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Innovation practices as a path to business growth performance : a study of small and medium sized firms in the emerging UAE market

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INNOVATION PRACTICES AS A PATH TO BUSINESS GROWTH PERFORMANCE: A STUDY OF SMALL AND MEDIUM SIZED FIRMS IN THE EMERGING UAE MARKET

By

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DECLARATION AND STATEMENT OF ORIGINAL AUTHORSHIP

I certify that the work presented in this thesis is, to the best of my knowledge and belief, original, except as acknowledged in the text, and that the material has not been submitted, either in whole or in part, for a degree at this or any other institution.

يحيى الأنصاري

Yahya D.Y. Al Ansari

08 January 2014

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ABSTRACT

Innovation is one of the most fundamental practices underpinning economic growth, and it has great potential to develop solutions to economic and social challenges. Innovation is the key to the survival of commercial firms in today's business and market environments. It enables different firms to survive and prosper by creating market value and competitive advantage. Research on innovation management has to date focused mainly on developed market economies and large enterprises, yet small and medium-sized enterprises (SMEs) make a significant contribution to innovation and economic growth. Only limited research has examined the externally driven and internally driven determinants, which influence SMEs' innovation practices in an integrated and a comprehensive manner, particularly in the context of an emerging market and economy, namely Dubai in the United Arab Emirates. The purpose of this study is to contribute to the business and innovation management literature on SMEs and their innovative behaviours in the socio-economic context of Dubai. The Dubai market is considered to be one of the fastest growing emerging markets and economies in the Middle East and North Africa and is dominated by SMEs. It has, with government support, attained substantial levels of modernisation, industrialisation, and rapid economic growth.

The research problem for this study is to: *identify the enabling factors to innovation practices for SMEs in the emerging Dubai market in the United Arab Emirates, and to examine the relationship between innovation practices and business growth performance*. Further, the specific objectives of this research study are: to provide new insights into the innovation development activities of an emerging market (the macro-environmental perspective); to gain a better understanding of SMEs' innovation capabilities and practices (the micro-environmental perspective); and to determine the impact of innovation practices on the business growth performance of SMEs. The focus is on SMEs' innovation practices and their key external and internal antecedents, and the impact of these innovation practices on business growth performance in the emerging Dubai market. A review of the innovation management literature and a group discussion with academic and industry professionals in the Dubai market were used to build the hypothetical conceptual model used in this study. The independent variables are externally driven factors (government supported developments, financial resources, academic-industry collaborations, and market dynamics) and internally driven factors (management orientation, organisational culture, technology orientation,

alliance and cooperation, and market orientation). The mediating variable is innovation practices and the dependent variable is business growth performance.

Drawing upon survey questionnaire data from 600 SMEs (with an acceptable response rate of 33.33%) across a range of manufacturing and service industries in the Dubai market, ten research hypotheses are tested using a Partial Least Squares path modelling technique. The results suggest that: first, management orientation, technology orientation, alliance and cooperation, and market orientation tend to have a significant influence on innovation practices, second, government supported developments, financial resources, academic-industry collaborations, market dynamics, and organisational culture tend to have a non-significant influence on innovative practices, and, finally, innovation practices tend to have a significant influence on business growth performance. Further, it should be noted that the most common innovative characteristics of SMEs in the past three years included: first, 65.5% of firms had ideas for starting businesses which came from outside the emerging Dubai market, second, 46.5% of firms had prospector management strategic archetypes, third, 90.5% of firms had proactive innovation strategies, fourth, 44% of firms had implemented radical innovation types mainly related to technical innovations, fifth, 72.2% of firms had management as an innovation driver, sixth, 56.2% of firms had customer added-value as an innovation development and modification platform, seventh, 50.9% of firms had customers as sources of innovative ideas, eighth, 37.9% of firms had launched three to five new innovations (new products and services) mainly related to tools, ninth, 54.4% of firms had invested less than 500,000 AED (approximately US$140,000) in research and development, and, finally, 51.5% of firms considered economic risk and inflation to be innovation barriers.

This study makes significant contributions. It is believed to be the first empirical research study examining SMEs' innovation practices and their business growth performance in the emerging Dubai market. It also extends the business and innovation management literature, and has both academic and managerial implications because it provides empirical evidence of the links between externally and internally driven capabilities and innovation practices, and innovation practices and business growth performance within SMEs. It finally provides a re-conceptualised model to guide the implementation of innovation practices in SMEs in emerging markets.

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LIST OF ACADEMIC PUBLICATIONS

The following refereed academic publications are produced from the thesis:

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LIST OF ABBREVIATIONS

The following abbreviations are used throughout the thesis:

ADSM	Abu Dhabi Securities Market
AED	Arab Emirates Dirham
ANOVA	Analysis of Variance
DCCI	Dubai Chamber of Commerce and Industry
DFM	Dubai Financial Market
ESCA	Emirates Securities and Commodities Authority
FDI	Foreign Direct Investment
GCC	Gulf Co-operation Council
GDP	Gross Domestic Product
GFC	Global Financial (and Economic) Crisis
GoF	Goodness-of-Fit
NIS	National Innovation System
PCA	Principal Components Analysis
PLS	Partial Least Squares
R^2	Squared Multiple Correlations
SCU-HREC	Southern Cross University's Human Research Ethics Committee
SEM	Structural Equation Modelling
SMEs	Small and Medium-Sized Enterprises
SPSS	Statistical Package for the Social Science
Q^2	Stone-Geisser Test
UAE	United Arab Emirates
USD	United States Dollar (USD 1 = AED 3.67)

CHAPTER 1 INTRODUCTION

1.1 Introduction

This chapter introduces the overall study. It presents the background and explains the justification and rationale for this study. It outlines the research problem, objectives, and questions, and then followed by a summary of the research design and methodology. The contributions, implications, and limitations, the definition of terms, and the outline of the thesis structure at each stage of this study are offered. Finally, the chapter is summarised.

1.2 Study Background

The competitive environment in most countries and for most firms (irrespective of size and sector) have changed as production has become more technology-driven and knowledge-based, and competition has globalised and developed into more innovation-based (Mytelka 2000; Szirmai, Naude & Goedhuys 2011). To survive today's global market economy and achieve long-term success, firms have recognised the importance of being able to adapt and keep innovating to overcome intense competition and to match changing market demands (Tucker 2002; Cefis & Marsili 2005; Brem & Voigt 2009; Hertog 2010; Ellonen, Jantunen & Kuivalainen 2011). Even small and medium firms need to seek new strategies and business models, introduce new and better products and services, and consider new knowledge and technologies (Hadjmanolis 1999; Chirico & Salvato 2008). Innovation is considered to be of importance to the growth of firms, despite their size, with great leverage in creating economic values and competitive advantages and in driving changes (Dougherty & Hardy 1996; Drucker 2003; Haour 2004; Davila, Epstein & Shelton 2006). The traditional innovation literature, as instigated by Joseph Schumpeter (1934), has primarily been concerned with the manufacturing industries and the patenting intensities in developed markets and economies (Dosi 1988; Salavou, Baltas & Lioukas 2004; Avci, Madanoglu & Okumus 2011). The uprising of the developing markets and economies has created conspicuous changes through structural reforms and growth-enhancing investments and are providing firms with more opportunities and propitious environments (Kim & Lim 1988; Arnold & Quelch 1998; Mahemba & De Bruijn 2003; Hertog 2010; Adams & Comber 2013; Hossain 2013).

The purpose of this study is to draw on issues related to innovation practices and their antecedents (external-driven and internal-driven determinants) and impact on business growth performance in

small and medium firms in the emerging Dubai market in the United Arab Emirates. It also looks for ways to encourage and support the development of small and medium firms leading to genuine diversification, technological upgrading, and growth of promising business models that have been mainly limited to large firms in the local Dubai market. However, for small and medium firms to provide innovation, a number of challenges and determinants should be tackled and investigated. These include both generic issues that firms everywhere in the world have to deal with and more specific issues to the United Arab Emirates. This study focusses its research on the contexts of the United Arab Emirates environment (specifically the emerging Dubai market), small and medium firms, and innovation capabilities and practices.

1.2.1 The United Arab Emirates Environment

The United Arab Emirates (UAE) is a complex federation of seven states, *emirates in Arabic*, in the process of developing plans to become commercial and industrial hubs of the Middle East and North Africa (Rettab, Brik & Mellahi 2009; DCCI 2011; UAE MFT 2012). It is considered the fastest growing market in the region and is ranked as the most innovation-driven economy in the Arab world (EW 2010; DCCI 2010; WEF 2010). As it moves away from an oil-based economy to a knowledge-based economy that is integrating into the global market economy, it demands major investment to infrastructure and requires changes to the free market system (Grant, Golawala & McKechnie 2007; DCCI 2010; Knight 2011). It intends to attract businesses and investments from many parts of the world through pursuit of an outward-oriented development strategy, prioritising economic policy reform and diversification, and streamlining foreign investment regulation (BMI 2007; Grant, Golawala & McKechnie 2007). It combines features of developed and developing market economies through creating a hybrid situation and offering a combination of challenges and opportunities for firms of all sizes to transform their current business models and create new ones to be able to meet new market conditions (Rettab, Brik & Mellahi 2009; Hertog 2010).

