot have the flexibility required to produce new ideas and innovation ”
<i>Apollo</i>	<ul style="list-style-type: none"> ▪ Increasing local autonomy due to change from a purely manufacturing location to a service-based campus 	<ul style="list-style-type: none"> ▪ Internal lobbying ▪ Innovation 	<ul style="list-style-type: none"> ▪ Positive “Our ability to operate with significant degrees of freedom is fundamental in terms of identifying opportunities and implementing innovation”
<i>Ares</i>	<ul style="list-style-type: none"> ▪ Complete autonomy within their area of research ▪ Increased autonomy over the years after they switched from manufacturing to R&D 	<ul style="list-style-type: none"> ▪ Innovation output provides more freedom to operate 	<ul style="list-style-type: none"> ▪ Positive “We now have greater autonomy than we had before and this has allowed us to really drive things forward in terms of working to our strengths and generating ideas”
<i>Hermes</i>	<ul style="list-style-type: none"> ▪ Complete autonomy within their area of research (Hermes is the main research hub for the MNC) 	<ul style="list-style-type: none"> ▪ Innovation output provides more freedom to operate 	<ul style="list-style-type: none"> ▪ Positive “Increasing autonomy and less control gave us more room for innovation”
<i>Poseidon</i>	<ul style="list-style-type: none"> ▪ Mainly local autonomy but also ability to bring influence to the corporate decision-making 	<ul style="list-style-type: none"> ▪ Innovation activities 	<ul style="list-style-type: none"> ▪ Positive “If our freedom to operate would increase, then we would benefit greatly in terms of bringing in more fresh approaches”
<i>Heracles</i>	<ul style="list-style-type: none"> ▪ Mainly local autonomy but also ability to influence 	<ul style="list-style-type: none"> ▪ Building relationships with the parent management team ▪ Innovation activities 	<ul style="list-style-type: none"> ▪ Positive “In order to develop innovative thinking on site we need to have the required levels of freedom”

6.5.2 Subsidiary credibility

Literature has linked the notion of credibility with subsidiary entrepreneurship. Essentially, subsidiary credibility has been used to describe the parent corporation’s views about subsidiary management. In particular, high subsidiary credibility in the eyes of the parent means that management in the corporate headquarters believes that subsidiary management will “deliver on its promises” (Birkinshaw, 1996, p. 9). While not directly linked to promoting subsidiary entrepreneurship, low levels of subsidiary credibility have been found to suppress subsidiary entrepreneurial activity (Birkinshaw, 1999).

The findings of the qualitative research also bring to the forefront the notion of subsidiary credibility. However, subsidiary management does not link the subsidiary's credibility directly to its ability of identifying opportunities. As has been explained in Section 6.5.1 above, continuous innovation at the subsidiary level builds credibility and reputation within the multinational system for the individual subsidiary "*as a site that can bring something new*" (Heracles). As subsidiary management explains, subsidiary credibility can bring more degrees of freedom to the individual subsidiary, in other words it can increase its decision-making autonomy.

The following quotes of subsidiary management are indicative of the importance of building credibility with respect to increasing the subsidiary's autonomy levels and allowing for innovation to take place:

"The headquarters are inclined to take more risks with us and give us more decision-making power than they would with other sites. And this is because we have led some major innovation activities. We have had a lot of innovations being generated on site and this has made us as a site very credible and attractive to the entire MNC" (Apollo)

"Our subsidiary is given more autonomy than other subsidiaries and the reason for that is having a lot of credibility, because we don't have to be told what to do; we look at our business in totality, we take action proactively and we bring innovation" (Hermes)

Nonetheless, subsidiary management does not directly relate the site's credibility to an increased subsidiary level of OI. Rather, credibility brings in more freedom to operate, which can eventually have a positive impact on the subsidiary's ability to identify entrepreneurial opportunities⁸¹.

6.5.3 Subsidiary role

The investigated subsidiaries, being discrete entities of a differentiated multinational network (Bartlett and Ghoshal, 1986), are involved in exchanges of resources with other MNC units. Management in the studied subsidiaries emphasises one particular aspect of their functioning within the multinational system, which relates to the transfer of knowledge amongst MNC entities. Gupta and Govindarajan (1991, 2000) identify two elements of such knowledge transfers, in particular magnitude and directionality. Chapter 2 analyses relevant

⁸¹ Consequently, as will be explained later, the refined conceptual model will not consider the direct impact of subsidiary credibility on the subsidiary's level of OI (Section 6.9).

literature on knowledge flows, which have been considered to essentially define the subsidiary's role within the multinational system (Gupta and Govindarajan, 1991).

Before moving on to present the findings of the cross-case analysis, it is important to make a critical distinction between the subsidiary's intra-MNC networking behaviour and the subsidiary's role as determined by its participation in intra-MNC knowledge flows. The subsidiary's networking activity within the MNC, as described in Section 6.4.6, might involve exchanging, sharing, and/or combining different types of resources - for example human, financial, technological, information, etc.- with the parent corporation and with sister subsidiaries. In that sense, the subsidiary's networking behaviour is a subsidiary-initiated activity, aiming at obtaining resources from establishing close relationships with different intra-MNC parties. Hence, literature on subsidiary networking takes a more "subsidiary-focused" view of the MNC. On the other hand, looking at knowledge flows within the MNC requires a more holistic view of the MNC, in examining the multinational subsidiary as a node in a network, whereby the transfer of knowledge might not necessarily be a subsidiary-initiated activity. Consequently, the subsidiary's participation in knowledge flows within the MNC is distinct from the subsidiary's intra-MNC networking behaviour. While the latter is broader and concerns exchanging, sharing and/or combining resources in general, knowledge flows refer to the particular transfer of knowledge and expertise amongst MNC units as "social communities" (Tsai and Ghoshal, 1998; Tsai, 2000). And whilst networking behaviour focuses on the individual subsidiary per se, knowledge flows examine the subsidiary as part of a "knowledge network" (Schlegelmilch and Chini, 2003). Hence, the conceptual model considers the subsidiary's networking behaviour to be a subsidiary-level characteristic, while the subsidiary's role in terms of knowledge flows as a characteristic of the intra-MNC relationships (see Figure 6.3).

Having made the above clarification, the following paragraphs move on to the findings of the case study research. A general insight of the cross-case analysis is that, although the magnitude and the directionality of these knowledge flows varies amongst the six studied subsidiaries, and to some extent may depend on their value-adding activity, the mechanisms used to transfer knowledge within the MNC are quite similar. Also, though literature (Mudambi and Navarra, 2004) tends to differentiate between knowledge exchanges with the parent and those with other sister subsidiaries, subsidiary management did not seem to rigorously adopt such a distinction during the interviews.

Table 6.6: Knowledge flows within the MNC and their effect on OI

Subsidiary	Magnitude and Directionality	Mechanisms Used	Perceived impact on OI
Zeus	<ul style="list-style-type: none"> ▪ Significant knowledge flows amongst sites, particularly within their segment ▪ Both inflows and outflows mentioned <p><i>“We are regarded as a global resource for the segment, whereby we can contribute but also gain knowledge...”</i></p>	<ul style="list-style-type: none"> ▪ Corporate-wide meetings ▪ Cross-site teams ▪ Intra-MNC management rotation 	<ul style="list-style-type: none"> ▪ Positive <p><i>“We consider ourselves as a global organisation, whereby knowledge is exchanged amongst different sites, so that each one can learn from the other. This way we can pick up ideas and opportunities across the entire organisation”</i></p>
Apollo	<ul style="list-style-type: none"> ▪ Significant knowledge flows amongst sites ▪ Both inflows and outflows mentioned <p><i>“It was all about using each of the geographies all around the world to help facilitate some issues we had at the time”</i></p>	<ul style="list-style-type: none"> ▪ Corporate-wide meetings ▪ Cross-site teams ▪ Intra-MNC management & employee rotation 	<ul style="list-style-type: none"> ▪ Positive <p><i>“Everyone uses everyone now, it’s all about cross-site communication, and it’s all about us sharing everything we learn with everyone else within our corporation. We work as a worldwide team and this allows us to see things that alone we wouldn’t”</i></p>
Ares	<ul style="list-style-type: none"> ▪ Significant knowledge flows with research and sales & marketing locations ▪ Both inflows and outflows mentioned <p><i>“What we heavily rely on is cross-site teams, just to make sure that we are benefiting from the knowledge and experience and information that’s being generated in each others’ research factories, because one of the benefits of being in a multinational organisation is tapping into knowledge that has been created in other research sites”</i></p>	<ul style="list-style-type: none"> ▪ Corporate-wide meetings ▪ Cross-site teams 	<ul style="list-style-type: none"> ▪ Positive <p><i>“We have strong cross-site communication. Although we’re based here, we behave very much as a kind of a global research organisation and it’s important that we do so. The strength that you can have is when everyone pulls together there are some good ideas coming in”</i></p>
Hermes	<ul style="list-style-type: none"> ▪ Knowledge flows mainly with research sites and smaller with sales & marketing and manufacturing locations ▪ Being the main R&D hub, they rely more on their internal knowledge and expertise, rather than knowledge inflows ▪ They are trying to improve in terms of knowledge flows <p><i>“It’s not our strength to do that, to leverage the other parts of the organisation. But we have realised this is the case, and what we are now trying to do is leverage more the synergies in terms of sharing expertise and know-how across sites”</i></p>	<ul style="list-style-type: none"> ▪ Corporate-wide meetings ▪ Cross-site teams 	<ul style="list-style-type: none"> ▪ Positive <p><i>“We want to improve in terms of exchanging knowledge across sites, because we recognise that the problems we are trying to fix here are probably problems that other parts of the business are experiencing. And this will help us not only address common problems, but also look at new possibilities”</i></p>
Poseidon	<ul style="list-style-type: none"> ▪ Knowledge flows mainly with sales & marketing sites ▪ Mainly inflows mentioned ▪ Trying to improve in terms of knowledge exchange with marketing sites 	<ul style="list-style-type: none"> ▪ Corporate-wide meetings 	<ul style="list-style-type: none"> ▪ Positive <p><i>“We recently set up forums with our sales and marketing people... These forums have only started three months ago and already we have identified some business opportunities for over the next year to put into progress”</i></p>
Heracles	<ul style="list-style-type: none"> ▪ Significant knowledge flows mainly within sister sites within the UK and within the same area of business ▪ Both inflows and outflows mentioned 	<ul style="list-style-type: none"> ▪ Cross-site meetings at top management level ▪ Cross-site teams 	<ul style="list-style-type: none"> ▪ Positive <p><i>“In terms of sharing our knowledge we are basically one plant within three sites, and this has helped us search for new business potential”</i></p>

As Table 6.6 illustrates, Zeus and Heracles tend to have significant knowledge flows with other sites, particularly within their area of business. Ares and Hermes, mainly involved in R&D activities, tend to exchange knowledge mainly with other research sites, and to a smaller extent with marketing and sales organisations. Yet, Hermes, being the main research hub for the entire multinational corporation, tends to participate mostly in knowledge outflows rather than inflows. Poseidon, mainly dealing with customer service and support, had not been actively involved in knowledge transfers until recently. The subsidiary is now receiving significant inflows from sales and marketing sites.

The investigated subsidiaries use three key mechanisms for exchanging knowledge with other entities within the multinational system: corporate-wide formal and informal meetings, rotation of management and employees in key positions throughout the organisation, and also cross-site teams. Literature has acknowledged the positive effect of such corporate socialisation mechanisms on intra-MNC knowledge flows (Gupta and Govindarajan, 2000).

In addition, management in the six investigated subsidiaries perceives a positive effect of such intra-MNC flow of knowledge with respect to actively searching for new possibilities. The subsidiaries feel that exchanging knowledge with other sites allows them to “gather information and feed them back into the innovation process” (Heracles) and to “pick up ideas and opportunities across the organisation” (Hermes); such knowledge exchange across sites “starts a dialogue that provides new insights and ideas” (Zeus). Management in Zeus characteristically cites:

“Within the entire organisation, we develop expertise and apply best practices to improve processes, especially around new technologies. There are experts within Zeus that disseminate their knowledge, interact with other sites... so that each site can learn from the other and each site can provide new ideas” (Zeus)

Indeed, literature on international firms has acknowledged the value of knowledge transfers across units, given that foreign markets often provide access to new ideas and stimuli that can be subsequently applied in other countries (Hedlund, 1986; Bartlett and Ghoshal, 1989; Sölvell and Zander, 1995). Also, literature on MNCs has proposed a linkage between intra-MNC knowledge flows - and particularly the integration of such flows - with MNC innovation (Buckley and Carter, 1996). Through exploiting the knowledge that exists in their network of subsidiaries, MNCs can explore into new possibilities (Frost, 2001).

Finally, it is important to note that subsidiary management considers knowledge flows to be generally critical to OI, irrespective of their directionality. In other words, both subsidiary

inflows and outflows with other entities in the multinational system may be important for exploring into new possibilities.

6.6 Environmental Influences on Opportunity Identification

The literature-based preliminary framework for studying the theme OI at the subsidiary level, introduced in Chapter 4, brought to light the relevance of particular characteristics in the subsidiary's external environment. Indeed, research has generally stressed the importance of considering environmental effects when studying entrepreneurial phenomena (Hood and Young, 1994; Birkinshaw and Hood, 1998; Hood and Taggart, 1999; Verbeke et al, 2007), and has further proposed the significance of external environmental characteristics on subsidiary-level capabilities (Teece, 1986; Bartlett and Ghoshal, 1989; Luo and Peng, 1999; Benito et al., 2003), such as that of OI. However, although conditions in both the subsidiary's local and international environments may influence its entrepreneurial activities (Zahra et al, 1999), research on subsidiary initiative has mainly examined characteristics of the host-country and the subsidiary's local market (Birkinshaw et al., 1998; Birkinshaw and Hood, 1998; Birkinshaw, 1999).

In that respect, key objective of the present research has been to identify critical factors in the subsidiaries' external environment - both local and international - that might influence their ability to identify opportunities⁸². Subsidiary management was asked accordingly to indicate external (environmental) factors that might contribute or obstruct to the identification of opportunities at the subsidiary level (see Interview Guide, Part C, Appendix 2), by providing indicative examples. The following paragraphs explain subsidiary management's perceptions of environmental effects on subsidiary entrepreneurial phenomena.

First and foremost, the six studied subsidiaries - operating in the UK - highlight the importance of resource richness as a key aspect of their local environment that can promote entrepreneurial phenomena at the subsidiary level. More specifically, subsidiary management indicates the importance of having a good local infrastructure, high-quality of academic institutions, as well as highly-skilled workforce in their locality. Subsidiaries may tap into these local resources (Pearce, 1989; Andersson and Forsgren, 2000; Ensign et al, 2000; Håkanson and Nobel, 2000) to develop superior competencies (Cantwell and Mudambi, 2005), such as that of OI.

⁸² See research objective 2, as identified in Section 6.1 of the present chapter.

Apart from the existence of local resources, subsidiary management also emphasises the significance of local financing in terms of promoting their entrepreneurial efforts. Section 6.4.6 on the subsidiaries' networking activity refers to the so-called "political networking" as a key element for gaining financial support. However, while Section 6.4.6 essentially refers to subsidiary-initiated efforts that secure local funding, the present Section examines the existence of local support per se, which is considered characteristic of a resource-rich (or munificent) environment. Management in Ares argues accordingly:

"Essentially we have been funding our R&D activities through local government funding. This has been a great support to our innovation. And this has also been very important in terms of expanding and growing our site as a research centre. We wouldn't have been able to do that, probably, in any other country" (Ares)

Hence, regarding the relevance of the local environment for promoting entrepreneurial phenomena, the studied subsidiaries pinpoint environmental munificence as a key factor. A local environment prosperous in resources can bring about positive influence by providing numerous opportunities by itself, but also by offering support to the subsidiary in its pursuit of novel ideas. Relevant literature on firm-level entrepreneurship corroborates the relevance of environmental munificence as a key advantageous factor (Miller, 1983; Khandwalla, 1987; Covin and Slevin, 1991; Zahra, 1991, 1993).

While a resource-rich local environment may expand the subsidiary's opportunity set, environmental uncertainty can also provoke significant change at the subsidiary level (Buzzell and Gale, 1987). Environmental uncertainty⁸³ in both the studied subsidiaries' local and international environments may be relevant for inducing entrepreneurial phenomena. Subsidiary management argues accordingly that intensifying cost pressures in the UK and internationally, demands from regulatory policy, rules applied unilaterally, and increased competition from the Asian countries tend to create unfavourable environmental conditions, both at a local and international level. While the latter conditions seemingly stifle innovation and pose a threat to the subsidiaries' survival, they essentially drive subsidiaries to behave in a more entrepreneurial manner and seek to explore into new possibilities. This view has also been corroborated in relevant literature (Miller, 1983; Miller and Friesen, 1982; Zahra et al., 1997). Consequently, local and international environmental uncertainty might stimulate idea generation. Management in Zeus quotes accordingly:

⁸³ Uncertainty essentially describes an environment with high rate of change and technological obsolescence, increasing levels of competition and also difficulty in predicting customer demand (Lawrence and Lorsch, 1967; Thompson, 1967).

“We need to get new products out in the marketplace that are lower cost, lower capital-intensive and technically differentiated to compete against competition coming from other countries. And internally we need to innovate against some of the external pressures that are happening in the UK, certainly the utilities, the legislation in terms of registration of chemicals. So we need to come up with new ideas on how to address the challenges of the pressures that we’re facing in the UK and worldwide” (Zeus)

In a similar vein, environmental uncertainty might urge subsidiaries to adopt more radical approaches, hence be linked with more radical OI at the subsidiary level. The need for radical OI under increased environmental uncertainty is evident in the following quotes:

“We won’t be able to compete with the people who manufacture in India and in China, because their capital costs are less, their labour costs are less, we’ll never ever be able to beat them at that particular game. So the only thing that we can hope for is innovation, but innovation obviously at the lowest possible cost, innovation quite differently from what we’ve been doing just now, so not really improvements on what we offer, but some really radical products and services” (Zeus)

“Now that we are moving into a new world, if we continue to do the same research and make the same product types as we are now, ten years from now we probably won’t exist. We have to radically, completely change our processes and look to move down the value chain” (Apollo)

6.7 Opportunity Identification and Entrepreneurial Performance

As has been thoroughly explained in Chapter 3, between the identification of an opportunity and its exploitation lies a critical opportunity evaluation and development process. This means that not all identified opportunities are translated into entrepreneurial output. In other words, high subsidiary OI does not necessarily relate to an equally high level of entrepreneurial performance. Nonetheless, literature has suggested that organisations cannot be engaged solely in exploitation or exploration; they rather find an appropriate balance in order to survive and grow (March, 1991). Consequently, key objective of the present study has been to identify (apart from driving factors) outcomes of OI at the subsidiary level⁸⁴. To this end, subsidiary management was asked to provide their views on the effect that the

⁸⁴ This is the third research objective, as indicated in Section 6.1 of the present Chapter.

identification of particular opportunities has on the subsidiary's entrepreneurial output⁸⁵ (see Interview Guide, Part D, in Appendix 2).

The interviews with subsidiary management suggest that there might be a positive relationship between the identification of opportunities and the subsidiary's entrepreneurial performance. As has been shown in Section 6.4, the investigated subsidiaries possess particular "entrepreneurial capabilities" (Birkinshaw, 1996, 1997; Birkinshaw and Hood, 1998). As capabilities reside in the subsidiary's corporate culture (Teece, 1982), these "entrepreneurial capabilities" could be similar to what the literature has identified as key constituents of an international entrepreneurial culture (Dimitratos and Plakoyiannaki, 2003). Hence, these "entrepreneurial capabilities" might be significant both for OI and for subsidiary entrepreneurial performance.

In addition, having defined subsidiary entrepreneurship as comprising not only of radical change and innovation, but also continuous and less fundamental subsidiary-initiated improvements (Section 6.3), subsidiary management explains how these "local and more operational in nature" opportunities tend to have high exploitation rates at the subsidiary level. In that sense, subsidiary management essentially explains how "strategic entrepreneurship" might relate to more radical opportunities identified at the subsidiary level, the development of which requires additional resources and corporate approval, while "operational entrepreneurship" encompasses opportunities with a more operational locus (Dutton et al., 1997), thus being more simple to implement. The latter opportunities are developed as part of the "entrepreneurial" subsidiaries' daily activities and hence contribute to their entrepreneurial output.

Consequently, subsidiary management seems to relate an increased ability of OI with increased entrepreneurial output at the subsidiary level. The following quotes suggest that high levels of subsidiary entrepreneurial performance tend to be driven by high levels of intra-subsidary OI:

"Our site is being innovative and entrepreneurial, because we identify a great number of opportunities. Creating opportunities and generating ideas is important for our entire entrepreneurial culture, even if some of these are not implemented or are implemented and fail. We usually implement ideas within our area of responsibility. For ideas that have a larger impact on the entire corporation, what we can do is 'sell' them to the parent. But

⁸⁵ As explained in Chapter 4, entrepreneurial output essentially refers to the actual result of subsidiary entrepreneurship, i.e. entrepreneurial activities taking place at the subsidiary level. Hence, the present study uses the term "entrepreneurial performance" to refer to such output.

overall I would say that generating ideas is basically what drives our innovation output”
(Zeus)

6.8 Subsidiary Entrepreneurship and Performance

As proposed in Chapter 4, while subsidiary OI might drive entrepreneurial performance at the subsidiary level, it is worth further investigating the extent to which such entrepreneurial output can actually have a positive impact on the overall subsidiary performance. To this end, subsidiary management was asked to provide their views on the effect of the subsidiary’s entrepreneurial activities on their subsidiaries’ bottom-line performance (see Interview Guide, Part D, in Appendix 2).

As has been explained in Section 6.3, subsidiary entrepreneurship can be relevant to all types of subsidiaries, irrespective of their value-adding activity. Hence, the present section also provides useful insights on how the bottom-line effect of subsidiary entrepreneurship can be measured and how it can be compared across different types of subsidiaries. Since no previous research has sought to study entrepreneurship across subsidiaries of differing value-adding activities (Birkinshaw 1997, 1999), the input of the exploratory case-study research in the conceptual model and quantitative design has been extremely helpful.

To begin with, subsidiary management explains that measuring the impact of their entrepreneurial activities on subsidiary performance is rather difficult⁸⁶. Obviously, management reports some purely financial benefits, such as cost savings through development of new manufacturing processes, increase in sales through the modification of existing and the introduction of new products, corresponding increase in profits, etc. Yet, a large part of the benefits from the subsidiary’s entrepreneurial behaviour tend to be non-financial in nature and thus difficult to quantify. Management indicates, for example, how changes in internal organisational processes led to significant efficiency and productivity improvements, and how employee performance was enhanced through fostering an internal environment of innovation. Consequently, measuring the tangible impact of the subsidiary’s entrepreneurial activities on overall subsidiary performance is not an easy task. Management in Zeus characteristically cites:

“This year already we know that we have saved more than one hundred thousand pounds from implementing some of our people’s ideas. But this is only from the ideas that we measured, because we can’t measure them all. For some of the ideas you just can’t quantify

⁸⁶ Literature has corroborated this view (e.g. Andersson et al., 2001).

the financial benefits, some of them are less tangible in nature, for example, safety improvements” (Zeus)

Moreover, each subsidiary, depending on the nature of its main value-adding activity, uses different measures to quantify its performance (Andersson et al., 2001). Subsidiaries that are mainly involved in R&D tend to operate as cost centres, while sales and marketing subsidiaries operate as profit centres. Consequently, measuring the impact of entrepreneurship on different types of subsidiaries might involve the use of dissimilar types of metrics. Management in Hermes quotes accordingly: *“I don’t think there’s the same level of comparison between different business units, for example, or different sites around the world”*. Management in Zeus and Poseidon also indicate that the parent corporation does not encourage their subsidiaries to measure their financial performance separately as a site. Poseidon sites characteristically: *“We don’t prepare our own financial statements as a site here; these are provided from our UK corporation, so financial results are only available at UK level”*.

Subsidiary management essentially identifies three pressures at the subsidiary level that drive subsidiary performance (Figure 6.2). *First*, it is the pressure from the parent corporation to satisfy the objectives that they have preset for the particular subsidiary. This pressure is translated into a need for the subsidiary to fulfil the parent’s expectations (Andersson, et al, 2001). *Second*, it is the pressure coming from the subsidiary’s industry and market to manage with increasing competition (Porter, 1980). This pressure is translated into a need to differentiate and to out-innovate competition. *Third*, it is the pressure from the subsidiary’s local environment to maintain its existence. Besides being important employers in their local environments, the six investigated subsidiaries also provide other benefits to their local communities.

The investigated subsidiaries use their entrepreneurial activity to address these three pressures for increased performance. Consequently, upon evaluating the impact of entrepreneurship on subsidiary performance, these three aspects seem more relevant than traditional financial metrics, and hence should be given explicit consideration⁸⁷. Management in Apollo argues accordingly: *“We do have levels of performance metrics but I don’t think they are all that sophisticated and I don’t think they can reflect the impact of our innovation and entrepreneurship, to be honest”*. Consequently, subsidiary management seems to be particularly interested in evaluating their subsidiaries’ relative performance in

⁸⁷ Section 7.2.1.9 in Chapter 7 explains in more detail the input of the qualitative research on the measurement of the subsidiary performance construct.

terms of three key dimensions: *first*, what the parent corporation’s objectives for the particular subsidiary are, *second*, what their key competitors are doing; and *third*, what their own goals and objectives for maintaining the subsidiary’s existence are.

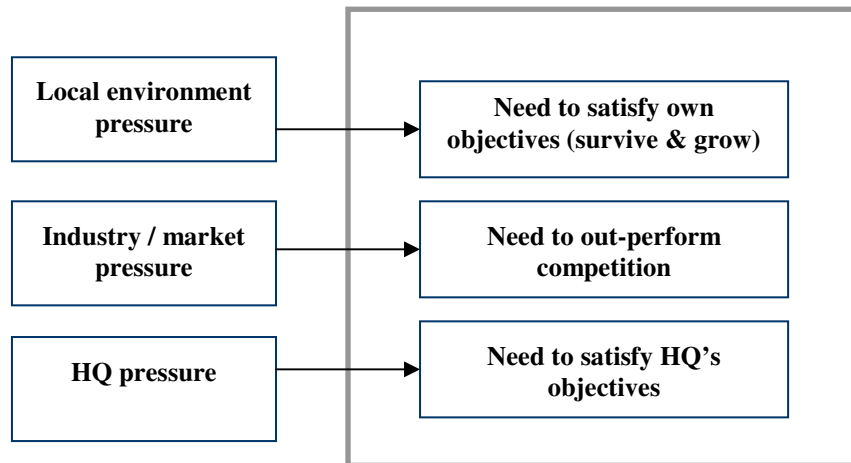


Figure 6.2: Levels of subsidiary performance that relate to entrepreneurship

In that respect, the studied subsidiaries consider that their innovation activities do have a positive impact on the three abovementioned performance levels. Engaging in entrepreneurial activities might allow them to out-innovate competition, satisfy the multinational parent and also secure the subsidiary’s survival and growth. Consequently, although the notion of OI is more strongly linked to the subsidiary’s entrepreneurial output, subsidiary management also views a positive association between the subsidiary’s tangible entrepreneurial output and its bottom-line performance. Characteristic are the following quotes of management in Apollo:

“Working on the ideas that we’ve had on site and transforming them into all sorts of innovations and internal improvements, we’ve managed to accomplish most of our goals and also succeed in the objectives that were set by the parent. So we know that unless we are entrepreneurial in making sure that we can develop ourselves through innovation, we won’t be able to take on new growth missions, we’ll stagnate” (Apollo)

6.9 Opportunity Identification in Multinational Subsidiaries

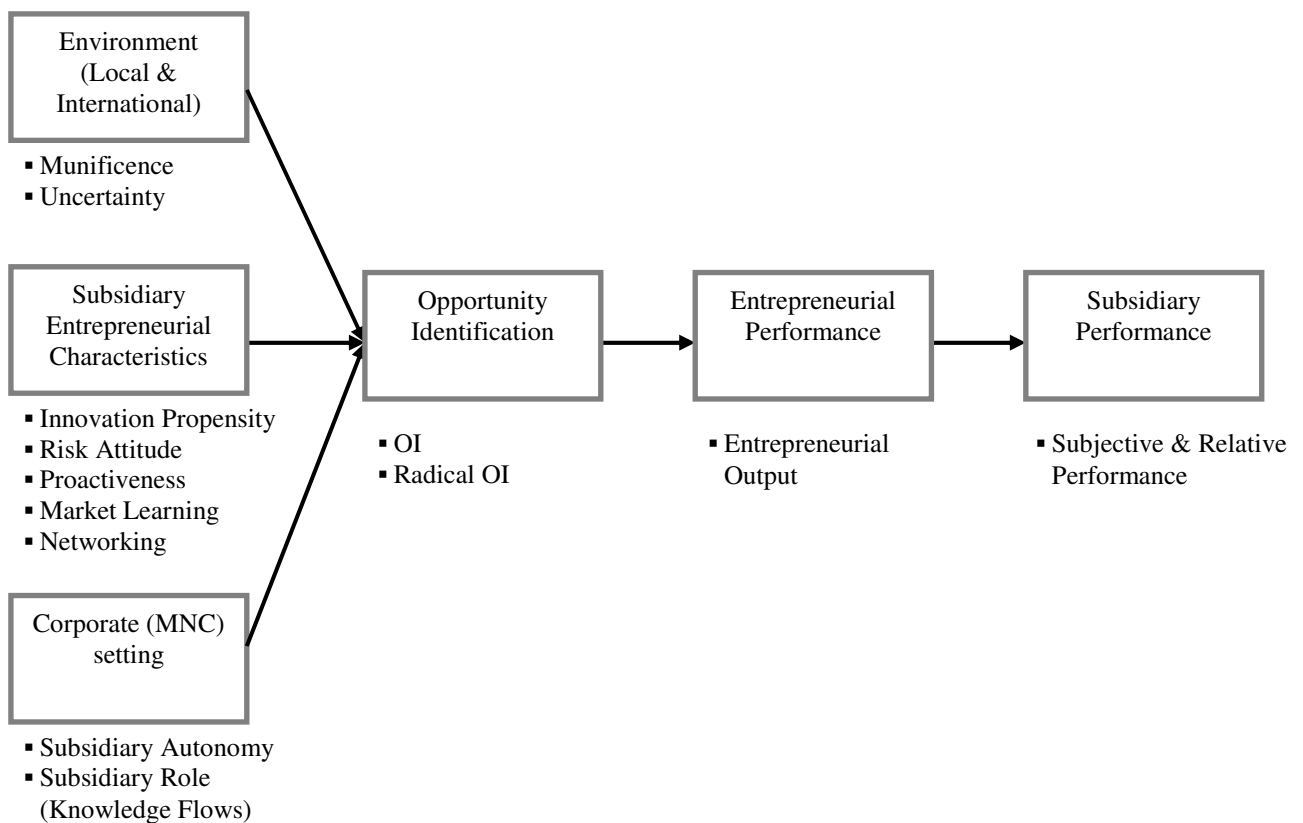
As has been explained in Chapter 5 (Research Methodology), the exploratory nature of the case study research was deemed necessary given the lack of relevant empirical work on the theme of subsidiary OI, and primarily for purposes of hypothesis building. This section summarises the key findings of the cross-case analysis that essentially contribute to the refinement of the preliminary literature-derived framework introduced in Chapter 4. In that respect, the insights of the exploratory case study research greatly assisted in providing a clearer picture of OI, its antecedent and outcomes, at the subsidiary level.

The refined conceptual model of this research, produced through a constructive synthesis of prior literature and the findings of the exploratory case-study research, is presented in Figure 6.3. In line with previous studies on subsidiary entrepreneurship (Birkinshaw, 1997), this model identifies particular subsidiary-specific “entrepreneurial capabilities” that are proposed as having a significant influence on the subsidiary’s ability to identify entrepreneurial opportunities. As explained in Chapter 4, topical literature in the field of international entrepreneurship has suggested the relevance of six key characteristics (Dimitratos and Plakoyiannaki, 2003), namely innovation propensity, risk attitude, motivation, market orientation, learning orientation, and networking orientation⁸⁸. Based on the findings of the exploratory case-studies, subsidiary innovation propensity and risk attitude may indeed positively affect the identification of opportunities at the subsidiary level. The subsidiary’s proactiveness, identified in literature as a third key dimension of the subsidiary’s entrepreneurial orientation (Covin and Slevin, 1989; Lumpkin and Dess, 1996), can also be added to the aforementioned three characteristics, as a factor that may further enhance subsidiary OI.

Also, the findings of the cross-case research suggest that, while motivation of subsidiary employees towards adopting an entrepreneurial behaviour promotes the subsidiary’s innovation efforts, the former construct is largely integrated in the subsidiary’s innovation propensity, and hence does not need to be studied as a distinct variable. In addition, while market and learning orientation have been proposed as two distinctive dimensions of an organisation’s international entrepreneurial culture (Dimitratos and Plakoyiannaki, 2003), the findings of the analysis suggest that two constructs might to a great extent overlap (Cadogan et al, 1999; Baker and Sinkula, 1999). Consequently, a synthesis of relevant literature and the cross-case findings give rise to the notion of “market learning”, as an

⁸⁸ As explained in Chapter 3 (Table 3.3) these dimensions, though linked to firm-level entrepreneurship, can be linked to key variables driving OI at the individual entrepreneur-level.

“entrepreneurial capability” that might promote subsidiary OI. Finally, the subsidiary’s networking activity might to a great extent drive OI at the subsidiary level. The findings of the exploratory research particularly emphasise the relevance of external (i.e. non-corporate) network partners as critical sources of opportunities at the subsidiary level. As regards these external sources, customers seem to be particularly relevant for increased OI at the subsidiary (Schmid and Schurig, 2003), followed by collaborations with academic and research institutions.



Note: the bullets under each box represent the constructs of the present study, as they emerged through a synthesis of relevant literature with the findings of the exploratory case-study research.

Figure 6.3: The refined conceptual model of the research

In brief, the findings of the exploratory case-study research, synthesised with relevant previous literature, bring to light the relevance of the following key factors as unique and valuable “entrepreneurial capabilities” at the subsidiary level, linked to an increased ability of OI at the subsidiary level: *innovation propensity, risk attitude, proactiveness, market learning and subsidiary networking*. These five dimensions could have a positive impact on

the general level of subsidiary OI. Table 6.8a summarises the relevant literature that, combined with the insights of the cross-case analysis, led to the development of the following research hypotheses⁸⁹:

Hypothesis 1: High levels of subsidiary innovation propensity are associated with increased levels of subsidiary OI.

Hypothesis 2: High levels of subsidiary risk-taking attitude are associated with increased levels of subsidiary OI.

Hypothesis 3: High levels of subsidiary proactiveness are associated with increased levels of subsidiary OI.

Hypothesis 4a: The subsidiary's learning orientation and market orientation are strongly interrelated⁹⁰.

Hypothesis 4b: High levels of subsidiary market learning are associated with increased levels of subsidiary OI.

Hypothesis 5a: High levels of subsidiary networking activity are associated with increased levels of subsidiary OI.

Hypothesis 5b: Networking with external non-corporate partners is more significant for subsidiary OI than networking with intra-MNC entities.