Of the seven states in the UAE, the state of Dubai is the focus of this study because it has been the first to implement major reforms, achieve high economic and market growth, and form a strong position in the business world (Grant, Golawala & McKechnie 2007; DCCI 2010). It reflects the features of the UAE economy in areas related to infrastructure, business activities, an investment destination, a competitive environment, and economic and social changes (Rettab, Brik & Mellahi 2009; DCCI 2010). As an emerging market, Dubai has attained important levels of modernisation, industrialisation, and rapid economic growth, which is considered in a transitional phase between

a developing and a developed market economy. It is progressing towards becoming an advanced market economy by increasing local debt and equity market liquidity, forming market exchange and regulatory body, offering opportunities in foreign direct investment, sourcing, and trade, and adapting international technological knowledge with a striving strategic plan that encompasses the formation of a solid foundation and sustaining a competitive advantage in the knowledge-driven economies era (DCCI 2010; UAE MFT 2012; OBG 2013). Dubai has also designed a consistent strategy to promote large scale innovation and to provide financial and logistic supports to firms with great potential for becoming an innovation hub for the region (Dutta 2006; UAE MFT 2012); however, the challenge remains in the existence of the right factors and environment at the firm's level to allow them to be more innovative in the local market. For example, the total early-stage entrepreneurial activity by phases of economic development confirms that the UAE, including Dubai, has a lower share of early-stage entrepreneurial activity in the innovation-driven economies compared to other countries in the factor and the efficiency-driven economies (GEM 2011). The Global Competitiveness Index ranks and scores the UAE, 25 (out of 139 countries) and 4.9 (out of 7 index points) respectively, with the basic requirements of 8 and 5.8, efficiency enhancers of 21 and 4.8, and innovation and sophistication factors of 27 and 4.4 (WEF 2010-2011). Hence, these are areas for improvement in the innovation and sophistication factors parameter where the UAE currently lags behind in comparison to other developed markets and economies with an innovation score of 3.4 and index of 6.69, which is below the World Index average of 8.11 (KEI 2009). This low innovative capacity may further restrain foreign investment and diversification efforts (if not addressed properly), thereby raising its vulnerability the global market.

In the emerging Dubai market, the opening of the market to foreign firms and investment has created rapid changes and complex and heterogeneous industrial dynamics that challenge business operations and change competitive landscapes, offering a remarkable setting to explore in terms of management and business practices (DCCI 2010; Hertog 2010). Globalisation has also increased competition among firms in both local and global business and market environments (Sim & Teoh 2011). In order to survive and compete more effectively in these challenging business and market environments, it is important for firms to keep innovating and continue providing new and better products and services (Lazonick & O'Sullivan 2000; Tucker 2002; Brem & Voigt 2009; Yang et al. 2012). This innovation action is stressed in the strategic and innovation management literature as a critical success factor for providing a competitive advantage and having a positive impact on economic development and business growth performance (Otero-Neira, Lindman & Fernandez

2009; Parrilli & Elola 2011; Talke, Salomo & Kock 2011; Francis et al. 2012). The unprecedented changes in the societal and business environments and the generation of new knowledge and technology ensures that innovation needs to be a top priority for firms in these emerging markets (Haour 2004; Hult, Hurley & Knight 2004). So, there is a possibility that the existing knowledge about innovation in Dubai might be questioned or at the very least needs to be confirmed.

1.2.2 The SMEs Focus

The small and medium-sized enterprises (SMEs) segment is very important for national socio-economic development (i.e. similar to the Dubai market in the UAE), both for developed and developing markets and economies (Forsman & Temel 2011). They are important movers in the process of structural changes in emerging markets and economies (Szirmai, Naude & Goedhuys 2011). They are significant to the local entrepreneurship and innovation activities and are able to exploit opportunities from globalisation (UAE MFT 2012). Their important roles continue to be crucial in diversifying the sources of the national income, in improving the competitiveness and economic development, and in contributing to the flexibility and resilience of the Dubai economy (DCCI 2010; Hertog 2010; Harrigan, Ramsey & Ibbotson 2011; Zhu, Wittmann & Peng 2011; UAE MFT 2012). They play roles in areas related to: entrepreneurship, innovation, productivity, competition, job creation, diversification, earning, and growth (Massa & Testa 2008; DDED 2011; Wonglimpiyarat 2011; Gilmore, Galbraith & Mulvenna 2013). For example, the firms' imports in Dubai amounted to USD$ 30.8b in Q3 2011 with a growth rate of 22.8% compared to Q3 2010; exports amounted to USD$ 7.3b in Q3 2011 with a growth rate of 53.1% compared to Q3 2010; and re-exports amounted to USD$ 10.8b in Q3 2011 with a growth rate of 6.8% compared to Q3 2010 (DCCI 2011; DSC 2011), indicating that these firm, including SMEs, have the potential to nurture and drive innovation in this marketplace and beyond.

In Dubai, as elsewhere of the world, SMEs comprise the majority of firms operating in the local market in both the service and manufacturing industry sectors, making significant contributions to its local economy (DCCI 2010). Therefore, it is important to support and stimulate SMEs to revive the market, solve any potential liquidity issues, and initiate new products and services (UAE MFT 2012). SMEs establishing in the Dubai market must have a minimum of 51% UAE national-ownership (though full profit repatriation is permitted), *kafeel in Arabic*, or a local agent and their staff must possess a three-year work visa cycle (BMI 2007; DDED 2011). However, these legal requirements, combined with weak regulations, aggressive business and management cultures, and

the internationalisation of business activities, have created a dynamic and a highly competitive environment for SMEs, reflecting need for new approaches and orientations toward innovation and long-term investment (Elewa 2007; Brik, Rettab & Mellahi 2011; DCCI 2011). Historically, SMEs has focused mainly on head-to-head market competition over buying and selling of existing products and services, which have decreased their presence and stickiness (not easily moveable) in the local market. Their survival objectives when market conditions are stable is to decrease costs and increase short-term profits, and when market conditions are dynamic and/or turbulent their survival strategy is to cautiously move into new domains (Lamb, Hair & McDaniel 2000; Hertog 2010; Valos & Bednall 2010). They are known for their authoritative and paternalistic approaches to management, for their adoption of imported management practices, and for their centralised organisational structures, a short-term focus, high administrative intensity, and top-down and formal communication and reporting styles (Iseri & Demirbag 1999; Wasti 1999; Kabasakal & Bodur 2002; Hertog 2010; Avci, Madanoglu & Okumus 2011). Further, other examples include the reliance on foreign labour sources whereas locals are prioritised for senior management roles (Grant, Golawala & McKechnie 2007; Lim 2012), the potential for alliance is based on personal and social networks (Hutchings & Weir 2006), and the lack of market research is a limiting factor to understand both customer demands and competitor behaviours (DCCI 2011). The outcome could be strategic orientations (conservative orientations) and business models that undermine the accumulation of sufficient resources and capabilities needed to implement innovations. Therefore, there are reasons that SMEs innovation in the emerging Dubai market needs to be investigated.

Small and medium-sized enterprises in the Dubai market are no exception to other firms in other markets and countries which should be encouraged to use innovation as a tool to improve both competitive advantage and business growth performance (Forsman & Temel 2011). However, these firms are not a smaller version of larger firms, which might face more challenges in reaching for successful innovation, despite their committed resources (O'Regan, Ghobadian & Sims 2006). For example, some challenges to SMEs include: lack of economies of scale, limited resources and capabilities, operation scales and scopes, market shifts, environmental shocks, and smaller market size (Schuman & Seeger 1986; Julien 1993; Shama 1993; Tether 1998; Cagliano, Blackmon & Voss 2000; Aragon-Sanchez & Sanchez-Marin 2005; Gilmore, Galbraith & Mulvenna 2013). However, they often possess the flexibilities to quickly adjust both their input and output activities (i.e. systems, processes, products, services, and prices) in response to environmental shocks; this ability to respond quickly in this manner is crucial to their business survival (Berry, Rodriquez &

Sandee 2002; Reid 2007). SMEs might engage in risky investments and innovative behaviours more than large firms to improve their business performance (Latham 2009), as they can possess the advantages of: entrepreneurial dynamism, internal structural flexibility, and receptiveness to changing market circumstances (Zhu, Wittmann & Peng 2011). Innovation is not something that is limited to large firms, small and medium firms can also be more productive in terms of innovation (Carrier 1994) and can be driving engines for technological advancement in the market (Mulhern 1995). Therefore, when compared to large firms, small and medium firms have different structures and requirements and behave differently in analysing and interacting with their environments.

1.2.3 Innovation Capability and Outcome Fundamental

Innovation has created many opportunities for firms to not only improve their current business operations and competitive advantages but to engage in new ones and gain higher business growth performance (Forsman & Temel 2011). At the present time, firms are increasingly relying on innovation to stand out from competitors, create value for customers, and increase their growth (Australian Chambers Business Congress 2011). Innovation demands strong managerial support and resource commitment (Covin & Slevin 1991; Cromer, Dibrell & Craig 2011). Although a firm with a higher business growth performance is considered to have a competitive advantage due to its valuable, unique, and difficult to imitate resources and capabilities, the sustainability of its competitive advantage might depend on its innovative capacity (Porter 1980; Barney 1991). SMEs are able to incorporate innovation into their management and organisational practices, business operations, and marketing methods (Ghobadian & Gallear 1996; Vossen 1998). The connection between economic success and innovation in SMEs has been highlighted in previous research studies (O'Dwyer, Gilmore & Carson 2011). With their innovation potential, SMEs can have the positive attitude that they view obstacles as learning opportunities rather than merely as problems (Mahemba & De Bruijn 2003). So far, the extent to which SMEs take advantage of innovation is still arguable due to their size and the limitation of their resources and capabilities.

Innovation can be an integral activity that involves the whole firm and conditions its behaviour (Martinez-Roman, Gamero & Tamayo 2011; Yam et al. 2011). Within this concept, an innovation is related to the ability of the firm to seek new and better ways to identify, acquire, and implement ideas and tasks in an organisation (North & Smallbone 2000; Calantone, Cavusgil & Zhao 2002; Blumentritt & Danis 2006; Brem & Voigt 2009; Hjalager 2010). For innovation to exist in a firm, it is necessary to cultivate both the external and internal environments and determinants, and the

driving forces to understand its innovative potential and continue its innovative activity (Hjalager 2010; Martinez-Roman, Gamero & Tamayo 2011). The literature discusses innovation according to three perspectives: an entrepreneur (Schumpeter 1934); a technology-push and a market-pull (Chidamber & Kon 1994; Nemet 2009); and an innovation system and cluster (Marshall 1920). Further examination of the innovation literature has revealed two main research streams: research into the diffusion of innovation across organisations and industries, and research into the influence of organisational characteristics on innovation (Cromer, Dibrell & Craig 2011). Recent research studies of the theory of the firm have extended the resource-based view of the firm by applying the concept of dynamic capabilities (i.e. innovation capabilities) to explain the ability of a firm to develop its resources and competencies to adapt to changing business and market environments that are described as being strategically responsive (Teece, Pisano & Shuen 1997).

The term innovative capability is looked at from different levels and from different perspectives, depending on the strategic orientations and the market conditions of the firm (Guan & Ma 2003; Martinez-Roman, Gamero & Tamayo 2011). In order to stimulate the development of innovation, there is a need to examine the influence of the external-driven and internal-driven determinants on innovation (Zirger & Maidique 1990; Neely et al. 2001; Llorens, Ruiz & Garcia 2005; Hjalager 2010). It can be looked at through recent research areas, namely the innovation theory and the theory of the firm that are national innovation concept and resource-based view. Both the national innovation system and the resource-based concepts can explain how a firm derives competitive advantage and develop innovative practices externally by using an interactive system of agencies (i.e. public and private institutions) that intend to initiate, produce, diffuse, and use knowledge and technology within a national border and internally by channelling resources and capabilities into innovation capabilities to survive in a dynamic market environment (Mothe & Paquet 1998; Eisenhardt & Martin 2000; Hult, Hurley & Knight 2004; Martinez-Roman, Gamero & Tamayo 2011; Wonglimpiyarat 2011; Yanadori & Cui 2013). The study of determinants around firms that condition their innovations offers additional means to understand their innovative capabilities (Martinez-Roman, Gamero & Tamayo 2011). Innovative behaviour is a complex fact that requires a number of external and internal factors, for example, structures for research and development and capabilities for technological advancement in explaining the firm's innovative development (Neely et al. 2001; Mahemba & De Bruijn 2003; Laforet & Tann 2006). For example, the United Arab Emirates, including Dubai, has the greatest potential for becoming the innovation hub for the entire region where firms of different sizes have the chance to tap into new opportunities whilst at

the same time considering the needs of the local and regional markets (Dutta 2006; Rettab, Brik & Mellahi 2009). Previous research studies have looked at part of what makes for an innovative firm or have proposed a solution to innovation (Lawson & Samson 2001). There is limited literature that has specifically addressed the issues of external-driven and internal-driven determinants of innovation in emerging markets and smaller economies similar to the one under investigation (Souitaris 2001; Hossain 2013).

1.2.4 Scope of the Study

To understand and enable innovation practices in SMEs, innovation can be inspired and affected by a number of macro (external-driven) and micro (internal-driven) environmental determinants, which these small and medium firms need to understand and adapt to in order to achieve higher business growth performance. In the literature, limited understanding of the external-driven and internal-driven determinants to inspire innovation within SMEs and emerging markets has been established (Hossain 2013). The scope of this study is to illustrate the importance of adopting a complete approach to the management of innovation by incorporating both the macro-and-micro-environmental contexts. Further, this study contributes to the current literature on the innovative behaviours of SMEs in a different market and economy context (i.e. the emerging Dubai market) by exploring the relationships between the external-driven and internal-driven determinants and innovation practices, and business growth performance. It develops a better understanding of the importance of innovation practices and business growth performance and examines the balance between the external-driven and internal-driven determinants and the link between human agents (i.e. management and customers) and functional aspects (i.e. technology, finance, and marketing).

Although previous research studies have been conducted to understand innovations in developed markets and economies, there are still gaps relating to the acceptance of outcomes and results and the enabling factors of innovation practices in SMEs in order to achieve better business growth performance in developing markets and economies (i.e. similar to the emerging Dubai market). Whereas many research studies indicate that academic-industry collaborations and organisational culture positively affect innovation (Parker 1992; Deshpande, Farley & Webster 1993; Martins & Terblanhe 2003; Peebles 2003; Wright 2008; Nelson 2011) others find that technology orientation and alliance and cooperation negatively affect innovation (Gomez Arias 1995; Tripsas & Gavetti 2000; Bougrain & Haudeville 2002; Srinivasan, Lilien & Rangaswamy 2002; Asheim et al. 2003; Laforet & Tann 2006; Gao, Zhou & Yim 2007; Bao, Chen & Zhou 2011). These inconsistent

findings suggest that the impact of the macro-and-micro-environmental determinants might be robust in somewhat homogenous contexts but dynamic in heterogeneous contexts, which need to be further investigated (Voss & Voss 2000; Gao, Zhou & Yim 2007). To fulfil these gaps, this study examines the macro and micro environmental determinants relevant to innovation practices to support higher business growth performance in more detail with specific mention of SMEs in the Dubai market in the UAE. Encouraging innovation in SMEs in an emerging market can help stimulate economic development, yet there have only been a limited number of research studies proposing a specialised (and/or comprehensive) innovation model for SMEs. More research is needed to provide an understanding of which factors can contribute to the success or failure of SMEs' innovation efforts (Lee et al. 2010).

1.3 Study Justification and Rationale

This study can be justified based on its capacity to fulfil the existing shortcomings in business and innovation management literature alongside other rationale as summarised below

First, innovation is perceived differently in different markets and economies, what products and services might seem new to firms and customers in one market and economy may already be familiar in another (GEM 2011). It could be as a result of a context-dependent to the local market and economy (Szirmai, Naude & Goedhuys 2011). There is a need to understand innovation on a local and a national level when considerable scientific, technological, and economical differences exist in one market and economy (Audretsch 1998; Cooke, Uranga & Etxebarria 1997; Porter & Stern 2001; Todtling & Trippl 2005). Such is the case of the Dubai market in the UAE where this study looks at what Dubai, which has created innovation mass through many large projects, should do to develop and improve various parameters for SMEs to be more innovative and to focus on innovation as a growth factor (i.e. business growth performance). Thus, this study allows a deeper understanding of the macro-and-micro-environmental determinants and reinforces the necessity for empirical research study to be undertaken to investigate innovation at the level of SMEs and their impact on business growth performance.

Second, previous research studies on innovation have addressed the issue of why firms innovate (Schumpeter 1934; Drucker 2003; Haour 2004; Davila, Epstein & Shelton 2006; Teece 2010) and

its implication in supporting higher business growth performance and developing a competitive advantage in a particular situation (Cooper 1994; Mole & Worrall 2001; Calantone, Cavusgil & Zhao 2002; Mahemba & De Bruijn 2003; Salavou, Baltas & Lioukas 2004; Aragon-Sanchez & Sanchez-Marin 2005; Aubert 2005; Scozzi, Garavelli & Crowston 2005; Teece 2010; Martinez-Roman, Gamero & Tamayo 2011). A limited number of research studies have examined the links between the contextual external-driven and internal-driven factors and innovation in an integrated and comprehensive manner and offer a collection of hypothesised links (Hult, Hurley & Knight 2004; Forsman & Temel 2011; Martinez-Roman, Gamero & Tamayo 2011), predominantly in an emerging market context such as the emerging Dubai market.

Third, most of the research studies into the importance of innovation have been focused on large firms in the Middle East and North Africa (Dutta 2006); however, a number of research studies have been investigated the importance of innovation for SMEs with the majority conducted in developed markets and economies (Kim & Lim 1988; Salavou, Baltas & Lioukas 2004). The importance of innovation in the emerging Dubai market has not yet been entirely investigated for SMEs because it is a relatively new phenomenon and research studies in the area are very limited but increasing. There are gaps in the literature that have been limited to empirical research studies into identifying and quantifying factors influencing SMEs innovation practices and their business growth performance in an emerging market context (i.e. similar to the Dubai market).