In addition, the literature-based conceptual framework for studying OI at the subsidiary level (as proposed in Chapter 4) emphasised the relevance of the corporate setting in which the subsidiary operates, essentially defined by the parent-subsidary and subsidiary-subsidary relationships. This preliminary framework identified two key factors as having a significant impact on the subsidiary's OI ability: subsidiary autonomy (Ghoshal and Bartlett, 1988; Birkinshaw, 1997, 2000; Birkinshaw et al., 1998; Hood and Taggart, 1999), and the subsidiary's role within the multinational system, determined by intra-organisational knowledge flows (Prahalad and Doz, 1981; Bartlett and Ghoshal, 1989; Birkinshaw, 1997). These dimensions comprise the subsidiary's power base within the multinational system (Pfeffer and Salancik, 1978) and essentially define the subsidiary's

⁸⁹ A discussion of the literature that relates to each of these research hypotheses has also been provided in Section 6.4 above, so only a summary is provided in Table 6.8a.

⁹⁰ Although the insights of the cross-case analysis proved that market and learning orientation are to a great extent overlapping, hence leading to the new construct of "market learning", it was considered most appropriate to corroborate this finding quantitatively before introducing it as a new construct in the quantitative analysis (See also Chapter 7, Section 7.2.2 for the measurement of the refined "market learning" construct).

ability to build up distinctive resources and capabilities that may enhance its OI ability. The findings of the exploratory case-study research indeed corroborate the relevance of these two factors for subsidiary OI. Subsidiary credibility, a third factor mentioned during the interviews with subsidiary management, was not found to relate to increased levels of OI per se, but through positively impacting on the subsidiary's autonomy levels (see Figure 6.1). Given that the present study only seeks to examine direct effects, this construct was thus not incorporated in the refined conceptual model (Figure 6.3). Table 6.8b summarises the relevant literature that, combined with the insights of the cross-case analysis, led to the development of the following research hypotheses⁹¹:

Hypothesis 6: High levels of subsidiary decision-making autonomy are associated with increased levels of subsidiary OI.

Hypothesis 7: High levels of knowledge transfers between the subsidiary and other entities within the MNC (parent and sister subsidiaries) are associated with increased levels of subsidiary OI.

The literature-driven framework for studying OI at the subsidiary level (developed in Chapter 4) also proposed the relevance of unique and valuable resources in the external environment for increased subsidiary OI. While the external environment can provide critical resources per se, aligning the subsidiary's resources and capabilities with environmental opportunities and threats can also support the development of critical capabilities (Bartlett and Ghoshal, 1989; Birkinshaw et al., 1998), such as that of OI. Two environmental dimensions are relevant when studying entrepreneurial phenomena (Covin and Slevin, 1989; Zahra, 1991, 1993), and particularly OI, at the subsidiary level; munificence and uncertainty. The findings of the exploratory case study research suggest that local munificence, local uncertainty and international uncertainty might promote subsidiary OI. In that respect, effects of both local and international environmental conditions on subsidiary OI need to be tested (Dimitratos et al, 2004). Given that literature has recently viewed local and international environments as posing diverse effects on entrepreneurial phenomena (McDougall et al, 2003; Young et al, 2003), it is further worth examining the extent to which local and international environmental conditions might affect subsidiary OI in disparate ways.

⁹¹ A discussion of the literature that relates to each of these research hypotheses has also been provided in Section 6.5 above, so only a summary is provided in Table 6.8b.

Table 6.8b summarises the relevant literature that, combined with the insights of the cross-case analysis, led to the development of the following research hypotheses⁹² (testing for environmental effects):

Hypothesis 8a: High levels of munificence in the subsidiary's local environment are associated with increased levels of subsidiary OI⁹³.

Hypothesis 8b: High levels of munificence in the subsidiary's international environment are associated with increased levels of subsidiary OI.

Hypothesis 9a: High levels of uncertainty in the subsidiary's local environment are associated with increased levels of subsidiary OI⁹⁴.

Hypothesis 9b: High levels of uncertainty in the subsidiary's international environment are associated with increased levels of subsidiary OI.

While the previous paragraphs essentially proposed the relevance of specific factors as key antecedents of subsidiary OI, the preliminary conceptual framework developed in Chapter 4 further examines the outcomes of subsidiary OI at the subsidiary level. Research objective 3 (Section 6.1 of the present Chapter) essentially seeks to address such performance considerations at two distinct levels: *first*, the effect of subsidiary OI on subsidiary entrepreneurial activity, and *second*, the extended effect of subsidiary OI on the subsidiary's bottom-line performance (through the intervention of entrepreneurial activity).

The first set of outcomes essentially refers to the relationship between OI and opportunity exploitation, as manifested through the subsidiary's "entrepreneurial performance", i.e. entrepreneurial activities that have been undertaken at the subsidiary-level⁹⁵. In that respect, the findings of the exploratory case study research suggest that increased OI could relate to high levels of subsidiary entrepreneurial output (also see Section 6.7). The second set of

⁹² A discussion of the literature that relates to each of these research hypotheses has also been provided in Section 6.6 above, so only a summary is provided in Table 6.8b.

⁹³ As explained in Chapter 3, Section 3.7.1, environmental munificence has been identified in literature as a factor conducive to corporate entrepreneurship (Khandwalla, 1987; Guth and Ginsberg, 1990; Zahra, 1991, 1993), given that it provides more opportunities to firms. The findings of the cross-case analysis corroborate this finding (Section 6.6). However, other studies (Covin & Slevin, 1991; Hitt et al, 1997; Lumpkin & Dess, 2001) have shown the lack of munificence (i.e. environmental hostility) to create threats that can also stimulate firm-level entrepreneurship. Chapter 7 on quantitative analysis sheds more light into this issue.

⁹⁴ As explained in Chapter 3, Section 3.9, environmental uncertainty in the domestic country can induce firms to adopt an entrepreneurial behaviour in order to counteract against unfavourable local conditions. The findings of the cross-case analysis corroborate this finding (Section 6.6).

⁹⁵ As has been explained in Chapter 4, it is assumed that subsidiary "entrepreneurial performance" essentially stems from the exploitation of entrepreneurial opportunities at the subsidiary level.

outcomes essentially refers to the relationship between subsidiary entrepreneurship (entrepreneurial activity or performance at the subsidiary level) and overall subsidiary performance. Hence, although the notion of OI primarily relates to the subsidiary's entrepreneurial output, the latter can also positively affect the subsidiary's bottom-line performance.

Table 6.8b summarises the relevant literature that, combined with the insights of the cross-case analysis, led to the development of the following research hypotheses⁹⁶:

Hypothesis 10: High levels of subsidiary OI are positively associated with high subsidiary entrepreneurial performance.

Hypothesis 11: High levels of subsidiary OI have a positive influence on overall subsidiary performance (through the intervention of entrepreneurial performance)⁹⁷.

Before concluding, it is critical to make one final observation. As has been explicitly analysed in Chapter 4, the present study examines the theme of OI as a firm-level phenomenon, through focusing on two distinct aspects⁹⁸: *First*, it focuses on the extent to which subsidiaries identify opportunities in general, in order to address the need for a broader conceptualisation of subsidiary entrepreneurship (Birkinshaw, 1997; Wright, 1999; Dess et al., 2003; Birkinshaw et al, 2005), as a phenomenon encompassing both important and “trivial initiatives” (Birkinshaw, 1997). *Second*, this study further examines the particular identification of radical opportunities at the subsidiary level. The focus on radical OI, based on Schumpeter's (1934) notion of “opportunity creation”, has generally been linked with breakthrough opportunities that can have a tremendous impact on economic performance (Poynter and White, 1989; Roth and Morrison, 1992; Dunning, 1994) and hence drive economic growth (Schumpeter, 1934; Brown and Eisenhardt, 1998). The consideration of radical OI at the subsidiary-level is critical, given that different antecedents and outcomes may be associated with this particular concept.

Consequently, while hypotheses 1 -11 were phrased to refer to the extent of OI taking place within the subsidiary boundaries, another set of similar hypotheses may be derived with

⁹⁶ A discussion of the literature that relates to each of these research hypotheses has also been provided in Section 6.7 and 6.8 above, so only a summary is provided in Table 6.8b.

⁹⁷ Consequently, as presented in Figure 6.3, the effect of OI on subsidiary performance is examined through the mediation of entrepreneurial performance (output).

⁹⁸ Based on relevant recommendations in the entrepreneurship literature (Amabile, 1990; Shane, 2000; Fiet, 2002; Shepherd and DeTienne, 2005). Past empirical research has indeed stressed the importance of both the “quantity” of identified opportunities (Hills and Shrader, 1998; Singh et al, 1999), and also their degree of “innovativeness” (Shane, 2000; Fiet, 2002).

respect to the particular identification of radical opportunities at the subsidiary level (i.e. radical OI). Tables 6.7a and 6.7b present accordingly the two sets of hypotheses developed through a synthesis of prior literature and the exploratory case-study research.

Table 6.7a: Hypotheses relating to OI at the subsidiary level	
Hypothesis 1	High levels of subsidiary innovation propensity are associated with increased levels of subsidiary OI.
Hypothesis 2	High levels of subsidiary risk-taking attitude are associated with increased levels of subsidiary OI.
Hypothesis 3	High levels of subsidiary proactiveness are associated with increased levels of subsidiary OI.
Hypothesis 4a	The subsidiary's learning orientation and market orientation are strongly interrelated.
Hypothesis 4b	High levels of subsidiary market learning are associated with increased levels of subsidiary OI.
Hypothesis 5a	High levels of subsidiary networking activity are associated with increased levels of subsidiary OI.
Hypothesis 5b	Networking with external non-corporate partners is more significant for subsidiary OI than networking with intra-MNC entities.
Hypothesis 6	High levels of subsidiary decision-making autonomy are associated with increased levels of subsidiary OI.
Hypothesis 7	High levels of knowledge transfers between the subsidiary and other entities within the MNC (parent and sister subsidiaries) are associated with increased levels of subsidiary OI.
Hypothesis 8a	High levels of munificence in the subsidiary's local environment are associated with increased levels of subsidiary OI.
Hypothesis 8b	High levels of munificence in the subsidiary's international environment are associated with increased levels of subsidiary OI.
Hypothesis 9a	High levels of uncertainty in the subsidiary's local environment are associated with increased levels of subsidiary OI.
Hypothesis 9b	High levels of uncertainty in the subsidiary's international environment are associated with increased levels of subsidiary OI.
Hypothesis 10	High levels of subsidiary OI are positively associated with high subsidiary entrepreneurial performance.
Hypothesis 11	High levels of subsidiary entrepreneurial performance have a positive influence on overall subsidiary performance.

Table 6.7b: Hypotheses relating to Radical OI at the subsidiary level	
Hypothesis 1Rad	High levels of subsidiary innovation propensity are associated with increased levels of subsidiary radical OI.
Hypothesis 2Rad	High levels of subsidiary risk-taking attitude are associated with increased levels of subsidiary radical OI.
Hypothesis 3Rad	High levels of subsidiary proactiveness are associated with increased levels of subsidiary radical OI.
Hypothesis 4a	The subsidiary's learning orientation and market orientation are strongly interrelated.
Hypothesis 4bRad	High levels of subsidiary market learning are associated with increased levels of subsidiary radical OI.
Hypothesis 5aRad	High levels of subsidiary networking activity are associated with increased levels of subsidiary radical OI.
Hypothesis 5bRad	Networking with external non-corporate partners is more significant for subsidiary radical OI than networking with intra-MNC entities.
Hypothesis 6Rad	High levels of subsidiary decision-making autonomy are associated with increased levels of subsidiary radical OI.
Hypothesis 7Rad	High levels of knowledge transfers between the subsidiary and other entities within the MNC (parent and sister subsidiaries) are associated with increased levels of subsidiary radical OI.
Hypothesis 8aRad	High levels of munificence in the subsidiary's local environment are associated with increased levels of subsidiary radical OI.
Hypothesis 8bRad	High levels of munificence in the subsidiary's international environment are associated with increased levels of subsidiary radical OI.
Hypothesis 9aRad	High levels of uncertainty in the subsidiary's local environment are associated with increased levels of subsidiary radical OI.
Hypothesis 9bRad	High levels of uncertainty in the subsidiary's international environment are associated with increased levels of subsidiary radical OI.
Hypothesis 10Rad	High levels of subsidiary radical OI are positively associated with high subsidiary entrepreneurial performance.
Hypothesis 11	High levels of subsidiary entrepreneurial performance have a positive influence on overall subsidiary performance.

6.10 Conclusion

The present chapter presented the findings of the exploratory case-study research in order to shed more light into the theme of subsidiary OI. Drawing on the insights of the cross-case analysis, this chapter refined the preliminary conceptual framework that was developed in Chapter 4 (based solely on existing literature). The amended model of subsidiary OI essentially emerged through a constructive synthesis of previous literature and the findings

of the exploratory cross-case research. This model identified factors in the subsidiary, corporate and environmental settings as possible drivers of subsidiary OI. In addition it encompassed performance considerations: while OI may positive link to subsidiary entrepreneurship (entrepreneurial output or performance), the latter can also have a beneficial effect on the overall subsidiary performance. Relevant hypotheses were derived based on a synthesis of previous research and the cross-case findings (see Tables 6.8a and 6.8b). These will be tested quantitatively through a large-scale survey research in the following Chapter (Chapter 7).

Table 6.8a: Synopsis of key hypotheses

<i>Construct</i>	<i>Previous research</i>	<i>Cross-case findings</i>	<i>Hypotheses Derived</i>
Innovation propensity	<ul style="list-style-type: none"> ▪ Key constituents of an organisation’s entrepreneurial orientation (Miller & Friesen, 1982; Covin & Slevin, 1991; Lumpkin & Dess, 1996) 	<ul style="list-style-type: none"> ▪ Promoting a culture of innovation is critical for idea generation and opportunity identification 	H1 & H1Rad: High levels of subsidiary innovation propensity are associated with increased levels of subsidiary OI and Radical OI
Risk Attitude		<ul style="list-style-type: none"> ▪ Increased risk-taking has been positively linked both with the number and the innovativeness of the identified opportunities 	H2 & H2Rad: Higher levels of subsidiary risk-taking attitude are associated with an increased level of subsidiary OI and Radical OI
Proactiveness		<ul style="list-style-type: none"> ▪ A subsidiary-level proactive posture is important for identifying market opportunities prior to competition 	H3 & H3Rad: Higher levels of subsidiary proactiveness are associated with an increased level of subsidiary OI and Radical OI
Market Orientation	<ul style="list-style-type: none"> ▪ Key constituent of an international entrepreneurial culture (Dimitratos & Plakoyiannaki, 2003) ▪ Importance of being close to customers (Styles & Ambler, 1994; Simon, 1996) and developing market-oriented strategies (Hassan & Katsanis, 1994; Lynch & Beck, 2001) 	<ul style="list-style-type: none"> ▪ Market Orientation & Learning Orientation can both enhance the subsidiary’s ability of OI, but they are also closely linked to each other ▪ “Market learning” refers to the subsidiary’s learning efforts that focus on specific markets and customers 	<p>H4a: The subsidiary’s learning orientation and market orientation are strongly interrelated</p> <p>H4b & H4bRad: Higher levels of subsidiary market learning are associated with an increased level of subsidiary OI and Radical OI</p>
Learning Orientation	<ul style="list-style-type: none"> ▪ Key constituent of an international entrepreneurial culture (Dimitratos & Plakoyiannaki, 2003) ▪ Entrepreneurial learning is what makes the detection of opportunities possible (Kirzner, 1973, 1979) 		
Networking Orientation	<ul style="list-style-type: none"> ▪ Key constituent of an international entrepreneurial culture (Dimitratos & Plakoyiannaki, 2003) ▪ Subsidiary network partners can be important sources of innovation and ideas (Anderson & Pahlberg, 1997; Young & Tavares, 2004) 	<ul style="list-style-type: none"> ▪ Though networking with particular extra-MNC business partners might be more significant, networking in general has the potential to enhance subsidiary OI 	<p>H5a & H5aRad: Higher levels of subsidiary networking are associated with an increased level of subsidiary OI and Radical OI</p> <p>H5b & H5bRad: Networking with extra-MNC partners is more significant for subsidiary OI and Radical OI than networking with intra-MNC partners</p>
Motivation	<ul style="list-style-type: none"> ▪ Key constituent of an international entrepreneurial culture (Dimitratos & Plakoyiannaki, 2003) ▪ Human capital is key in taking advantage of opportunities in foreign markets (Zahra & Dess, 2001) 	<ul style="list-style-type: none"> ▪ Motivation embedded in the subsidiary’s innovation culture (mainly through structured innovation programs rewarding innovative idea contribution) 	<ul style="list-style-type: none"> ▪ Motivation is considered as integral part of a subsidiary’s innovation propensity, thus not examined per se

Table 6.8b: Synopsis of key hypotheses

<i>Construct</i>	<i>Previous research</i>	<i>Cross-case findings</i>	<i>Propositions Derived</i>
Autonomy	<ul style="list-style-type: none"> Positive relationship between subsidiary autonomy and innovation (Ghoshal & Bartlett, 1988; Gupta & Govindarajan, 1994). 	<ul style="list-style-type: none"> Increased autonomy levels allow the subsidiary to explore into new possibilities and generate innovative ideas 	H6 & H6Rad: Higher levels of subsidiary decision-making autonomy are associated with an increased level of subsidiary OI and Radical OI
Credibility	<ul style="list-style-type: none"> While not directly linked to promoting subsidiary entrepreneurship, low levels of subsidiary credibility have been found to suppress subsidiary entrepreneurial activity (Birkinshaw, 1999) 	<ul style="list-style-type: none"> Subsidiary credibility brings in more freedom to operate, which can eventually have a positive impact on the subsidiary's ability to identify entrepreneurial opportunities 	<ul style="list-style-type: none"> Impacts on autonomy levels but no direct impact on subsidiary OI or Radical OI, hence not examined per se
Subsidiary Role (Knowledge Flows)	<ul style="list-style-type: none"> Knowledge transfers across units often provide access to new ideas and stimuli (Hedlund, 1986; Bartlett & Ghoshal, 1989; Sölvell & Zander, 1995) Linkage between intra-MNC knowledge flows and MNC innovation (Buckley & Carter, 1996) Through exploiting the knowledge that exists in their network of subsidiaries, MNCs can explore into new possibilities (Frost, 2001) 	<ul style="list-style-type: none"> Positive effect of intra-MNC knowledge flows with respect to searching for new possibilities Both inflows and outflows are important for the identification of opportunities 	H7 & H7Rad: High levels of knowledge transfers between the subsidiary and other entities within the MNC (parent and sister subsidiaries) are associated with increased levels of subsidiary OI and Radical OI.
Munificence	<ul style="list-style-type: none"> Research on firm-level entrepreneurship corroborates the relevance of environmental munificence as a key advantageous factor (Zahra, 1991, 1993) Local and international environmental conditions may pose differing effects on entrepreneurial phenomena (McDougall et al, 2003; Young et al, 2003) 	<ul style="list-style-type: none"> A local environment prosperous in resources can bring about positive influence by providing numerous opportunities by itself, but also by offering support to the subsidiary in its pursuit of novel ideas 	<p>H8a & H8aRad: High levels of munificence in the subsidiary's local environment are associated with increased levels of subsidiary OI and Radical OI.</p> <p>H8b & H8bRad: High levels of munificence in the subsidiary's international environment are associated with increased levels of subsidiary OI and Radical OI.</p>
Uncertainty	<ul style="list-style-type: none"> Research links environmental uncertainty to the initiation of entrepreneurial activities at the firm level (Miller, 1983; Miller & Friesen, 1982; Zahra et al., 1997) Local and international environmental conditions may pose differing effects on entrepreneurial phenomena (McDougall et al, 2003; Young et al, 2003) 	<ul style="list-style-type: none"> Though posing threats and challenges to the subsidiary's survival, uncertainty in the local and international environments forces the subsidiary to explore into new possibilities 	<p>H9a & H9aRad: Higher levels of uncertainty in the subsidiary's local environment are associated with an increased level of subsidiary OI and Radical OI</p> <p>H9b & H9bRad: Higher levels of uncertainty in the subsidiary's international environment are associated with an increased level of subsidiary OI and Radical OI</p>
Entrepreneurial Performance	<ul style="list-style-type: none"> Entrepreneurial output stems from opportunities that are identified and subsequently exploited at the subsidiary level (Birkinshaw, 1997) 	<ul style="list-style-type: none"> Subsidiary management relates an increased ability of OI with increased entrepreneurial output at the subsidiary level 	H10 & H10Rad: High levels of subsidiary OI and Radical OI are positively associated with high subsidiary entrepreneurial output
Subsidiary Performance	<ul style="list-style-type: none"> Firm-level entrepreneurship linked with profitability and growth (Zahra 1991, 1993; Zahra & Covin, 1995), firm value creation (Covin & Slevin, 1991), international success (Birkinshaw, 1997) 	<ul style="list-style-type: none"> Innovation activities have a positive impact on three key performance levels: out-innovating competition, satisfying the parent and securing subsidiary survival and growth 	H11: High levels of subsidiary entrepreneurial output have a positive influence on the overall subsidiary performance

Chapter 7:

Quantitative research and hypothesis testing

7.1 Introduction

The present chapter presents the findings of the quantitative research. In particular, two distinct multivariate data analysis methods are employed: multiple regression and structural equation modelling (SEM). These two data analysis techniques are employed independently to test the proposed research hypotheses, as these were developed in the previous Chapter (Chapter 6), through a synthesis of relevant literature and the findings of the exploratory case-study research. While multiple regressions are run to test particular dependence relationships amongst the constructs of the conceptual model, SEM allows for testing the entire model simultaneously, therefore examining all dependence relationships at the same time. Although the results of the two data analysis techniques to a great extent converge, some disparities are also evidenced.

The chapter is structured as follows: *Section 7.2* explains the way that the constructs were measured and subsequently refined for purposes of the quantitative analysis. *Section 7.3* highlights key descriptive statistics of the sample data, focuses on the multiple regression analysis procedures, and concludes with presenting the results of the linear regression models. *Section 7.4* explains the SEM analysis, along with the results of the measurement and structural model tests, which provide the basis for assessing the proposed research hypotheses. *Section 7.5* combines the findings of the two distinctive data analysis techniques (multiple regression and SEM), accounts for any observed differences, and concludes by accepting or rejecting the proposed research hypotheses. *Section 7.6* highlights the key points raised in the chapter.

7.2 Measurement and refinement of the constructs

7.2.1 Measurement of the constructs

The following paragraphs explain how the different constructs of the present study were operationalised. Measurement scales were drawn from relevant previous studies and subsequently adapted based on the advice of knowledgeable academics (see also Chapter 5)

and the findings of the exploratory case-study research, in order to suit the purposes of the present study⁹⁹.

7.2.1.1 Entrepreneurial Orientation

This study employed the most widely employed operationalisation of firm-level “entrepreneurial orientation” (EO) in both the entrepreneurship and strategic management literature. This scale was developed by Covin and Slevin (1989, 1991), based on the earlier work of Khandwalla (1977) and Miller and Friesen (1982). The scale consists of nine items: three items measuring innovativeness, three items measuring proactiveness, and three items measuring risk taking. In developing this measure, Covin and Slevin (1989) argued that the three dimensions of innovation propensity, risk attitude and proactiveness should be considered together when conducting research in the field of entrepreneurship (Covin and Slevin, 1989).

While many authors have confirmed the reliability and validity of this measure (Naman and Slevin, 1993; Becherer and Maurer, 1997), recent research has questioned its uni-dimensionality (Knight, 1997; Lumpkin and Dess, 1996; Zahra, 1993) and the interdependence of its three sub-dimensions (Dess, Lumpkin, and McGee, 1999; Lumpkin and Dess, 1996). Issues regarding the dimensionality of the measure have focused on the use of aggregated, uni-dimensional measures (consistent with Covin and Slevin, 1989) versus multi-dimensional measures reflecting each of the sub-dimensions of EO (e.g., Lumpkin and Dess, 1996). Proponents of the multi-dimensional approach acknowledge the parsimony of the uni-dimensional measure, but are concerned that it may undervalue the unique contribution of each sub-dimension to the entrepreneurial process. In addressing the interdependence of the sub-dimensions, proponents of multi-dimensional operationalisation of EO highlight the potential for each sub-dimension to have a differential impact (Lumpkin and Dess, 2001). Consequently, to address this issue, the present study examines the three dimensions separately, while each one is measured based on the three items proposed by Covin and Slevin (1989, 1991).

Innovation propensity refers to the proclivity of the subsidiary to espouse new and creative ideas, products, or processes designed to service the host market (Lumpkin and Dess, 1996).

⁹⁹ In particular, measures drawn from previous studies in the entrepreneurship literature were adapted to fit the subsidiary context, whereas those drawn from subsidiary-related research were modified to address the dynamic nature of entrepreneurial phenomena. To this end, the feedback from knowledgeable academics and the input of the pilot tests (with 20 subsidiary managers) has been significant. For more details on the process see Methodology Chapter 5, Section 5.4.

Innovation propensity was measured through a semantic differential scale (ranging from 1 to 5) incorporating the three items presented in Table 7.2.1.1a. Also, the wording of the questions was changed to be applicable to different types of subsidiaries, for example services' subsidiaries that do not provide tangible products.

Risk attitude refers to the extent to which the subsidiary is prepared to undertake significant and risky resource commitments in the host market (Miller and Friesen, 1978). Risk attitude was measured through a semantic differential scale (ranging from 1 to 5) incorporating the following three items (Table 7.2.1.1b).

Proactiveness refers to a posture of anticipating and acting on future needs in the marketplace, thereby creating a first-mover advantage (Lumpkin and Dess, 1996). It was measured through a semantic differential scale (ranging from 1 to 5) incorporating the following three items (Table 7.2.1.1c).

Table 7.2.1.1a: Measuring Subsidiary Innovation Propensity						
<i>In general, in this subsidiary the product offerings we provide are...</i>						
1. "Tried and tested"	1	2	3	4	5	"Innovative and novel"
<i>How many new product offerings has this subsidiary produced / marketed during the past three years?</i>						
2. No new product offerings	1	2	3	4	5	Very many product offerings
3. Changes in product offerings have been mostly of minor nature	1	2	3	4	5	Changes in product offerings have usually been quite dramatic

Table 7.2.1.1b: Measuring Subsidiary Risk Attitude						
<i>In general, with regard to risk, this subsidiary has...</i>						
4. A strong propensity for low-risk projects (with normal and certain rates of return)	1	2	3	4	5	A strong propensity for high-risk projects (with chances of very high returns)
<i>In general, in this subsidiary we believe that due to the nature of the environment...</i>						
5. It is best to explore it gradually via cautious, incremental actions	1	2	3	4	5	Bold, wide-ranging acts are necessary to achieve this subsidiary's objectives
<i>When confronted with decisions involving uncertainty, this subsidiary typically...</i>						
6. Adopts a cautious, "wait and see" posture in order to minimise the probability of making costly decisions	1	2	3	4	5	Adopts a bold, aggressive posture in order to maximise the probability of exploiting potential opportunities

Table 7.2.1.1c: Measuring Subsidiary Proactiveness						
<i>In dealing with its competitors, this subsidiary...</i>						
7. Typically responds to actions which competitors initiate	1	2	3	4	5	Typically initiates actions to which competitors then respond
8. Is very seldom the first business to introduce new product offerings, administrative techniques, operating technologies, etc.	1	2	3	4	5	Is very often the first business to introduce new product offerings, administrative techniques, operating technologies, etc.
9. Typically seeks to avoid competitive clashes, preferring a “live-and-let live” posture	1	2	3	4	5	Typically adopts a very competitive “beat-the-competitors” posture

7.2.1.2 Market Orientation

Subsidiary market orientation was conceptualised in this study based on the scale developed by Narver and Slater (1990). By suggesting that market orientation is essentially an “organisation culture”, Narver and Slater (1990) adopted a cultural perspective (Deshpande and Webster, 1989). However, by recognising that this culture manifests itself through behaviour, they also incorporated a “behaviourist” perspective (Mavondo, 1999). Narver and Slater (1990) hypothesised that market orientation is a uni-dimensional construct, consisting of three behavioural components: customer orientation, competitor orientation and inter-functional coordination. These three behavioural components can be reliably measured with a multi-item scale and are considered as being of equal importance (Narver and Slater, 1990; Greenley, 1995; Slater and Narver, 1994).

In measuring subsidiary market orientation, this study draws on the above scales used by Narver and Slater (1990). However, based on the advice of knowledgeable academics and the feedback received through pilot-testing the questionnaire with management in the six investigated subsidiaries, specific items were dropped since they were considered redundant. Also, items measuring competitor orientation were dropped to avoid high collinearity issues, given that these appeared to conceptually coincide with the subsidiary proactiveness (towards competitors) construct.

Consequently, the adapted subsidiary market orientation scale comprises 5 items, which refer to the subsidiary’s customer orientation (items 1-3) and inter-functional coordination (items 4 -5). More specifically, on a scale from 1 to 5 (1 = strongly disagree and 5 =

strongly agree), respondents were asked to evaluate their subsidiary's market orientation based on the following propositions (Table 7.2.1.2):

Table 7.2.1.2: Measuring Subsidiary Market Orientation
<i>With regard to its market orientation...</i>
<ol style="list-style-type: none"> 1. This subsidiary responds to customer needs in a timely fashion. 2. This subsidiary emphasises customer satisfaction as a key objective. 3. This subsidiary measures customer satisfaction on a regular basis. 4. In this subsidiary, customer information is shared throughout functions and departments. 5. All departments or functions of this subsidiary contribute to customer value.

7.2.1.3 Learning Orientation

Learning orientation refers to the propensity of the subsidiary to actively obtain and use to its advantage intelligence on the host market (Moorman, 1995; Slater and Narver, 1995). Following recent literature (Sinkula et al, 1997; Baker and Sinkula, 1999), learning orientation was conceptualised as encompassing the continuous collection of information about customers' needs and competitors' activities and also using this information to continuously create superior customer value. Subsidiary learning orientation was operationalised in the present study using Moorman's earlier scale (1995), adapted based on the feedback of knowledgeable academics and management in the six investigated subsidiaries. The scale measures the subsidiary's information acquisition, internal dissemination/sharing and use. Respondents were asked to indicate the extent to which they agree (1 = strongly disagree and 5 = strongly agree) with the following statements (Table 7.2.1.3):

Table 7.2.1.3: Measuring Subsidiary Learning Orientation
<i>This subsidiary has formal or informal processes...</i>
<ol style="list-style-type: none"> 1. For continuously collecting information about customers and competitors. 2. For sharing information effectively with the corporate headquarters and sister subsidiaries of this multinational corporation. 3. For using all the above information in subsidiary problem solving.
<i>With regard to all types of available information, this subsidiary...</i>
<ol style="list-style-type: none"> 4. Integrates information from a variety of sources to assist subsidiary top management in decision-making. 5. Has been able to avoid some potentially serious mistakes by taking advantage of information.

7.2.1.4 Subsidiary Networking

Subsidiary networking, as used in the present study, refers to the extent to which the subsidiary obtains resources from the external environment to use in its activities in the host market (Granovetter, 1973; Gulati, 1998). Subsidiary networking activity was measured in the present study based on Dollinger (1984) and following recommendations of entrepreneurship researchers. In particular, Zhao and Aram (1995, p.351) have suggested that “*the study of networking in the field of entrepreneurship imposes fewer structural requirements than does the study of networking as defined social systems*” and “*the interest lies with the function of resource acquisition from external sources*”. Particular items, for example networking with academic and research institutions, were added based on the findings of the exploratory case studies. Also, the relevant scale was adapted based on the feedback of knowledgeable academics and was pilot-tested with subsidiary management (in the six investigated subsidiaries that had participated in the case-study research).

Consequently, this study measured networking in terms of two dimensions: *range* (i.e. types of external relationships), based on the general argument that the possession of a broader range of network relationships provides greater access to instrumental resources (Aldrich, 1989; Burt, 1992); and *intensity*¹⁰⁰ (i.e. frequency of contact) as suggested by Aldrich (1975) and Zhao and Aram (1995). These two dimensions are prominent in network-related literature (Granovetter, 1973; Nelson, 1989).

In particular, respondents were asked to indicate (from a scale 1 to 5, where 1= not at all and 5 = very much) the extent to which their subsidiary had cooperated with the following organisations in performing its business activities: 1) customers, 2) suppliers, 3) distributors, 4) corporate headquarters, 5) sister subsidiaries in the UK or internationally, 6) external consultants, 7) government organisations, 8) academic and research institutions, 9) professional and trade associations. As was clarified in the questionnaire, such cooperation referred to exchanging, sharing and/or combining different types of resources (e.g. human, financial, technological, information, etc.) with such extra-subsidary parties. The identification of specific categories of partners was to a great extent based on Schmid and Schurig’s (2003) relevant study on subsidiary network embeddedness.

¹⁰⁰ Frequency of contact has generally been used as a surrogate variable for the other two components of intensity, i.e. reciprocity of favours and obligations, and friendship (Nelson, 1989).

7.2.1.5 Autonomy

The notion of autonomy, as used in the present study, essentially refers to the extent of the subsidiary's decision-making authority. For measuring the subsidiary autonomy construct, this study relied heavily on previous research employing comparable measurement methods (Hedlund, 1981; Egelhoff, 1988; Young et al., 1988; Roth and Morrison, 1992; Taggart, 1997; Nobel and Birkinshaw, 1998; Birkinshaw et al, 1998; Edwards et al, 2002). In particular, different sets of decisions are usually provided, depending on the focus of each study, while respondents are asked to state the level to which such decisions are usually taken by their own subsidiary versus their parent corporation.

In identifying particular decisions, this study was greatly influenced by the items used by Ghoshal and Bartlett (1988) in their study on subsidiary innovation - as adapted by the earlier instrument developed and used by De Bodinat (1975). The set of decisions employed in the present study includes *product decisions* (Ghoshal and Bartlett, 1988; Roth and Morrison, 1992; Taggart, 1997, 1999; Birkinshaw and Hood, 2000; Edwards et al, 2002), *process decisions* (Ghoshal and Bartlett, 1988; Birkinshaw and Hood, 2000; Roth and Morrison, 1992), *financial decisions* (Edwards et al, 2002). In accordance with Birkinshaw and Morrison (1995), Nobel and Birkinshaw (1998) and O'Donnell (2000) both strategic and operational decisions were included¹⁰¹.

In particular, respondents were asked to indicate based on a Likert 1-5 type of scale (where 1 = decision made by the corporate HQ only and 5 = decision made by the subsidiary only) the extent to which the following decisions were made by the corporate headquarters of their MNC versus their own subsidiary (Table 7.2.1.5). It is important to note that, in order to avoid common method bias, the strategic and operational items were provided in mixed sequence.

¹⁰¹ The distinction between strategic and operational autonomy was also statistically verified through principal component analysis in the autonomy construct.

Table 7.2.1.5 Decisions for Measuring Subsidiary Autonomy
<i>Strategic decisions</i>
<ol style="list-style-type: none"> 1. Expanding the current scope of business activity (e.g. R&D, marketing, manufacturing, etc.) 2. Developing a major new product offering 3. Developing a new major process (e.g. administrative, manufacturing, management, etc.)
<i>Operational Decisions</i>
<ol style="list-style-type: none"> 4. Formulation of this subsidiary's annual budget 5. Decisions over employee pay and rewards 6. Recruitment and promotion to managerial positions

7.2.1.6 Subsidiary Role

As has been thoroughly explained in Chapter 2, the present research follows Gupta and Govindarajan's (1991, 2000) categorisation of subsidiary roles based on knowledge flows. In accordance with Gupta and Govindarajan (1991, 2000), this study focuses on the transfer of *largely procedural types of knowledge* (e.g. product designs, distribution know-how, etc), but not on the transfer of largely declarative types of knowledge (e.g. monthly financial statements).