Fourth, small and medium firms play important roles in the emerging Dubai market. Data shows that SMEs represent the majority of firms in the local Dubai market and contribute effectively to the development and growth of the local economy (DSC 2010). To date, much of the support to identify opportunities and improve resource efficiency has focused on large firms, and therefore there is a need to address the challenges faced by small and medium firms (Adams & Comber 2013). These SMEs face competition from large and foreign firms entering the local market seeking to gain more market shares, thus, enhanced competitive advantages from innovation can offer opportunities and channels for SMEs in their local environment.

Fifth, this study uses rigorous research design and methodology based on psychometric properties, which is designed to capture exogenous and endogenous constructs in a higher-order factor model. As a result of the research design, a high level of mixed methods is achieved in triangulation of different theories, models, methodologies, and data analyses. The scale in the survey questionnaire

instrument is able to differentiate among firms with different levels of innovation practices and business growth performance. The effects of the external-driven and internal-driven determinants of innovation practices and business growth performance are measured to avoid the chance of positive effects blocking negative effects by using intervening and mediating variables. This study generates literature-based constructs and items which are adopted and modified from the business and innovation management literature and the discussions with SMEs owners/managers, academic researchers, and industry and market experts.

Sixth, the replication of previous research studies for different market and economic contexts is important to assess the reliability, validity, and generalisability of these studies; however it might not be directly applicable in contributing relevant answers to the new settings. Each market and economy has its own features that provide a unique environment for firms to develop and operate. The need to develop a research study for a specific context (i.e. the emerging Dubai market) is of importance not only for developing SMEs and managing innovation but also for its contribution to the business and innovation management literature.

Finally, this study offers a combination of academic contributions, for scholars and researchers, and managerial implications, for policymakers and practitioners. An emerging market innovation-based model is proposed as a guide for scholars, policymakers, and managers to promote and implement innovation practices within SMEs. Further, the suggestion for the success of innovation practices is to effectively and empirically communicate the firms' requirements and specifications to local government authorities and agencies, encourage internal creativity, allocate resources for technology, understand the customers' needs and competitors' actions, attempt new initiatives and projects, create alliances and networks, and stay informed about new trends in the local market and beyond. Together, policymakers and managers can design suitable strategies and programs to address factors which are important in the achievement of successful innovation.

1.4 Research Problem, Objectives, and Questions

This study investigates the enabling factors to innovation practices for SMEs to support higher business growth performance in the emerging Dubai market context in the United Arab Emirates. It addresses the following research problem: *Can the enabling factors to innovative practices be*

identified for SMEs in the emerging Dubai market in the United Arab Emirates, and do innovation practices have an impact on business growth performance? It is a roadmap for examining the research objectives and questions and for setting the groundwork for developing a hypothetical conceptual model. It has 11 constructs: four external-driven independent constructs (government supported developments, financial resources, academic-industry collaborations, and market dynamics); five internal-driven independent constructs (management orientation, organisational culture, technology orientation, alliance and cooperation, and market orientation); one mediating (innovation practices); and one dependent constructs (business growth performance constructs).

The specific research objectives of this study are: (1) to provide new insights into the innovation development activities of an emerging market (the macro-environmental perspective); (2) to gain a better understanding of SMEs' innovation capabilities and practices (the micro-environmental perspective); and (3) to determine the impact of innovation practices on the business growth performance of SMEs. To further address these research objectives, three research equations are developed for this study: (1) which of the macro-(external-driven) environmental determinants can influence SMEs innovation practices?; (2) which of the micro-(internal-driven) environmental determinants can influence SMEs innovation practices?; and (3) what is the impact of SMEs innovation practices on business growth performance? The two-dimensional approach, including the external-driven and internal-driven determinants, has not been directly used by other research studies; however, it is supported by other research studies, that include the macro-(Dubai context)-environmental factors, the micro-(SMEs context)-environmental factors, innovation practices, and business growth performance.

1.5 Research Design and Methodology

This research study adopts a positivism paradigm to test the research hypotheses and conceptual model. The deductive theoretical and quantitative methodological approaches are further applied, which lead to the development of a quantitative survey questionnaire instrument. This research study draws on a sample of SMEs from various manufacturing and service industries so as to be able to generalise beyond particular industries, to the population of SMEs, and to cater for the exploratory nature of the study (Dawes 2000; Calantone, Cavusgil & Zhao 2002; Scozzi, Garavelli & Crowston 2005; Martinez-Roman, Gamero & Tamayo 2011). The definition of SMEs is based

on the number of employees as a means of classifying a firm's size due to the fact that financial and turnover data is not available in the public domain, thus accessing this data is difficult (Freel 1999). The classification the Dubai Chamber of Commerce and Industry (DCCI) adopted is: small (1-9 employees); medium (10-199 employees); and large (more than 200 employees), (DCCI 2010). A sample frame of 600 SMEs owners/managers (focusing on individuals with senior-level responsibilities) is drawn from the DCCI commercial database. The population is stratified and segmented according to the DCCI classification using employment size to better represent each element of the population and to have enough variance with respect to each construct (Zikmund 2003; Homburg & Jensen 2007). This research study uses a cross-sectional approach and self-administered structured survey questionnaire for data collection.

Drawing on an extensive review of the extant business and innovation management literature, the study develops definitions of the constructs. The items used to measure the constructs are based on an extensive review of the relevant literature and a group discussion (n=20) and are measured using a seven-point Likert scale. As a result, 54 items are generated from the literature review and 12 items are generated from the group discussion. Before the actual data collection procedure is conducted, the content validity of the initial survey questionnaire is established by grounding it in the current literature and pre-tested (n=30) with owners/managers of SMEs, academic researchers, and industry and market experts based on their knowledge and expertise regarding the subject under investigation (Churchill 1979). The final version of the survey questionnaire is also sent to SMEs (n=24) to be pilot tested to assess the quality of the research design survey instrument (Hunt, Sparkman & Wilcox 1982). The method of successive waves is applied when conducting the delivery of survey questionnaires (Armstrong & Overton 1977). Further, data from the survey questionnaires to investigate the proposed hypothesised conceptual model are empirically tested by using simple statistical and advanced structural equation modelling (Partial Least Squares path technique) measures to be able to estimate the measurement (inner) and structural (outer) models (Wold 1985; Haenlein & Kaplan 2004).

1.6 Study Contributions and Implications

The study focuses on an emerging market and economy context (i.e. similar to the Dubai market) and proposes a comprehensive conceptual model based on innovative capability that addresses the

concerns to study the contextual external-driven and internal-driven factors, innovation practices, and business growth performance in SMEs in an integrated manner (Forsman & Temel 2011; Martinez-Roman, Gamero & Tamayo 2011). Therefore, this study makes a number of significant contributions and implications as summarised below.

First, this study combines recent research areas, namely innovation theory and the theory of the firm (such as a national innovation system and resource-based view in an emerging market) by constructing a comprehensive conceptual model. It makes a solid contribution to the business and innovation management literature by proposing a conceptual model that is original in explaining the innovative outcomes of SMEs in a local market and economic context. The conceptual model differentiates between components of the external-driven and the internal-driven environments to offer sufficient information to create innovation related policy and strategy by incorporating a general base of constructs applicable to innovation that have not been sufficiently investigated as a set in an empirical manner and by providing evidence of the relationship between innovation and business performance.

Second, the study reveals more insights into the validity of organisational innovation perspectives and the measures and items of innovation capabilities and practices are validated in the context of SMEs and an emerging market (i.e. similar to the Dubai market) that is only a few research studies to do so but in a broader context (Hertog 2010; Al-Abd, Mezher & Al-Saleh 2012; Jaruzelski et al. 2012). It also provides answers to recent calls to differentiate between components of a firm's strategic orientations such as technology and market orientations (Spanjol, Muhlmeier & Tomczak 2012). Further, it addresses the concern that more evidence is needed to understand the impact of innovation practices on business growth performance in SMEs (Frosman & Temel 2011). In this study, measures point out that the external-driven factors (of government supported developments, financial resources, academic-industry collaborations, and market dynamics) have no influence on SMEs innovation practices and the internal-driven factors (of management direction, technology orientation, market orientation, and alliance and cooperation) do influence on SMEs innovation practices, with the exception of organisational culture, describing the behaviours and tendencies of SMEs toward innovation practices and business growth performance in an emerging market similar to the Dubai market. This study indicates that a number of small and medium firms appear to depend on their internal resources and apply formal procedures similar to those found in large firms (Adams & Comber 2013). It further shows that SMEs in the emerging Dubai market are the

primary driving force of their own innovative behaviours by utilising their internal resources and capabilities.

Third, the integration of dynamic capability view takes into account the development of external sources of capabilities (i.e. knowledge and funds) as important ways of acquiring new resources and integrating them with the firms' internal resource base to react more effectively to changes in the environment (Eisenhardt & Martin 2000; Helfat & Peteraf 2009). Previous research studies have focused on the link between the firms' capabilities and performance outcomes (Lieberman, Lau & Williams 1990; Henderson & Cockburn 1994) and on internal sources of capabilities, with less attention given to where or how these capabilities can be obtained, particularly from external sources (Penrose 1959; McEvily & Zaheer 1999; Leiblein 2011). However, there are important sources, internal as well as external, allowing the firm to obtain and apply capabilities (McEvily & Zaheer 1999; Hsu & Ziedonis 2013). These external resources can stimulate or inhibit the ability of a firm to have competitive capabilities and competences by different exposures to information, knowledge, and opportunities such as government supported developments, academia-industry collaborations, alliance and cooperation, and market orientation. This provides further insight into the possible outcomes of deploying these resources and capabilities and the concern regarding the support to identify opportunities and pursue sustainability through resource efficiency which has focused on large firms, where there are needs to address SMEs (Adams & Comber 2013).

Fourth, a combination of theoretical and empirical implications for the business and innovation management literature and for the measurement of empirical constructs is provided. The findings from the measurement and structural models contribute to the expanding literature of SMEs innovation capability and practice and business performance. This conceptual model proves the multidimensionality of the external-driven and internal-driven construct by showing the differing effects of their constituents on the firm's innovation practices. It provides empirical evidence of a relationship between management orientation, technology orientation, alliance and cooperation, market orientation, innovation practices, and business growth performance. However, there is a lack of empirical and significant support for the relationships between external determinants, organisational culture, and innovation practices.

Fifth, the "one-size-fits-all" model of innovation is inadequate to capture and explain its impact on business growth performance (Todtling & Trippl 2005). This study recommends that the emerging

markets compared to developed markets need a different customised innovation-based model that fits their resources and capabilities for improving the innovation practices of their SMEs by re-conceptualising the original model tested in this study. Innovation could be considered context-dependent (i.e. the characteristics of the emerging Dubai market). A supporting framework needs to be developed to develop management and organisational capabilities and enhance access to relevant market information taking into account the challenges facing small and medium firms in the emerging Dubai market. This conceptual innovation-based model differs in that it incorporates both the external and internal environmental conditions (i.e. academic-industry collaborations, market dynamics, management orientation, technology orientation, and alliance and cooperation) leading to innovation and business growth performance. In order to increase the optimum benefits from innovation in the emerging Dubai market for small and medium firms and the country, the message is apparent that SMEs should continue to improve the soft aspects of innovation (i.e. organisational culture) and implement the necessary resources and capabilities before trying to implement the hard aspects of innovation (i.e. technology development), and the government and its agencies should establish the basics and competitiveness of innovation (i.e. infrastructures).

Finally, the current literature has neglected the role of small and medium firms on innovation in developing markets similar to the emerging Dubai market (Hossain 2013). This study contributes to the international marketing and innovation literature by analysing data from Middle Eastern country and firms and provides additional significant information to scholars, policymakers, and practitioners that are involved in the emerging Dubai market. The findings of this study might be attributed to the changing nature of the local Dubai market, encouraging: policymakers to take additional steps toward national policies and regulatory and market conditions (i.e. infrastructure, institutional support, legal and regulatory frameworks, funding mechanisms, set-up and operation costs, education and research institutions and capacity building, market restructure, among other national reforms) supporting SMEs and their innovation practices; management to improve their organisational practices and to take particular actions for connecting to customers, business groups and supporting industries, educational and research centres, and to marketplace; and scholars and practitioners to investigate and understand emerging markets and to extend their knowledge about innovation. This study can provide clear evidence of the possible gap between the conventional wisdom in relation to the benefit of innovation and the actual effects of innovation that the actual effects of innovation and possible advantages under the right conditions and circumstances. Thus, the results of this study can also provide a benchmark of strategic planning, innovation capability

and competency, and business growth performance attributes apparent in conjunction with certain contingencies in an operating market environment of a firm.

1.7 Study Limitations

This study has some limitations. These limitations are due to resource constraints and because the research study focuses on a particular geographical region, uses a particular methodology, and makes assumptions which are embedded within the philosophical stance on which the study is based.

First, information about the business and market behaviours of SMEs in Dubai is limited, and information is obtained from similar market settings for comparison. This study focuses only on SMEs in the local Dubai market (i.e. geographical region); however, other firms (i.e. large and non-profit organisations) and cultural contexts and markets (i.e. Middle East, Africa, Asia, Latin America and the Caribbean) should be covered in future research to strengthen and validate the findings due to innovation varying depending on industry sector and the country. It does not also capture the role of large firms, which can be the main customers of SMEs. Further, the role of regulators, public agencies, or other bodies is not captured. They can have control over policy, infrastructure, and contracts and can have far-reaching effects on SMEs. Time and cost limitations have also influenced the specific geographical location and the firm selection of this study.

Second, the survey questionnaires (i.e. quantitative method) are answered by a single informant in each firm. Although the results herein do not indicate any problems, the study cannot definitely eliminate a possible common method bias and a loss of data and information. Using interview and focus group methods (i.e. qualitative method) and multiple respondents (from different managerial levels or functional units) in each firm can provide more insights into the study. Self-reporting is further relied upon, whereas objective measures can heighten the external validity of the findings.

Third, the conceptualisation of constructs of the external-driven and internal-driven determinants, innovation practices, and business growth performance in this study covers the most commonly mentioned dimensions, yet it cannot claim to cover all relevant dimensions. Future research needs to explore cognitive orientation (i.e. quantitative versus qualitative and analytical versus intuitive).

Further, items under each construct are modified. Even though these items are evaluated and pre-tested, this study cannot claim definite non-ambiguous or unbiased relations among constructs. A replication study using these scale items is recommended to address the issue.

Fourth, whilst the data was collected from different industries and had reached a great source of variance, the generalisability of the findings is still limited to those industries covered in the Dubai market. A cross-sectional approach is applied and as such any causality suggested is tentative. Future longitudinal data would appear more desirable to take account of patterns over a longer period of time to support the causal relations in this study.

Finally, the study applies the positivism paradigm and is based on the assumption that innovation is important for a firm's business growth performance and a country's economic progression. Future research needs to explore different paradigms and philosophical stances.

1.8 Definition of Terms

The key terms are defined to establish the positions of this study as provided below.

Small and Medium-Sized Enterprises: The term small and medium-sized enterprises is defined according to the Dubai Chamber of Commerce and Industry classification: small (1-9 employees), medium (10-199 employees), and large (200 employees or more) (DCCI 2010).

Macro-Environmental Determinants: The term macro-environmental determinants is defined according to those external factors that can directly affect the firm's attitude toward innovation, either by stimulating or inhibiting its innovative activities (Avlonitis & Gounaris 1999).

Micro-Environmental Determinants: The term micro-environmental determinants is defined according to those internal factors that can facilitate or hinder the firm's ability to innovate, either by enhancing or inhibiting its innovative behaviours (Avlonitis & Gounaris 1999).

Innovation Practices: The term innovation practices is defined according to the firm's ability to seek new and better ways to identify, acquire, and implement ideas and tasks (i.e. management

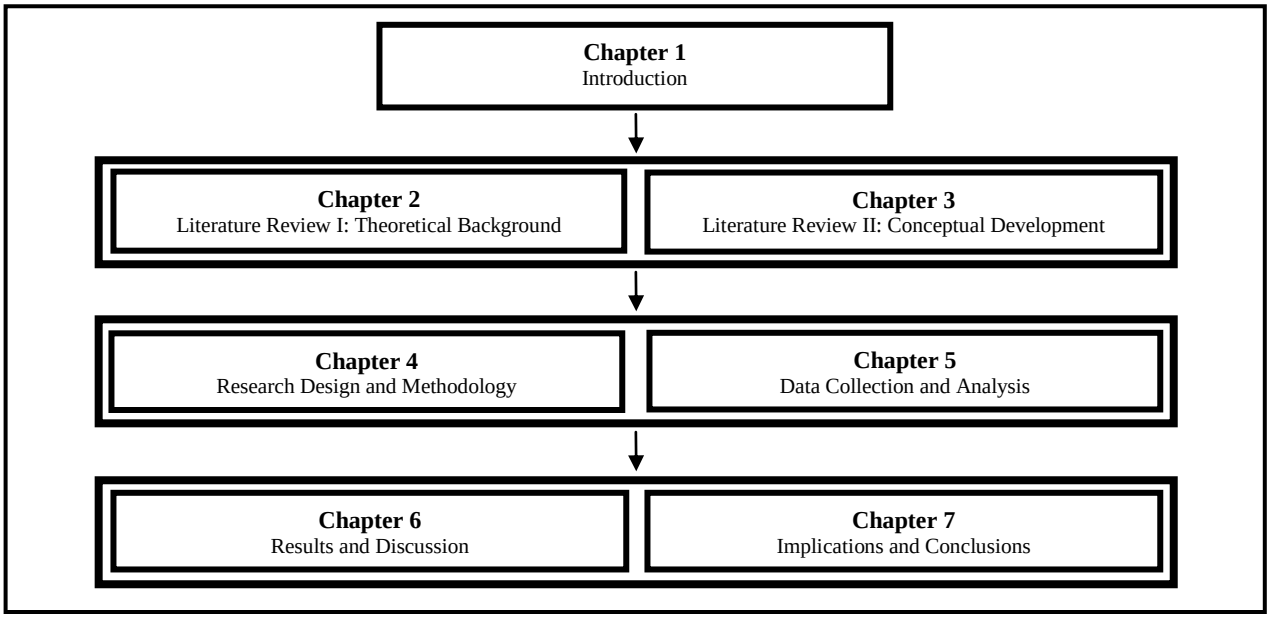
and administrative systems, internal cultures, processes, products, services, distributing channels, and marketing methods-segments) within the organisation (North & Smallbone 2000; Calantone, Cavusgil & Zhao 2002; Blumentritt & Danis 2006; Brem & Voigt 2009).