In particular, Gupta and Govindarajan (1991, 2000) distinguish two aspects of knowledge flows: the *magnitude of transactions* (the extent to which subsidiaries engage in knowledge transfers) and the *directionality of the transactions* (whether subsidiaries are providers or receivers of knowledge). Also, in accordance with Gupta and Govindarajan (2000) different areas of knowledge were indicated: 1) research and development, 2) product design, 3) materials procurement and purchasing, 4) manufacturing operations, 5) distribution, 6) marketing and sales, 7) customer service, and 8) management systems and practices. This categorisation allows for the examination of knowledge flows within the MNC system in different types of subsidiaries, i.e. irrespective of their value-adding activity, hence satisfying the objectives of the present research.

In particular, following Gupta and Govindarajan (2000), respondents were asked to indicate on a scale from 1 to 5 (ranging from 1 = not at all to 5 = very much) the extent to which their subsidiary engaged in the transfer of knowledge and skills in the above eight areas, in each of the following directions: 1) provides knowledge and skills to the parent, 2) provides knowledge and skills to other subsidiaries, 3) receives knowledge and skills from the parent, 4) receives knowledge and skills from other subsidiaries. Following Gupta and Govindarajan's logic, responses across the eight items/areas were averaged to yield

composite measures of knowledge outflows to HQs, knowledge outflows to SSs, knowledge inflows from HQs and knowledge inflows from SSs.

Table 7.2.1.6: Indicators of Subsidiary Role	
Directionality	Areas
The subsidiary RECEIVES “strategic knowledge and skills” FROM sister subsidiaries / corporate headquarters:	...Regarding the following: <ol style="list-style-type: none"> 1. Research & Development 2. Product design 3. Materials procurement & purchasing 4. Manufacturing operations 5. Distribution 6. Marketing & Sales 7. Customer service 8. Management systems & practices
The subsidiary PROVIDES “strategic knowledge and skills” TO sister subsidiaries / corporate headquarters:	

7.2.1.7 Opportunity Identification

The operationalisation of the opportunity identification construct relied heavily on entrepreneurship literature. The particular concept has only been studied with respect to individual entrepreneurs, i.e. their particular characteristics and the process through which they identify opportunities. Entrepreneurship literature has empirically investigated the notion of opportunity and the process of OI mainly through longitudinal studies, experiments or simulations (Eckhardt and Shane, 2003). Entrepreneurship researchers instruct scholars to consider qualitative methods (Gaglio and Katz, 2001) and experimental studies (Shane, 2000; Gaglio and Katz, 2001; Shepherd and DeTienne, 2005), given that they avoid much of the retrospective and self-reporting bias associated with survey studies. However, most recent work on opportunities and OI tends to consider the benefits of the survey approach (Corbett, 2005, 2007), particularly suitable for studying the notion of OI at an organisational level and for enhancing result generalisability.

In developing an empirical investigation of subsidiary OI, the present study was informed by previous research on OI in both incorporating relevant recommendations and also avoiding potential problems (Busenitz, 1996; Gaglio and Katz, 2001). In particular, entrepreneurship research emphasises the importance of acknowledging not only the number of opportunities identified, but also the value of these opportunities, i.e. a measure of “innovativeness” (Amabile, 1990; Shane, 2000; Fiet, 2002). To address this issue, the

present study ((based on the work of Shepherd and DeTienne, 2005) employed two variables to capture the OI construct.

The *first variable (OI)* measured the extent to which opportunities had been identified at the individual subsidiary level, i.e. the general level of OI within the subsidiary boundaries. Similar to prior studies (Hills and Shrader, 1998; Singh et al, 1999), respondents were asked to indicate the extent to which their subsidiary had identified opportunities over the past three years. In particular, based on the findings of the exploratory case-studies, the extent of OI was matched to particular internal and external sources of opportunities; hence respondents were asked to specify (in a Likert-type of scale ranging from 1 to 5, where 1=not at all and 5=very much), the extent to which their subsidiary had identified opportunities over the past three years from the following sources¹⁰² (Table 7.2.1.7a):

Table 7.2.1.7a: Sources of OI at the Subsidiary Level	
<i>Internal, within the multinational corporation...</i>	
1.	From subsidiary employees
2.	From subsidiary management
3.	From the corporate headquarters
4.	From sister subsidiaries in the UK or internationally
<i>External, through any type of interaction(s) with...</i>	
5.	The subsidiary's customers
6.	The subsidiary's suppliers
7.	The subsidiary's distributors
8.	External consultants
9.	Government organisations
10.	Academic and research institutions
11.	Professional and trade associations

The *second variable (Radical OI)* measured the extent to which radical (i.e. innovative) opportunities had been identified within the subsidiary boundaries over the past three years (following a Likert-type of scale ranging from 1 to 5, where 1=none and 5=very many) (Table 7.2.1.7b). As explained in Chapter 4, the particular focus on Radical OI was based on Schumpeter's (1934) notion of "opportunity creation", a concept relating to new resource combinations, rather than optimisation of existing resources (Schumpeter, 1934; Ripsas, 1998; Ardichvili et al., 2003). Radical OI has generally been associated in literature

¹⁰² These possible sources emerged during the exploratory case study research (Chapter 6).

with opportunities that represent a clear departure from existing practices and business goals, for example opportunities on new products, processes and technologies. The particular focus on Radical OI was considered essential¹⁰³, given its tremendous impact on economic performance (Poynter and White, 1989; Roth and Morrison, 1992; Dunning, 1994), economic growth (Schumpeter, 1934; Brown and Eisenhardt, 1998), and its increasing criticality for ensuring organisational survival (Michalski, 2006) (see also Chapter 4).

Table 7.2.1.7b: Radical OI at the subsidiary level
<i>Please indicate the extent to which the opportunities that this subsidiary has identified over the past three years belong to the following classifications:</i>
<ol style="list-style-type: none"> 1. Opportunities far from current business practices of the subsidiary 2. Opportunities far from existing subsidiary organisational goals 3. Opportunities that led to significant changes in products, processes, and/or technologies

7.2.1.8 Entrepreneurial Performance (Output)

As has been explained in Chapter 4, the term “entrepreneurial performance” is used in this study to refer to the output of subsidiary entrepreneurship, i.e. the outcome of entrepreneurial activities that have been undertaken at the subsidiary-level. Whilst such entrepreneurial activities could have a more local or international orientation, or they can be mainly strategic or operational in nature, they are essentially manifestations of subsidiary entrepreneurship.

Consequently, the notion of entrepreneurial performance (output) basically describes entrepreneurial activity at the subsidiary level, and hence is close to the prominent concept of subsidiary initiative (Birkinshaw, 1997; Birkinshaw and Hood, 1998). However, as has been explained in Chapter 2 (Subsidiary Literature) and as was evidenced during the qualitative research (Chapter 6, Section 6.3), subsidiary entrepreneurship is a concept broader than subsidiary initiative. Whilst subsidiary initiative is mainly linked to the pursuit of opportunities that have impact on the rest of the MNC (Birkinshaw and Ridderstråle, 1999), subsidiary entrepreneurship can also encompass limited-scope entrepreneurial activities that have impact at the subsidiary level only. Hence, this study views subsidiary entrepreneurship as a broader concept that may be exhibited through various and different types of initiatives, irrespective of their scope and magnitude.

¹⁰³ The consideration of Radical OI at the subsidiary-level is important, given that different antecedents and outcomes may be associated with this particular construct (than with OI).

Nonetheless, in order to measure the output of subsidiary entrepreneurship, i.e. the notion of subsidiary entrepreneurial performance, this research is based on the earlier operationalisation of subsidiary initiative (Birkinshaw et al, 1998). In measuring subsidiary initiative, previous research has identified the extent to which particular manifestations of subsidiary initiative take place at the subsidiary level (Birkinshaw et al, 1998). These manifestations were found to load into a single construct, hence depicting subsidiary initiative.

Following the same method of operationalisation, this study measures (through a Likert-type of scale ranging from 1 to 5, where 1= not at all and 5 = very much) the extent to which the responding subsidiaries had pursued six particular entrepreneurial activities (during the past three years). These activities were identified based on a review of literature and the examples of entrepreneurial output provided by management during the qualitative research (also presented in more detail in Chapter 6, Table 6.2). Given that the present research views entrepreneurship as a broader concept, different options of entrepreneurial activities were provided so as to be applicable to different types of subsidiaries.

Consequently, the following list of entrepreneurial activities was provided: 1) entering (a) new market(s), 2) developing a major new product offering, 3) developing a new technology, 4) developing a new major process (e.g. administrative, manufacturing, management etc.), 5) restructuring the organisational structure, involving creation or elimination of departments, 6) developing innovative work practices.

The identification of particular activities was based on the exploratory study of Birkinshaw and Ridderstråle (1999) on subsidiary entrepreneurial initiative and also on the findings of the exploratory case study research of the present study. These activities, whilst also described as manifestations of subsidiary entrepreneurship during the case study research, fall under Stopford and Baden-Füller's (1994) definition of entrepreneurial activity as comprising the creation of new business activity, subsidiary transformation and renewal, and subsidiary-driven change of the market rules. In a similar vein, Ghoshal and Bartlett's (1988) study includes administrative, product and process innovations that can take place in entrepreneurial subsidiaries involved in various types of value adding activities and not only R&D operations.

Also, based on previous research (Dutton et al., 1997) and the findings of the qualitative research, both "strategic" and "operational" entrepreneurial activities were identified and

provided as options¹⁰⁴. Activities 1 – 3 in Table 7.2.1.8 below are more strategic in nature, while activities 4 – 6 tend to be more operational in nature¹⁰⁵. Finally it is important to note that, in order to avoid common method bias, the strategic and operational items were provided in mixed sequence.

Table 7.2.1.8: Types of Subsidiary Entrepreneurial Performance (Output)
Strategic
1. Entering (a) new market(s) 2. Developing a major new product offering 3. Developing a new technology
Operational
4. Developing a new major process (e.g. administrative, manufacturing, management etc.) 5. Restructuring the organisational structure, involving creation or elimination of departments 6. Developing innovative work practices

7.2.1.9 Subsidiary Performance

Measuring subsidiary performance has been an inherent difficulty in the present study, given its generic orientation, i.e. studying subsidiaries involved in different types of value-adding activities and operating in different industries. Hence, apart from a thorough review of relevant literature, the exploratory case studies provided a significant input in terms of identifying appropriate measures of subsidiary performance. Whilst the previous Chapter (Chapter 6 on Qualitative Research) provides a detailed analysis on the issue, it is important to refer to some key insights in the following paragraph. These insights, along with relevant literature, greatly assisted in the development of a measurement scale suitable for the purposes of the present study.

Based on the exploratory case studies, a large part of the benefits of subsidiary OI and entrepreneurship tend to be non-financial in nature and thus difficult to quantify. Moreover, each subsidiary, depending on the nature of its main value-adding activity, uses different measures to quantify its performance. In addition, some subsidiaries may not be encouraged to measure their financial performance separately as a site (Andersson et al, 2001). As a

¹⁰⁴ The case-study research brought into light the relevance of both “strategic entrepreneurship” (relating to more radical opportunities identified at the subsidiary level, the development of which requires additional resources and corporate approval) and “operational entrepreneurship” (relating opportunities with a more operational locus, developed as part of the “entrepreneurial” subsidiary’s daily activities).

¹⁰⁵ Such a differentiation between “strategic” and “operational” entrepreneurship was also corroborated through principal component analysis on the sample data.

result, measuring the impact of entrepreneurship on different types of subsidiaries might involve the use of dissimilar types of metrics.

Therefore, in measuring the bottom-line effect of subsidiary entrepreneurship of subsidiary performance, this study focuses on managerial satisfaction with performance. Satisfaction with performance is based on subjective perceptions and may capture non-financial aspects of performance, while its use is also recommended in international business studies (e.g. Zou and Stan, 1998). Further, Lumpkin and Dess (1996) in the entrepreneurship field posit that satisfaction of managers with performance may need to be weighted more heavily when estimating firm performance.

The scale employed by this study is based on previous studies who asked respondents to rank their firm's performance in terms of overall performance/success compared to other similar firms (e.g. Dess and Robinson, 1984; Anderson and Zeithaml, 1984; Doyle et al, 1992; Priem et al, 1995; Shaw and Wong, 1996). Such a comparison to other similar firms provides a form of control for differences in performance that may be due to industry (Dess, Ireland and Hitt, 1990) and value adding activity. Besides, subjective, self-reported performance measures - such as those used in this study - have been found to be highly correlated with objective measures of firm performance (Dess and Robinson, 1984; Robinson and Pearce, 1988; Venkatraman and Ramanujam, 1987; Geringer and Hebert, 1991).

Also, multiple relative measures were used to reflect the multidimensionality of the performance construct (Cameron, 1978; Chakravarthy, 1986). An important insight of the exploratory case study research was that, upon evaluating the impact of subsidiary entrepreneurship on subsidiary performance, four key dimensions should be taken into consideration (Taggart, 1999): **First**, performance is assessed based on the subsidiary's individual objectives, as these have been set by the subsidiary management team, with or without involvement of the parent corporation (Andersson, et al, 2001). **Second**, performance is assessed based on the expectations of the parent corporation; this pressure translates into a need for the subsidiary to fulfil the parent's expectations. Regarding this pressure for performance, Birkinshaw and Morrison (1995) note accordingly: "*Subsidiary performance is a complex construct, because it depends on what the parent company is trying to achieve*" (Birkinshaw and Morrison, 1995, p.740). The parent corporation may set its own private objectives based on which subsidiary performance is measured, which might differ significantly from subsidiary perspectives (Prahalad and Doz, 1987; Andersson, et al, 2001). **Third**, performance is assessed based on environmental pressures; several

researchers have argued that firm performance is to a great extent determined by the degree of match with overall environmental pressures (Miller and Friesen, 1978; Miles and Snow, 1984; Porter, 1985; Prahalad and Doz, 1987; Bartlett and Ghoshal, 1989; Westney, 1994). *Fourth*, performance is assessed based on industry and market norms (Porter, 1980); this pressure translates into a need for the subsidiary to differentiate and to out-innovate competition.

The above four dimensions were taken into careful consideration when building the subsidiary performance measurement scale. In particular, respondents were asked to evaluate (through a Likert-type of scale ranging from 1 to 5, where 1=low and 5=high, their *overall level of satisfaction* with the following:

- 1) The subsidiary's performance over the past three years relative to the subsidiary's objectives.
- 2) The subsidiary's performance over the past three years relative to the subsidiary's main competitors.
- 3) The subsidiary's performance over the past three years relative to other sister subsidiaries in the UK or internationally operating in the same area of business activity.
- 4) The subsidiary's performance over the past three years relative to the corporate headquarters' expectations.

7.2.1.10 Environmental Dimensions

Two environmental dimensions were employed to capture subsidiary management's perceptions of the external environment: environmental uncertainty and environmental munificence. These two constructs are widely used in empirical studies that consider environmental effects (Keats and Hitt, 1988; Lawless and Finch, 1989).

Environmental uncertainty refers to the rate of change and innovation in the industry, along with the uncertainty or unpredictability of the actions of competitors and customers (Lawrence and Lorsch, 1967; Thompson, 1967; Dess and Beard, 1984; Miller and Dröge, 1986). Based on these characteristics, firms may be positioned on an environmental continuum ranging from stability to uncertainty. The environmental uncertainty construct was measured drawing on the scale developed by Miller and Friesen (1982), based on the earlier scales of Khandwalla (1977) and Miles and Snow (1978), and also adapted by Covin and Slevin (1989). In particular, environmental uncertainty was measured through a 1 -5 semantic differential scale, with 1 indicating low levels and 5 high levels of environmental uncertainty (Table 7.2.1.10a).

Table 7.2.1.10a: Measuring Environmental Uncertainty						
<i>With respect to this subsidiary's market / industry...</i>						
1. This subsidiary must rarely change its competitive practices to keep up with the market and competitors	1	2	3	4	5	This subsidiary must change its competitive practices extremely frequently
2. The rate at which product offerings are becoming obsolete in the market/industry is very slow	1	2	3	4	5	The rate of obsolescence is very high
3. Actions of competitors are quite easy to predict	1	2	3	4	5	Actions of competitors are unpredictable
4. Demand and customer preferences are fairly easy to forecast	1	2	3	4	5	Demand and customer preferences are unpredictable
5. The technology concerning our product offerings is not subject to dramatic change and is well established	1	2	3	4	5	The technology concerning our product offerings changes often and in major ways

Environmental munificence refers to the availability of environmental resources that support firm growth (Aldrich, 1979; Dess and Beard, 1984). As opposed to munificent environments, Covin and Slevin (1989, p.75) define hostile environments as “characterised by precarious industry settings, intense competition, harsh, overwhelming business climates, and the relative lack of exploitable opportunities”. The environmental munificence construct was measured drawing on the scales developed by Dess and Beard (1984), Miller and Friesen (1984) and adapted by Covin and Slevin (1989, 1990). Other researchers (Covin and Slevin, 1990; Zahra, 1991, 1993; Dickson and Weaver, 1997) have used variants of this measure. In particular, environmental munificence was measured through a 1 -5 semantic differential scale, with 1 indicating high levels of environmental munificence and 5 indicating low levels of environmental munificence, i.e. environmental hostility (Table 7.2.1.10b).

Table 7.2.1.10b: Measuring Environmental Munificence						
<i>The market / industry within which this subsidiary functions is ...</i>						
1. Very safe, posing little threat to the survival and well being of this subsidiary	1	2	3	4	5	Very risky, one false step can mean this subsidiary's undoing
2. Rich in investment opportunities	1	2	3	4	5	Very stressful, exacting, hostile, very hard to keep afloat
3. An environment that this subsidiary can control and manipulate to its own advantage	1	2	3	4	5	A dominating environment in which this subsidiary's initiatives count for little against the tremendous political, technological and competitive forces

Finally, it is important to make a critical observation. Subsidiaries, by definition, operate within two distinct environmental contexts: their local (host-country related) environment and the broader international setting. Studies have focused on the effects of both local environmental conditions (e.g. Bartlett and Ghoshal, 1989; Ghoshal and Nohria, 1989; Rosenzweig and Nohria, 1995; Andersson and Johanson, 1996; Zahra et al., 1997; Birkinshaw and Hood, 1998; Luo and Peng, 1999), and also international environmental characteristics (Dunning, 1994; Poynter and White, 1989; Roth and Morrison, 1992; Zahra and Garvis, 2000) on subsidiary innovativeness and performance. Given that environmental conditions might be dissimilar at a local and international level, the present study measures environmental uncertainty and munificence separately for the local (UK) and the international level (DuBois et al, 1993). Indeed, the insights of the exploratory case-study research (explained in more detail in Section 6.6, Chapter 6) suggest that these two environmental levels might have diverse effects on subsidiary OI and entrepreneurship.

7.2.1.11 Control Variables

As explained in Chapter 4, three control variables were employed in this study: subsidiary age (Frost, 2001), subsidiary size (Zahra et al., 2000), and subsidiary country of origin (Birkinshaw, 1999).

Subsidiary age is generally used as a control variable in relevant studies (Zahra et al., 2000), as it is considered to influence a firm's entrepreneurial activities (Pinchot 1985; Zahra 1991). This control variable was measured by the number of years that the subsidiary has been in operation (Egelhoff, 1984).

Subsidiary size was included as a control variable given its association with corporate innovation in the entrepreneurship literature (Zahra, 1993). As done in past research, this control variable was measured by the number of full-time subsidiary employees (Egelhoff, 1984; Roth et al., 1991; Roth and Morrison, 1992). More specifically, subsidiary size was measured by the log of a subsidiary's total number of employees.

Also, the statistical analysis included dummy variables in the analysis to control for the *subsidiary's country of origin effect* (Birkinshaw, 1999). In particular, two country control variables (U.S.1/0, Europe1/0) were used to account for any effects that might be due to specific triad region-level (i.e. Europe, U.S. and Japan) factors.

7.2.2 Refinement of the constructs

A starting point of the data analysis has been to clearly define the individual constructs and examine the reliability of the respective measurement scales (Hair et al, 2006). Particularly for the constructs that were measured based on multiple items, given that their scale reliability might be artificially high, factor analysis was conducted in order to reduce the number of indicators (items)¹⁰⁶. Orthogonal rotation methods were preferred as most widely used and most suitable for the research goal of reducing data to either a small number of variables or a set of uncorrelated measures for subsequent use in other multivariate techniques (Hair et al, 2006). In particular, varimax rotation was used to simplify factors by maximising the variance of the loadings within factors. In extracting factors, the widely accepted Kaiser-Gutman criterion (i.e. eigenvalues > 1) was employed.

Initially, factor analysis was conducted in the subsidiary networking scale¹⁰⁷ to discover coherent subsets within the variable that are relatively independent of one another. As presented in Table 7.2.2.1, three factors were extracted with high factor loadings, i.e. exceeding 0.60 (Hair et al, 2006). The first factor relates to *networking within the multinational system*, in accordance with literature conceptualising the subsidiary as part of an intra-organisational network (Hedlund, 1986; Bartlett and Ghoshal, 1989; White and Poynter, 1990; Doz and Prahalad, 1991). Andersson and Forsgren (1995, 1996) have referred to such networking activity as “corporate embeddedness”. The second factor related to subsidiary *networking with its direct value chain partners*, i.e. customers, suppliers and distributors. Literature has acknowledged that customers (Håkansson, 1989; Laage-Hellman, 1989; Frost et al., 2002), suppliers (Dosi, 1988; Lindstrand, 2003) and distributors (Schmid and Schurig, 2003) constitute a very important category of network partners. The third factor relates to *networking with external parties, not direct members of the subsidiary’s value chain*. These might include government organisations, academic and research institutions, professional and trade associations, as well as external consultants. Literature has recognised the relevance of such external parties with respect to subsidiary competence building (Taggart, 1989; Schmid and Schurig, 2003). As Table 7.2.2.1 illustrates, communality values are high (above 0.50), indicating that a large amount of the variance has been extracted by the factor solution.

¹⁰⁶ Reducing the number of items per construct was also particularly useful for the next stage of the LISREL analysis. In general, such procedures are recommended for SEM, because they tend to enhance the overall model fit (Hair et al, 2006).

¹⁰⁷ Since it comprised multiple items that could be reduced or grouped.

	<i>Factor 1</i> Within the MNC	<i>Factor 2</i> Direct Value Chain	<i>Factor 3</i> Non Direct Value Chain	Communality
Networking with Customers (DVCNet1)	.03	.70	.04	.50
Networking with Suppliers (DVCNet2)	.01	.80	.06	.65
Networking with Distributors (DVCNet3)	.20	.68	.09	.51
Networking with Corporate HQs (MNCNet1)	.81	.01	.10	.66
Networking with Sister Subsidiaries (MNCNet2)	.76	.20	.07	.62
Networking with External Consultants (NonDVCNet1)	.12	.15	.62	.49
Networking with Government Organisations (NonDVCNet2)	.17	.03	.80	.67
Networking with Academic & Research Institutions (NonDVCNet3)	.09	.05	.78	.61
Networking with Professional & Trade Associations (NonDVCNet4)	.14	.10	.79	.66
Eigenvalue	1.34	1.68	2.28	5.30
Percent variance explained	14.8%	18.6%	25.4%	58.9%

In addition, an important insight of the qualitative analysis (Chapter 6), also supported by relevant literature (Cadogan et al., 1999; Baker and Sinkula, 1999), is that market orientation and learning orientation are closely linked to each other, in that one provides scope for the other. Therefore, a synthesis of literature and the findings of the cross-case analysis gave rise to the notion of “market learning”. Indeed, Table 7.2.2.2 shows a high (0.672) and significant (at the 0.01 level) correlation of the two constructs. Consequently, the two variables (market orientation and learning orientation) were merged into one construct, namely “market learning”.

	1	2	3	4	5	6
1. Innovation Propensity	1					
2. Risk Attitude	.397(**)	1				
3. Proactiveness	.365(**)	.366(**)	1			
4. Market Orientation	.068	-.001	.241(**)	1		
5. Learning Orientation	.154(*)	.056	.215(**)	.672(**)	1	
6. Networking Orientation	.248(**)	.119	.209(**)	.048	.268(**)	1

(Pearson Correlation, N=270)

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

In order to identify an appropriate measurement scale for the new construct, factor analysis was conducted in the items of both scales (measurement scales for market orientation and learning orientation, as adopted from previous studies in order to suit the subsidiary context). To this end, principal component analysis was conducted to reduce the two scales down to a smaller number of components (Tabachnick and Fidell, 1996). The stringent criterion of Hair et al (2006) was employed, suggesting that factor loadings exceeding +0.70 are the goal of any factor analysis, since these are considered indicative of well-defined structure (Hair et al, 2006). Item LearningOr1 was omitted due to its significant cross-loading values. Items MarketOr5, LearningOr2 and LearningOr5 were rejected due to their low communality values (less than 0.60). In order to facilitate the selection of the most representative items, it was decided to select the items with the highest factor loading and communalities. In particular, two variables were selected from each pre-existing scale (market and learning orientation scales respectively) to act as surrogate variables (Hair et al, 2006), in that they are representative of the two principal components. As highlighted in Table 7.2.2.3, these items are MarketOr1, MarketOr2, LearningOr3 and LearningOr4. These have the highest loadings and communalities and hence lead to high scale reliability, as will be shown in the following paragraphs. Consequently, the new “market orientation” measurement scale comprises these four items.

Table 7.2.2.3: Principal Components of “Market Learning”			
	1	2	Communality
Subsidiary responds to customer needs in a timely fashion (MarketOr1)	.779	.149	.629
Subsidiary emphasises customer satisfaction as a key objective (MarketOr2)	.841	.151	.730
Subsidiary measures customer satisfaction on a regular basis (MarketOr3)	.695	.348	.605
Customer information is shared throughout functions and departments (MarketOr4)	.704	.327	.602
All departments and/or functions contribute to customer value (MarketOr5)	.665	.317	.542
Subsidiary continuously collects information about customers and competitors (LearningOr1)	.449	.594	.555
Subsidiary shares information effectively with the corporate headquarters and sister subsidiaries (LearningOr2)	.128	.697	.502
Subsidiary uses all the above information in problem solving (LearningOr3)	.311	.791	.722
Subsidiary integrates information from a variety of sources to assist in decision-making (LearningOr4)	.258	.779	.673
Subsidiary has been able to avoid some potentially serious mistakes by taking advantage of information (LearningOr5)	.205	.685	.511
Eigenvalue	3.157	2.913	6.070
Percent variance explained	31.568	29.131	60.699

Factor analysis was also conducted in the OI construct to identify coherent subsets within the particular variable that are relatively independent of one another (Table 7.2.2.4). Four factors were extracted with high factor loadings, i.e. exceeding 0.60 (Hair et al, 2006). Factor 1 relates to *OI that can take place internally*, within the subsidiary boundaries, as an initiative of subsidiary employees and management. Factor 2 relates to *intra-MNC identification of opportunities*. Factor 3 relates to *OI through interaction with members of the subsidiary's direct value chain*, while Factor 4 relates to *OI through interaction with external parties, non-direct value chain members*.

Previous research tends to emphasise subsidiary embeddedness in two distinctly different business networks: the corporate network consisting of relationships within the MNC and the external network comprising relationships in the subsidiary's local and international market (Andersson and Forsgren, 1995). Both types of networks have been linked to subsidiary innovation. Intra-MNC networking has been acknowledged as particularly important in the subsidiary innovation process (Ghoshal and Bartlett, 1988; De Meyer, 1993), while external network partners have been considered as key sources of innovation, new ideas and business practices (Von Hippel, 1988; Håkansson, 1989; Laage-Hellman, 1989; Powell et al., 1996; Tsai and Ghoshal, 1998).

In examining the theme of subsidiary OI, this research goes into a more thorough level of analysis. In particular, it considers four possible sources of opportunities: *internal sources* (opportunities identified by subsidiary employees and management), *corporate sources* (opportunities identified through interaction with corporate parent and sister subsidiaries), *external sources in the subsidiary's direct value chain*, or *external sources in the subsidiary's non-direct value chain*. For purposes of the SPSS analysis, and given that the reliability for the entire scale is high, an average of these four sources was used as a measure of the overall OI level within the subsidiary boundaries. For purposes of the SEM analysis (Section 7.4 in the present chapter), these four sources were used as reliable items of the OI measurement scale.

Table 7.2.2.4: Factor Analysis in OI					
	<i>Factor 1</i>	<i>Factor 2</i>	<i>Factor 3</i>	<i>Factor 4</i>	Communality
	Internal OI	Intra-MNC OI	Direct Value Chain OI	Non Direct Value Chain OI	
OI from Subsidiary Employees	.85	.01	.01	.11	.73
OI from Subsidiary Management	.83	.12	.10	.10	.73
OI through interaction with Corporate HQs	.09	.81	.02	.11	.68
OI through interaction with Sister Subsidiaries	.04	.78	.14	.08	.64
OI through interaction with Customers	.37	.15	.64	.06	.50
OI through interaction with Suppliers	.01	.12	.83	.16	.72
OI through interaction with Distributors	.06	.19	.69	.18	.56
OI through interaction with External Consultants	.03	.18	.14	.68	.51
OI through interaction with Government Organisations	.04	.00	.16	.71	.54
OI through interaction with Academic & Research Institutions	.16	.12	.04	.77	.64
OI through interaction with Professional & Trade Associations	.09	.00	.09	.80	.65
Eigenvalue	1.60	1.41	1.43	2.31	6.75
Percent variance explained	14.5%	12.77%	13.02%	21.0%	61.29%

Also, correlations amongst the key constructs of this study were examined. Apart from the high correlation between the market orientation and the learning orientation constructs, high correlations were also evidenced amongst subsidiary knowledge flows (Table 7.2.2.5). In particular, knowledge inflows from the corporate headquarters were highly correlated with knowledge outflows to the corporate headquarters (0.650). Also, knowledge inflows from sister subsidiaries were highly correlated with knowledge outflows to sister subsidiaries (0.677). These correlations are significant at the 0.01 level. Consequently, the correlated items were merged into two constructs: *knowledge flows with HQs* (both inflows and outflows) and *knowledge flows with sister subsidiaries* (both inflows and outflows). These two constructs were used in subsequent multivariate analysis. Also, there is no high correlation amongst these two constructs and between these two constructs and subsidiary autonomy (for correlations amongst the refined constructs see Table 1 in Appendix 5).

Finally, correlations were particularly high amongst the local (UK) and international environmental dimensions (Table 7.2.2.6). In particular, UK munificence and international munificence were highly correlated (0.771), and so were UK uncertainty and international uncertainty (0.829). This was also evidenced during the qualitative research. Consequently, two environmental dimensions were derived, munificence and uncertainty, and were used in subsequent multivariate analysis.

Table 7.2.2.5: Correlations amongst knowledge flows				
	1	2	3	4
1. Knowledge Inflows from SSs	1			
2. Knowledge Inflows from HQs	.265(**)	1		
3. Knowledge Outflows to SSs	.677(**)	.200(**)	1	
4. Knowledge Outflows to HQs	.250(**)	.650(**)	.432(**)	1

(Pearson Correlation, N=270)

** Correlation is significant at the 0.01 level (2-tailed)

Table 7.2.2.6: Correlations amongst environmental variables				
	1	2	3	4
1. International Munificence	1			
2. International Uncertainty	.304(**)	1		
3. UK Munificence	.771(**)	.382(**)	1	
4. UK Uncertainty	.323(**)	.829(**)	.462(**)	1

(Pearson Correlation, N=270)

** Correlation is significant at the 0.01 level (2-tailed)

Upon refinement of the constructs, the respective scale reliabilities were examined. Table 7.2.2.7 presents the scale reliability results, as indicated by Cronbach's α . Cronbach's α should be above 0.60 for exploratory research and above 0.70 for confirmatory research (Nunnally and Bernstein, 1994; Peter, 1979). Cronbach's α values for this study range between 0.71 and 0.92, hence ensuring high scale reliability for all the studied constructs.

Table 7.2.2.7: Scale Reliability Analysis		
Constructs		Cronbach's α
<i>Subsidiary Entrepreneurial Capabilities</i>		
Innovation propensity		0.73
Risk attitude		0.76
Proactiveness		0.73
Market orientation		0.79
Learning orientation		0.81
	Market Learning	0.78
Networking orientation		0.73
	Networking with Direct Value Chain partners	0.71
	Networking with Non-Direct Value Chain partners	0.77
	Networking within the MNC	0.74
<i>Corporate Context</i>		
Autonomy		0.81
Knowledge Inflows from HQs		0.81
Knowledge Inflows from SSs		0.91
Knowledge Outflows to HQs		0.88
Knowledge Outflows to SSs		0.92
	Knowledge Flows (IN & OUT) with HQs	0.71
	Knowledge Flows (IN & OUT) with SSs	0.81
<i>External Environment</i>		
Munificence		0.87
Uncertainty		0.91
<i>Performance Types</i>		
Entrepreneurial Performance (Output)		0.72
Subsidiary Performance		0.76
<i>Opportunity Identification</i>		
OI		0.71
Radical OI		0.75

7.3 Multiple Regression Analysis

Prior to building the regression models, analysis was conducted to ensure that the data are meeting the *three basic assumptions of regression*. First, with respect to *data normality* (i.e. variable distributions approximate normal distributions), univariate and multivariate normality was examined through histograms, normal probability plots, as well as the statistical tests of Shapiro-Wilks and a modification of the Kolmogorov-Smirnov test. Each statistical test calculated the significance for the differences from a normal distribution. In cases of small differences from the normal distribution, data transformations were attempted but did not affect the regression results, given that regression is rather robust with

respect to normality (Hair et al, 2006). Second, regarding the assumption of *homoscedasticity* (i.e. the dependent variable exhibits equal levels of variance across the range of predictor variables), an examination of the residual scatterplots revealed no particular pattern of increasing or decreasing residuals. Third, as concerns *linearity* (of the relationship between dependent and independent variables), residual plots were examined to identify any nonlinear patterns in the data. Residuals for the independent variables exhibited no non-linear relationships with the dependent variables. Consequently, the data was deemed suitable for multiple regression analysis.

7.3.1 Descriptive statistics

Before proceeding with the regression analysis to test the hypotheses proposed by the research model, it is worth examining the general descriptive statistics of this study's sample data (Table 7.3.1.1). A general observation is that the three elements of subsidiary entrepreneurial orientation, i.e. innovation propensity, risk attitude and proactiveness, are close to the mean (close to 3 for this study's Likert scales ranging from 1 to 5). Also, the subsidiaries that responded in the survey tend to exhibit above average levels of market learning (mean = 3.62). Across this study's sample, networking with partners in the subsidiary's direct value chain (i.e. customers, suppliers, distributors) is on average higher than the other two types of networking. The mean for subsidiary autonomy is close to average (mean = 3.13), while knowledge flows appear below average. The mean for munificence scores 3.12, which essentially describes *environmental hostility* (i.e. the opposite of munificence), since the variable was measured through a semantic differential scale with 1 indicating high levels of munificence and 5 indicating high levels of hostility. Another interesting observation is that the responding subsidiaries seem to score lower than average in terms of their OI ability, while Radical OI scores are even lower. However, their perceived performance (both entrepreneurial and overall performance) tends to be above average.

Table 7.3.1.2 presents means across the country-Triad; U.S.A., Europe and Japan. Also, the significance of the differences in means is tested (F-statistic). While literature has generally examined differences across subsidiaries of triad-nation firms (U.S., Japan and Europe), there seems to be scarcity of studies examining country-of-origin effects with respect to the theme of subsidiary entrepreneurship and OI. An important observation in Table 7.3.1.2 is that U.S. subsidiaries tend to score higher in terms of their OI ability and their entrepreneurial performance (output). This disparity could be partly attributed to the

increased levels of freedom that the U.S. subsidiaries enjoy (Bowman et al, 2000). As will be explained in the following sections (Sections 7.3.2 and 7.4.2), the multiple regression and the SEM analysis also brought to light a country-of-origin effect. These paragraphs and more specifically Section 7.5.6 will deal more explicitly with this issue.

Table 7.3.1.1: Descriptive Statistics of the Sample Data*		
	Mean	Std. Deviation
<i>Subsidiary Entrepreneurial Capabilities</i>		
Innovation propensity	2.92	0.928
Risk attitude	2.93	0.826
Proactiveness	3.30	0.906
Market Orientation	4.01	0.768
Learning Orientation	3.64	0.747
Market Learning	3.62	0.828
Networking within the MNC	3.26	0.876
Networking with Direct Value Chain partners	4.24	0.809
Networking with Non-Direct Value Chain partners	2.66	0.903
<i>Corporate Context</i>		
Autonomy	3.13	0.808
Flows with HQs	2.62	0.869
Flows with SSs	2.29	0.909
<i>External Environment</i>		
Munificence (Hostility)	3.12	0.739
Uncertainty	3.04	0.731
<i>Opportunity Identification</i>		
OI	2.36	0.487
Radical OI	1.94	0.731
<i>Performance</i>		
Entrepreneurial Performance (Output)	3.21	0.890
Subsidiary Performance	3.58	0.857

*Likert scales 1-5

Valid N = 270

Note: All the variables included in Table 7.3.1.1 are measured based on 1 - 5 Likert type of scales, with 1 indicating low levels and 5 high levels of a specific variable. The only exception is environmental munificence. As explained in Section 7.2.1.10, this variable was measured based on a semantic differential scale, with values closer to 1 indicating a munificent environment, while values closer to 5 indicating a hostile environment (i.e. the opposite). Table 7.3.1.1 shows that the sample mean for environmental munificence is 3.12, hence indicating subsidiary management's perceptions of a hostile external environment.

Table 7.3.1.2: Differences of means based on country of origin				
	USA	Europe	Japan	F (sig.)
<i>Subsidiary Entrepreneurial Capabilities</i>				
Innovation propensity	2.84	2.94	2.99	
Risk attitude	2.89	2.77	2.51	4.641(*)
Proactiveness	3.41	3.39	3.08	3.608(*)
Market Orientation	3.91	4.10	3.97	
Learning Orientation	3.53	3.68	3.69	
Market Learning	3.54	3.70	3.60	
Networking within the MNC	3.37	3.10	3.35	
Networking with direct value chain partners	4.28	4.26	4.18	
Networking with non-direct value chain partners	2.83	2.64	2.52	
<i>Corporate Context</i>				
Autonomy	3.15	3.12	3.10	
Flows with HQs	2.63	2.52	2.76	
Flows with SSs	2.28	2.33	2.22	
<i>External Environment</i>				
Munificence (Hostility)	3.13	3.08	3.16	
Uncertainty	3.13	2.89	3.17	4.287(*)
<i>Opportunity Identification</i>				
OI	2.47	2.28	2.37	3.745(*)
Radical OI	2.09	1.89	1.87	
<i>Performance</i>				
Entrepreneurial Performance (Output)	3.48	3.11	3.06	5.692(***)
Subsidiary Performance	3.55	3.67	3.49	

F-values are a result of one-way ANOVA test where ***, **, and * represent statistical significance at 0.001, 0.01 and 0.05 respectively.

Note: All the variables included in Table 7.3.1.2 are measured based on 1 - 5 Likert type of scales, with 1 indicating low levels and 5 high levels of a specific variable. The only exception is environmental munificence. This variable was measured based on a semantic differential scale (Section 7.2.1.10), with values closer to 1 indicating a munificent environment, while values closer to 5 indicating a hostile environment (i.e. the opposite).

7.3.2 Regression models

The initial effort to examine the relationships proposed by the research model involved conducting multiple regression analysis. Multiple regression analysis is used to analyse the relationship between a single dependent variable and several independent (predictor) variables (Hair et al, 2006). Therefore, *the conceptual model was split into three sets of dependence relationships*, which were tested through three different regression models (Figure 7.1). The first set of relationships examines the effect of subsidiary, corporate and environmental factors on subsidiary OI (either OI or Radical OI). The second set tests the extent to which subsidiary OI (either OI or Radical OI) drives subsidiary entrepreneurial performance (output). The third set of relationships examines the impact of entrepreneurial performance on the overall subsidiary performance. The results of the OLS regressions for each of these sets of relationships are presented in the following paragraphs.

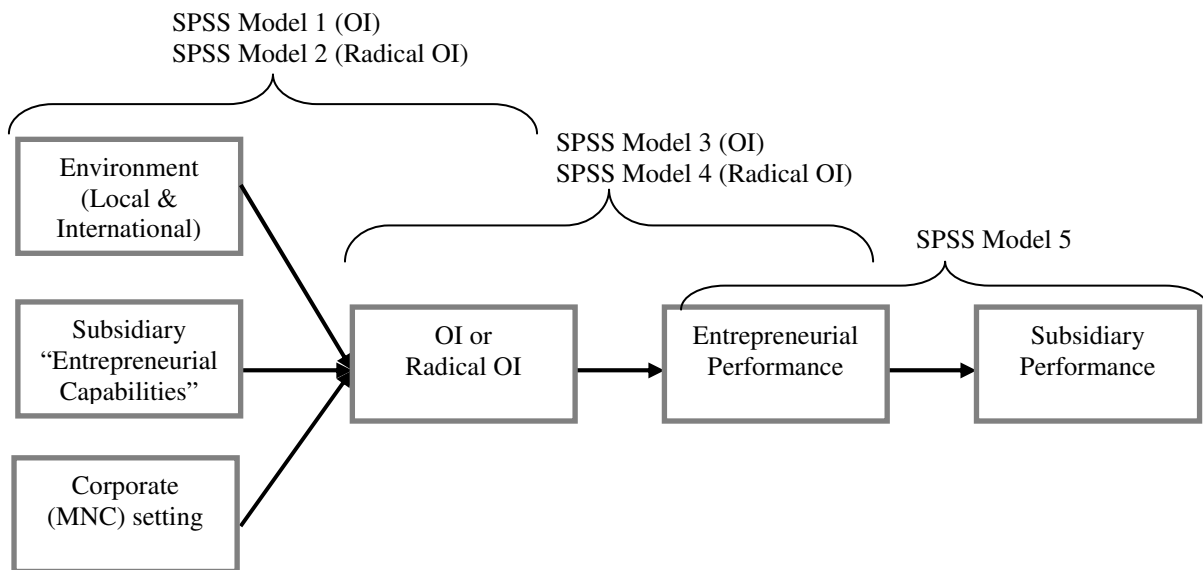


Figure 7.1: The dependence relationships examined by each regression model

Table 7.3.2.1 presents the OLS regression results with respect to the first set of dependence relationships. **SPSS Model 1** examines the impact of subsidiary, corporate and environmental factors on the subsidiary's ability to identify opportunities (**OI**). Based on the results of the linear regression analysis, critical "entrepreneurial capabilities" at the subsidiary level are the subsidiary's *innovation propensity* ($p < 0.01$) and the subsidiary's *networking with external, non-direct value chain partners* ($p < 0.001$), such as government organisations, academic and research institutions, professional and trade associations, as well as external consultants. These are critical capabilities that enhance the subsidiary ability to identify a larger set of opportunities. As regards corporate-related factors, the subsidiary's *knowledge flows (both in- and outflows) with the parent corporation* ($p < 0.001$) seem to have a positive and significant influence on subsidiary OI. Finally the external environment was also found to pose a significant direct but negative effect on the general level of OI. In particular, high levels of *environmental hostility* appear to decrease the subsidiary's ability to identify opportunities ($p < 0.05$). R^2 for SPSS Model 1 is 0.439, while adjusted R^2 is 0.404, hence indicating good model fit.

SPSS Model 2 examines the impact of subsidiary, corporate and environmental factors on the particular identification of radical opportunities at the subsidiary level (**Radical OI**). Whilst *networking with external, non-direct value chain partners* ($p < 0.001$) appears significant (as has been for SPSS Model 1), *risk attitude* and not *innovation propensity* was found statistically significant as a key driver of Radical OI ($p < 0.01$) (Table 7.3.2.1). As regards corporate-related factors, the subsidiary's *autonomy* ($p < 0.001$) seems to have a positive and significant influence on Radical OI ($p < 0.05$). As in the case of SPSS Model 1, environmental hostility was also found to pose a significant direct but negative effect on subsidiary Radical OI ($p < 0.05$). R^2 for SPSS Model 2 is 0.270, while adjusted R^2 is 0.224, hence indicating good model fit.

SPSS Model 3 (Table 7.3.2.2) examines the impact of OI on the subsidiary's entrepreneurial performance, i.e. its entrepreneurial output, while **SPSS Model 4** the effect of Radical OI on subsidiary entrepreneurial performance. Both relationships were found statistically significant ($p < 0.001$), hence indicating that higher levels of OI or Radical OI translate into increased entrepreneurial activity (output) at the subsidiary level. Both models have good fit, though R^2 for SPSS Model 3 ($R^2 = 0.262$ and adjusted $R^2 = 0.248$) is higher than R^2 for SPSS Model 4 ($R^2 = 0.226$ and adjusted $R^2 = 0.212$). In addition, the control variable relating to subsidiary size is statistically significant (at $p < 0.001$) in both regression models. This means that the relationship between OI and entrepreneurial output, or Radical OI and

entrepreneurial output, is stronger for subsidiaries of larger size (in terms of number of employees).

Independent Variables	Dependent Variables	
	<i>SPSS Model 1</i> OI	<i>SPSS Model 1</i> Radical OI
<i>Subsidiary Entrepreneurial Capabilities</i>		
Innovation propensity	.197(**)	
Risk attitude		.182(**)
Proactiveness		
Market Learning		
Networking within the MNC		
Networking with Direct Value Chain partners		
Networking with Non-Direct Value Chain partners	.323(***)	.298(***)
<i>Corporate Context</i>		
Autonomy		.133(*)
Flows with HQs	.213(***)	
Flows with SSS		
<i>External Environment</i>		
Hostility	-.113(*)	-.151(*)
Uncertainty		
<i>Control Variables</i>		
Size		
Age		
Europe		
U.S.A.	.166(*)	
ANOVA F (sig.)	12.373(***)	5.814(***)
R-square	.439	.270
Adjusted R-square	.404	.224

*<.05 **<.01 ***<.001

Standardised beta coefficients reported

Table 7.3.2.2: OLS Regression Results				
Dependent Variable: Entrepreneurial Performance (Output)				
	<i>SPSS Model 3</i>		<i>SPSS Model 4</i>	
<i>Independent Variable</i>			<i>Independent Variable</i>	
OI	.328(***)		Radical OI	.254(***)
<i>Control Variables</i>			<i>Control Variables</i>	
Size	.279(***)		Size	.342(***)
Age			Age	
Europe			Europe	
U.S.A.			U.S.A.	
ANOVA F (sig.)	18.730(***)		ANOVA F (sig.)	15.458(***)
R-square	.262		R-square	.226
Adjusted R-square	.248		Adjusted R-square	.212

***<.001

Standardised beta coefficients reported

Finally, *SPSS Model 6* (Table 7.3.2.3) examines the impact of subsidiary entrepreneurial activity (output) on the overall *subsidiary performance*. Though statistically significant at the $p < 0.001$ level, the model's predictive ability is weaker than the other models ($R^2 = 0.078$ and adjusted $R^2 = 0.006$), indicating that there are also other factors besides entrepreneurial activity that determine subsidiary performance.

Table 7.3.2.3: OLS Regression Results	
Dependent Variable: Subsidiary Performance	
	<i>SPSS Model 5</i>
<i>Independent Variable</i>	
Entrepreneurial Performance (Output)	.277 (***)
<i>Control Variables</i>	
Size	
Age	
Europe	
U.S.A.	
ANOVA F (sig.)	4.464(**)
R-square	.078
Adjusted R-square	.060

<.01 *<.001

Standardised beta coefficients reported

Before concluding this section it is important to note that no collinearity problems were evidenced in any of the regression models, since there was not case of a high Variable Inflation Factor (VIF), i.e. exceeding the value of 10, or a Condition Index above 30 with variance proportions exceeding 0.90.

7.4 Structural Equation Modelling (SEM) Analysis

The regression analysis that was conducted by means of the SPSS software (as presented in Section 7.3), essentially divided the conceptual model in three sets of dependence relationships, i.e. relationships between one dependent and one (or several) independent variable(s). As has been explained above, independent regressions were run for each set of relationships between constructs. Each regression model tested the relative contribution of the independent variable(s) in predicting the dependent variable. Therefore, the results of each regression pertain to the particular relationship examined by each model.

However, the conceptual model of this research (as presented in Chapter 6) depicts a series of dependence relationships simultaneously (Figure 7.2). In that respect, the Structural Equation Modelling (SEM) method is considered most appropriate for analysing the data of the present study¹⁰⁸. As has been analytically explained in Chapter 5 on the Research Methodology, SEM is a multivariate technique suitable for estimating causal models with multiple independent and dependent constructs, i.e. when dependent variables become independent variables in subsequent dependence relationships (Hair et al, 2006).

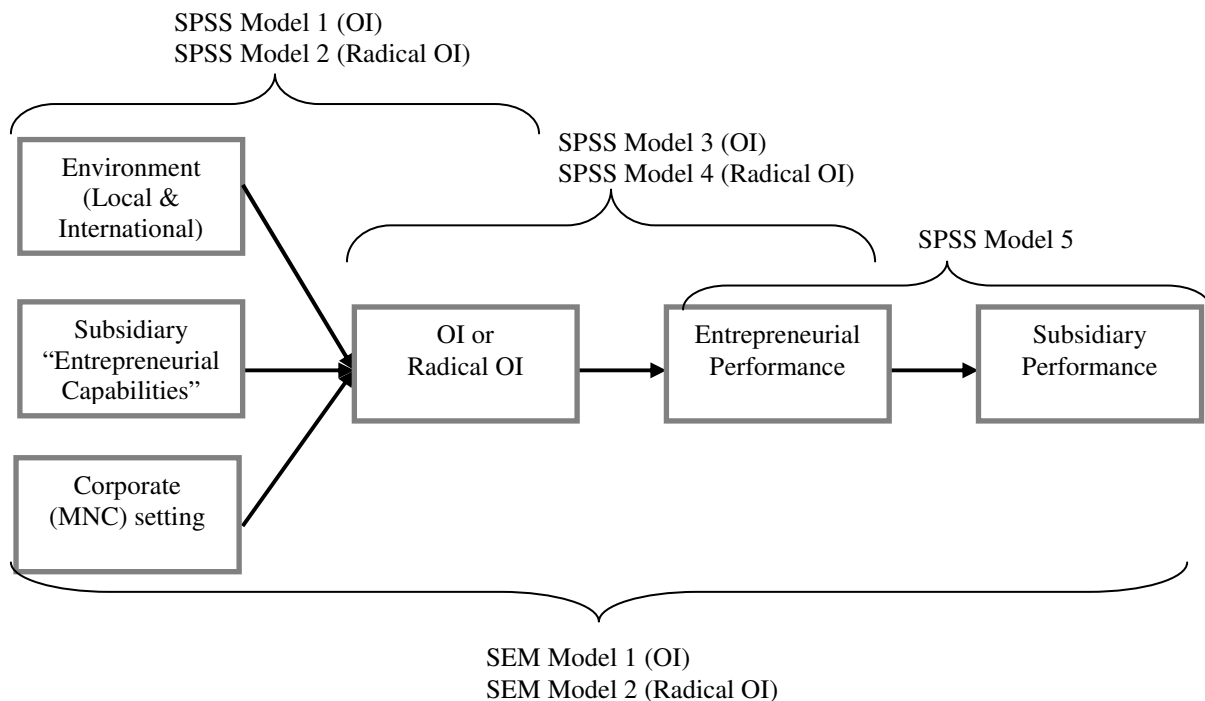


Figure 7.2: The dependence relationships examined by the SPSS versus the SEM models

¹⁰⁸ As explained in Chapter 5 on Research Methodology, during data analysis using the SEM method, the researcher relied heavily on the expertise of Dr Pavlos Vlachos, Lecturer of Marketing, who has a long experience of working with the LISREL software.

In particular, the entire hypothesised model¹⁰⁹ (Chapter 6) was tested by means of the LISREL software (Jöreskog and Sörbom, 1993). Empirical data analysis was conducted in a two-step procedure, as proposed by Anderson and Gerbing (1988). The first step involved the formulation of the so-called *measurement model*, so as to evaluate different forms of construct validity. For the second step of the analysis, the *structural model* was created by specifying the causal relations amongst latent variables according to the proposed hypotheses. The validation of the entire structural model was assessed to prove a good fit between the data and the model.

Prior to the analysis, univariate and multivariate outlier and normality tests were conducted, as suggested by Schumacker and Lomax (2004). The maximum likelihood (ML) estimation method assumes that data are univariate and multivariate normal (Baumgartner and Homburg, 1996). Univariate normality is essential but not sufficient for establishing multivariate normal distribution (Newsom, 2005). Therefore besides tests for univariate normality, tests of multivariate normality were also conducted. Concern for univariate non-normality is signified when skewness and kurtosis are greater than 2 and 7 respectively (West, Finch and Curran, 1995). For examining multivariate normality the Mardia's multivariate kurtosis test was used. Newsom (2005) suggests that normalised estimates greater than 3.00 reflect problematic kurtosis. Another important issue related to the issue of handling non-normal data in SEM, relates to the level of measurement scales used. In this study 5-point Likert-type scales and 5-point semantic differential scales were used, which are usually treated as continuous (Newsom, 2005). Schumacker and Lomax (2004) suggest that when it comes to non-interval variables and data show small skewness and kurtosis, namely in the range of -1.5 to 1.5, then normal theory can be used. The data of this study do not show evidence of excess skewness and most importantly kurtosis since all values are within the ranges suggested by relevant studies (West, Finch and Curran, 1995; Schumacker and Lomax, 2004).

7.4.1 Measurement model results

As has been explained in Chapter 5 (Research Methodology), SEM provides the *measurement model*, which specifies the rules of correspondence between measured (observed) and latent variables (constructs). Each latent construct to be included in the model is identified and the measured indicator variables (items) are assigned to latent

¹⁰⁹ As developed through a synthesis of previous literature and the findings of the exploratory case-study research (Chapter 6).

constructs. The loading estimate for each arrow, linking a construct to a measured variable, is an estimate of a variable's loading, i.e. the degree to which that item is related to the construct (Hair et al, 2006). This stage of SEM can be thought of as assigning individual variables to constructs. Hence, an important first step in SEM analysis involves assessing the validity of the measurement model, which depends on goodness-of-fit for the model and construct validity.

For demonstrating the adequacy of the measurement model, this study investigates *unidimensionality/consistency* (indicators having one underlying construct and adequate model fit in structural equation analysis), *reliability*¹¹⁰ (indicators that are comparatively free of measurement error), and *validity* (construct manifestations actually measuring what they should), following the writings of Ping (2002).

7.4.1.1 Confirmatory factor analysis results

For assessing *unidimensionality/consistency*, confirmatory factor analysis (CFA) was employed for the model, with indicators constrained to load only on their hypothesised underlying factors (Sirdeshmukh, Singh, and Sabol, 2002). A confirmatory analysis attempts to support a predefined hypothesised relationship, rather than examine all the possible relationships and select the one that has the best statistical fit. Fit refers to the ability of a model to reproduce the data (essentially the variance-covariance matrix) (Kenny, 2003).

To this end, confirmatory factor analysis was performed on a fifteen-factor model, consisting of all the latent constructs proposed by the conceptual model (essentially two models, one examining OI, and the other examining Radical OI). The fit indices for the measurement models indicate a good fit (Table 7.4.1.1). As has been explained in Chapter 5 (Research Methodology), in order to evaluate the SEM models, this study considers measures that are not sensitive to sample size (Fan et al, 1999). This seems necessary, given that the research model is complex and also sample size is above 250 (Hair et al, 2006).

¹¹⁰ Following the writings of Ping (2002), reliability and consistency though most commonly addressed as synonymous measures, it seems that they are conceptually distinct. One can have consistency achieved due to high average inter-item correlations, but low reliability due to random and specific measurement error.

Table 7.4.1.1 presents the results of the measurement model tests for the two SEM models.

SEM Model 1 examines OI as the key mediating variable. For this model, the *Normed Chi-Square* fit index (the chi-square fit index divided by degrees of freedom in an attempt to make it less dependent on sample size) is 1.85 (Chi-Square / df = 1613.22 / 870), less than the conservative 2 cutoff level, suggesting a good fit for the measurement model (Carmines and McIver, 1981; Kline, 1998; Ullman, 2001). Also, RMSEA and CFI are considered in literature as less sensitive to sample size than other fit indices (Fan et al, 1999). In particular, the RMSEA is 0.055, hence less than the established benchmark for good fit (i.e. less than 0.06) (Hu and Bentler, 1999). CFI and IFI equal 0.91, hence indicating good fit for the particular model characteristics, i.e. large sample and complex model (Hair et al, 2006). The standardised RMR is 0.062, i.e. less than the .08 benchmark establishing good fit (Hu and Bentler, 1999; Hair et al, 2006).

SEM Model 2 examines the extent of radical OI as the key mediating variable. For this model, the *Normed Chi-Square* fit index is 1.73 (Chi-Square / df = 1432.54 / 826), less than the conservative 2 cutoff level, suggesting a good fit for the measurement model (Carmines and McIver, 1981; Kline, 1998; Ullman, 2001). RMSEA is 0.052, CFI and IFI equal 0.91, hence indicating good fit for the particular model characteristics, i.e. large sample and complex model (Hair et al, 2006). The standardised RMR is 0.057, i.e. less than the .08 benchmark establishing good fit (Hu and Bentler, 1999; Hair et al, 2006).

Consequently, both measurement models seem to adequately fit the data.

<i>Fit Indices</i>	SEM Model 1 OI	SEM Model 2 Radical OI
Chi-Square	1613.22 (p=0.0)	1432.54 (p=0.0)
Degrees of freedom	870	826
Normed Chi-Square (χ^2 / df)	1.85	1.73
RMSEA (90% CI)	0.055 (0.051 ; 0.060)	0.052 (0.048 ; 0.057)
Standardised RMR	0.062	0.057
CFI	0.91	0.91
IFI	0.91	0.91

7.4.1.2 Reliability results

In examining reliability, both Cronbach's alpha and the Composite Reliability index¹¹¹ (Fornell and Larcker, 1981) were used. The Composite Reliability measure is similar to Cronbach's alpha, but preferred in structural equation modelling (SEM), because it estimates reliability on the basis of actual measurement loadings (White et al, 2003). Cronbach's alpha is used as a more conservative lower bound of reliability. Cronbach's alpha should be above .60 for exploratory research and above .70 for confirmatory research (Nunnally and Bernstein, 1994; Peter, 1979). Additionally it has been suggested that, in the case of a scale with two or three items, a coefficient alpha of .60 (Cortina, 1993) or .50 (Nunnally and Bernstein, 1994) is acceptable as a minimum standard. Pertaining to the Composite Reliability index, Bagozzi and Yi (1988) suggest a benchmark of .60. In this study both Cronbach's alpha and the Composite Reliability indexes for all constructs are between the 0.71 and 0.91 levels indicating acceptable reliability (Table 7.4.1.2).

	Average Variance Extracted (AVE)	Composite Reliability (CR)	Cronbach's alpha
Innovation Propensity	51%	0.74	0.73
Risk Attitude	52%	0.76	0.76
Proactiveness	55%	0.76	0.73
Market Learning	52%	0.80	0.78
Networking Direct VC	48%	0.73	0.71
Networking Non-Direct VC	50%	0.78	0.77
MNC Networking	58%	0.74	0.74
Autonomy	54%	0.82	0.81
Flows with HQs	60%	0.74	0.71
Flows with SSs	73%	0.84	0.81
Munificence	79%	0.88	0.87
Uncertainty	84%	0.91	0.91
OI	50%	0.80	0.71
Radical OI	52%	0.76	0.75
Entrepreneurial Performance	49%	0.82	0.72
Subsidiary Performance	48%	0.76	0.76

$$\text{Composite Reliability (CR)} = \frac{(\sum \lambda_i)^2}{(\sum \lambda_i)^2 + \sum \text{Var}(e_i)}$$

7.4.1.3 Convergent validity results

Reliability indexes are frequently used as substitutes for convergent validity (Ping, 2002). However, as pointed out by Fornell and Larcker (1981), measures with high levels of reliability may not be judged convergent valid because they contain more measurement error variance than construct specific variance. For this reason, the same authors suggested the conservative Average Variance Extracted (AVE)¹¹² measure as a complementary way of concluding convergent validity. In this study, AVE ranges between .48 and .84 (Table 7.4.1.2). The AVE for the DVC networking, entrepreneurial performance and subsidiary performance constructs is marginally less than the established cut-off level of 0.50 (i.e. 0.48, 0.49 and 0.48 respectively). Therefore, convergent validity was further examined based on the *magnitude of factor loadings* and the *magnitude of accompanying t-values* (Anderson and Gerbing, 1988; Bagozzi, Yi and Philips, 1991).

Tables 7.4.1.3 a and b show the results of the measurement model test (i.e. test of construct validity) with factor loadings, t-values and R² values for all indicators. The constructs have good validity in that their factor loadings (ranging between 0.54 and 0.98) are relatively high and greater than the cut-off point of 0.50 (Hair et al, 2006), while all t-values are significant. All R² values are also relatively high, meaning that variation of these indicators is represented by their constructs. Hence, the indicators of the models exhibit convergent validity.

7.4.1.4 Discriminant validity results

The conservative approach for establishing discriminant validity compares the variance-extracted estimates for each factor with the squared inter-construct correlations associated with that factor (Hair et al, 2006). Discriminant validity can be demonstrated utilising the stringent test of Fornell and Larcker (1981), requiring AVE to be greater than the shared variance of all possible pairs of constructs, something that holds in the data of this study (see Table 2 in Appendix 5).

¹¹²
Average Variance Extracted (AVE) =
$$\frac{(\sum \lambda_i^2)}{(\sum \lambda_i^2) + \sum \text{Var}(e_i)}$$

Table 7.4.1.3a: The Measurement Model

The constructs and their indicators		Factor loading	t-value	R ² value
<i>Subsidiary Entrepreneurial Characteristics</i>				
Innovation propensity	Innovativeness of product offerings (InnProp1)	0.71	9.40	0.34
	Number of new product offerings (InnProp2)	0.88	13.10	0.58
	Changes in product offerings (InnProp3)	0.81	12.86	0.56
Risk attitude	Propensity for risky projects (RiskAtt1)	0.63	10.16	0.39
	Extent to which bold actions are undertaken (RiskAtt2)	0.79	13.56	0.62
	Adoption of aggressive posture when confronted with uncertainty (RiskAtt3)	0.75	12.62	0.55
Proactiveness	Initiates actions to which competitors respond (Proact1)	0.62	10.53	0.45
	Introduces new product offerings before competition (Proact2)	0.96	13.31	0.75
	Adopts a competitive posture (Proact3)	0.63	10.59	0.38
Market Learning	Subsidiary responds to customer needs in a timely fashion (MarkLearn1)	0.85	12.72	0.62
	Subsidiary emphasises customer satisfaction as a key objective (MarkLearn2)	0.86	13.01	0.65
	Subsidiary uses all the above information in problem solving (MarkLearn3)	0.54	9.03	0.34
	Subsidiary integrates information from a variety of sources to assist in decision-making (MarkLearn4)	0.61	9.54	0.39
Networking with Direct Value Chain partners	Networking with customers (DVCNet1)	0.81	10.77	0.69
	Networking with suppliers (DVCNet2)	0.66	9.01	0.54
	Networking with distributors (DVCNet3)	0.77	10.49	0.63
Networking with Non-Direct Value Chain partners	Networking with External Consultants (NonDVCNet1)	0.78	10.74	0.54
	Networking with Government Organisations (NonDVCNet2)	0.69	9.61	0.35
	Networking with Academic & Research Institutions (NonDVCNet3)	0.70	9.78	0.37
	Networking with Professional & Trade Associations (NonDVCNet4)	0.96	15.19	0.75
Networking within the MNC	Networking with HQs (MNCNet1)	0.94	10.20	0.70
	Networking with SSs (MNCNet2)	0.98	11.11	0.54
<i>Corporate Context</i>				
Autonomy	Expanding the current scope of business activity (Auton1)	0.71	9.87	0.36
	Formulation of this subsidiary's annual budget (Auton2)	0.69	9.63	0.34
	Developing a major new product offering (Auton3)	0.83	10.16	0.41
	Developing a new major process (Auton4)	0.93	12.25	0.56
	Decisions over employee pay and rewards (Auton5)	0.59	9.67	0.20
	Recruitment and promotion to managerial positions (Auton6)	0.62	10.09	0.39
Flows with HQs	Knowledge Inflows from HQs (FlowsHQ1)	0.60	9.53	0.37
	Knowledge Outflows to HQs (FlowsHQ2)	0.93	12.81	0.89
Flows with SSs	Knowledge Inflows from SSs (FlowsSS1)	0.63	9.97	0.41
	Knowledge Outflows to SSs (FlowsSS2)	0.96	15.01	0.91
<i>External Environment</i>				
Munificence	International Munificence (Mun1)	0.60	13.98	0.63
	UK Munificence (Mun2)	0.78	17.89	0.95
Uncertainty	International Uncertainty (Uncer1)	0.67	17.28	0.77
	Local Uncertainty (Uncer2)	0.73	19.09	0.89

Table 7.4.1.3b: The Measurement Model

The constructs and their indicators		Factor Loading	t-value	R ² value
<i>Dependent Variables</i>				
OI	Intra-Subsidiary OI (OI1)	0.59	9.01	0.25
	Intra-MNC OI (OI2)	0.62	10.06	0.36
	External OI (Non - Direct Value Chain Partners) (OI3)	0.61	10.01	0.31
	Value Chain OI (Direct Value Chain Partners) (OI4)	0.63	10.16	0.38
Radical OI	Opportunities far from business practices (RadOI1)	0.68	11.78	0.53
	Opportunities far from organisational goals (RadOI2)	0.82	13.89	0.74
	Opportunities leading to significant in products, processes, and/or technologies (RadOI3)	0.56	9.48	0.18
Entrepreneurial Performance	Entering (a) new market(s) (EntrPerf1)	0.73	9.22	0.31
	Developing a major new product offering (EntrPerf2)	0.86	11.10	0.46
	Developing a new major process (EntrPerf3)	0.68	9.07	0.28
	Developing a new technology (EntrPerf4)	0.84	10.02	0.39
	Restructuring the organisational structure, involving creation or elimination of departments (EntrPerf5)	0.67	9.01	0.26
	Developing innovative work practices (EntrPerf6)	0.70	10.09	0.35
Subsidiary Performance	Relative to subsidiary objectives (Perf1)	0.88	13.09	0.73
	Relative to main competitors (Perf2)	0.71	13.05	0.53
	Relative to sister subsidiaries (Perf3)	0.74	13.43	0.55
	Relative to corporate HQs expectations (Perf4)	0.87	15.63	0.71

7.4.2 Structural model results

Upon examining the properties of the measurement model, and after having received positive feedback based on theoretical grounds and empirical benchmarks, the analysis was legitimised to continue in testing the proposed research hypotheses (Anderson and Gerbing, 1988).

Figure 7.4.2.1 illustrates the results of the structural model, which was constructed for testing direct effects. *SEM Model 1* examines **OI** as the key mediating variable. Based on the LISREL results, the subsidiary's *innovation propensity* and *non-direct value chain networking* (i.e. networking with external parties that are not direct members of the subsidiary's value chain, such as government organisations, academic and research institutions, professional and trade associations and external consultants) are significant "entrepreneurial capabilities" at the subsidiary level that positively affect the subsidiary's ability to identify opportunities. In addition, the subsidiary's *autonomy* and the existence of *knowledge flows (both inflows and outflows) with the multinational parent* constitute elements in the corporate context that promote the subsidiary's OI level. Paths in SEM Model 1 indicate the estimated coefficients for the four statistically significant constructs, i.e. innovation propensity, non-direct VC networking, autonomy and knowledge flows with the HQs, which are 0.38, 0.26, 0.30 and 0.30 respectively. An interesting observation is that the external environment does not appear to have a significant direct influence on subsidiary OI. This finding, since it appears to contradict the previous analysis with the SPSS software, will be elaborated upon in the following section (Section 7.5) of the present chapter. Also, the level of subsidiary OI does have a strong positive impact on the subsidiary's *entrepreneurial performance*, i.e. entrepreneurial output, as indicated by an R^2 of 0.82. However, increased entrepreneurial output appears to have a smaller but still positive effect on the overall *subsidiary performance* ($R^2 = 0.32$).

In terms of control variables, subsidiary size seems to relate positively to OI level, suggesting that subsidiaries of larger size (i.e. number of employees) tend to exhibit increased levels of OI. Yet, this relationship, though significant, does not appear to be very strong ($R^2 = 0.08$). Also, USA country of origin seems to have a significant influence on the overall level of subsidiary OI ($R^2 = 0.41$).

The structural model has a Normed Chi-Square of 1.86, indicating good fit (Carmines and McIver, 1981; Kline, 1998; Ullman, 2001). Also, RMSEA is 0.057, with a 90% confidence interval below 0.060, while CFI and IFI equal 0.90, hence establishing good fit (Hair et al, 2006). Finally, the standardised RMR is 0.070, i.e. less than the .08 benchmark (Hu and

Bentler, 1999; Hair et al, 2006). Consequently, the structural model SEM 1 adequately fits the data (Table 7.4.2).