Business Growth Performance: The term business growth performance is defined according to the firm's ability to gain profit and obtain growth using both qualitative (non-accounting/financial) and quantitative measures (non-accounting/financial) (Snow & Hrebiniak 1980; Mahemba & De Bruijn 2003; Aragon-Sanchez & Sanchez-Marin 2005).

1.9 Outline of the Thesis

This study is structured around seven chapters as outlined in Figure 1.1.

Figure 1.1: Outline of the thesis.



First of which is, Chapter 1, the introduction to the study. The remaining six chapters are organised as follows:

Chapter 2 charts the key concepts of the current business and innovation management literature relevant to this study. This chapter further reviews the parent disciplines that examine the areas of the theory, business strategy, and innovation management of the firm and the macro-environment

(external-driven) and the micro-environment (internal-driven) apropos of SMEs by having more emphasis on the emerging Dubai market in the UAE.

Chapter 3 examines the immediate discipline that focuses on the innovation practices of SMEs and their business growth performance in the emerging Dubai market in the UAE. The research issues and shortcomings in the current business and innovation management literature are identified and discussed. This chapter further establishes the constructs for innovation practices and business growth performance for SMEs from the literature and develops the conceptual model with links to research questions and hypotheses for further investigation.

Chapter 4 presents the research design and methodology, and the justifications for the research paradigm and methodology are detailed as are the specific research design and methods followed throughout this study. The hypothesised conceptual model is linked to the instrument design. This chapter further demonstrates how to collect and analyse data to examine the proposed research hypotheses and conceptual model and provides detailed information regarding the research inputs and outputs, data collection and analyses, and measurement implications.

Chapter 5 reports on the collection and analysis of the data from the research instrument (survey questionnaire), which the data is empirically tested by two alternative methodological approaches: simple approach using simple statistical measures and advanced approach using structural equation modelling measures (i.e. Partial Least Squares path modelling technique). This chapter further shows how to examine raw data and provides detailed information about data preparation, assumption testings, descriptive statistical analysis, inferential statistical analysis, and open-ended questions analysis.

Chapter 6 evaluates the interpretation and discussion of the results. The research objectives and questions and the extent to which these findings from the previous chapters and empirical research studies address the hypothesised conceptual model are examined. This chapter further informs the data collected about the existence of evidence to support the perceptions of respondents from both SMEs and innovation perspectives in the emerging Dubai market.

Chapter 7 draws and presents the implications and conclusions of this study. This chapter further outlines the academic contributions and managerial implications to the existing knowledge and

industry practice. The limitations of the study are offered and suggestions for future research are proposed.

A complete list of references and appendices is included to provide relevant details of referred information throughout this study.

1.10 Summary

This chapter laid the foundations for the study. It provided the introduction and the background to and detailed the justification and rationale for this study. The research problem, objectives, and questions were introduced that are examined during the research process. It proposed the research design and methodology of this study. The study contributions and implications were offered. It outlined the limitations and the definition of terms. Finally, the overview of the thesis structure was presented.

The next chapter, Chapter 2, proceeds with a detailed description of the parent disciplines and the appropriate theoretical foundations for this study.

CHAPTER 2 LITERATURE REVIEW I: THEORETICAL BACKGROUND

2.1 Introduction

This chapter reviews the extant business management literature in order to synthesise the different theories and business models and establish the theoretical foundations by examining and analysing the theory, business strategy, and innovation management of the firm in general and the macro-(external) and the micro-(internal) environments in the context of the SMEs in the emerging Dubai market and economy in the United Arab Emirates in particular.

It examines the essential concepts of the relevant business management literature on the firm's theory, business strategy, and innovation management, that is, parent discipline one. The second parent discipline of the macro-(external)-environment and SMEs predominantly in the context of the Dubai market in the United Arab Emirates are presented. This is then followed by a review of the micro-(internal)-environment and SMEs (including their innovation practices), that is, parent discipline three. Finally, the chapter is summarised.

2.2 The Firm's Theory, Business Strategy, and Innovation Management

The firm exists to satisfy market demands and provide customer value by producing products and services at a higher quality and lower price rather than just focusing on reducing transaction costs and maximising profits (Drucker 1974; Slater 1997). Ahlstrom (2010, p.10) argues that "the main goal of business is to develop new innovative goods and services that generate economic growth while delivering benefits to society". Firms have dissimilar activities (i.e. scale, scope, or type) in which they are engaged in to sustain business growth performance in order to generate and attract new capital for internal expansions and debt and equity markets (Slater 1997). A firm with higher business growth performance can have a competitive advantage due to its valuable and unique resources and capabilities in which the sustainability of its competitive advantage depends on its innovative capacity (Porter 1980; Day & Wensley 1988; Barney 1991; Slater 1996).

2.2.1 The Environment of the Firm

The firm operates in turbulent and complex business and market environments with increasingly intense competition and economic upswing that bring uncertainty (Slater 1997; Aragon-Sanchez & Sanchez-Marin 2005; Connaughton & Madsen 2009; Wang et al. 2013). These business and market environments are changing continuously as a result of the internationalisation of market economy, the change of demographic and socio-economic magnitudes, the use of information and communication technology, the short product life cycles, the demand of customers, the need of continuous innovations, the global competition, and the economic crisis (Cravens & Shipp 1991; Salavou, Baltas & Lioukas 2004; Aragon-Sanchez & Sanchez-Marin 2005), whilst resources are distributed unevenly among firms and knowledge and technologies are considered to be sources of competitive advantage (Day 1994; Slater & Narver 1995; Slater 1997). The challenges might be greater for small and medium firms due to their lack of economies of scale and limited resources compared to larger firms but then small and medium firms with their simple internal structure may be faster at adapting and responding to these emerging challenges in their environments (Aragon-Sanchez & Sanchez-Marin 2005; Laforet & Tann 2006).

It is no longer relevant for the firm to focus on comparative advantage input-costs rather than on competitive advantage productive input-uses, which requires continual innovation (Porter 1998). The changing global environments force the firm to permanently seek the most competent models

and paradigms to maximise its innovation efforts and capacities in order to efficiently serve new and/or existing customers and markets with new and/or modified products and services (Ansoff 1965; Brem & Voigt 2009). It is essential to understand the underlying forces behind such firm dynamics so as to be more innovative. Before analysing the macro-(external) and micro-(internal) environmental determinants of the firm in an emerging market and economy (i.e. Dubai in the UAE), this study provides an overview of theories and models, which can affect the existence, organisational structure, behavioural activity, relationship to market, and business performance difference of the firm with particular emphasis on innovative behaviour.

2.2.2 The Theory of the Firm

The theory of the firm has long posed a challenge for economists (Holmstrom & Tirole 1989). It evolves from straightforward (i.e. the scope of the firm as a planning mechanism that superseded prices within its boundaries) to multidisciplinary subjects (Casson 2005). It explains the nature of the firm and tackles its existence, organisational structure, behavioural activity (i.e. scale, scope, or type), relationship to market, and business performance difference (Holmstrom & Tirole 1989; Conner 1991; Grant 1996; Slater 1997; Kantarelis 2007). The theory(s) of the firm is drawn from economic and organisation theories and deal with different aspects of microeconomics, industrial conditions, managerial economics, and organisational behaviours (Grant 1996; Kantarelis 2007). A firm is seeking to "transform productive resources into goods and services that can be sold to generate revenues", which the theory of the firm needs to provide explanations of the productive transformation and revenue generation process (Lazonick 2006, p.2). The theory(s) of the firm increases and articulates the basic development of a firm from its neoclassical roots by transaction costs, evolutionary, behavioural, and resource-based perspectives to its innovative enterprise.

The search for empirical support of the importance of innovation to the firm, that either confirms or disconfirms the explanation provided by the different theory(s) of the firm, can also guide this study plan in the emerging Dubai market and economy in the UAE. Slater (1997, p.162) argues that "there is no apparent consensus across [or even within] disciplines regarding the theory of the firm because a major new theory seems to emerge every decade". Despite the differences among the emerging theory(s) of the firm, most have a common theoretical background, which preserves the fundamental neoclassical proposition of equilibrium and profit maximisation approaches. In the business management literature, there are different prevailing theory(s) of the firm, including economic, behavioural, strategic, and innovative to be examined next in order to determine their

relevant importance and implication for this study through reviewing the external and the internal determinants of the firm to support its higher business growth performance with particular weight on the resource-based and innovative perspectives of the firm (Slater 1997; Mone, McKinley & Barker 1998; Casson 2005; Kantarelis 2007; Teece 2010).