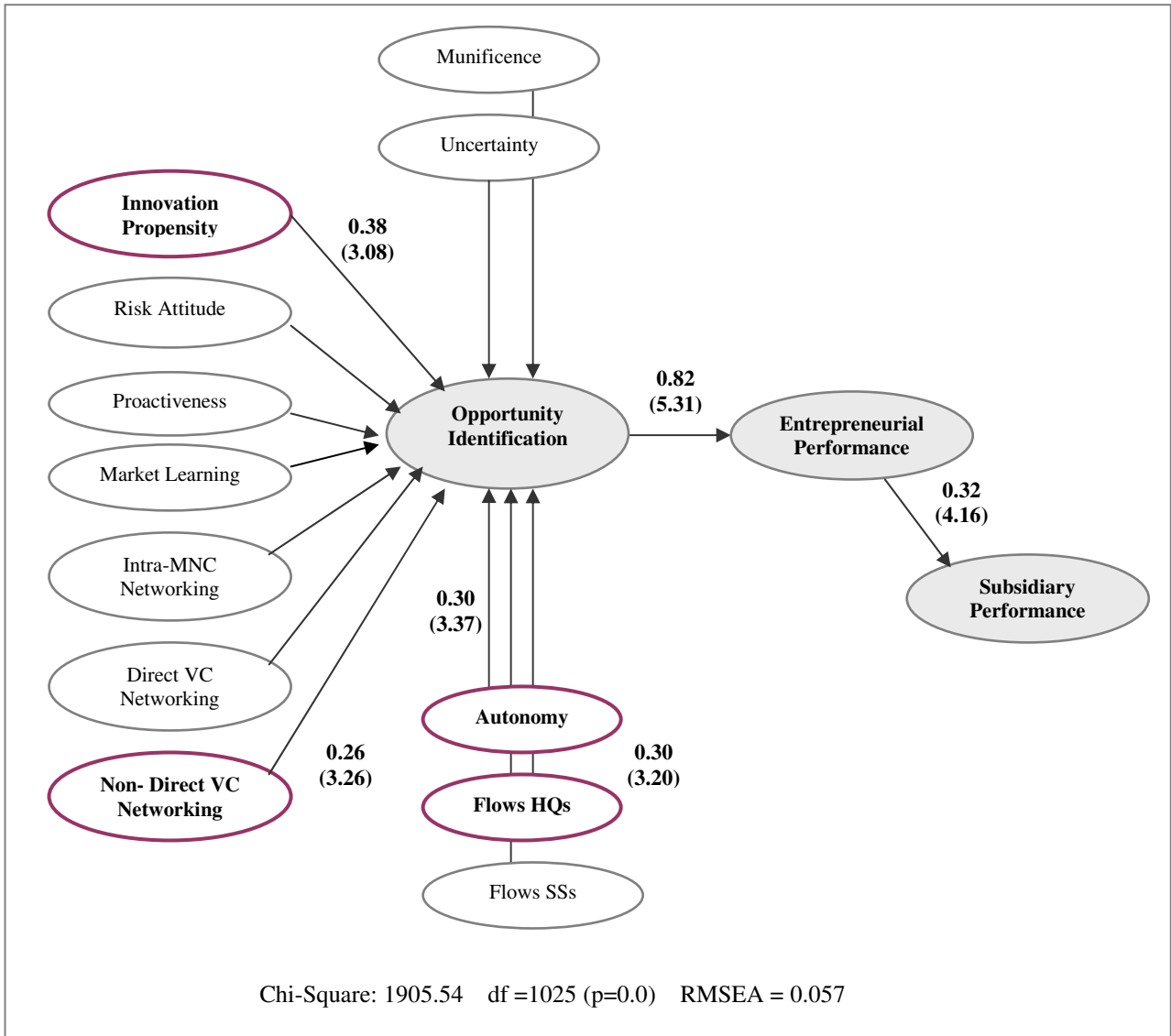
Constructs *		<i>SEM Model 1</i>		<i>SEM Model 2</i>
<i>Dependent</i>	<i>Independent</i>	OI	<i>Dependent</i>	Radical OI
OI			Radical OI	
	Innovation Propensity	0.38 (3.08)**		
	Risk Attitude			0.22 (2.20)*
	Proactiveness			
	Market Learning			
	Intra-MNC Networking			
	Direct VC Networking			
	Non-Direct VC Networking	0.26 (3.26)***		0.35(3.87)***
	Autonomy	0.30 (3.37)***		0.26 (3.09)**
	Flows HQs	0.30 (3.20)***		
	Flows SSs			
	Munificence			
	Uncertainty			
	Control Variables			
	Age			
	Size	0.08 (2.33)**		
	USA	0.41 (2.51)**		
	Europe			
Entrepreneurial Performance				
	OI Level	0.82 (5.31)***	Radical OI	0.48 (5.25)***
Subsidiary Performance				
	Entrepreneurial Performance	0.32 (4.16)***	Entrepreneurial Performance	0.31 (3.93)***
Fit Indices				
Normed Chi-Square (χ^2 / df)		1.86		1.82
RMSEA (90% CI)		0.057 (0.053; 0.060)		0.055 (0.050 ; 0.060)
SRMR		0.070		0.075
CFI		0.90		0.90
IFI		0.90		0.90

Note: Unstandardised coefficients are reported

*<.05 **<.01 ***<.001

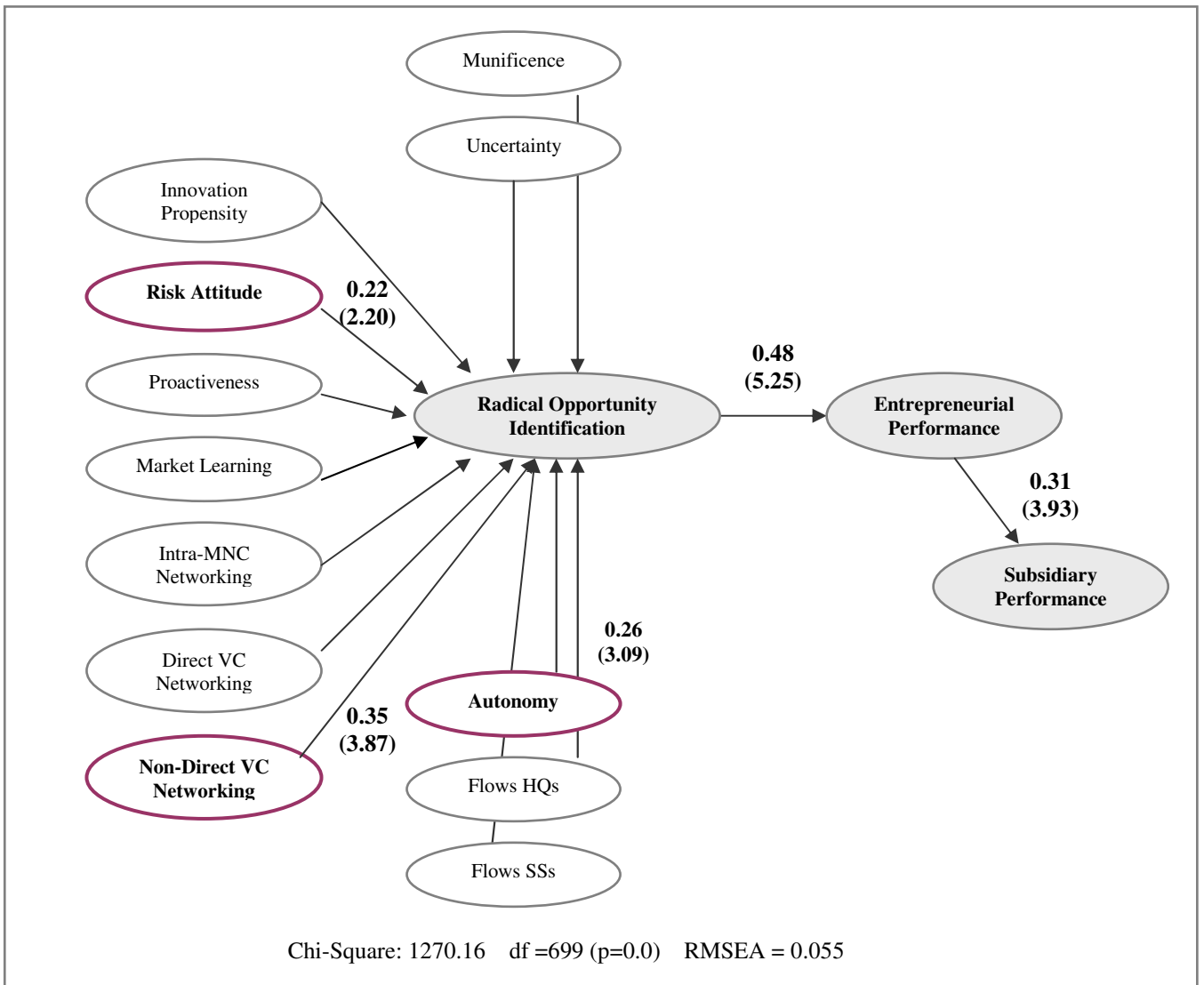
SEM Model 2 (Figure 7.4.2.2) examines **Radical OI** as key mediating variable. Based on the LISREL results, the subsidiary's *risk attitude* and *non-direct value chain networking* (i.e. networking with external parties that are not direct members of the subsidiary's value chain) have a significant positive influence on the subsidiary's ability to identify radical opportunities. In addition, the subsidiary's *autonomy*, in essence defining the parent subsidiary and subsidiary-subsidiary relationships, also has the potential to enhance radical OI within the subsidiary boundaries. An interesting observation is that non-direct value chain networking has the highest coefficient (0.35), indicating that it is most important. Risk attitude and autonomy also have statistically significant and high coefficients, 0.22 and 0.26 respectively. As has been the case with the previous model (*SEM Model 1*), in *SEM Model 2* the external environment also appears not to have a direct significant influence on Radical OI. The following section, where the research hypotheses are discussed, will shed more light into this issue. Finally, the level of subsidiary OI does have a significant positive impact on the subsidiary's entrepreneurial performance, i.e. entrepreneurial output, as indicated by an R^2 of 0.48. Similar to *SEM Model 1*, increased entrepreneurial output appears to have a smaller but still positive effect on the overall subsidiary performance ($R^2 = 0.31$).

The structural model has a Normed Chi-Square of 1.82, indicating good fit (Carmines and McIver, 1981; Kline, 1998; Ullman, 2001). Also, RMSEA is 0.055, with a 90% confidence interval below 0.060, while CFI and IFI equal 0.90, hence establishing good fit (Hair et al, 2006). Finally, the standardised RMR is 0.075, i.e. less than the .08 benchmark (Hu and Bentler, 1999; Hair et al, 2006). Consequently, the structural model *SEM 2* adequately fits the data (Table 7.4.2).



Note: Numbers in bold represent significant coefficient estimates for the paths, and numbers in parentheses depict the corresponding t values

Figure 7.4.2.1: The OI structural model results



Note: Numbers in bold represent significant coefficient estimates for the paths, and numbers in parentheses depict the corresponding t values

Figure 7.4.2.2: The Radical OI structural model results

7.5 Testing the proposed research hypotheses

The following sections test the research hypotheses of the present study, as these were developed in the previous chapter (Chapter 6), following a synthesis of previous literature and the findings of the exploratory case-study research. Tables 7.5.1 and 7.5.2 summarise the results of the hypothesis testing.

7.5.1 “Entrepreneurial capabilities” at the subsidiary level

(Hypotheses 1 – 5b and 1Rad – 5bRad)

Based on the statistical analyses that were presented above, particular subsidiary-specific capabilities were identified as key drivers of subsidiary OI. Regarding the extent to which OI takes place within the subsidiary boundaries, *innovation propensity* and *external networking with non-direct value chain partners* proved statistically significant. Consequently, Hypothesis 1 was fully supported, while Hypotheses 5a and 5b were partly supported, since only one particular aspect of external subsidiary networking, i.e. with non-direct value chain partners, proved significant. With respect to the particular identification of radical opportunities at the subsidiary level, again *external networking with non-direct value chain partners* was found statistically significant (hence Hypotheses 5aRad and 5bRad were partly supported). The difference is that, while subsidiary innovation propensity enhances the overall level of subsidiary OI, *risk attitude* is critical for the particular identification of radical opportunities. Hence, Hypothesis 2Rad was supported, while Hypotheses 1Rad and 2 were not supported. Also, Hypothesis 4a was supported, since market and learning orientation were found to be highly correlated and thus were merged into the new construct of “market learning”. However, Hypotheses 3, 3Rad, 4b, and 4bRad were not supported, since subsidiary proactiveness and market learning were not found to be statistically significant neither with respect to OI nor to Radical OI. All the above results appear similar both in the linear regression models (using the SPSS software) and the SEM analysis (using the LISREL software). Tables 7.5.1 and 7.5.2 provide a summary of the research results, while Table 7.5.3 a comparison of the findings between the two statistical methods.

To sum up, the subsidiary’s innovation propensity, risk attitude and networking with non-direct value chain partners constitute “*entrepreneurial capabilities*” at the subsidiary level. These capabilities seem to be strongly intertwined with the individual subsidiary and hence cannot be traded or imitated easily (Foss, 1993; Conner and Prahalad, 1996; Teece et al,

1997). Such internal “entrepreneurial capabilities” essentially drive subsidiary OI. While the subsidiary’s innovation propensity and risk attitude clearly constitute internal capabilities from a resource-based perspective, this study proves that the subsidiary’s external networking activity, and in particular networking with non-direct value chain parties, can be viewed as an internal “dynamic” capability in itself, given that it can enhance intra-subsidary capabilities (Burt, 1992; Powell and Smith-Doerr, 1994).

Also, in terms of external networking, only the subsidiary’s networking activity with non-direct value chain partners appears to be significant for OI (both OI and Radical OI). Non-corporate units constitute an increasingly important resource for the development of critical capabilities within the foreign subsidiary (Andersson and Forsgren, 1996; Andersson and Pahlberg, 1996). Following Granovetter’s (1973) notion of weak ties as relationships lying outside of an actor’s immediate cluster of contacts and characterised by infrequent interaction, such links with external non-direct value chain partners could be considered weak. Indeed, the subsidiaries that participated in the survey tend to cooperate with external non-direct value chain partners to a smaller extent than with internal corporate and external direct value chain partners (as indicated by sample means). Consequently, this study aligns with related literature suggesting that weak and not strong ties are usually associated with idea generation (Henderson and Cockburn, 1994; Eisenhardt and Tabrizi, 1995; Hansen, 1999).

7.5.2 Aspects defining the parent-subsidary relationship

(Hypotheses 6 - 7 and 6Rad – 7Rad)

Based on the statistical analyses that were presented above, particular factors in the subsidiary’s corporate context, essentially defining the parent-subsidary relationship, appear to have a significant direct influence on subsidiary OI (and Radical OI). In that respect, the results of the linear regressions and SEM analysis are somewhat different.

As regards the extent of OI taking place within the subsidiary boundaries, the SPSS analysis suggests that *knowledge flows with the corporate parent* are critical, irrespective of their directionality, i.e. whether these are inflows or outflows. Literature corroborates that the magnitude of the transfers is more important than their directionality (Anderson and Pahlberg, 1997). In that respect, literature has suggested that strong interdependencies, i.e. when the subsidiary is a very important “knowledge provider” but also to a great extent “knowledge recipient” within the MNC, might be more important as a base for subsidiary

influence than weaker interdependencies, i.e. when the subsidiary is a “net provider” (Anderson and Pahlberg, 1997; Anderson and Narus, 1990). From a resource-based perspective, such knowledge flows with the parent corporation constitute “unique” and “valuable” resources (Wernerfelt, 1984; Barney, 1991) that seem to enhance the subsidiary’s OI ability. Knowledge flows with the parent corporation were found statistically significant both in the SPSS and LISREL analyses. Hence, Hypothesis 7 is partly supported (Table 7.5.1), given that subsidiary OI is enhanced through subsidiary knowledge transfers with the parent corporation and not with sister subsidiaries. However, the existence of knowledge flows within the MNC was not found a statistically significant driver of Radical OI (hence Hypothesis 7Rad was not supported). This finding is also consistent in the two statistical analysis methods (SPSS and LISREL).

The SEM analysis also brought to the forefront *subsidiary autonomy* as a statistically significant factor, having a positive direct effect on subsidiary OI. Indeed, the subsidiary’s autonomy constitutes an important source of subsidiary power within the multinational system (Forsgren and Pahlberg, 1992). Increased levels of autonomy allow the subsidiary not only to access critical resources, but also to deploy resources most appropriately (Birkinshaw, 1996; O’Donnell, 2000), and promote internal capabilities, such as that of OI. Literature has also associated greater subsidiary autonomy with higher levels of entrepreneurship (Miller, 1983; Zahra, 1991). Consequently, subsidiary autonomy might relate not only to OI, but also to entrepreneurial performance (output) at the subsidiary level. This could explain why the relationship between autonomy and OI becomes significant when entrepreneurial performance (output) is incorporated into the analysis (i.e. only in the SEM and not in the SPSS analysis¹¹³). Consequently, Hypothesis 6 is supported by the LISREL analysis, but not supported by the SPSS analysis (see Table 7.5.3). Given that the LISREL model is more complete in that it tests all the proposed relationships simultaneously, it is considered more credible for purposes of this research.

In brief, subsidiary knowledge flows with the parent corporation were found statistically significant both in the linear regression and the SEM models (examining subsidiary OI), while subsidiary autonomy was found significant only in the SEM model (where entrepreneurial performance was also incorporated in the analysis). While literature has acknowledged subsidiary autonomy and strong intra-MNC interdependencies (Anderson and Narus, 1990) as important sources of subsidiary power, yet these are based on different

¹¹³ As has been explained, the SEM analysis tests the entire model simultaneously, hence examines antecedents and outcomes at the same time. Contrarily, the SPSS analysis examines either antecedents or outcomes of OI.

grounds (Forsgren and Pahlberg, 1992); while the latter is based on intra-organisational interdependencies, autonomy relates to subsidiary independence. However, the results of the present study suggest that *both subsidiary autonomy and subsidiary knowledge flows can co-exist as sources of subsidiary power and bring a positive influence on the subsidiary's OI ability.*

Finally, with respect to the particular identification of radical opportunities at the subsidiary level, (Radical OI) subsidiary autonomy was found statistically significant both in the SPSS and LISREL analyses. Consequently, the identification of radical opportunities at the subsidiary level is to a great extent driven by high autonomy levels (Hypothesis 6Rad is supported).

7.5.3 Characteristics of the external environment

(Hypotheses 8a – 9b and 8aRad – 9bRad)

As concerns the effect of the external environment on subsidiary OI, the findings of the two multivariate data analysis methods – multiple regression and SEM - are contradictory. In particular, while the regression models find *environmental hostility* to have a significant but negative direct effect on both subsidiary OI and Radical OI, the SEM analysis does not corroborate this finding. The following paragraphs seek to account for this inconsistency.

Literature has provided conflicting results with respect to the effect of environmental hostility on firm-level entrepreneurship. On the one hand, some studies have proved that adopting an entrepreneurial posture is a common reaction of successful firms in hostile environmental conditions (Miller and Friesen, 1983; Lumpkin and Dess, 2001). On the other hand, literature has also suggested that environmental munificence (i.e. the opposite of environmental hostility) may encourage firms to adopt an entrepreneurial posture as a response to emerging opportunities (Khandwalla, 1987; Guth and Ginsberg, 1990). The findings of the SPSS analysis also corroborate the importance of environmental munificence for increased subsidiary OI and Radical OI. In that respect, the existence of opportunities in the external environment can create a larger market domain in which subsidiary entrepreneurship and the particular ability of OI can create value for subsidiaries. However, the results of the LISREL analysis do not find an important direct effect of the external environment (neither on OI nor on Radical OI).

Two possible explanations can be offered for the dissimilarity of the statistical results between the two methods. *First*, the SEM models test the entire set of dependence

relationships simultaneously, while the multiple regression models consider only one set of relationships each time. Consequently, incorporating the entrepreneurial performance (output) and the overall performance variables in the analysis might affect the statistical results. Environmental munificence might be important in providing access to key resources and opportunities for the individual subsidiary, but subsidiary entrepreneurial output and performance might depend more on intra-subsidary resources and capabilities. Hence, the direct effect of environmental munificence on subsidiary OI might be diminished when incorporating performance considerations in the model. *Second*, previous empirical studies have proved the moderating effect of environmental hostility on the relationship between international entrepreneurship and international performance (Zahra and Garvis, 2000). However, this research examines direct effects only¹¹⁴. Consequently, the external environment might play a significant moderating role in the entire conceptual model, which is outside the scope of the present study.

In brief, although literature has acknowledged that the external environment can have considerable impact on the scope and competence level of subsidiaries (Benito et al, 2003), *the results of the SEM analysis did not prove a significant direct effect of environmental munificence or uncertainty with respect to the subsidiary's OI ability* (both OI Level and Radical OI). It is also important to highlight that, while studies have suggested that the subsidiary's local and international environments may be characterised by different conditions and hence have differing effects on subsidiary entrepreneurship (Zahra et al, 1999; McDougall et al, 2003; Young et al, 2003), these two settings were found to be highly correlated in the present study.

To conclude, given that the LISREL model is more complete in that it tests all the proposed relationships simultaneously, it is considered more credible for the purposes of this research. Consequently, it is assumed that all the hypotheses relating to direct environmental effects are rejected (see Table 7.5.1 for Hypotheses 8a, 8b, 9a, 9b; Table 7.5.2 for Hypotheses 8aRad, 8bRad, 9aRad and 9bRad; and Table 7.5.3 for a comparison of the results of the two statistical methods).

¹¹⁴ Testing for different types of indirect effects goes beyond the scope of the present research, as it would entail making a different set of assumptions. For more details see Chapter 4.

7.5.4 Effect of OI on entrepreneurial performance (output)

(Hypotheses 10 and 10Rad)

Based on the statistical analyses that were performed using both the SPSS and the LISREL software, *the subsidiary's OI ability was found to be a statistically significant driver of subsidiary entrepreneurial performance*. In particular, the relationships between OI Level and Radical OI respectively with the particular construct of entrepreneurial performance (output) appear to be strong, hence supporting Hypotheses 10 and 10Rad (see Tables 7.5.1, 7.5.2, and 7.5.3). This finding corroborates the fact that opportunities are the core element of the entrepreneurial process. Indeed, entrepreneurship starts with the identification of opportunities (Shane and Venkataraman, 2000; Hitt et al., 2001). This study suggests that subsidiary entrepreneurship (entrepreneurial output) is essentially driven by opportunities that are identified within the subsidiary boundaries. For the identification of these opportunities, particular subsidiary “entrepreneurial capabilities” and aspects of the parent-subsidiary relationship defining the subsidiary’s power base are critical. Consequently, while previous research has failed to identify factors that can explain differences in subsidiaries’ entrepreneurship (Birkinshaw, 1999; Birkinshaw and Hood, 1997, 1998), this study appears to address this issue.

7.5.5 Effect of entrepreneurial performance on subsidiary performance

(Hypothesis 11)

Based on the statistical analyses that were performed using both the SPSS and the LISREL software, *the subsidiary's entrepreneurial performance (output) has a positive effect on overall subsidiary performance*. Indeed, prior theory and research have suggested that firm-level entrepreneurship is critical for organisational success (Covin and Slevin, 1991; Zahra, 1991; Lumpkin and Dess, 1996; Zahra et. al., 2001). However, the theme of subsidiary performance in general and the effect of entrepreneurship on performance in particular have surprisingly drawn limited empirical attention (Andersson et al., 2001; Hornsby et al., 2002; Dess et al., 2003). Consequently, the present study addresses this gap by proving the direct and positive effect of subsidiary entrepreneurship on subsidiary performance. Hence, Hypothesis 11 is supported (see Tables 7.5.1, 7.5.2, and 7.5.3).

However, it should be noted that, whereas the effect of OI on subsidiary entrepreneurial performance (output) is strong¹¹⁵, the effect of entrepreneurial performance (output) on the overall subsidiary performance, though statistically significant, appears smaller (adjusted R² = 0.060 in the SPSS Model 5, while the Squared Multiple Correlation for the structural equations is 0.32 in SEM Model 1 and 0.31 in SEM Model 2). Hence, subsidiary performance might also be determined by other factors, apart from subsidiary entrepreneurial performance (entrepreneurial output).

7.5.6 Impact of control variables

During statistical analysis, two control variables proved significant: *country of origin* and *subsidiary size*. As regards the *country of origin effect*, literature has mainly attributed differences across subsidiaries of triad-nation firms (U.S., Japan and Europe) to dissimilarities in the respective levels of autonomy and centralisation (Ouchi, 1980; Hedlund, 1981; Negandhi and Baliga, 1981; Martinez and Jarrillo, 1989), differences in national cultures (Morris et al., 1994), and also home-country environmental disparities (Douglas and Rhee, 1989). In addition, there seems to be scarcity of literature examining country-of-origin effects on the theme of subsidiary entrepreneurship in general and the particular theme of subsidiary OI. The results of the present study indicate that OI levels tend to be higher for U.S. subsidiaries based in the UK, in comparison to their European and Japanese counterparts. Given that entrepreneurship literature has focused on the positive effect of autonomy on firm-level entrepreneurship (Hitt et al, 1996; Zahra et al, 2000), this disparity could be attributed to the increased levels of freedom that the U.S. subsidiaries enjoy (Bowman et al, 2000). Nonetheless, most topical research has failed to confirm a significant country-of-origin effect on subsidiary autonomy (Johnston and Menguc, 2007).

As regards *subsidiary size*, it appears significant as a control variable when examining the impact of OI - and also radical OI - on subsidiary entrepreneurial performance (SPSS Models 3 and 4 respectively). This finding could be explained using Hedlund's (1981) argument that larger subsidiaries tend to possess greater resources and more autonomy. In that respect, subsidiaries of larger size might take advantage of their resources and increased autonomy levels to exploit identified opportunities, hence producing increased entrepreneurial output. Also, the results of the SEM analysis corroborate a significant influence of subsidiary size with respect to OI. While subsidiary OI has been found to

¹¹⁵ Adjusted R² = 0.248 for SPSS Model 3 and adjusted R² = 0.212 for SPSS Model 4, while the Squared Multiple Correlation for the structural equations is 0.82 for SEM Model 1 and 0.48 for SEM Model 2.

positively relate to innovation propensity, subsidiary autonomy and knowledge flows (with the parent), these three factors might also positively relate to subsidiary size. In that respect, relevant literature has confirmed a significant positive correlation between firm size and innovation (Camison-Zornoza et al, 2004), a positive link between subsidiary size and autonomy (Hedlund, 1981), and also an association between organisational size and increased resource flows (Egelhoff, 1988; Roth et al., 1991).

Table 7.5.1 Summary of the Research Results (OI) (Based on the LISREL analysis*)		
Hypothesis	Description	Results
Hypothesis 1	High levels of subsidiary innovation propensity are associated with increased levels of subsidiary OI.	Supported
Hypothesis 2	High levels of subsidiary risk-taking attitude are associated with increased levels of subsidiary OI.	Not supported
Hypothesis 3	High levels of subsidiary proactiveness are associated with increased levels of subsidiary OI.	Not supported
Hypothesis 4a	The subsidiary's learning orientation and market orientation are strongly interrelated.	Supported
Hypothesis 4b	High levels of subsidiary market learning are associated with increased levels of subsidiary OI.	Not supported
Hypothesis 5a	High levels of subsidiary networking activity are associated with increased levels of subsidiary OI.	Partly supported
Hypothesis 5b	Networking with external non-corporate partners is more significant for subsidiary OI than networking with intra-MNC entities.	Partly supported
Hypothesis 6	High levels of subsidiary decision-making autonomy are associated with increased levels of subsidiary OI.	Supported
Hypothesis 7	High levels of knowledge transfers between the subsidiary and other entities within the MNC (parent and sister subsidiaries) are associated with increased levels of subsidiary OI.	Partly supported
Hypothesis 8a	High levels of munificence in the subsidiary's local environment are associated with increased levels of subsidiary OI.	Not supported
Hypothesis 8b	High levels of munificence in the subsidiary's international environment are associated with increased levels of subsidiary OI.	Not supported
Hypothesis 9a	High levels of uncertainty in the subsidiary's local environment are associated with increased levels of subsidiary OI.	Not supported
Hypothesis 9b	High levels of uncertainty in the subsidiary's international environment are associated with increased levels of subsidiary OI.	Not supported
Hypothesis 10	High levels of subsidiary OI are positively associated with high subsidiary entrepreneurial performance.	Supported
Hypothesis 11	High levels of subsidiary entrepreneurial performance have a positive influence on overall subsidiary performance.	Supported

* As mentioned in Sections 7.4 and 7.5, the results of the LISREL analysis were considered superior to those of the SPSS analysis, given that the former tested the entire model altogether (i.e. all sets of dependence relationships simultaneously).

Table 7.5.2 Summary of the Research Results (Radical OI) (Based on the LISREL analysis*)		
Hypothesis	Description	Results
Hypothesis 1Rad	High levels of subsidiary innovation propensity are associated with increased levels of subsidiary radical OI.	Not supported
Hypothesis 2Rad	High levels of subsidiary risk-taking attitude are associated with increased levels of subsidiary radical OI.	Supported
Hypothesis 3Rad	High levels of subsidiary proactiveness are associated with increased levels of subsidiary radical OI.	Not supported
Hypothesis 4a	The subsidiary's learning orientation and market orientation are strongly interrelated.	Supported
Hypothesis 4bRad	High levels of subsidiary market learning are associated with increased levels of subsidiary radical OI.	Not supported
Hypothesis 5aRad	High levels of subsidiary networking activity are associated with increased levels of subsidiary radical OI.	Partly supported
Hypothesis 5bRad	Networking with external non-corporate partners is more significant for subsidiary radical OI than networking with intra-MNC entities.	Partly supported
Hypothesis 6Rad	High levels of subsidiary decision-making autonomy are associated with increased levels of subsidiary radical OI.	Supported
Hypothesis 7Rad	High levels of knowledge transfers between the subsidiary and other entities within the MNC (parent and sister subsidiaries) are associated with increased levels of subsidiary radical OI.	Not supported
Hypothesis 8aRad	High levels of munificence in the subsidiary's local environment are associated with increased levels of subsidiary radical OI.	Not supported
Hypothesis 8bRad	High levels of munificence in the subsidiary's international environment are associated with increased levels of subsidiary radical OI.	Not supported
Hypothesis 9aRad	High levels of uncertainty in the subsidiary's local environment are associated with increased levels of subsidiary radical OI.	Not supported
Hypothesis 9bRad	High levels of uncertainty in the subsidiary's international environment are associated with increased levels of subsidiary radical OI.	Not supported
Hypothesis 10Rad	High levels of subsidiary radical OI are positively associated with high subsidiary entrepreneurial performance.	Supported
Hypothesis 11	High levels of subsidiary entrepreneurial performance have a positive influence on overall subsidiary performance.	Supported

* As mentioned in Sections 7.4 and 7.5, the results of the LISREL analysis were considered superior to those of the SPSS analysis, given that the former tested the entire model altogether (i.e. all sets of dependence relationships simultaneously).

Table 7.5.3: Comparison of results between the two statistical methods		
Opportunity Identification		
	<i>SPSS Results (OI)</i>	<i>SEM Results (OI)</i>
Subsidiary entrepreneurial capabilities		
Innovation propensity	Statistically significant and positive	Statistically significant and positive
Networking with Non-Direct Value Chain partners	Statistically significant and positive	Statistically significant and positive
Elements of the parent-subsidiary relationship		
Autonomy	Not statistically significant	Statistically significant and positive
Flows with HQs	Statistically significant and positive	Statistically significant and positive
Characteristics of the external environment		
Hostility	Statistically significant and negative	Not statistically significant
Effects on performance		
Entrepreneurial Performance	Statistically significant and positive	Statistically significant and positive
Subsidiary Performance	Statistically significant and positive	Statistically significant and positive
Radical Opportunity Identification		
	<i>SPSS Results (Radical OI)</i>	<i>SEM Results (Radical OI)</i>
Subsidiary entrepreneurial capabilities		
Risk attitude	Statistically significant and positive	Statistically significant and positive
Networking with Non-Direct Value Chain partners	Statistically significant and positive	Statistically significant and positive
Elements of the parent-subsidiary relationship		
Autonomy	Not statistically significant	Statistically significant and positive
Characteristics of the external environment		
Hostility	Statistically significant and negative	Not statistically significant
Effects on performance		
Entrepreneurial Performance	Statistically significant and positive	Statistically significant and positive
Subsidiary Performance	Statistically significant and positive	Statistically significant and positive

7.6 Conclusion

The present chapter tested the proposed research hypotheses, as these emerged through a synthesis of literature and exploratory case-study research (Chapter 6). In particular, two multivariate data analysis techniques were employed, *multiple regression analysis* and *structural equation modeling (SEM)*, based on which sample data were analysed. While the statistical results of the two methods to a great extent coincided, when disparities were encountered, the SEM analysis was considered superior given its inherent ability to test the entire set of relationships simultaneously.

The findings of the quantitative analysis brought to light particular “entrepreneurial capabilities” at the subsidiary level that relate to OI: the subsidiary’s *innovation propensity* and *external networking with non-direct value chain partners* proved significant for increased levels of subsidiary OI, while the subsidiary’s *risk-taking attitude* and *external networking with non-direct value chain partners* appeared critical for the identification of radical opportunities. In addition, *subsidiary autonomy* and *knowledge flows with the parent corporation* were found important sources of power for the individual subsidiary. These can have a significant positive impact upon the subsidiary’s ability of OI. Subsidiary *autonomy* might also enhance the subsidiary’s ability of identifying radical opportunities. As concerns the subsidiary’s *external environment*, the structural equation analysis did not identify any important direct effect on subsidiary-level OI. In that respect, *internal subsidiary capabilities and the subsidiary’s power base within the MNC system appear more critical for subsidiary OI than external factors in the subsidiary’s local and international environments*. Nonetheless, only direct environmental effects were tested. Finally, the identification of opportunities at the subsidiary level (both general level of OI and radical OI) has the ability to enhance the subsidiary’s *entrepreneurial output* and can also have a positive but smaller effect on overall *subsidiary performance*.

Chapter 8: Conclusions

8.1 Introduction

This study examines the under-investigated topic of opportunity identification (OI), within a totally new context, that of the multinational subsidiary. Despite its centrality in entrepreneurship research (Zahra and George, 2002; McDougall and Oviatt, 2003; Dimitratos and Jones, 2005; Boojihawon et al, 2007), the notion of OI still lies at an embryonic stage of investigation, particularly as an organisation-wide phenomenon. Especially within the context of the multinational subsidiary, the notion of OI has not been examined per se, regardless of studies proving that entrepreneurial subsidiaries can also be actively involved in the identification and pursuit of innovative ideas (Birkinshaw, 2000; Prahalad, 1999).

The present study places the notion of OI within the broader theme of subsidiary entrepreneurship, and examines antecedents and outcomes of the subsidiary OI process. In doing so, it merges previous literature in the fields of international business and entrepreneurship under a resource-based framework of subsidiary OI. Given the scarcity of previous relevant empirical studies, this framework is refined based on the results of the exploratory multiple case-study analysis and subsequently tested quantitatively through a large-scale survey research.

This chapter addresses the three specific research objectives of the research, as these have been presented in Chapter 4:

1. What are the “entrepreneurial capabilities” in MNC subsidiaries that drive subsidiary OI?
2. What are critical factors in the subsidiaries’ corporate (MNC) setting and the external environment (local and international) that influence subsidiary OI?
3. How does subsidiary OI affect subsidiary entrepreneurial activity (entrepreneurial performance) and overall subsidiary performance (through the intervention of entrepreneurial performance)?

This chapter starts with an overview of the theme of subsidiary entrepreneurship (*Section 8.2*) and presents key gaps in the subsidiary-related and entrepreneurship literature (*Section 8.3*). It continues to discuss the findings of the present research: the existence of subsidiary “entrepreneurial capabilities” (*Section 8.4*), along with the relevance of factors in the

subsidiary's corporate setting (*Section 8.5*) and the external environment (*Section 8.6*) that drive subsidiary OI. Subsequently, the outcomes of the OI process are discussed, both in terms of the subsidiary's entrepreneurial performance (entrepreneurial activity) and overall subsidiary performance (*Section 8.7*). This chapter concludes by summarising the key findings (*Section 8.8*), and discussing the implications of the study for literature, management and public policy (*Section 8.9*). Finally, it provides a detailed account of the limitations of this research and proposes possible directions for future academic work (*Section 8.10*).

8.2 Re-conceptualising subsidiary entrepreneurship

The present study sheds light on the under-investigated theme of subsidiary entrepreneurship. While substantial interest in subsidiary-related literature has focused around the notions of subsidiary innovation (Bartlett and Ghoshal, 1988; Taggart, 1997; Pearce, 1997, 1999; Venaik et al, 2005) and initiative (Birkinshaw, 1997; 2000; Birkinshaw et al., 1998), most topical research has emphasised the need for further research attention on the topic of subsidiary entrepreneurship (Paterson and Brock, 2002; Young and Tavares, 2004; Birkinshaw et al, 2005; Boojihawon et al, 2007).

Indeed, research pertaining to the theme of subsidiary entrepreneurship has essentially focused on the particular notion of "subsidiary initiative" (Birkinshaw, 1997, 2000). Birkinshaw (1997) defined subsidiary initiative as "essentially an entrepreneurial process" that leads to "international responsibilities for the subsidiary" (Birkinshaw, 1997, p. 207). The above definition of subsidiary initiative describes it as a discrete entrepreneurial activity at the subsidiary level, but with international impact (Birkinshaw, 1997). Such initiatives that have implications for the entire MNC have been essentially the focus of research on subsidiary entrepreneurship, sidestepping entrepreneurial activities of limited-scope with implications for the individual subsidiary only (Birkinshaw and Ridderstråle, 1999).

Given that an entrepreneurial initiative is a specific form of corporate entrepreneurship (Kanter, 1982; Miller, 1983), subsidiary entrepreneurship is a concept broader than subsidiary initiative (Birkinshaw, 1999). Hence, although the above definition of subsidiary initiative acknowledges it as an activity that can take place within the context of the individual subsidiary, it is considered too narrow to address the entire theme of subsidiary entrepreneurship. Therefore, *there seems to be a clear gap in the subsidiary-related*

literature in terms of developing a more holistic conceptualisation and measurement of MNC subsidiary entrepreneurship (Birkinshaw, 1997; Wright, 1999; Dess et al., 2003; Birkinshaw et al, 2005; Boojihawon et al, 2007). Examining the notion of entrepreneurship at the subsidiary level requires that it is viewed as a broader concept that may be exhibited through various and different types of initiatives, irrespective of their nature (radical versus incremental), orientation (local versus international) and locus of the opportunity (internal versus external).

In addressing this gap, this study takes a broader perspective in conceptualising the notion of subsidiary entrepreneurship. Drawing on the findings of the exploratory case-study research, this study shows that subsidiary entrepreneurship does not only consist of activities with international impact (Birkinshaw, 1997); rather, *subsidiary entrepreneurship can also be manifested through a set of continuous incremental improvements taking place at the subsidiary level* (Andersson and Pahlberg, 1997), what Birkinshaw (1997) has referred to as “*trivial initiatives*” (Birkinshaw, 1997, p. 211). This aspect of subsidiary entrepreneurship, described by the investigated subsidiary management as “continuous innovation” (Freeman, 1987), is an integral part of subsidiary-level entrepreneurship. Though such “trivial initiatives” tend to have a more local orientation, they might also eventually prove “internationally useful” (Kogut 1991, p.60).

In accordance with the above conceptualisation of subsidiary entrepreneurship as a broader concept - ranging from incremental but value-adding change to radical innovation - lies the assumption that *subsidiary entrepreneurship can be relevant to all types of subsidiaries*, irrespective of their value-adding activity. Indeed, literature on subsidiary initiative tends to confine entrepreneurship to particular types of subsidiaries, excluding for example sales-only subsidiaries (Birkinshaw, 1997, 1999). Also, research on subsidiary initiative has largely focused on small samples of North American subsidiaries (Birkinshaw, 1997, 1999).

Therefore, building concrete knowledge on the theme of subsidiary entrepreneurship requires a “comprehensive understanding of the initiative phenomenon in other MNC settings”, and “in a larger sample of subsidiaries from different countries” (Birkinshaw, 1997, p. 227). This study addresses this gap by investigating the theme of entrepreneurship across a larger set of multinational subsidiaries, from different countries of origin and with dissimilar value-adding activities.

8.3 Subsidiary entrepreneurship and Opportunity Identification (OI)

While the theme of subsidiary entrepreneurship has been under-investigated in MNC literature, studies in the field of international entrepreneurship also appear to have neglected the multinational subsidiary as an object of research. Indeed, international entrepreneurship literature has almost exclusively emphasised on the international activities of smaller firms, *alluding to the need for more research attention in the international operations of large established organisations and their multinational subsidiaries* (Zahra and George, 2002; Young et al, 2003; Dimitratos and Jones, 2005). In a similar vein, Dimitratos and Jones (2005) recently argued for the expansion of the field of international entrepreneurship, in order to include the international entrepreneurial activities of various types of firms in a wider range of industries. Given the presence of entrepreneurial behaviour at the subsidiary level (Birkinshaw, 1997, 1999, 2000; Birkinshaw and Hood, 2001; Birkinshaw, Hood, and Jonsson, 1998), and its considerable impact on the entire multinational corporation, there seems to be a need for re-direction of the research attention on the individual subsidiary unit.

While the general topic of subsidiary entrepreneurship merits further research attention, subsidiary-related literature has acknowledged that it essentially begins “with the identification of an opportunity” (Birkinshaw, 1997, p.207). Indeed, literature on entrepreneurship has considered that the notion of opportunity identification (OI) lies at the heart of entrepreneurial activity (Shane and Venkataraman, 2000). Despite its criticality, the concept of OI still lies at an embryonic stage of investigation. Indeed, most of the research on OI tends to examine it at the individual entrepreneur- rather than at a firm-level. Topical research has affirmed the importance of OI as a major theme of study within the field of international entrepreneurship (Dimitratos and Plakoyiannaki, 2003; McDougall and Oviatt, 2003; Zahra and George, 2002). In particular, Dimitratos and Jones (2005, p.122) recently posited that “future international entrepreneurship research agenda should include study on opportunity search, discovery, evaluation and exploitation in order to gain insights into how international entrepreneurial firms irrespective of age, size or industrial sector perceive opportunities”.

Within the context of the multinational subsidiary, the notion of OI has not been examined per se. Nonetheless, studies have shown that entrepreneurial subsidiaries can also be actively involved in the identification and pursuit of novel ideas and opportunities (Birkinshaw, 2000; Prahalad, 1999), which can also bring benefits to the entire

multinational system (Bartlett and Ghoshal, 1989; McEvily and Zaheer, 1999). As such, *the notion of OI is particularly relevant for the multinational subsidiary.*

In examining the notion of subsidiary OI, the present study drew on relevant recommendations in the entrepreneurship literature (Amabile, 1990; Shane, 2000; Fiet, 2002; Shepherd and DeTienne, 2005), *to investigate both the extent of OI taking place at the subsidiary level (OI), and also the particular identification of radical opportunities (radical OI).* While the first aspect addressed the need for a broader conceptualisation of subsidiary entrepreneurship (Birkinshaw, 1997; Wright, 1999; Dess et al., 2003; Birkinshaw et al., 2005), as a phenomenon ranging from incremental but value-adding change to radical innovation, the focus on radical OI was essential based on Schumpeter's (1934) definition of "opportunity creation" as a concept that can have a tremendous impact on economic performance (Poynter and White, 1989; Roth and Morrison, 1992; Dunning, 1994) and drive economic growth (Schumpeter, 1934; Brown and Eisenhardt, 1998).

Table 8.1: Key gaps in the literature	
Gap Identified	Need Addressed
Subsidiary Literature	
<ul style="list-style-type: none"> ▪ Subsidiary-literature focuses on particular manifestations of subsidiary entrepreneurship, i.e. subsidiary innovation and subsidiary initiative 	<ul style="list-style-type: none"> ▪ Need for a more holistic conceptualisation and measurement of subsidiary entrepreneurship
<ul style="list-style-type: none"> ▪ Literature on subsidiary initiative examines smaller samples of particular types of subsidiaries (e.g. excludes sales-only subsidiaries and focuses mainly on North-American subsidiaries) 	<ul style="list-style-type: none"> ▪ Need for a more generalisable study investigating the notion of subsidiary entrepreneurship across a large sample of different types of subsidiaries (different value-adding activities, different industries and different countries of origin)
<ul style="list-style-type: none"> ▪ Characteristics of subsidiary initiatives have been studied 	<ul style="list-style-type: none"> ▪ Characteristics of subsidiaries that take initiatives need to be studied
<ul style="list-style-type: none"> ▪ Limited research has dealt with the dispersion of resources and capabilities within the MNC, and particularly with the RBV of the multinational subsidiary 	<ul style="list-style-type: none"> ▪ Need for identification of resources and capabilities at the subsidiary level that relate to subsidiary entrepreneurship
<ul style="list-style-type: none"> ▪ Remarkably little has been written about the assessment of subsidiary performance, particularly with under the theme of subsidiary entrepreneurship 	<ul style="list-style-type: none"> ▪ The results of entrepreneurial opportunities on subsidiary performance should also be examined
Entrepreneurship Literature	
<ul style="list-style-type: none"> ▪ Corporate entrepreneurship and international entrepreneurship literature have neglected the multinational subsidiary 	<ul style="list-style-type: none"> ▪ Need to examine the international entrepreneurial activities of multinational firms and their subsidiaries
<ul style="list-style-type: none"> ▪ The particular notion of OI, lying at the heart of entrepreneurship, has not been examined at a corporate level, and more specifically not in the context of the multinational subsidiary 	<ul style="list-style-type: none"> ▪ Need to examine the notion of OI at the individual subsidiary level
<ul style="list-style-type: none"> ▪ Absence of a strong theoretical foundation for studying corporate and international entrepreneurship 	<ul style="list-style-type: none"> ▪ Need for an integrative theoretical framework that can holistically capture entrepreneurial phenomena and synthesise multidisciplinary perspectives

Table 8.1 summarises the key gaps in both subsidiary-related and entrepreneurship literature addressed by the present study (as explained in Sections 8.2 and 8.3). The following sections focus explicitly on these gaps through providing answers to the three main research objectives (as presented in Section 8.1 above). Section 8.4 highlights the existence of particular “entrepreneurial capabilities” at the subsidiary level that drive the subsidiary’s OI (and Radical OI) ability, and thus addresses *Research Objective 1*. Sections 8.5 and 8.6 examine the influence of aspects defining the parent-subsidiary relationship and the subsidiary’s external environment on subsidiary OI (and Radical OI), hence address *Research Objective 2*. Finally, Section 8.7 deals explicitly with performance considerations (including the effect of subsidiary OI on entrepreneurial performance and overall subsidiary performance) to address *Research Objective 3*.

8.4 The existence of “entrepreneurial capabilities” at the subsidiary level

An important objective of the present research has been to identify particular “entrepreneurial capabilities” at the subsidiary level that drive entrepreneurial phenomena, and particularly subsidiary OI. In doing so, the present study drew on the resource-based view (RBV) and the related schools of thought focusing on the development of firm-level capabilities.

While the resource-based perspective has received increased attention as a theory of the firm (Penrose, 1959; Wernerfelt, 1984; Barney, 1991; Amit and Schoemaker, 1993), limited research has dealt with the dispersion of resources and capabilities within the MNC (Kogut and Zander, 1994; Sölvell and Zander, 1994). Birkinshaw’s (1996, 1997) seminal work on subsidiary initiative brought to light the importance of distinctive resources and capabilities at the subsidiary level, and modeled these “as part of the subsidiary’s resource context” (Birkinshaw, 1999, p.17). Most topical research has also focused around subsidiaries that provide critical resources and capabilities to the entire multinational system (McEvily and Zaheer, 1999; Andersson and Forsgren, 2000; Holm and Pedersen, 2000; Rugman and Verbeke, 2001; Frost et al., 2002; Andersson et al., 2002). Nonetheless, *researchers acknowledge that limited work has been done thus far to explore and explain the development of resources and capabilities at the subsidiary level* (Schmid and Schurig, 2003). Inherent difficulties in applying the resource-based view to the multinational subsidiary mainly pertain to the level of analysis, i.e. distinguishing corporate-level from subsidiary-level resources and capabilities (Birkinshaw, 1994).

From a resource-based perspective, entrepreneurship can be viewed as a process of identification, acquisition and accumulation of resources to take advantage of perceived opportunities (Stevenson et al., 1994; Bergmann-Lichtenstein and Brush, 2001). Within the particular context of the multinational subsidiary, subsidiary-specific capabilities may allow for the combination and deployment of such resources (Amit and Schoemaker, 1993) in order to achieve entrepreneurial ends. In that respect, the resource-based framework can provide unique insights in the study of entrepreneurial phenomena (Barney, 2001), and particularly that of OI.

In examining the particular notion of OI within the broader theme of subsidiary entrepreneurship, *the present study identified particular subsidiary-specific capabilities that drive entrepreneurial phenomena*. Such “entrepreneurial capabilities” cannot be easily transferred from one subsidiary to the next and hence constitute a source of competitive advantage (Barney, 1991) at the subsidiary level. While previous research has essentially

referred to subsidiary capabilities in terms of their relevance to other corporate entities (Schmid and Schurig, 2003), this study examined subsidiary capabilities from the perspective of their influence on subsidiary OI and entrepreneurship. More specifically, three “entrepreneurial capabilities” were identified as key determinants of the subsidiary’s OI ability. These include the subsidiary’s *innovation propensity*, *risk attitude* and *networking activity*, and were characterised as “entrepreneurial capabilities” due to their inherent characteristics: they cannot be easily transferred from one subsidiary to the other, they are path dependent, non-imitable and rare (Barney, 1991). The following sections explicitly analyse each of these three “entrepreneurial capabilities”, along with their effect of subsidiary OI.

8.4.1 Subsidiary networking

Literature on MNC subsidiaries has acknowledged the importance of the subsidiary’s network for the creation of new knowledge and critical capabilities at the subsidiary level (Håkansson and Snehota, 1997; Andersson et al., 1999; Andersson et al., 2000; Schmid and Schurig, 2003). A resource-based approach of the multinational subsidiary would thus bring into light the importance of the subsidiary’s network embeddedness as a strategic resource (Srivastava et al., 1998; Andersson et al., 2002; Lecocq and Yami, 2002), that is created through a path-dependent process and is, therefore, idiosyncratic and difficult to imitate (Dyer and Singh, 1998; McEvily and Zaheer, 1999; Andersson et al., 2002). In addition, through its embeddedness in business networks, the subsidiary has access to key resources and capabilities residing outside its restricted organisational boundaries (Gulati, 1999; Gulati et al., 2000). Topical research in the field of entrepreneurship has also considered network embeddedness as a key element of the entrepreneurial process (Jack and Anderson, 2002).

In the particular context of the multinational subsidiary, “network resources” (Gulati, 1999) can reside both inside and outside the MNC (Ghoshal and Westney, 1993). Indeed, relevant literature tends to differentiate between the subsidiary’s internal/corporate network - consisting of relationships developed within the multinational system - and the external network of the subsidiary - comprising relationships in the local and international market(s) (Andersson and Forsgren, 1995). While embeddedness of the multinational subsidiary in intra-organisational relationships, referred to as “corporate embeddedness” (Andersson and Forsgren, 1995, 1996), provides valuable resources (Andersson et al., 2001) for subsidiary capability development (Schmid and Schurig, 2003), external partners have been generally

considered to play significant role as sources of new ideas and business practices (Von Hippel, 1988; Håkansson, 1989; Powell et al., 1996; Andersson and Forsgren, 1995, 1996; Tsai and Ghoshal, 1998; Andersson et al., 2002; Young and Tavares, 2004).

Whereas literature has mainly differentiated between internal and external “network resources” (Gulati, 1999) at the subsidiary level, the present study took a more detailed approach in examining the effect of the subsidiary’s networking activity on OI. In particular, it has shown that external network partners comprise two distinct categories: direct value chain partners and non-direct value chain partners. Hence, the following *three types of subsidiary networking activity* were identified:

1. Subsidiary networking *within the MNC*, in accordance with literature conceptualising the subsidiary as part of an intra-organisational network (Hedlund, 1986; Bartlett and Ghoshal, 1989; White and Poynter, 1990; Doz and Prahalad, 1991).
2. Subsidiary networking *with its direct value chain partners*, i.e. customers, suppliers and distributors. Literature has acknowledged that customers (Håkansson, 1989; Laage-Hellman, 1989; Frost et al., 2002), suppliers (Dosi, 1988; Lindstrand, 2003) and distributors (Schmid and Schurig, 2003) constitute a very important category of network partners.
3. Subsidiary networking *with external parties, not direct members of the subsidiary’s value chain*. These include government organisations, academic and research institutions, professional and trade associations, as well as external consultants. Literature has recognised the relevance of such external parties with respect to subsidiary competence building (Taggart, 1989; Schmid and Schurig, 2003).

This study proved the *significance of the subsidiary’s networking activity with non-direct value chain partners for increased subsidiary OI*. Networking within the multinational system and with direct members of the subsidiary’s value chain (such as customers, suppliers and distributors) appeared to have no influence on the subsidiary’s ability to identify opportunities. While previous studies have viewed extra-MNC relationships as most important for building critical capabilities (Andersson and Forsgren, 1996; Andersson and Pahlberg, 1996; Ensign, Birkinshaw and Frost, 2000; Furu, 2000), the present research emphasises the importance of only one particular aspect of the subsidiary’s external networking activity, i.e. networking with partners that are not members of the subsidiary’s direct value chain. In that respect, the subsidiary’s external networking activity with non-direct value chain members (e.g. government organisations, academic and research institutions, professional and trade associations, external consultants) constitutes an

important “entrepreneurial capability” at the subsidiary level that enhances the subsidiary’s ability of identifying a great number of and also more radical opportunities.

In addition, the subsidiary’s networking activity with non-direct value chain partners was characterised by lower levels of intensity - in terms of frequency of contact – compared to the other two types of networking activity. Following Granovetter’s (1973) notion of weak ties as relationships lying outside of the subsidiary’s immediate cluster of contacts and characterised by infrequent interaction, such links with external non-direct value chain partners were considered weak. In the related literature, weak ties have often been associated with access to novel knowledge and resources (Granovetter, 1973) increased alertness (Zaheer and Zaheer, 1997) and idea generation (Singh et al, 1999), whereas strong ties tend to be related to knowledge sharing (Uzzi, 1996; Lane and Lubatkin, 1998) and problem solving (Henderson and Cockburn, 1994; Eisenhardt and Tabrizi, 1995; Hansen, 1999). In a similar vein, the present study proved that a subsidiary’s weak ties with external non-direct value chain partners (such as government organisations, academic and research institutions, professional and trade associations, external consultants) are most critical for OI (both OI and radical OI).

8.4.2 Innovation propensity

Literature on corporate entrepreneurship and international entrepreneurship has long recognised the notion of “innovativeness” as an integral element of an organisation’s entrepreneurial posture (Covin and Slevin, 1991; Lumpkin and Dess, 1996). The particular concept has been considered to reflect a tendency of the entrepreneurial organisation to engage in and support new ideas, novelty, experimentation, and creative processes, thereby representing a clear departure from existing practices (Drucker, 1993; Lumpkin and Dess, 1996).

The notion of innovation has also been studied within the context of the multinational subsidiary. While early multinational literature viewed innovation from the MNC parent perspective, important studies have shown the importance of creativity and innovation as a key driver of subsidiary-level strategy (White and Poynter, 1984; Ghoshal and Bartlett, 1988; Venaik et al., 2005). An important part of subsidiary-related literature has also focused on the different types of R&D performed by subsidiaries and R&D subsidiary roles (Pedersen and Valentin, 1996; Taggart, 1997; Pearce, 1997, 1999; Papanastassiou, 1999).

While innovation has been largely considered in the literature with respect to its “innovative output”, an organisation’s “innovative culture” (Dosi, 1988; Nelson and Winter, 1982) is the stimulus for tangible innovation in terms of new products, markets, processes, technology and market entry (Manu, 1992). In line with the recent definition of subsidiary innovation as the extent to which subsidiaries seek new ideas for carrying out and improving their activities (Venaik et al (2005), the present study proved the positive and direct effect of the subsidiary’s innovation propensity on its ability to identify entrepreneurial opportunities. In that respect, *the subsidiary’s innovation propensity is considered a significant “entrepreneurial capability” at the subsidiary level that drives the subsidiary OI process.*

However, innovation propensity was found to be significantly associated only with the extent to which the subsidiary identifies opportunities (OI) and not with the particular identification of radical opportunities at the subsidiary level (radical OI). This finding links to subsidiary management’s view of “innovativeness” as a broader concept, covering the entire sphere of the subsidiary’s business activity. Management in the six investigated subsidiaries did not refer to innovation only as radical product, process and technological innovation, but also as innovation in work practices and in terms of transforming the subsidiary’s culture. In that respect, the subsidiary’s tendency to engage in and support new ideas positively relates to the overall extent of OI, and not to the particular identification of radical opportunities and ideas.

8.4.3 Risk attitude

Literature in the field of corporate entrepreneurship has identified a risk-taking attitude as an important element of an organisation’s entrepreneurial posture (Covin and Slevin, 1991; Lumpkin and Dess, 1996). Also, the notion of risk-taking is central in the definition of international entrepreneurship as “a combination of innovative, proactive and risk-seeking behaviour” in international organisations (McDougall and Oviatt, 2000, p. 903). In a similar vein, recent conceptual work has identified an international organisation’s risk-taking attitude as a key dimension of its entrepreneurial culture (Dimitratos and Plakoyiannaki, 2003). In essence, a risk-taking posture indicates the organisation’s willingness to commit significant resources in the pursuit of goals and engage in business activities where the outcomes may be highly uncertain (Miller and Friesen, 1978; Miller, 1983; Morris, 1998; Keh et al., 2002). However, the particular notion of risk-taking has not been examined within the context of the multinational subsidiary.

This study empirically proved the *relevance of the subsidiary's risk-taking attitude for the identification of radical opportunities at the subsidiary level (radical OI)*. Indeed, the exploratory case-study research brought to light the importance of what has been described by subsidiary management as a “calculated risk-taking” attitude (Stevenson and Jarrillo, 1990; Baden-Füller and Stopford, 1994), while the statistical analysis further linked such a risk-taking attitude with the particular identification of radical ideas at the subsidiary level. Consequently, subsidiary risk-taking was viewed as an important subsidiary “entrepreneurial capability” that drives radical OI at the subsidiary level. In a similar vein, entrepreneurship literature has found radical ideas to generally involve higher levels of uncertainty (Lee and Venkataraman, 2006), and also risk-taking to stimulate radical innovation (Lassen et al, 2006). Hence, an increased propensity for taking “calculated risks” (i.e. a strong risk-taking attitude) at a subsidiary level appears particularly relevant for engaging in radical OI.

8.4.4 Recapitulating: subsidiary “entrepreneurial capabilities” as drivers of OI

This study showed that *the subsidiary's innovation propensity, risk attitude and networking with non-direct value chain partners constitute critical “entrepreneurial capabilities” at the subsidiary level*. Subsidiary networking with non-direct value chain partners enhances the subsidiary's ability to identify both a larger set and also more radical opportunities. Nonetheless, this is not the case with innovation propensity and risk attitude; while subsidiary innovation propensity enhances the overall level of subsidiary OI, risk attitude is critical for the particular identification of radical opportunities at the subsidiary level (radical OI).

The aforementioned three “entrepreneurial capabilities” are strongly intertwined in the subsidiary's organisational culture and hence cannot be imitated easily or traded (Foss, 1993; Conner and Prahalad, 1996; Teece et al, 1997). While the subsidiary's innovation propensity and risk attitude clearly constitute internal capabilities from a resource-based perspective, this study proves that the subsidiary's external networking activity, and in particular networking with its non-direct value chain parties, can be viewed as an internal “dynamic” capability in itself, given that it can enhance intra-subsidiary capabilities (Burt, 1992; Powell and Smith-Doerr, 1994). As such, the present study aligns with previous literature under the “subsidiary choice” perspective, in empirically proving the existence of discrete “entrepreneurial capabilities” at the subsidiary level that drive subsidiary OI.

The aforementioned three subsidiary “entrepreneurial capabilities” were identified through a synthesis of relevant literature and the findings of the exploratory case-study analysis, and were subsequently tested through the large-scale survey research. However, the preliminary synthesis of previous literature with the exploratory case-study findings also brought to light the importance of two other “entrepreneurial capabilities” at the subsidiary level, which did not prove statistically significant in the subsequent quantitative analysis: “market learning” and “subsidiary proactiveness”.

“Market learning” emerged as a new concept in the present thesis, through proving that the subsidiary’s “learning orientation” and “market orientation” are closely linked to each other¹¹⁶ (Baker and Sinkula, 1999; Cadogan et al, 1999). While entrepreneurship literature has paid considerable attention to the importance of a strong learning orientation with respect to the identification of entrepreneurial opportunities (Kirzner, 1973, 1979; Shane and Venkataraman, 2000; Corbett, 2002; Lumpkin, 2005; Politis, 2005), an intense market-focused posture provides scope to an organisation’s learning efforts towards specific markets (Von Hippel, 1988), ways to serve markets (Schumpeter, 1934), and customer problems (Shane, 2000). Hence, superior knowledge of and increased sensitivity to market needs can open up a broader set of opportunities for the individual subsidiary. Based on the same reasoning, the exploratory case-study research proposed that a strong “market learning” orientation can enhance the subsidiary’s ability of OI. Though literature has stressed the importance of “generative learning” for radical innovation (Fiol and Lyles, 1985; Miner and Mezias, 1996), the findings of the exploratory case-study analysis did not imply a particular link between subsidiary “market learning” and radical OI.

Despite the proposed significance of “market learning” for increased subsidiary OI, the results of the statistical analysis did not corroborate this proposition. In order to explain this finding, the present study draws on relevant literature and proposes that the particular notion of “market learning” could to a large extent be embedded in entrepreneurial processes. This assumption aligns with literature describing entrepreneurship, and particularly OI, as a learning process (Minniti and Bygrave, 2001; Dimov, 2003; Gaglio, 2004). When applied to the concept of entrepreneurship, learning has often been concerned with identifying and acting on opportunities (Shane and Venkataraman, 2000; Corbett, 2002). In that respect, it can be argued that the subsidiary’s “entrepreneurial capabilities” incorporate elements of learning, and are basically generated through a learning process

¹¹⁶ Indeed, the insights of the exploratory case-study research (Section 6.4.5) brought into light the concept of “market learning”, while the results of the statistical analysis proved a high correlation between the two constructs, i.e. market orientation and learning orientation (Section 7.2.2).

(Eisenhardt and Martin, 2000). Hence, the three “entrepreneurial capabilities” that significantly drive subsidiary OI, to a great extent incorporate elements of “market learning”. Indeed, an important aspect of the subsidiary’s external network activity involves acquiring market-related “network knowledge” (Powell et al., 1996; Forsgren et al., 2000; Foss and Pedersen, 2002). Also, the subsidiary’s innovativeness and risk-taking culture are essentially reinforced by organisational learning processes, which emphasise improvement of practices and expansion into new areas by creating new knowledge (Senge, 1990).

In addition, “subsidiary proactiveness”, though identified in the literature as an important constituent of an entrepreneurial culture (Covin and Slevin, 1991; Lumpkin and Dess, 1996), and proposed by the exploratory case-study research as a factor enhancing subsidiary OI, was not found statistically significant during the quantitative analysis. However, the notion of “proactiveness” appears to relate closely to the subsidiary’s “market learning” posture. Relevantly, Bartlett and Ghoshal (1998) have acknowledged the importance of organisational learning for developing a firm-level capability of sensing and responding to change in a rapid and flexible manner. In a similar vein, sensing changing market conditions and proactively addressing market needs requires a superior “market-learning” capability at the subsidiary level. Also, the notion of “proactiveness” essentially refers to creating first-mover advantages towards competition (Lumpkin and Dess, 1996), hence reflects the subsidiary’s way of dealing with external threats; however entrepreneurial OI might relate more to factors internal to the subsidiary, such as an internal culture of innovation and risk-taking.

8.5 Corporate factors and their effect on subsidiary OI

A key objective of the present research has also been to identify critical factors in the subsidiary’s corporate (MNC) setting that influence entrepreneurial phenomena, and particularly subsidiary OI. Given that the subsidiary’s corporate context is essentially determined by aspects of the parent-subsidiary and subsidiary-subsidiary relationship, the present study incorporated elements of the resource-dependency logic under a resource-based approach of subsidiary OI. As has been argued in this thesis, these two theoretical approaches can be linked to each other, given the similarity in the essence of their fundamental concepts (Medcof, 2001; Luo, 2003).

The corporate context in which the subsidiary operates is essentially defined by intra-MNC resource dependencies that determine the relative power of the various entities within the

multinational system (Andersson et al., 2001). Therefore, characteristics of the parent-subsubsidiary and subsidiary-subsubsidiary relationship reflect the subsidiary's power base within the MNC and essentially determine the subsidiary's ability to build up "entrepreneurial" resources and capabilities. Literature on subsidiary entrepreneurship has indeed emphasised the importance of the subsidiary's relative power within the multinational system as a key driver of subsidiary initiative (Birkinshaw and Ridderstråle, 1999).

This study proved the relevance of two sources of subsidiary power for increased OI at the subsidiary level: the subsidiary's role within the multinational system and its level of autonomy (Forsgren and Pahlberg, 1992; Taylor et al., 1996).

8.5.1 Subsidiary role

The role of the subsidiary in the MNC has attracted increasing interest in recent years, but the empirical research within this area still remains limited (Gupta and Govindarajan, 1994; Andersson and Pahlberg, 1997). While considerable research has linked subsidiary roles to the notions of innovation and creativity at the subsidiary level (Gupta and Govindarajan, 1994; Forsgren and Pedersen, 1998), and most recent studies have focused around subsidiaries that possess specialised resources and unique capabilities to play innovative roles within the multinational system (Young and Tavares, 2004), *no study has directly linked subsidiary roles to the theme of subsidiary entrepreneurship.*

The present study sought to conceptualise subsidiary roles based on Gupta and Govindarajan's (1991) logic of intra-MNC knowledge flows. Gupta and Govindarajan's (1991, 2000) notion of knowledge flows essentially refers to procedural types of knowledge that exist in the form of "know-how", rather than declarative "know-what" type of knowledge (Kogut and Zander, 1993; Simonin, 1999; Gupta and Govindarajan, 2000). The subsidiary's role is defined in terms of the magnitude and direction of the knowledge flows that take place within the MNC. The magnitude of flows is basically the extent to which subsidiaries engage in knowledge transfers within the MNC, and the directionality of flows refers to whether subsidiaries are providers or receivers of knowledge.

The particular focus on knowledge flows was deemed most suitable within the context of the present study due to the following reasons:

First, a resource-based consideration of the multinational subsidiary aligns with the particular examination of knowledge as a strategic resource that can be transferred within the multinational system and generate superior power at the subsidiary level. *Second*,

substantial literature conceptualising the MNC as a “social community” (Tsai and Ghoshal, 1998; Tsai, 2000) highlights the importance of knowledge transfers as a reason for the MNC’s very existence (Kogut and Zander, 1992, 1993) and further identifies intra-MNC knowledge flows as sources of value creation (Gupta and Govindarajan, 2000; Frost, 2001). *Third*, the value of knowledge transfer in international firms can be particularly relevant for providing access to new ideas and stimuli (Sölvell and Zander, 1995), and hence might relate to opportunity identification. *Fourth*, while further empirical work is still required on Gupta’s and Govindarajan’s (1991) subsidiary typology (Harzing and Noorderhaven, 2006), the concept of intra-MNC knowledge flows has not been considered with respect to the theme of subsidiary entrepreneurship. In considering the impact of knowledge flows, Buckley and Carter (1996) proposed that innovation within the MNC occurs through “global synthesis”, meaning the integration of knowledge flows from diverse sources. Through exploiting the knowledge that exists in their network of subsidiaries, MNCs can explore into new possibilities (Frost, 2001). However, the impact of intra-organisational knowledge flows has not been examined from the individual subsidiary’s perspective, i.e. the effect of such knowledge transfers on the subsidiary’s internal capabilities, such as OI.

This study empirically proved that *subsidiary knowledge flows with the parent corporation are critical for increased subsidiary OI, irrespective of their directionality, i.e. whether these are inflows or outflows*. Literature has corroborated that the magnitude of the knowledge transfers is more important than their directionality (Anderson and Pahlberg, 1997). In that respect, literature has suggested that strong interdependencies, i.e. when the subsidiary is a very important “knowledge provider” but also to a great extent “knowledge recipient” within the MNC, might be more important as a base for subsidiary influence than weaker interdependencies, i.e. when the subsidiary is a “net provider” (Anderson and Narus, 1990; Anderson and Pahlberg, 1997). From a resource-based perspective, such knowledge flows between the individual subsidiary and the parent corporation may be considered as “unique” and “valuable” resources (Wernerfelt, 1984; Barney, 1991) that promote the subsidiary’s ability of OI.

From a resource dependency perspective, however, previous studies have linked large subsidiary knowledge outflows with increased strategic influence (Andersson and Pahlberg, 1997) and relative power within the multinational system (Mudambi and Navarra, 2004). Indeed, Gupta and Govindarajan’s (1991) rationale has been that that greater reliance by the parent company on the subsidiary tends to increase the subsidiary’s power base. However, the present study suggests that with respect to OI, both knowledge inflows from and

outflows to the parent are important. While knowledge outflows to the parent¹¹⁷ might be a source of subsidiary power, knowledge inflows from the parent provide the subsidiary with valuable resources that might affect OI levels.

8.5.2 Subsidiary autonomy

Studies on corporate entrepreneurship have suggested a clear link between decentralised decision-making and entrepreneurial activity (Kanter, 1985; Sathe, 1985). Similarly, early studies in MNCs have posited that some degree of decision decentralisation to the local subsidiaries provides the MNC with the required flexibility to confront unexpected problems and seize unexpected opportunities (Prahalad and Doz, 1987). While dispersed responsibility is crucial for developing a truly responsive global firm, there is an obvious tendency for such autonomous subsidiaries to develop into “centres of excellence” (Bartlett and Ghoshal, 1986). This tendency has been confirmed by researchers who further posit that autonomous subsidiaries can increase their influence within the multinational system (Forsgren et al, 1992) and contribute towards firm-specific advantages (Birkinshaw et al, 1998).

This viewpoint has been mainly supported by research under the “subsidiary choice” perspective, in considering autonomy as both a prerequisite and desirable result of subsidiary development (Birkinshaw, 1997; Birkinshaw and Hood, 1998; Hood and Taggart, 1999; Paterson and Brock, 2002). In a similar vein, studies have positively linked the notion of autonomy to the subsidiary’s innovative potential (Ghoshal and Bartlett, 1988; Jarillo and Martinez, 1990; Gupta and Govindarajan, 1994) and the pursuit of entrepreneurial initiatives (Zahra, 1991; Birkinshaw, 1997, 2000). Although the concept of subsidiary autonomy has been the focus of numerous studies, recent papers call for further research attention on autonomy and the multinational subsidiary (Young and Tavares, 2004), particularly within the field of international entrepreneurship (Young, Dimitratos, and Dana, 2003).

Despite studies that have found subsidiary autonomy per se to be insufficient in ensuring subsidiary innovative behaviour (Taggart, 1997), the *present study proved the direct and positive effect of autonomy on the subsidiary’s ability to identify opportunities(OI) and also its ability to identify radical opportunities (radical OI)*. Increased levels of subsidiary

¹¹⁷ While knowledge flows from the parent to the subsidiary are the traditional “forward” knowledge transfers, knowledge flows from the subsidiary to the parent have been termed in literature as “reverse” knowledge flows, and have received limited research attention (Frost, 1998; Yamin, 1999; Håkanson and Nobel, 2000; Frost and Zhou, 2005; Ambos et al, 2006).

autonomy do not only provide access to critical resources, but also allow subsidiaries to deploy such resources most appropriately (Birkinshaw, 1996; O'Donnell, 2000), hence are positively associated with the identification of opportunities at the subsidiary level. Regarding the particular identification of radical opportunities, given that these are generally associated with higher levels of uncertainty (Lee and Venkataraman, 2006), subsidiary autonomy appears even more critical for allowing unobstructed experimentation and hence stimulating radical innovation (Lassen et al, 2006).