2.2.2.1 The Economic Theory

The world economy is dynamic and there is sufficient evidence that society is undergoing change and transformation. Adam Smith in 1776/1976 in *An Inquiry into the Nature and Causes of the Wealth of Nations* defined land, labour, and capital as the key input factors of the economy, Joseph Schumpeter in 1934 in *Theory of Economic Development* added innovation as one more input factor, and Poul Romer in 1986 and Robert Lucas in 1988, with others, identified knowledge as a fifth important driver of economic growth and prosperity in society (Landstrom 2008; Teece 2010). Holmstrom and Tirole (1989, p.63) argue that "the firm has played a central role in the growth and prosperity of a country's economy". The role of government and its institutions have always been given substantial weight when discussing economic development and growth at the national level; however, limited economic theories and empirical studies have investigated factors inside a firm and connected its activity and growth to its surrounding environments (Teece 2010). The last decades have observed a growing interest in the theory of the firm by economic theories that move beyond the standard micro model of the firm as being a capital-labour function. The most prevailing economic theories and assumptions of the firm (i.e. neoclassical, transaction costs, evolutionary, growth performance, and knowledge-based) are examined next in Table 2.1.

Table 2.1: Overview description of the economic theory of the firm.

Economic Theory	Description	Limitation
Neoclassical	The firm generates products and services to a point where marginal costs equal marginal revenues, which analyses the firm's optimising behaviour in pursuit of profit maximisation through inputs-processes-outputs by way of demands that are homogenous and with consumers who have perfect and costless information. It exists in perfect market competition, taking industrial conditions (technological and market) as given constraints, combining three driving forces (labour, capital, and technology) to produce outcomes and by varying the amount of labour and capital in the production function that an equilibrium state can be accomplished.	The firm, as economic actor, operating under perfect market competition may not be able to produce economic wealth. It fails to describe the diversity, managerial motivation (scale and performance), innovation creation process, and development of the firm.
Solow-Swan	Technological progress is exogenous in favour of a more flexible neoclassical production function where growth declines in absence of technological progress due to decreasing marginal productivity of capital that is in order to sustain a	Technological and managerial scale factors have constrained effects on the size of the firm and exogenous production function

	positive long-term growth rate. There must be continual allocation of both resources and technological knowledge advancements. A firm has access to perfect and costless information without agency transaction costs and industry resources are homogenous and mobile flowing fast to their highest value use where production and demand functions are credible in the market system and management implements production function and determines quantity output.	and factor price have determined the organisation of the firm to compete in an industry where it has invested.
Endogenous	Economic growth is generated from within a system as a direct result of internal processes or later by a random sequence of quality improvement and vertical innovation that itself results from uncertain research activities without dependence on exogenous factors, involving a two-way interaction between technology, innovation, and economic system. Two growth models have emerged: the accumulation-based model (i.e. accumulation of physical and human capital), and the innovation-based model (i.e. investments in research and development and technological development).	The firm needs to understand the interplay between technological knowledge and various structural characteristics of the economy and society, and how it results in economic growth that agents within the system are successful in taking advantage of the opportunities.
AK Approach	Technological knowledge as an intellectual capital can be put together with other forms of capital (i.e. computers and crankshafts) into a single aggregate called K. A model is proposed, as an early attempt at providing a Schumpeterian (1934) approach to the endogenous theory, where growth is rising from a sequence of product improvements in a fixed number of industries but without uncertainty in the innovation process. A different model is sketched where growth is generated through a random sequence of quality improvements or a small addition of new technologies (i.e. vertical innovation) that results from uncertain research and development activities, which has the natural property that new inventions make old ones obsolete.	
New Growth	Investments in knowledge and human capital can generate growth, for example, knowledge-organisations investing in knowledge to stimulate growth and return on investment, and if successful, they create knowledge spill-over.	
Principal-Agent	The agent (i.e. manager) seeks to maximise value in contrast to profit maximising neoclassical theory in an effort to satisfy the principal (i.e. owner and stakeholder) and the firm, which relies on the shareholder-and-manager relationship. It depends on complex incomplete contracts and adds an agent to the firm concerned with hostility between the principal and agent due to incomplete information of the agent having greater knowledge and expertise than the principal who cannot directly see the actions of the agent that entails the firm to implement precise agent performance measurement and an incentive mechanism.	It fails to clarify the external and internal transaction costs, developments, and business growth performance difference of the firm.
Transaction Cost	The firm exists in the market due to transaction costs and so the firm and market are alternative mechanisms for coordinating transactions and determining boundaries. It analyses the ability of the firm in relying on cost of the market (i.e. contract-based) versus managerial hierarchy (i.e. authority-based), in minimising the costs of buy and make input, in adapting knowledge and information, and in balancing views of owner, stakeholder, manager, and employee who are involved in the transactions. The firm has no access to perfect and costless market information, asymmetric information, and the criterion for organising transactions is cost minimisation (i.e. production or transaction costs), which may expand the scope of the firm's activities opportunistically by transacting with external contractors to overcome constraints and bounded rationality.	It fails: to explain the firm's business growth performance difference in dynamic and turbulent environments; to select what to manage internal assets and capabilities vs. alliance and market depending on dynamic transaction costs; to address how productive resources develop in the firm; to consider the firm's agency cost and evolution; to explain the firm's concern with taking opportunity or avoiding opportunism; to have efficiency restructuring for confronting and transforming constraining market conditions; and to explain vertical integration dealing with investment in humans.

Evolutionary	The firm's focus on the production capabilities and processes due to the possession of unique resources and capabilities, which evaluates the firm's capability in acquiring resources, for example, physical, financial, human, and organisational assets. This is a shift from the efficiency argument implicit in the transaction costs approach. The embodied innovation model occurs due to capital investments while the disembodied technical change model occurs due to direct research and development activities that differ as a result of complex dynamic interactions of different types of knowledge applications in all functional areas. Latecomer economies and markets (i.e. emerging economies and markets) may benefit from a diffusion phenomenon in accessing new knowledge and technology without bearing the risk of investing in new ones.	It fails to explain the incorporation of entrepreneurship and product innovation within the firm in the pursuit of profit maximisation.
Theory of the Growth	The firm is connected with the managers' and individuals' behaviours and learning processes, internal dynamics, and collection of physical and human assets to perform tasks and to encourage continuous growth, which enables the firm to investigate the growth incentives and constraints all together. The firm is involved with matching resources, as a cognitive driver for its strategy, and opportunities to create value and to respond to changing market opportunities and is confined with administrative restraints (i.e. absorption of modern technology) and internal scarce resources (i.e. human assets) that might cause growth to be dynamically constrained. The firm's ability to utilise its unique resources and capabilities to generate new products and services enables it to grow in the long-term.	It fails to distinguish between managerial learning and organisational learning and explains the early business growth performance of a new firm and the cost structure (i.e. total fixed and variable costs during innovation process) of an innovative firm.
Knowledge-Based / New Economy	Knowledge is a significant resource for a firm to create new product activity and achieve competitive advantage and heterogeneous knowledge foundation and its capabilities are difficult to imitate and are socially complex, building upon the resource-based theory. A firm focuses on efficiently economising its knowledge exchanges and accumulates its capabilities by recognising, exploring, and generating new knowledge in path dependent ways that might affect its innovation. In knowledge-driven economies, the primary driver of economic growth is innovative capacity spurred through an appropriable rate and direction of knowledge and technological change between collaborative firms (such as in business parks and clusters) but it is not capital accumulation as stated by neoclassical theory.	

Source: Coase (1937); Solow (1956); Swan (1956); Penrose (1959); Baumol (1962); Marris (1964); Williamson (1964); Nelson & Winter (1982); Romer (1986, 1990); Wernerfelt (1984); Lucas (1988); Segerstrom, Anant & Dinopoulos (1990); Barney (1991); Carlsson & Stankiewicz (1991); Conner (1991); Langlois (1992); Foss (1993); Peteraf (1993); Ghoshal & Moran (1996); Grant (1996); Aghion & Howitt (1997); Slater (1997); Garnsey (1998); Witt (1998); Kor & Mahoney (2000); Lazonick & O'Sullivan (2000); Antonelli (2003); Nickerson & Zenger (2004); Casson (2005); Carayannis et al. (2006); Lazonick (2006); Parto, Ciarli & Arora (2006); Kantarelis (2007); Landstrom (2008); Richman & Macher (2008); Teece (2010); Martinez-Roman, Gamero & Tamayo (2011); Zhou & Li (2012); Alvarez, Barney & Anderson (2013).

2.2.2.2 The Behavioural Theory

Behavioural theory suggests that the firm is a coalition of individuals or members, each of which have their own goals, attempting to reach realistic goals rather than maximise profits in explaining how decisions are taken in their firms (Cyert & March 1963; Slater 1997). In behavioural theory, the firm exists to be able to survive and to achieve a satisfactory level of profits involving fewer risks and reflecting a compromised, weighted outcome between individuals with aspirations and

conflicting interests within the firm (Cyert & March 1963; Slater 1997). This may require the firm to change its strategic behaviour in responding to business performance feedback (Greve 2003). The behaviour of a firm is "the result of a complex joint decision process within a network of agency relationships" (Holmstrom & Tirole 1989, p.63). The firm has no access to perfect and costless information and its goals are laid-down by negotiating among individuals. However, the negotiation is complicated by the role of in-context learning, bounded rationality, individuals' behaviours, and the sequential setting of conflicting goals when making decisions in a complex situation (Nelson & Winter 1982; Slater 1997). The outcome could be local rationality rather than perfect rationality leading to decentralised decision-making processes achieving local optimisation more willingly than organisational optimisation. The behavioural theory has succeeded to explain the decision-making process of the firm but has failed to explain the existence, cross-country-cultural context, and business performance difference of the firm (Slater 1997; Greve 2003).