8.5.3 Recapitulating: the impact of subsidiary role and autonomy on OI

The present study proved that the subsidiary's role, as determined by increased knowledge flows with the parent corporation, as well as the subsidiary's autonomy can enhance the identification of opportunities at the subsidiary level. From a resource-based perspective, these two factors, essentially pertaining to the parent – subsidiary relationship, allow the subsidiary to access “unique” and “valuable” resources, which drive the subsidiary's ability of identifying a larger set of entrepreneurial opportunities.

From a resource dependency perspective, strong interdependencies with the parent (Anderson and Narus, 1990) and subsidiary autonomy can be viewed as “critical” sources of subsidiary power (Forsgren and Pahlberg, 1992). Yet, these two sources of power at the subsidiary level are based on different grounds: while increased knowledge flows (inflows and outflows) with the parent corporation essentially rely on strong intra-organisational dependencies, autonomy relates to the subsidiary's ability to achieve independence through avoiding control from the parent (Andersson and Pahlberg, 1997).

Indeed, a large part of the MNC literature has supported a negative correlation between corporate embeddedness (hence increased intra-organisational resource flows and thus interdependencies) and subsidiary autonomy (Hedlund, 1981; Birkinshaw and Morrison, 1995; Andersson and Forsgren, 1996; Taggart and Hood, 1999; Holm and Pedersen, 2000). In that respect, Holm and Pedersen (2000, p. 7) have argued that “integration in the MNC and interdependence with other units reduce the decision-making power in the subsidiary”. Yamin (2000, 2002) refers to a required “*organisational isolation*”, notion which is critical for entrepreneurial action and the development of distinctive subsidiary capabilities.

However, in addition to other exceptions (Gates and Egelhoff, 1986), Gupta and Govindarajan's (1991, 1994) study did not prove a significant negative correlation between subsidiary autonomy levels and knowledge flows. In a similar vein, the present study found that both increased interdependencies with the parent and subsidiary autonomy have a direct

and positive impact on the subsidiary's OI ability. This means that *both subsidiary autonomy and subsidiary knowledge flows with the parent can co-exist as sources of subsidiary power that bring a positive influence on the subsidiary's OI ability*. In explaining this finding, the notions of "forward" versus "reverse" knowledge flows were considered (Frost, 1998; Håkanson and Nobel, 2000, 2001; Zhou and Frost, 2003). In particular, knowledge transfers from the subsidiary to the parent, i.e. reverse knowledge flows, might translate to a greater need for knowledge creation expected from the individual subsidiary, which can only be achieved through autonomous action (Gupta and Govindarajan, 1991). Forsgren and Pedersen (2000) have also posited that greater subsidiary knowledge can increase the subsidiary's ability to influence MNC strategic decisions only to the extent that other units are able to assimilate and use it. Increased efforts in developing the subsidiary's own knowledge base without transferring knowledge to other units can actually have a negative effect on the subsidiary's position within the MNC (Forsgren et al., 2000). This last point proves the importance of both knowledge creation and knowledge transfer within the MNC. Whilst the first may require increased autonomous action (Gupta and Govindarajan, 1991), the latter suggests increased interdependencies within the MNC.

8.6 Environmental influences on subsidiary OI

MNC literature has long acknowledged the significant influence of the external environment on the subsidiary's activities and its role within the multinational system (Ghoshal and Nohria, 1989; Ghoshal and Bartlett, 1991; Rosenzweig and Singh, 1991; Westney, 1994; Hood et al, 1994; Rosenzweig and Nohria, 1995). Along the same line of thought, researchers have stressed the importance of considering environmental effects in studying the particular theme of subsidiary entrepreneurship (Hood and Young, 1994; Birkinshaw and Hood, 1998; Hood and Taggart, 1999; Verbeke et al, 2007). *A resource-based view of the multinational subsidiary should therefore not overlook the potential significant impact of external environmental characteristics on subsidiary-level resources and capabilities* (Teece, 1986; Bartlett and Ghoshal, 1989; Luo and Peng, 1999). As most topical research has proposed, environmental factors can significantly influence the competence level of subsidiaries (Benito et al., 2003).

Particularly within the fields of corporate and international entrepreneurship, literature has traditionally viewed the external environment as a key determinant of entrepreneurial activity at the firm-level (Miller, 1983; Khandwalla, 1987; Covin and Slevin, 1991; Zahra,

1991, 1993). In that respect, specific environmental characteristics have been identified as either conducive or adversary to firm-level entrepreneurship (Oviatt and McDougall, 1994; Zahra et al., 1997; Zahra and Garvis, 2000; Dimitratos et al. 2004). Nonetheless, such studies appear to have neglected the “entrepreneurial subsidiary” as an object of research.

In examining *direct environmental effects on subsidiary OI*, the present study particularly focused on the prominent notions of munificence and uncertainty (Khandwalla, 1977; Lawless and Finch, 1989; Covin and Slevin, 1989). While some studies have considered environmental *munificence* to encourage firms in adopting an entrepreneurial posture (Khandwalla, 1987; Guth and Ginsberg, 1990; Zahra, 1991), others have shown the lack of munificence, i.e. environmental *hostility*, to create threats that stimulate entrepreneurial behaviour at the firm level (Miller and Friesen, 1983; Covin and Slevin, 1991; Zahra, 1993; Hitt et al, 1997; Lumpkin and Dess, 2001). The environmental dimension of *uncertainty* has also been viewed as a stimulus for entrepreneurial firms to actively seek for entrepreneurial opportunities and engage in entrepreneurship (Miller and Friesen, 1982; Miller, 1983; Miller et al, 1988; McDougall et al. 1994; Oviatt and McDougall, 1994; Balabanis and Katsikea, 2003).

In addition, literature examining the effects of the external environment on firm-level entrepreneurship tends to essentially consider characteristics of the local environment (Ghoshal and Nohria, 1989; Jarrillo and Martinez, 1990; Rosenzweig and Singh, 1991; Covin and Slevin, 1991; Porter, 1992; Bartlett and Ghoshal, 1993; Zahra and Covin, 1995; Zahra et al. 1997; Zahra et al, 2000). Similarly, research on subsidiary initiative has mainly examined characteristics of the host-country and the subsidiary’s local market (Birkinshaw et al., 1998; Birkinshaw and Hood, 1998; Birkinshaw, 1999). However, it has been argued in the present thesis that conditions in both the subsidiary’s local and international environments may influence its entrepreneurial activities (Zahra et al, 1999). No research appears to have examined the effects of both local and international environmental settings on subsidiary entrepreneurship, nor on the entrepreneurship-performance relationship (Dimitratos et al, 2004). This seems to be a deficiency of previous empirical studies, given that the local and international environments may be characterised by different conditions and hence pose differing effects on entrepreneurial phenomena (McDougall et al, 2003; Young et al, 2003).

Particularly with respect to the multinational subsidiary, given that entrepreneurial opportunities can be identified in both its local and international market(s) (Birkinshaw, 1996, 1997; Zahra and Gravis, 2000; Zahra and Dess, 2001), environmental characteristics

should reflect both environmental settings. Although this study examined munificence and uncertainty at both a local and international level, the findings proved that subsidiary management's perceptions of the local and international environmental settings coincide, i.e. they are highly correlated to each other.

Also, contrary to the results of some prior studies, *this research did not find a significant direct effect of the external environment on the subsidiary's ability to identify either a larger set or more radical opportunities*. However, as will be recognised as a limitation of the present study (Section 7.9), this research examined exclusively direct effects. The external environment per se may not play a significant role in inducing subsidiary OI (and radical OI), *but could significantly define the subsidiary's internal resources and capabilities* (Luo and Peng, 1999) *and/or determine aspects of the parent-subsidiary relationship* (Rosenzweig and Singh, 1991). Indeed, the disparate results provided by the two statistical analysis methods¹¹⁸, i.e. multiple regression analysis and structural equation modelling, suggest that the external environment, either posing direct or indirect effects, might be extremely relevant in the study of entrepreneurial phenomena.

8.7 Outcomes of OI at the subsidiary level

Entrepreneurial activity originates from opportunities that have been identified and subsequently exploited at the subsidiary level (Birkinshaw, 1997). However, between the identification of an opportunity and its exploitation lies a critical opportunity evaluation and development process (Ardichvili et al, 2003). This means that not all identified opportunities translate into actual entrepreneurial output. Consequently, increased subsidiary OI might not necessarily relate to increased subsidiary entrepreneurial activity.

Given that entrepreneurial activity at the subsidiary level refers to the actual output of subsidiary entrepreneurship, this study employs the term “entrepreneurial performance”. It is therefore assumed that subsidiary “entrepreneurial performance” essentially stems from the exploitation of entrepreneurial opportunities at the subsidiary level.

Two principal reasons can be offered to explain *why subsidiary OI might not always result in increased subsidiary entrepreneurial performance*. **First**, literature has suggested that

¹¹⁸ While the regression models found environmental hostility to pose a significant but negative direct effect on both OI and radical OI, the SEM method did not prove an important direct effect of the external environment.

“exploitation” activities tend to “drive out” activities of “exploration” and creation¹¹⁹ (March, 1991, Hedlund and Ridderstråle, 1992; Levinthal and March, 1993; Birkinshaw and Ridderstråle, 1999). Hence, different resources and capabilities may be required for exploration versus exploitation at the subsidiary level. However, literature has also suggested that organisations cannot be engaged solely in exploitation or exploration; they rather tend to find an appropriate balance (March, 1991). In that respect, subsidiary roles may also vary depending on the relative balance of opportunity exploration versus exploitation at the subsidiary level. For example, some subsidiaries may engage more actively in the identification of opportunities, thereby operate as “scanning units”, while other subsidiaries may also vigorously exploit identified opportunities and hence form “innovation hubs”. **Second**, the established architecture of the MNC tends to favour opportunities originating in highly-influential parts of the organisation at the expense of those from the periphery (Burgelman and Grove, 1996; Hamel, 1996). Consequently, subsidiaries may not always be given the autonomy and required resources to exploit opportunities and for reasons beyond the subsidiary’s control (Birkinshaw and Ridderstråle, 1999). In that respect, Yamin (2002) underlines the importance of “autonomous behaviour” for exploratory activities to take place.

Nonetheless, *the present study found high levels of subsidiary OI (and radical OI) to relate to increased subsidiary entrepreneurial performance*. This finding corroborates the fact that opportunities are the core element of the entrepreneurial process. Indeed, entrepreneurship starts with the identification of opportunities (Shane and Venkataraman, 2000; Hitt et al., 2001) and subsidiary entrepreneurship is essentially driven by opportunities identified at the subsidiary level.

While OI was found to have a significant and positive effect on subsidiary entrepreneurial performance, this study further examined the effect of the latter (i.e. subsidiary entrepreneurial performance) on *overall subsidiary performance*. Indeed, differences in performance can also arise from the quality of opportunities and the creativity of the exploitation modes (Zahra et al, 2005). Although literature has generally asserted that entrepreneurship can have a positive influence on firm performance (Covin and Slevin, 1991; Zahra, 1991, 1993; Lumpkin and Dess, 1996; Zahra et. al., 2001), the theme of subsidiary performance in general and the effect of entrepreneurship on performance in particular have surprisingly drawn limited empirical attention (Zahra, 1993; Zahra et al, 1999; Andersson et al., 2001; Hornsby et al., 2002; Dess et al., 2003). This holds especially

¹¹⁹ In the FDI literature, “strategic asset seeking” (i.e. exploration activities) has been contrasted with “asset-exploiting” (i.e. exploitation activities) (Dunning, 1995; Chen and Chen, 1998; Frost, 2001).

for studies dealing with entrepreneurship and international performance of the firm (Dimitratos et al., 2004). While research has generally suggested that this relationship is positive (Zahra and Garvis, 2000; Dimitratos and Plakoyiannaki, 2003; McDougall and Oviatt, 2000), empirical evidence is scant.

In addressing such performance considerations, *this study established a positive direct link between subsidiary entrepreneurial performance (i.e. entrepreneurial activity) and overall subsidiary performance*. Although some studies have proposed that the relationship between corporate entrepreneurship and performance is context-specific (Miller and Friesen, 1983; Covin and Slevin, 1989; Lumpkin and Dess, 1996; Dess et al., 1997), meaning that it depends on internal/organisational and external/environmental factors (Covin and Slevin, 1989; Naman and Slevin, 1993; Zahra, 1993; Zahra and Covin, 1995; Brush et al., 2001; Lumpkin and Dess, 2001), the present study found a direct relationship.

Hence, the identification of opportunities at the subsidiary level (both OI and radical OI) essentially drives the subsidiary's entrepreneurial performance (output), which ultimately has a positive overall impact on subsidiary bottom-line performance. Nonetheless, the effect of OI on entrepreneurial performance appears stronger than the effect of entrepreneurial performance on overall subsidiary performance. In that respect, this study acknowledges *the existence of other critical factors, apart from subsidiary entrepreneurship, that fundamentally determine subsidiary performance*.

8.8 Overall conclusions

This study adopts a resource-based view (RBV) of the multinational subsidiary to prove that *subsidiary entrepreneurship is essentially driven by opportunities identified at the subsidiary level*. For the identification of these opportunities, *particular subsidiary-specific "entrepreneurial capabilities" and external resources determined by the parent-subsidiary relationship are most critical, while the subsidiary's external environment does not have a significant direct effect on subsidiary OI*.

From a resource-based perspective, the subsidiary's innovation propensity, risk attitude and external networking with non-direct members of the subsidiary's value chain (such as government organisations, academic and research institutions, professional and trade associations, external consultants) constitute unique, valuable and non-imitable capabilities at the subsidiary level that are combined, coordinated and developed through time (Young et al., 2000) to drive the subsidiary's OI ability. In itself, OI can be viewed as a firm-level

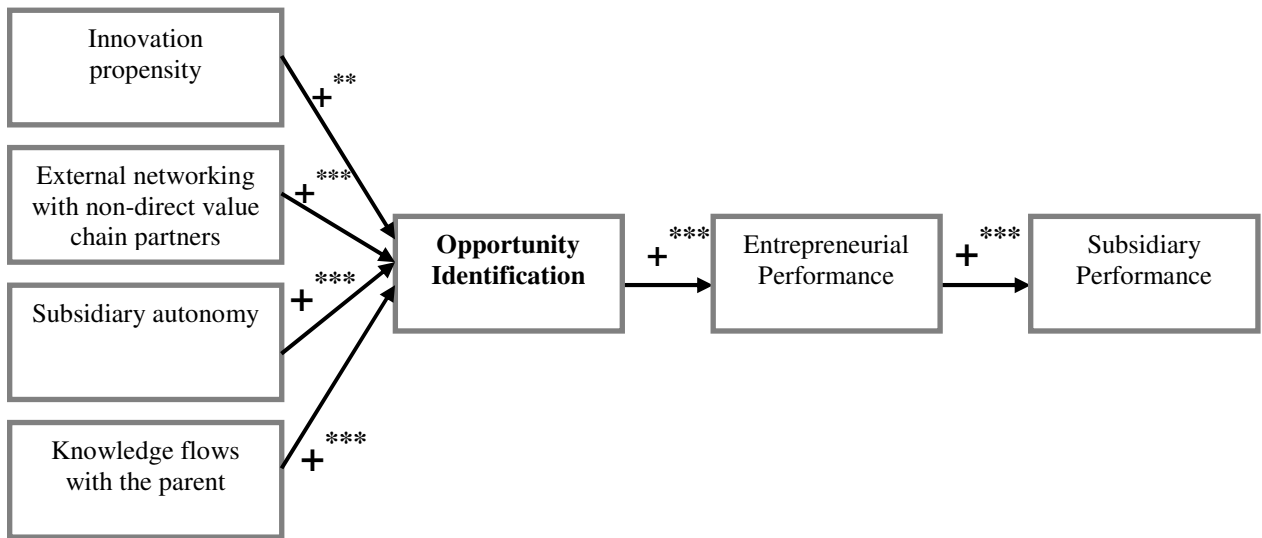
capability that can lead to competitive advantage (Alvarez and Busenitz, 2001). While subsidiary innovation propensity links more to an increased ability of OI, risk attitude relates to the particular identification of radical opportunities at the subsidiary level. External networking with non-direct members of the subsidiary's value chain can enhance both OI and radical OI.

In addition, characteristics of the parent-subsidary relationship, and specifically the flows of "strategic knowledge and skills" between the subsidiary and the parent, as well as the level of autonomy enjoyed by the individual subsidiary, critically determine subsidiary OI. From a resource-based perspective, increased knowledge flows between the subsidiary and the parent provide to the subsidiary access to unique, valuable and non-imitable resources, which expand the set of opportunities that can be identified at the subsidiary level. In addition, the subsidiary's autonomy levels determine its power within the MNC, allowing it to devote slack resources to exploration versus exploitation.

While specific internal "entrepreneurial capabilities" and characteristics of the parent-subsidary relationship drive subsidiary OI, the subsidiary's external environment, defined by the notions of munificence (versus hostility) and uncertainty, was not found to play a significant direct role in that respect. However, only direct effects of the external environment were studied.

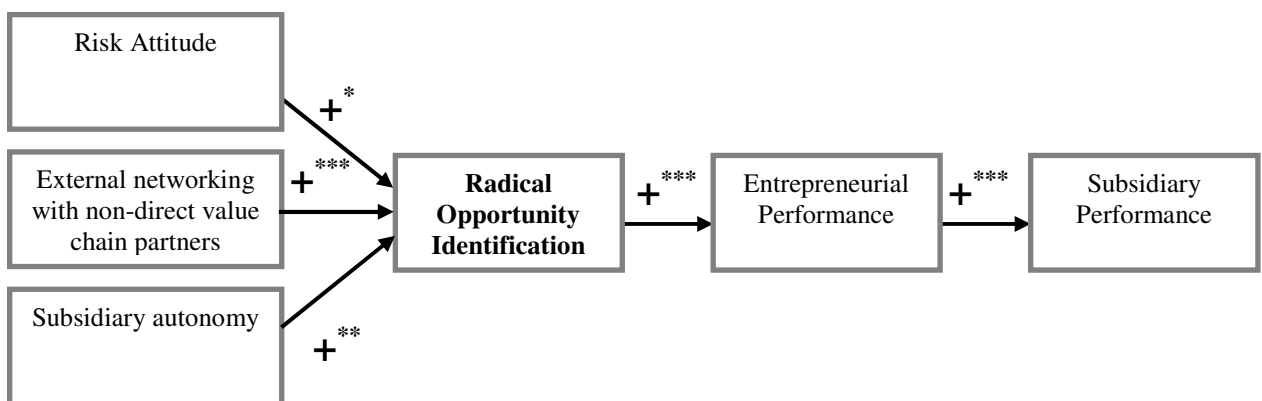
This study further proved the importance of increased OI for enhanced entrepreneurial activity (entrepreneurial performance) at the subsidiary level, suggesting that subsidiaries with increased capabilities of exploration also tend to actively engage in exploitation activities. This study concluded with establishing a positive link between subsidiary entrepreneurship and performance. In accordance to the resource-based approach, distinctive "entrepreneurial capabilities" held at the subsidiary level, as well as "critical resources" accessed through the parent-subsidary relationship, lead to increased subsidiary OI, which can enhance entrepreneurial activity at the subsidiary level. This activity can eventually have a positive impact on overall subsidiary performance. Consequently, the identification of opportunities (and radical opportunities) at the subsidiary level positively affects subsidiary performance, through the intervention of the subsidiary's entrepreneurial performance (entrepreneurial activity). Nonetheless, the effect of entrepreneurial performance (entrepreneurial activity) on subsidiary performance appears smaller than the effect of OI on entrepreneurial performance (entrepreneurial activity), implying that other factors, apart from subsidiary entrepreneurship, can fundamentally determine subsidiary performance.

Figures 8.1 and 8.2 below illustrate the overall conclusions of the present study in terms of the antecedents and consequences of OI and Radical OI at the subsidiary level.



Significance at p ***<.001 **<.01

Figure 8.1: A model of OI in multinational subsidiaries



Significance at p ***<.001 **<.01 *<.05

Figure 8.2: A model of radical OI in multinational subsidiaries

8.9 Implications of the study

The present thesis has important implications for literature, management and public policy, which are explicitly analysed in the following sections.

8.9.1 Implications for the literature

In conceptualising subsidiary entrepreneurship, the present research brought together notions from the fields of international business and entrepreneurship, seeking synergies in both disciplines (Verbeke et al, 2007). On the one hand, research on subsidiary initiative was informed by concepts and models of the corporate entrepreneurship and international entrepreneurship literature. On the other hand, research on entrepreneurship was enriched by the study of subsidiary initiative, given the distinctiveness and inherent complexity of the MNC organisational context, as compared to more conventional domestic settings (Verbeke et al, 2007). Contributions to both international business and entrepreneurship literature are discussed below.

This study contributes to literature taking a “subsidiary-focused” view of the MNC (Birkinshaw and Hood, 1998; Birkinshaw, 2000; Andersson et al, 2001; Birkinshaw et al, 2005) by holistically capturing and measuring the under-investigated theme of subsidiary entrepreneurship. It expands previous conceptualisations of subsidiary initiative as an entrepreneurial process leading to “international responsibilities for the subsidiary” (Birkinshaw, 1997, p. 207) to *provide a more holistic definition of subsidiary entrepreneurship as a broader phenomenon; a set of activities that can range from incremental but value-adding change to radical innovation*. Being the first to measure the incidence of subsidiary entrepreneurship through a large scale survey in subsidiaries of different nationalities (Birkinshaw, 1997) and value-adding activities, this study also enhanced the integrity and generalisability of earlier empirical work on subsidiary entrepreneurship.

Though previous research has failed to identify factors that determine (Hornsby et al, 2002) and hence explain differences in subsidiaries’ entrepreneurship (Birkinshaw and Hood, 1997, 1998; Birkinshaw, 1999; Zahra et al, 2000), this study *proved the existence of subsidiary-specific resources and capabilities that drive entrepreneurial processes at the subsidiary level*. While literature has essentially focused on initiative characteristics, *this study examined the “characteristics of subsidiaries that exhibit initiatives”* (Birkinshaw, 1997, p. 227). In doing so, this study applied the resource-based approach to the individual subsidiary context and hence extended previous research dealing with the dispersion of

resources and capabilities within the MNC (Kogut and Zander, 1994; Sölvell and Zander, 1994). Particular unique and valuable subsidiary “entrepreneurial capabilities” were identified that cannot be easily transferred from one subsidiary to the other, hence constitute a source of subsidiary-specific advantage (Wernerfelt, 1984; Dierickx and Cool, 1989; Barney, 1991). In addition, *the resource-based approach was expanded to include elements of the network theory*. More specifically, the subsidiary’s ability to construct an idiosyncratic network of weak inter-firm linkages with non-direct members of its value chain was substantiated as an important intra-subsidary capability promoting the OI process.

The present study also contributes to literature by proving the relevance of aspects of the parent-subsidary relationship for increased OI and entrepreneurial activity (performance) at the subsidiary level. In particular, it is the first to establish a positive direct link between subsidiary roles and entrepreneurial phenomena (particularly OI) at the subsidiary level. Also, the present study examines the prominent notion of subsidiary autonomy within the contemporary field of international entrepreneurship, and hence is the first to link autonomy with the notion of OI, particularly within the context of the multinational subsidiary.

In terms of the entrepreneurship literature, this study brought forward the topical theme of OI and examined it at a firm- rather than individual entrepreneur- level. Given the centrality of the notion of OI in entrepreneurship research, *a more holistic and integrative framework was provided for studying the OI process within firms, and particularly within the context of the multinational subsidiary*. This framework built upon the well-established resource-based approach as a unifying framework for matching distinct theoretical perspectives on OI and corporate entrepreneurship. While resource-based research has largely failed to integrate entrepreneurial phenomena in its framework (Barney, 2001), and OI literature tends to overlook the RBV due to the latter’s firm-level rather than individual entrepreneur-orientation, *this study brought new insights to the resource-based approach through applying it to the notion of OI* (Alvarez and Busenitz, 2001).

Also, in terms of the corporate entrepreneurship literature, the present study asserted the multi-dimensionality of the entrepreneurial orientation construct (Zahra, 1993; Lumpkin and Dess, 1996; Knight, 1997). In particular, two of the three dimensions of a firm’s entrepreneurial posture were found to significantly influence subsidiary OI: the subsidiary’s innovation propensity and risk attitude. However, these two dimensions posed different effects: while innovation propensity was linked to the identification of a larger set of opportunities, risk attitude was found to stimulate the identification of radical opportunities

at the subsidiary level. Hence, this study proposed that the three dimensions of a firm's entrepreneurial orientation should be treated as independent rather constructs (Lumpkin and Dess, 2001), rather than uni-dimensional measures (Covin and Slevin, 1989).

Table 8.2a summarises the theoretical, empirical and methodological contributions of the present study.

Table 8.2a: Contributions of the present study

Subsidiary literature	Entrepreneurship literature
Theoretical Contributions	
<ul style="list-style-type: none"> ▪ Develops a more holistic conceptualisation of subsidiary entrepreneurship (as a broader phenomenon that can be relevant to different types of subsidiaries) through taking a resource-based view (RBV) of the multinational subsidiary ▪ Integrates distinct theoretical approaches of subsidiary development (and entrepreneurship) under a resource-based framework 	<ul style="list-style-type: none"> ▪ Applies the resource-based framework to examine firm-level entrepreneurial phenomena (and particularly that of OI) within a new context, that of the multinational subsidiary ▪ Integrates distinctive theoretical approaches on OI and corporate entrepreneurship under the resource-based view (RBV), to provide an RBV of OI
Empirical Contributions	
<ul style="list-style-type: none"> ▪ Empirically proves the existence of distinctive “entrepreneurial capabilities” at the subsidiary level that drive entrepreneurial phenomena, and particularly OI ▪ Empirically proves that both subsidiary autonomy and subsidiary knowledge flows with the parent can co-exist as sources of subsidiary power that enhance the subsidiary’s OI ability ▪ Links subsidiary roles (in terms of knowledge flows within the MNC) with subsidiary entrepreneurship ▪ Contributes to empirical work focusing on the positive effects of entrepreneurship on subsidiary performance ▪ Examines the existence of entrepreneurial phenomena, and particularly OI, across subsidiaries of different age, size, country of origin, value-adding activity and industrial sector 	<ul style="list-style-type: none"> ▪ Provides a holistic and integrative framework for studying the phenomenon of OI within entrepreneurial firms ▪ Empirically proves the existence of specific internal/organisational factors that drive firm-level OI ▪ Empirically proves the notion of OI as relevant not only to the individual entrepreneur, but also to the entrepreneurial organisation ▪ Contributes to empirical studies highlighting the positive influence of corporate entrepreneurship on firm-level performance ▪ Examines the notion of OI, as well as its antecedents and consequences, across different types of firms, i.e. firms of different age, size, main value-adding activity, and industrial sector
Methodological Contributions	
<ul style="list-style-type: none"> ▪ Examines subsidiary entrepreneurship (and OI) through following a “mixed-methods” approach, i.e. combining exploratory case-study research for hypotheses building and survey research for hypotheses testing ▪ Employs two distinct statistical methods (multiple regression analysis and Structural Equation Modelling) to test the hypothesised relationships, the results of which are compared to draw final conclusions ▪ Operationalises subsidiary performance through employing subjective and relative measures, which are considered most suitable for studying entrepreneurial phenomena across different types of subsidiaries 	<ul style="list-style-type: none"> ▪ Examines the theme of OI under a quantitative study and draws generalisable conclusions based on statistical analysis and hypotheses testing ▪ Operationalises firm-level OI (for purposes of quantitative testing) as comprising two distinct elements: the extent to which opportunities are identified within the firm, and the particular identification of radical opportunities ▪ Proves the multi-dimensionality of the entrepreneurial orientation construct, through demonstrating differing effects of its three constituents (namely innovation propensity, risk attitude, and proactiveness)

8.9.2 Implications for management

This study has significant implications for management both at the corporate headquarters and the individual subsidiary level.

Management at the corporate headquarters needs to *consider foreign subsidiaries as potential sources of capabilities which can enhance the competitiveness of the entire multinational system* (Rugman and Verbeke, 2001; Schmid and Schurig, 2003). Indeed, the findings of the present study suggest that management at the corporate headquarters can increasingly rely on their subsidiaries to identify new business opportunities. Hence, attention should be paid to the capabilities that reside within subsidiaries, such as the subsidiary's innovation propensity and risk attitude, and learn more about the external relationships that their subsidiaries develop with non-direct value chain partners, such as government organisations, academic and research institutions, professional and trade associations, and external consultants (Ahuja and Katila, 2004).

Also, management at the corporate headquarters needs to acknowledge the *possible benefits of some decision decentralisation in promoting entrepreneurial thinking throughout the multinational system* and hence allow for some autonomous action at the individual subsidiary level. Additionally, the entire MNC needs to operate as an "open system", encouraging intra-MNC flows of "strategic knowledge and skills", particularly at the dyadic parent-subsidiary level. To this end, corporate socialisation mechanisms (Gupta and Govindarajan, 2000), such as corporate-wide formal and informal meetings, rotation of management and employees in key positions throughout the MNC, and development of cross-site teams, could prove of considerable value¹²⁰.

Moreover, this research has significant implications for subsidiary management. In particular, *it provides insights into specific "entrepreneurial capabilities" that need to be nurtured at the subsidiary level*, as these affect the identification of potentially profitable opportunities and further relate to enhanced subsidiary performance. Subsidiary management should place considerable effort in promoting internal entrepreneurial skills and capabilities with particular emphasis on the subsidiary's innovation propensity and risk attitude. To this end, management could establish structured innovation programmes as key element of the subsidiary's innovation culture, foster an internal environment that encourages employee idea contribution, promote calculated risk taking and maintain reasonable tolerance for failure. Additionally, *considerable effort should be spent in initiating and maintaining contacts with external entities*, such as government

¹²⁰ This is a key insight of the exploratory case-study research (see Table 6.6 in Chapter 6).

organisations, academic and research institutions, professional and trade associations, as these can contribute to the identification of opportunities at the subsidiary level, stimulate subsidiary entrepreneurship and have a final positive impact on subsidiary performance.

Finally, subsidiary management needs to consider the constructiveness of parent-subsidiary relationships with respect to promoting subsidiary entrepreneurship and performance. In particular, they need to put substantial effort not only in increasing the subsidiary's knowledge base (Pedersen, 2000), but also in *transferring knowledge to other parts of the multinational system, and particularly to the parent corporation* (Forsgren et al., 2000).

8.9.3 Implications for public policy

Research has generally stressed the potential benefits of foreign subsidiary activities in the host country economy (Young et al., 1988; Graham and Krugman, 1995), mainly associated with increases in productivity through inducement of competitive stimuli and transfers of technology, managerial skills and know-how (Caves, 1974; Globerman, 1979; Blomström, 1986; Kokko, 1994; Blomström and Sjöholm, 1999; Liu et al, 2000; Chung, 2001). Topical literature has also acknowledged the existence of more dynamic benefits in the form of technological spin-offs, new firm creation (Siler et al, 2003) and other entrepreneurial activities. In that respect, entrepreneurial performance of multinational subsidiaries, largely determined by the pursuit of entrepreneurial opportunities at the subsidiary level, may also have considerable benefits for the host country economy. Hence, the implications of this study for policy makers essentially involve decisions on developing a population of “entrepreneurial subsidiaries” and also further encouraging subsidiary entrepreneurship in the host country.

In promoting subsidiary entrepreneurship, previous research has typically centered its attention on environmental conditions in the host country. Common recommendation for host governments has been to focus strongly on upgrading the business environment through investments in public goods, such as infrastructure and education (Young and Tavares, 2004). However, the findings of this study suggest that *affecting environmental factors, such as munificence and uncertainty, may not be a key decision with respect to promoting subsidiary entrepreneurship*. What seems to be more critical is attracting into the UK subsidiaries with particular “entrepreneurial” characteristics. Young et al (1994) have used the term “*developmental subsidiaries*” to refer to subsidiaries that can provide dynamic benefits for the host economy, while the emergence of such subsidiaries has been attributed to internal subsidiary capabilities. The present study found these subsidiaries to

be characterised by high levels of innovation propensity and risk attitude; be involved in relationships with local government organisations, academic and research institutions, as well as professional and trade associations; enjoy certain levels of decision-making autonomy; and be actively involved in “forward” (i.e. from the parent to the subsidiary), but also “reverse” - from the subsidiary to the parent (Yamin, 2000, 2002) - flows of “strategic knowledge and skills”.

While the above suggests that FDI incentive concession should not be viewed as a matter of “environmental regulation” but more as a “selection decision”, identifying such subsidiary characteristics a priori has proved a policy dilemma. *What appears more feasible is to target certain types of parent-firm characteristics*, for example MNCs that support and promote entrepreneurial behaviour within the multinational system, MNCs favouring a decentralised structure and thus subsidiary development potential, MNCs with established formal and informal corporate socialisation mechanisms, allowing them to operate as “open systems”.

To further maximise benefits from inward investment, governments also need to *introduce policies that encourage subsidiaries to build entrepreneurial capabilities of their own*. In that respect, policies aiming at linking subsidiaries with local academic and research institutions, local government organisations and local professional and trade associations might prove an inexpensive way of building subsidiary capabilities and further increasing the levels of subsidiary autonomy (Young and Tavares, 2004). While this study found the notion of subsidiary autonomy to stimulate entrepreneurial processes (such as OI) at the subsidiary level, previous literature has also acknowledged the same concept as determinant of FDI benefits on the host country (Taggart and Hood, 1999; Edwards et al, 2002). Consequently, policy makers can also use programmes to “encourage subsidiary management to maximise autonomy in a way that balances local needs with MNC imperatives” (Taggart and Hood, 1999, p.234). For example, local autonomy might be gradually promoted through increasing the potential vitality of local R&D and the availability of local support and resources.

Table 8.2b summarises the contributions of the present study to management (within the subsidiary and at the corporate headquarters), as well as to public policy.

Table 8.2b: Contributions of the present study	
Contributions to management	
Headquarter Management	Subsidiary Management
<ul style="list-style-type: none"> ▪ Consider foreign subsidiaries as potential sources of capabilities for the entire MNC ▪ Rely more on their foreign-owned subsidiaries for increased OI ▪ Acknowledge possible benefits of decision decentralisation for promoting MNC-wide entrepreneurship ▪ Benefit from operating the entire MNC as an “open system”, i.e. encouraging knowledge flows at the dyadic parent-subsidiary level 	<ul style="list-style-type: none"> ▪ Opportunity Identification and entrepreneurial activity at the subsidiary level can have a positive influence on subsidiary performance ▪ Specific “entrepreneurial capabilities” need to be nurtured (such as innovation propensity, risk attitude, networking activity with external entities) as these enhance the subsidiary’s ability to identify entrepreneurial opportunities ▪ Spend considerable effort not only in increasing the subsidiary’s knowledge base, but also in transferring knowledge to the parent corporation ▪ Developing healthy relationships with the parent corporation can promote subsidiary entrepreneurship
Contributions to public policy	
<ul style="list-style-type: none"> ▪ In order to develop a population of entrepreneurial subsidiaries in the host country <ul style="list-style-type: none"> ▪ Upgrade the business environment through investments in public goods ▪ Target certain types of parent-firm characteristics, such as MNCs that promote entrepreneurial behaviour, favouring a decentralized structure and operating as “open systems” ▪ In order to further encourage subsidiary entrepreneurship in the host country <ul style="list-style-type: none"> ▪ Affecting environmental factors, such as munificence and uncertainty, may not be a key decision with respect to promoting subsidiary entrepreneurship ▪ Introduce policies that encourage subsidiaries to build entrepreneurial capabilities of their own (e.g. policies linking subsidiaries with local academic and research institutions) ▪ Use programmes to encourage subsidiary management to increased autonomy through balancing local needs with MNC imperatives (e.g. increase the potential vitality of local R&D and the availability of local support and resources) 	

8.10 Limitations of the study and directions for future research

The present section notes several limitations of the present study, followed by relevant propositions and possible avenues for future research.

First, the present study took a “subsidiary-focused” view of the MNC in examining subsidiary entrepreneurial processes and performance associations from the individual subsidiary perspective, i.e. based on perceptions of subsidiary management. Although a second subsidiary respondent was identified in 10% of the sample to control for possible single-source bias (Podsakoff and Organ, 1986), this study relied on the assumption that headquarters and subsidiary managers’ perceptions converge with each other. Nonetheless, given the possible existence of “perception gaps” within MNCs (Birkinshaw et al., 2000),

future research should also seek to include the perceptions of management at the corporate headquarters, and reveal possible differences of insights on the topic under investigation.

Another limitation of the present study pertains to the fact that it *exclusively examines direct effects*, i.e. the direct impact of subsidiary, corporate and environmental factors on subsidiary OI and entrepreneurial performance. However, previous research has generally acknowledged that contextual conditions interact with entrepreneurship (Miller, 1986; Zahra and Covin, 1995; Lumpkin and Dess, 1996; Zahra and O'Neil, 1998; Brush et al., 2001; Dimitratos et al, 2004). Given the fact that this study did not establish a direct effect of the subsidiary's external environment on subsidiary OI and entrepreneurship, *future research should examine the extent to which environmental conditions interact with subsidiary- and corporate-level characteristics to moderate the effect of the latter on subsidiary entrepreneurial processes* (i.e. subsidiary OI and entrepreneurial performance). To this end, both contingency (two-way) and configurational (three-way) interactions need to be examined. Nevertheless, this study acknowledges the inherent difficulties of testing such complex associations, particularly when using the structural equation modelling (SEM) method.

An additional limitation of the present study relates to the operationalisation and measurement of the subsidiary performance construct. In particular, this research chose to focus on subjective perceptions of performance, based on the subsidiary management's satisfaction with the subsidiary's relative performance. This was deemed necessary, given the broad scope of the present study, and the related need to test for performance differences across a large set of different types of subsidiaries (i.e. involved in different types of value-adding activities). Though such subjective perceptions may well capture non-financial aspects of performance and thus have been recommended in international business (Zou and Stan, 1998) and entrepreneurship studies (Dess et al, 1990; Lumpkin and Dess, 1996) as highly correlating with objective measures (Dess and Robinson, 1984; Robinson and Pearce, 1988; Venkatraman and Ramanujam, 1987; Geringer and Hebert, 1991), future research should ideally try to combine both types of measures. In doing so, *future research could split samples in different types of subsidiaries, based on their main value-adding activities, and examine the effect of entrepreneurial phenomena (such as OI and entrepreneurial performance) on subsidiary financial and non-financial performance within each sub-sample and across industries*. A possible generic categorisation could, for example, entail differentiating between subsidiaries that operate as profit versus cost centres.

Moreover, the present study addressed performance considerations only at the individual subsidiary level. However, subsidiary entrepreneurship may also have considerable impact on the host-country economy. Given that successful operations of foreign MNCs can bring about benefits to the local economy (Steuer et al., 1973; Young et al., 1988; Kokko, 1992; Pain, 2000), *future research in this direction should pay particular attention to the effects of subsidiary entrepreneurial performance on the local economy*. Although the implications for policy making could be significant, the particular theme still remains under-investigated (Paterson and Brock, 2002). In a similar vein, Holm et al (2003) recently pointed out that limited research has dealt with the effect of subsidiary competence development on the host country economy. Extending this argument, it would be interesting to examine whether “entrepreneurial competencies” of multinational subsidiaries might provide benefits at a local level.

In addition, this research proved the importance of both intra-subsidiary and intra-corporate (MNC) factors for promoting subsidiary OI and entrepreneurial performance. However, the relative significance of each set of factors on subsidiary entrepreneurship and performance was not examined. *Future research should hence try to evaluate the relative importance of internal subsidiary capabilities versus characteristics of the parent-subsidiary relationship for promoting subsidiary entrepreneurship and performance, as well as the interaction between these two sets of factors*. For example, future research could examine the extent to which corporate characteristics pre-exist and are somewhat imprinted in the subsidiary’s organisational culture, or the possible influence of subsidiary internal entrepreneurial capabilities on the parent-subsidiary relationship. A related research objective would entail investigating differences in entrepreneurial capabilities between subsidiaries and other types of local firms¹²¹; the prime significance of the corporate context might for example indicate that entrepreneurship in subsidiaries should be examined on different grounds than in local firms.

In a similar vein, future academic work could also examine *possible linkages between corporate entrepreneurship at the parent level and subsidiary entrepreneurship*. While an entrepreneurial culture at the corporate level may be conducive to subsidiary entrepreneurship (Covin and Slevin, 1991), it could also be accompanied by routines and processes that hinder entrepreneurial processes at the periphery of subsidiaries. Additional research in that direction would thus indicate whether these two notions (i.e. corporate parent and subsidiary entrepreneurship) relate positively or negatively to each other.

¹²¹ For example, Yamin (2002) has touched upon the issue of whether the propensity for initiative and competence development is greater for subsidiaries compared to sub-units of national firms.

Finally, *the present research did not account for the effect of subsidiary entry modes on subsidiary entrepreneurship*. While literature has linked the existence of strong competitive capabilities with the establishment of wholly-owned subsidiaries, rather than joint ventures, (Gatignon and Anderson, 1988; Gomes-Casseres, 1989; Kogut and Chang, 1991; Chen and Hennart, 2002) and acquired subsidiaries have generally been found to enjoy higher levels of autonomy compared to greenfield operations (Young et al, 1985; Andersson and Forsgren, 1996; Harzing, 1999; Young and Tavares, 2004), there is no clear linkage between subsidiary entry mode and entrepreneurial performance. Future research would thus be welcomed to address this issue.

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Appendix 1

Table 1: Comparing mail and web-based surveys			
Criterion	Web-based survey	Mail survey	Remarks
Cost	Usually lower	Usually higher	<ul style="list-style-type: none"> ▪ Total costs depend on the length of the survey and volume of surveys distributed and returned ▪ Web-based surveys tend to have higher fixed costs but essentially no variable costs
Time	Less time-demanding (usually 1 week)	More time demanding (usually 3-4 weeks)	<ul style="list-style-type: none"> ▪ Survey respondents act more quickly with electronic notifications ▪ Mail surveys tend to have idle times
Data entry	Automatic	Manual	<ul style="list-style-type: none"> ▪ The web-based method allows for automatic and accurate data entry, eliminating human error
Data completeness	Usually fewer incomplete responses	Usually more incomplete responses	<ul style="list-style-type: none"> ▪ Web-based surveys can offer higher-quality data, as they allow respondents to continue the survey from the point they left it
Questionnaire design	More difficult to develop, constrains question format	Easier to develop, no constrains on question format	<ul style="list-style-type: none"> ▪ Web-based surveys allow only for particular question formats; they work better with simple questionnaires ▪ Mail surveys are preferred when the questionnaire design is complex
Geographical reach	Ideal for reaching rapidly across boundaries	Ideal for targeting local populations	<ul style="list-style-type: none"> ▪ Web-based surveys can target geographically remote populations (assuming access to the internet)
Comfort with the survey format	Web access and familiarity with web surveys is required	Very friendly survey format	<ul style="list-style-type: none"> ▪ Non-response error can be increased in web-based surveys
Response rates	Usually comparable but also examples of lower rates	Usually comparable but also examples of higher rates	<ul style="list-style-type: none"> ▪ Contradicting findings in literature ▪ Response rates in web-based surveys depend on the complexity and length of the questionnaire, and the familiarity of the respondent with the survey format ▪ Paper surveys tend to enjoy higher response rates for large sample sizes

Source: the author based on a review of relevant literature

Table 2: Achieving Integrity in Case Study Research	
Criteria	Techniques Followed
<p>Construct validity Adequate operational measures for the concepts under investigation (Emory and Cooper, 1991; McDaniel and Gates, 1991; Sekaran 1992)</p>	<ul style="list-style-type: none"> ▪ Develop constructs through literature review ▪ Use of multiple sources of evidence (triangulation of sources) (Burgess, 1984; Denzin, 1978; Jorgensen, 1989; Marshall and Rossman, 1989; Patton, 1990) ▪ Development of an interview guide to provide for systematic process in the interviews (Yin, 1994) ▪ Establish a chain of evidence from the beginning of the research questions through data collection to the final conclusions (Yin, 1994) ▪ Prudent selection of interviewees, structured interview process, structured process for recording, transcribing and interpreting the data (Dick, 1990; Lincoln and Guba, 1985) ▪ Have key external informants review draft case study reports (Kirk and Miller, 1986; Yin, 1994; Healy and Perry, 2000).
<p>Confirmability Ability of others to satisfy themselves that the research was carried out in the way it is described by the researcher (Lincoln and Guba, 1985; Miles and Huberman, 1994; Riege and Nair, 1996)</p>	<ul style="list-style-type: none"> ▪ Develop a record of data collected (such as recorded cassette tapes, transcriptions, interview notes, secondary sources) to allow other researchers to observe a chain of evidence ▪ Have key informants review draft case study reports and the findings of the research (Miles and Huberman, 1994; Yin, 1994).
<p>Internal validity/credibility Establish a phenomenon in a credible manner, i.e. locate generative mechanisms that assist in determining inferences about real phenomena (Guba and Lincoln, 1994; Miles and Huberman, 1994; Yin, 1993)</p>	<ul style="list-style-type: none"> ▪ Case analysis and cross-case analysis ▪ Development of diagrams, illustration and data matrices to demonstrate the internal consistency of the information collected ▪ Precisely distinguish the unit of analysis ▪ Link the analysis to prior theory identified in a literature review, and presentation and analysis of pilot case studies (Yin, 1993) ▪ Peer debriefing, discussion of the results and conclusions with other academic researchers (Lincoln and Guba, 1985; Hirschman, 1986)
<p>External validity/transferability Scope to which the research findings can be replicated beyond the proximate research case studies or (analytical) generalisability (Emory and Cooper, 1991; Lincoln and Guba, 1985; McDaniel and Gates, 1991; Miles and Huberman, 1994; Yin, 1989)</p>	<ul style="list-style-type: none"> ▪ Use of a multiple case studies methodology and comparison of evidence (Lincoln and Guba, 1985; Miles and Huberman, 1984) ▪ Multiple case studies can be used to develop analytic generalisation through replication logic and/or corroboration of findings to achieve external validity (Eisenhardt, 1989; Parkhe, 1993; Yin, 1994) ▪ Cross-case analysis, intended interview guide, and the use of procedures for coding and analysis (Lincoln and Guba, 1985; Miles and Huberman, 1994)
<p>Reliability/dependability Ability of other researchers to carry out the same study and achieve similar results (Cassell and Symon, 1994; Emory and Cooper, 1991; King et al, 1994; McDaniel and Gates, 1991; Miles and Huberman, 1994; Singleton et al. 1993)</p>	<ul style="list-style-type: none"> ▪ Case study protocol with documentation trails during data collection ▪ Development and execution of an interview guide to provide for systematic process in the interviews (Eisenhardt, 1989; Merriam, 1988; Parkhe, 1993; Yin, 1994) ▪ Formation of a case study data base allows for other researchers to access the files (Yin, 1994)

Source: the author based on a synthesis of relevant literature

Appendix 2

Generic Interview Guide

Exploratory Research Objectives

1. What are the entrepreneurial characteristics of MNC subsidiaries in the UK that promote subsidiary OI?
2. What are key factors in the subsidiaries' corporate (MNC) setting and the external environment (local and international) that influence subsidiary OI?
3. What is the effect of subsidiary OI on subsidiary entrepreneurship and overall subsidiary performance?

Questions

Part A: Warm-up questions and verification of general information on the subsidiary's operations (corroborated with secondary data)

1. What are your responsibilities in the organisation? Could you discuss briefly the history of your organisation? Could you elaborate on the activities of your firm?

Part B: Focus discussion on the theme of subsidiary entrepreneurship

2. Do you use the term entrepreneurship within the organisation? How would you describe it within the context of your organisation? What would you consider examples of key entrepreneurial activities in your organisation? (Based on the respondent's answers issues of subsidiary entrepreneurship can be introduced and key aspects of subsidiary entrepreneurship can be identified. Also, might gain insight on whether entrepreneurship is mostly considered at a domestic or international level or both and may distinguish between internal and external to the subsidiary entrepreneurship)
3. Please elaborate on specific entrepreneurial activities that your subsidiary has undertaken. Why would you characterise them as entrepreneurial? (Keep in mind that such activities may include major entrepreneurial initiatives/projects, new responsibilities, new business functions, new product/markets, cultural changes, etc)
4. Who (organisational members) were involved in these entrepreneurial activities? How and why did they occur? (This is also a question for identifying subsequent respondents within the subsidiary)

Part C: Focus discussion on the particular theme of subsidiary OI

5. How did these entrepreneurial activities emerge? How were the associated opportunities identified? What factors contributed / obstructed to the identification of these entrepreneurial opportunities?
6. In general how do entrepreneurial opportunities emerge within your organisation? To what extent?
7. What internal factors contribute / obstruct to the identification of entrepreneurial opportunities? What is the effect of these factors? To what extent? Provide examples.
8. What external (environmental) factors contribute / obstruct to the identification of entrepreneurial opportunities? What is the effect of these factors? To what extent? Provide examples.
9. Please elaborate on the relationship of your subsidiary with the headquarters. To what extent you think the relationship/interaction with the headquarters of the subsidiary has contributed /obstructed to the identification of entrepreneurial opportunities? Please elaborate. (Make sure to address factors such as subsidiary autonomy, subsidiary credibility and parent-subsiidiary communication)
10. Please elaborate on the relationship of your subsidiary with other company subsidiaries. To what extent you think the relationship/interaction with other company subsidiaries has contributed /obstructed to the identification of entrepreneurial opportunities? Please elaborate.
11. To what extent do you think the relationship/interaction with other organisations in the UK and internationally has contributed /obstructed to the identification of entrepreneurial opportunities? What kind of organisations were they (policy organisations, suppliers, competitors etc)? Please elaborate.

Part D: Focus discussion on the particular performance considerations

12. How do you think OI has affected entrepreneurial activity within your organisation? What aspects of entrepreneurial activity do you refer to, if any?
13. How do you think entrepreneurship has affected the subsidiary's performance? What aspects of performance do you refer to, if any? Please elaborate. (For performance measures gain insight as to whether the subsidiary operates mostly as a profit or cost center).

Appendix 3a

Glasgow, October 2005

Dear Sir

Survey on Multinational Subsidiary Entrepreneurship In The UK

About the Survey

We, at the University of Strathclyde, are conducting an Economic & Social Research Council* (**ESRC**) funded survey that examines *the entrepreneurial and innovative characteristics of foreign-owned subsidiaries in the UK*. This research aims at:

- ❖ Assisting **subsidiary managers** in identifying which organisational characteristics can enhance subsidiary entrepreneurship and performance.
- ❖ Assisting **UK policy makers** in identifying environmental aspects that can be conducive to superior performance of entrepreneurial subsidiaries.

For the purposes of this study, the term *subsidiary* refers to the plant / facility with which you are directly associated. This may be a manufacturing plant, service operation, R&D unit or some combination. It would usually comprise operations (e.g. R&D, product design, materials procurement & purchasing, manufacturing, product distribution, marketing & sales, etc.) on a single site, although on occasions a number of sites within a locality may be managed together.

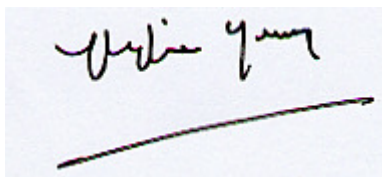
Could we please have around 20 minutes of your time to fill out the enclosed questionnaire?

- ❖ Your firm in this survey has been selected randomly. Your responses will be **strictly confidential** and no firms will be named in any publications that follow from the analysis of the collected data.
- ❖ There are *no questions asked on sales, profitability or other performance figures*. Also, please bear in mind that there are no right or wrong answers.
- ❖ It is important that *the Managing Director or a Senior Manager* involved in the main area(s) of your subsidiary's business activity fills out this questionnaire.
- ❖ If you wish to receive a summary of the study's findings, just write your name, business and email address (if any) at the end of this questionnaire, or if you prefer, request the results of the survey in a separate letter. We will be glad to send you a summary of the results when ready.
- ❖ If you have any questions regarding this survey, please feel free to call Professor Young (Tel: 0141-548 3041, stephen.young@strath.ac.uk) or Ms Liouka (Tel: 0789-1772142, ioanna.liouka@strath.ac.uk). Please return the completed questionnaire in the enclosed pre-paid envelope or fax it to Professor Young on 0141-548 5848 at your earliest convenience.

Your answers are very significant to this research!

THANK YOU VERY MUCH FOR YOUR TIME AND COOPERATION!

Sincerely

A handwritten signature in black ink, appearing to read 'Stephen Young', is written over a light blue background. Below the signature is a long, thin, slightly curved horizontal line.

Professor Stephen Young

Strathclyde International Business Unit, University of Strathclyde

Appendix 3b



Survey on Multinational Subsidiary Entrepreneurship in the UK

Profile of the subsidiary

1. Subsidiary's country of origin: _____
2. Year of subsidiary's establishment: _____
3. Subsidiary's postcode in the U.K.: _____
4. Subsidiary's total number of employees: _____

5. Which of these categories best describes the **main** industry that this subsidiary operates in? **Please tick one.**

- | | | | |
|---|--------------------------|--|--------------------------|
| Chemicals and Pharmaceuticals | <input type="checkbox"/> | Vehicles | <input type="checkbox"/> |
| Rubber, Plastic, Glass and Ceramics | <input type="checkbox"/> | Business Services / Wholesaling / Logistics Operations | <input type="checkbox"/> |
| Metal Works and Metal Production | <input type="checkbox"/> | Financial Services | <input type="checkbox"/> |
| Mechanical Engineering | <input type="checkbox"/> | Energy and Utilities | <input type="checkbox"/> |
| Electrics, Electronics, Communication Equipment and Precision Instruments | <input type="checkbox"/> | Others, please indicate: _____ | |

6. Please indicate which of the following best describes the **main** value adding activity performed by this subsidiary. **Please tick one.**

- | | | | | | |
|--------------------------|--------------------------|--------------------------------|--------------------------|------------------------------------|--------------------------|
| Research & Development | <input type="checkbox"/> | Product Design | <input type="checkbox"/> | Materials Procurement & Purchasing | <input type="checkbox"/> |
| Manufacturing Operations | <input type="checkbox"/> | Product Distribution | <input type="checkbox"/> | Marketing & Sales Activities | <input type="checkbox"/> |
| Customer Service | <input type="checkbox"/> | Others, please indicate: _____ | | | |

2. Please indicate the extent to which you agree with the following statements, using the ☐ scale given.

	Strongly Disagree			Strongly Agree	
	1	2	3	4	5
<i>With regard to its market orientation...</i>					
1. This subsidiary responds to customer needs in a timely fashion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. This subsidiary emphasises customer satisfaction as a key objective	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. This subsidiary measures customer satisfaction on a regular basis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. In this subsidiary, customer information is shared throughout functions and departments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. All departments or functions of this subsidiary contribute to customer value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>This subsidiary has formal or informal processes...</i>					
6. For continuously collecting information about customers and competitors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. For sharing information effectively with the corporate headquarters and sister subsidiaries of this multinational corporation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. For using all the above information in subsidiary problem solving	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>With regard to all types of available information, this subsidiary...</i>					
9. Integrates information from a variety of sources to assist subsidiary top management in decision-making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Has been able to avoid some potentially serious mistakes by taking advantage of information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Please indicate the extent to which this subsidiary has cooperated with the following organisations in performing its business activities.

Please note that such cooperation may refer to **exchanging, sharing or combining** resources (e.g. human, financial, technological, information, etc.)

	Not at all			Very much	
	1	2	3	4	5
1. Customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Suppliers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Distributors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Corporate headquarters of this multinational corporation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Sister subsidiaries in the UK or internationally, if any.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. External consultants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Government organisations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Academic and research institutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Professional associations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Trade associations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Please indicate the extent to which the following decisions are made by corporate headquarters of the multinational corporation versus your own subsidiary.

Please tick only the decisions that are relevant to this subsidiary.

	Decision made by				
	HQ only				Subsidiary only
	1	2	3	4	5
1. Expanding the current scope of business activity (e.g. R&D, marketing, manufacturing, etc.).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Formulation of this subsidiary's annual budget	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Developing a major new product offering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Developing a new major process (e.g. administrative, manufacturing, management, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Decisions over employee pay and rewards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Recruitment and promotion to subsidiary managerial positions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Please indicate the extent to which this subsidiary is engaged in transfers of "STRATEGIC knowledge and skills" that relate to the following value adding activities.

Note that by "STRATEGIC knowledge and skills" we **EXCLUDE operational aspects**, such as exchange of monthly financial data, administrative staff reports, order fulfilment rates, stock levels, etc.

Please leave blank when this subsidiary is not involved in a particular activity. Sister subsidiaries may be located in the UK or internationally.

1. This subsidiary RECEIVES "strategic knowledge and skills" FROM:

Regarding the following:	Sister subsidiaries					Corporate headquarters				
	Not at all		Very much			Not at all		Very much		
	1	2	3	4	5	1	2	3	4	5
i. Research & Development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii. Product design	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii. Materials procurement & purchasing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv. Manufacturing operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
v. Distribution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
vi. Marketing & Sales	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
vii. Customer service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
viii. Management systems & practices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. This subsidiary PROVIDES "strategic knowledge and skills" TO:

Regarding the following:	Sister subsidiaries					Corporate headquarters				
	Not at all		Very much			Not at all		Very much		
	1	2	3	4	5	1	2	3	4	5
i. Research & Development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii. Product design	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii. Materials procurement & purchasing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv. Manufacturing operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
v. Distribution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
vi. Marketing & Sales	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
vii. Customer service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
viii. Management systems & practices.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B. Entrepreneurial Activity

1. Please indicate the extent to which the following entrepreneurial activities have been pursued by this subsidiary during the past three years.

	Not at all				Very much
	1	2	3	4	5
1. Entering (a) new market(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Developing a major new product offering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Developing a new major process (e.g. administrative, manufacturing, management etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Developing a new technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Restructuring the organisational structure, involving creation or elimination of departments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Developing innovative work practices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C. Subsidiary Performance

1. Please indicate YOUR overall level of satisfaction with the following:

	Low				High
	1	2	3	4	5
1. This subsidiary's performance over the past three years relative to this subsidiary's objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. This subsidiary's performance over the past three years relative to this subsidiary's main competitors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. This subsidiary's performance over the past three years relative to other sister subsidiaries in the UK or internationally operating in the same area of business activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. This subsidiary's performance relative to the corporate headquarters' expectations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D. Opportunity Identification

In the following section, “opportunities” are **all prospects or possibilities (even if they are not implemented)** that could be **useful to the way this subsidiary does business**. These “opportunities” typically come from **ideas** that this subsidiary has identified, e.g. new areas of business, market possibilities, customer possibilities, etc.

1. Please indicate the extent to which the opportunities that this subsidiary has identified over the past three years belong to the following classifications.

	None					Very many
	1	2	3	4	5	
1. Opportunities far from current business practices of this subsidiary ...	1	2	3	4	5	
2. Opportunities far from existing subsidiary organisational goals	1	2	3	4	5	
3. Opportunities that led to significant changes in products, processes, and/or technologies	1	2	3	4	5	

2. The opportunities that this subsidiary has identified over the past three years mainly emerged:

	Not at all					Very much
	1	2	3	4	5	
<i>Internally, within this multinational corporation...</i>						
1. From subsidiary employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. From subsidiary management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. From the corporate headquarters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. From sister subsidiaries in the UK or internationally	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<i>Externally, through any type of interactions with...</i>						
5. This subsidiary's customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. This subsidiary's suppliers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. This subsidiary's distributors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. External consultants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9. Government organisations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10. Academic and research institutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11. Professional and trade associations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

E. Subsidiary Environment

1. Please evaluate the following sentences regarding this subsidiary's external environment by circling the appropriate number.

(1 means that the sentence on the **left** is completely right, **5** that the sentence on the **right** is completely right)

I. The **international** market / industry within which this subsidiary functions is...

- | | | | | | | |
|---|---|---|---|---|---|--|
| 1. Very safe , posing little threat to the survival and well being of this subsidiary | 1 | 2 | 3 | 4 | 5 | Very risky , one false step can mean this subsidiary's undoing |
| 2. Rich in investment opportunities | 1 | 2 | 3 | 4 | 5 | Very stressful , exacting, hostile, very hard to keep afloat |
| 3. An environment that this subsidiary can control and manipulate to its own advantage | 1 | 2 | 3 | 4 | 5 | A dominating environment in which this subsidiary's initiatives count for little against the tremendous political, technological and competitive forces |

II. With respect to this subsidiary's **international** market / industry...

- | | | | | | | |
|---|---|---|---|---|---|---|
| 1. This subsidiary must rarely change its competitive practices to keep up with the market and competitors | 1 | 2 | 3 | 4 | 5 | This subsidiary must change its competitive practices extremely frequently |
| 2. The rate at which product offerings are becoming obsolete in the market/industry is very slow | 1 | 2 | 3 | 4 | 5 | The rate of obsolescence is very high |
| 3. Actions of competitors are quite easy to predict | 1 | 2 | 3 | 4 | 5 | Actions of competitors are unpredictable |
| 4. Demand and customer preferences are fairly easy to forecast | 1 | 2 | 3 | 4 | 5 | Demand and customer preferences are unpredictable |
| 5. The technology concerning our product offerings is not subject to dramatic change and is well established | 1 | 2 | 3 | 4 | 5 | The technology concerning our product offerings changes often and in major ways |

III. The **UK** market / industry within which this subsidiary functions is ...

- | | | | | | | |
|---|---|---|---|---|---|--|
| 1. Very safe , posing little threat to the survival and well being of this subsidiary | 1 | 2 | 3 | 4 | 5 | Very risky , one false step can mean this subsidiary's undoing |
| 2. Rich in investment opportunities | 1 | 2 | 3 | 4 | 5 | Very stressful , exacting, hostile, very hard to keep afloat |
| 3. An environment that this subsidiary can control and manipulate to its own advantage | 1 | 2 | 3 | 4 | 5 | A dominating environment in which this subsidiary's initiatives count for little against the tremendous political, technological and competitive forces |

IV. With respect to this subsidiary's market / industry **in the UK** ...

- | | | | | | | |
|---|---|---|---|---|---|---|
| 1. This subsidiary must rarely change its competitive practices to keep up with the market and competitors | 1 | 2 | 3 | 4 | 5 | This subsidiary must change its competitive practices extremely frequently |
| 2. The rate at which product offerings are becoming obsolete in the market/industry is very slow | 1 | 2 | 3 | 4 | 5 | The rate of obsolescence is very high |
| 3. Actions of competitors are quite easy to predict | 1 | 2 | 3 | 4 | 5 | Actions of competitors are unpredictable |
| 4. Demand and customer preferences are fairly easy to forecast | 1 | 2 | 3 | 4 | 5 | Demand and customer preferences are unpredictable |
| 5. The technology concerning our product offerings is not subject to dramatic change and is well established | 1 | 2 | 3 | 4 | 5 | The technology concerning our product offerings changes often and in major ways |

**Thank you very much for the time you devoted
to answer this questionnaire!!**

Please return the completed questionnaire in the enclosed pre-paid envelope
or fax it to **Prof. Stephen Young** on 0141 548 5848 at your earliest convenience.

If you wish to receive a summary of the study's findings,
just write your name, business and email address (if any):

Alternatively, you may send us your business card in a separate envelope to:

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Appendix 4

Table 1: Complete Regression Results for SPSS Model 1					
	Dependent Variable: OI				
Independent Variables					
<i>Subsidiary Entrepreneurial Capabilities</i>	Standardized Coefficients (Beta)	t-values	Sig.	Tolerance	VIF
Innovation propensity	.197	3.226	.001	.596	1.677
Risk attitude	.096	1.692	.092	.691	1.447
Proactiveness	.071	1.283	.200	.725	1.380
Market Learning	.059	1.167	.244	.853	1.173
Networking within the MNC	.086	1.661	.098	.819	1.221
Networking with Direct Value Chain partners	.024	0.477	.634	.858	1.166
Networking with Non-Direct Value Chain partners	.323	6.229	.000	.827	1.210
<i>Corporate Context</i>					
Autonomy	.045	0.863	.389	.817	1.224
Flows with HQs	.213	3.824	.000	.718	1.393
Flows with SSs	.095	1.694	.091	.709	1.411
<i>External Environment</i>					
Hostility	-.113(*)	-2.015	.045	.709	1.410
Uncertainty	.061	0.960	.338	.547	1.829
<i>Control Variables</i>					
Size	.068	1.233	.219	.727	1.376
Age	.019	0.375	.708	.883	1.133
Europe	-.069	-1.116	.266	.585	1.708
U.S.A.	.166	2.372	.018	.594	1.683

Table 2: Complete Regression Results for SPSS Model 2					
	Dependent Variable: Radical OI				
Independent Variables					
<i>Subsidiary Entrepreneurial Capabilities</i>	Standardized Coefficients (Beta)	t-values	Sig.	Tolerance	VIF
Innovation propensity	.039	.559	.576	.598	1.674
Risk attitude	.182	2.828	.005	.699	1.430
Proactiveness	.042	.659	.510	.730	1.371
Market Learning	.026	.428	.669	.862	1.160
Networking within the MNC	.063	1.059	.291	.818	1.222
Networking with Direct Value Chain partners	.091	1.560	.120	.861	1.162
Networking with Non-Direct Value Chain partners	.298	4.955	.000	.804	1.244
<i>Corporate Context</i>					
Autonomy	.133	2.237	.026	.819	1.220
Flows with HQs	.077	1.204	.230	.718	1.393
Flows with SSs	.107	1.672	.096	.708	1.412
<i>External Environment</i>					
Hostility	-.151	-2.362	.019	.714	1.401
Uncertainty	.137	1.893	.089	.555	1.800
<i>Control Variables</i>					
Size	-.021	-.326	.745	.731	1.368
Age	.028	.480	.632	.882	1.134
Europe	.086	1.217	.225	.588	1.701
U.S.A.	.052	.852	.395	.594	1.684

Table 3: Complete Regression Results for SPSS Model 3					
	Dependent Variable: Entrepreneurial Performance (Output)				
Independent Variables	Standardized Coefficients (Beta)	t-values	Sig.	Tolerance	VIF
OI	.328	5.926	.000	.911	1.098
<i>Control Variables</i>					
Size	.279	4.909	.000	.866	1.155
Age	-.048	-.875	.382	.934	1.070
Europe	.057	.892	.373	.673	1.487
U.S.A.	.121	1.854	.065	.653	1.531

Table 4: Complete Regression Results for SPSS Model 4					
	Dependent Variable: Radical OI				
Independent Variable	Standardized Coefficients (Beta)	t-values	Sig.	Tolerance	VIF
Radical OI	.254	4.630	.000	.975	1.025
<i>Control Variables</i>					
Size	.342	6.062	.000	.918	1.089
Age	-.053	-.944	.346	.935	1.070
Europe	.020	.311	.756	.677	1.478
U.S.A.	.101	1.504	.134	.647	1.546

Table 5: Complete Regression Results for SPSS Model 5					
	Dependent Variable: Subsidiary Performance				
Independent Variables	Standardized Coefficients (Beta)	t-values	Sig.	Tolerance	VIF
Entrepreneurial Performance (Output)	.277	4.360	.000	.832	1.201
<i>Control Variables</i>					
Size	-.027	-.412	.681	.806	1.241
Age	-.006	-.102	.919	.919	1.088
Europe	.122	1.703	.090	.677	1.499
U.S.A.	.010	.141	.888	.631	.1589

Appendix 5

Table 1: Correlations amongst refined constructs (SPSS analysis)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Innovation Propensity	1															
2. Risk Attitude	.397**	1														
3. Proactiveness	.365**	.366**	1													
4. Market Learning	.161**	.046	.242**	1												
5. Non-DVC Networking	.130*	.045	.185**	.150*	1											
6. MNC Networking	.091	.142*	.066	.117	.125*	1										
7. DVC Networking	.210**	.144*	.256**	.167**	.080	.165**	1									
8. Autonomy	.016	.195**	.068	.160**	.043	.035	.119	1								
9. Flows SSs	.198**	.138*	.156*	.173**	.161**	.304**	.213**	.086	1							
10. FlowsHQs	.262**	.082	.165**	.136*	.159**	.181**	.098	-.195**	.357**	1						
11. Munificence	-.005	-.038	-.127*	-.064	-.043	-.069	.002	-.041	-.066	-.176**	1					
12. Uncertainty	.368**	.272**	.196**	.081	.079	.068	.088	-.020	.090	.144*	.310**	1				
13. OI	.375**	.244**	.186**	.073	.341**	.116	.147*	.072	.307**	.387**	-.135*	.226**	1			
14. Radical OI	.194**	.283**	.124*	.090	.074	.114	.028	.153*	.230**	.172**	-.133*	.145*	.373**	1		
15. Entrepreneurial Performance	.393**	.380**	.375**	.264**	.272**	.192**	.171**	.322**	.307**	.194**	.002	.355**	.314**	.303**	1	
16. Subsidiary Performance	.220**	.137*	.213**	.184**	.019	.110	.171**	.057	.225**	.219**	-.286**	-.064	.140*	.060	.254**	1

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Table 2: Construct Discriminant Validity (LISREL analysis)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. InnProp	0.51^a															
2. RiskAtt	0.50 ^b	0.52														
3. Proact	0.50	0.47	0.55													
4. MarkLearn	0.21	0.09	0.30	0.52												
5. NetDVC	0.18	0.14	0.21	0.13	0.48											
6. NetnonDVC	0.14	0.05	0.24	0.21	0.07	0.50										
7. NetMNC	0.12	0.21	0.10	0.13	0.15	0.12	0.58									
8. Auton	0.01	0.29	0.08	0.18	0.10	0.01	0.07	0.54								
9. FlowsHQs	0.34	0.14	0.22	0.14	0.08	0.22	0.24	-0.14	0.60							
10. FlowsSSs	0.24	0.19	0.17	0.17	0.17	0.18	0.34	0.16	0.46	0.73						
11. Mun	0.00	-0.05	-0.16	-0.08	0.03	-0.02	-0.06	-0.06	-0.18	-0.08	0.79					
12. Uncer	0.50	0.30	0.21	0.10	0.07	0.09	0.07	-0.07	0.13	0.03	0.48	0.84				
13. OI	0.49	0.51	0.53	0.29	0.22	0.49	0.28	0.36	0.56	0.48	-0.04	0.44	0.50			
14. Radical OI	0.48	0.10	0.52	0.28	0.21	0.48	0.27	0.35	0.54	0.50	-0.05	0.45	0.48	0.52		
15. EntrepPerf	0.47	0.45	0.44	0.24	0.18	0.43	0.23	0.29	0.46	0.39	-0.03	0.36	0.42	0.39	0.49	
16. SubPerf	0.18	0.14	0.14	0.08	0.06	0.14	0.07	0.09	0.15	0.13	-0.01	0.12	0.26	0.32	0.32	0.48

a. Entries in the diagonal represent Average Variance Extracted (AVE)

b. Off-diagonal entries represent shared variance between constructs