2.2.2.3 The Positioning Model and Resource-Based View Theories

To better understand the nature of the firm, an examination of the strategic management literature suggests that two main perspectives shape our understanding of strategy and strategic choices for achieving competitive advantage: the positioning school and the resource-based school (Teece 2010; Cromer, Dibrell & Craig 2011). The positioning school view provides an assessment of the industry structure that a firm needs to achieve a "strategic fit" with its environment by evaluating its competitive forces; the Porters' five forces, to assess where and how best to compete (Porter 1980, 2008), while the resource-based view provides an assessment of the resources that the firm requires to possess and dispose of a bundle of distinctive capabilities and competencies to assess how to extend its resources in order to compete (Rumelt 1984; Wernerfelt 1984; Barney 1991).

2.2.2.3.1 The Positioning Five-Force Competitive Advantage Model

The positioning competitive advantage model suggests that the firm emphasises the importance of understanding the competitive forces that shape its industry competition, which can be a starting point for the firm to develop its strategy and consider its competitive position (Porter 1980, 2008; Cockburn, Henderson & Stern 2000). The firm should already know what the average industry profitability is and how it has been changing over time. Porter (1980, 2008) proposes the five-force competitive advantage model that reveals industry profitability and has become important to the strategy formation of the firm. Only then, the firm can integrate industry conditions into its strategy. In looking at the five forces, the firm needs to consider the overall structure instead of

gravitating to one element and remains focused on structural conditions rather than on certain visible attributes such government, industry and market growth rates, technology and innovation, and complementary products and services (Porter 2008). These five forces are the threat of entry, the power of suppliers, the power of buyers, the threat of substitutes, and rivalry among existing competitors.

2.2.2.3.2 The Resource-Based View

The resource-based view suggests that the firm, when operating in changing business and market environments, is required to encompass resources (i.e. capabilities and competencies) and perform tasks efficiently and expeditiously to capture new opportunities and threats and to meet customer needs by either morphing existing, or creating new, ventures (Teece 2010). Conner (1991, p.122) further argues that "the coronation of strategy as a fit between the internal competences of the firm and external opportunities incorporates a resource-based perspective". The resource-based view complements the positioning model and suggests that the firm is a set of tangible and intangible resource (strategic) assets (Wernerfelt 1984; Barney 1991). It focuses on how a firm can develop unique capabilities and competencies in the context of a competitive environment (Penrose 1959; Collis & Montgomery 1995; Grant 1996; Aragon-Sanchez & Sanchez-Marin 2005; Blumentritt & Danis 2006; Akman & Yilmaz 2008; Teece 2010). In this view, the firm, as a bundle of assets and capabilities, exists to achieve a higher performance and a competitive advantage through utilising its valuable, relatively scarce, and difficult to imitate strategic assets such as intellectual property, knowledge and know-how process, and customer links (Prahalad & Hamel 1990; Conner 1991; Teece, Pisano & Shuen 1997; Senge & Carstedt 2001; McAdam & McClelland 2002a). But the firm might not have access to perfect information, homogenous resources, and resources mobility within the industry (Slater 1997). It earns payments from leveraging its unique resources, which are difficult to monetise directly via transactions in the immediate market (Wernerfelt 1984; Teece 2010). Hunt and Morgan (1995) also contribute more specific considerations into the resource-based view in which heterogeneous and dynamic industry and market demand, imperfect market information, costly information gathering, and strategy and growth performance are influenced by changing environments. The firm is assumed to be heterogeneous having dedicated internal forces (resources, capabilities, and competences) that are acquired and developed through characteristic and path dependent processes, which are more difficult to duplicate by other firms (Barney 1995; Blumentritt & Danis 2006). Innovation capabilities should focus on nurturing and enhancing the firm's internal forces to adapt to changing external market and environment (Neely et al. 2001; Xu

et al. 2007; Sirmon et al. 2011). The resource-based view has succeeded to explain the existence, behavioural activity, and business performance difference of the firm (Slater 1997) but has failed to identify critical resources and capabilities, to explain the process issues which lead to some resources becoming valuable contributors to sustainable competitive advantage, to deal adequately with the issue of complementarity of resources, to explain inside-out, outside-in, and boundary spanning capabilities (i.e. dynamic capabilities), to acknowledge the role of human involvement (i.e. judgments or mental models) in assessing and creating value, and to explain how to manage resources in ways that sustain competitive advantage (Fahy & Smithee 1999; Barney 2001; Priem & Butler 2001; Foss et al. 2008; Wiengarten et al. 2013).

2.2.2.3.3 The Core Competence-Based and Complexity Views

The core competence-based view argues that the core competencies of the firm are the integrated collective capabilities such as organisational routines and problem-solving skills that are sources of sustainable competitive advantage and can distinguish the firm in the marketplace (Quinn 1992; Hamel & Heene 1994; Heene & Sanchez 1997; Schilling 2006; Teece 2010), which are difficult for other firms to replicate (Snow & Hrebiniak 1980; Vanhaverbeke & Peeters 2005). This view is linked to the concept of market dynamics, "dynamic capabilities" view, looking at the ability of a firm to build, integrate, and reconfigure its competence base (i.e. skills, procedures, structures, and decision rules) to get "strategic fit" with the external business and market environments in order to create opportunities and capture values for a long-term growth (Teece & Pisano 1994; Teece, Pisano & Shuen 1997; Eisenhardt & Martin 2000; Helfat et al. 2007; Teece 2010; Kor & Mesko 2013). Dynamic capabilities combine the evolutionary and resource-based theories of the firm to achieve congruence between the competencies and changing environmental conditions of the firm (Lazonick & O'Sullivan 2000; Sirmon & Hitt 2009; Martinez-Roman, Gamero & Tamayo 2011). Teece (2010) further emphasises that a firm needs to sense (i.e. opportunity identification and assessment), seize (i.e. resources mobilisation and value capturing), and transform (i.e. renewal continuation) in order to innovate and revitalise itself. Innovation capabilities should be integrated in cultivating the dynamic competences of the firm to respond properly to changes in the external business and market environments (Neely et al. 2001; Akman & Yilmaz 2008). Further, the complexity view argues that the managerial system of the firm is a complex process and an open system not in equilibrium and the innovation journey is neither sequential nor random (Xu et al. 2007). Van de Ven et al. (1999) also indicated that innovation journey is a non-linear dynamic cycle of divergent activities that repeat over time and across levels, if enabling and constraining

conditions are present. Xu et al. (2007, p.15) describe the innovation management of the firm as a "non-linear sequence [and] extremely complex system", which requires dynamic coordination and integration of activities such as strategy, technology, and culture that are repeatedly changing. It focuses on decreasing the effect of systematic entropy value and enhances the effectiveness and the efficiency of the managerial system of the firm.

2.2.2.4 The Theory of Innovative Enterprise

The theory of the firm is still a "black box" in understanding the innovation process of creating new products and services and their profitable commercialisations (Teece 2010). Teece (2010, p.681) further argues that "economics may have had success with developing an understanding of the consequences of technological change, but the firm-level and market determinants are still enigmatic". Innovation economics focus on the theory of economic development that impact on the theory of the firm and its decision-making where the continual increase of outputs can no longer only be explained by the increase of inputs used in the production process; however, the innovation process is the key to understanding the economic development with the firm playing the central role (Lazonick & O'Sullivan 2000; Lazonick 2006). Innovation can be explored in a systems model inspired by the theories of the firm. Slater (1997, p.165) explains that "innovation may be concerned with the creation of new businesses within the existing business or the renewal of ongoing businesses that have become stagnant or in need of transformation". The firm can survive the competitive struggle, not by varying its price and quantity, but by innovating (Porter 1990). The firm must also understand the interaction of organisational conditions (i.e. cognitive, behavioural, and strategic), which play no substantive role in the neoclassical theory, or in the transformation of industrial conditions (i.e. technological and market) as being described in the theory of innovative enterprise (Lazonick & O'Sullivan 2000). Lazonick and O'Sullivan (2000) describe the innovative firm that undertakes the transformation of industrial conditions through productive input resources to generate useful (i.e. high quality) and affordable (i.e. low cost) output products and services (i.e. innovative products and services) compared to the adaptive firm that optimises conditions to technological and market constraints. The transformation of industrial conditions, the firm faces, requires the transformation of organisational conditions of individuals' cognitive condition (knowledge), behavioural condition (motivation and incentive), and strategic condition in the firm which in turn depends on the control of the individuals with decision-making power to exploit financial commitments and organisational integrations. Integrating organisational learning within the firm can further transform cognitive (individual and collective rationality),

behavioural (opportunism), and strategic characteristics of individuals in the firm to develop and utilise productive resources and capabilities and contribute successfully to innovation.

The innovating firm is not concerned with cost increases and is constrained by the market to minimise profit outputs in cases where marginal cost is equal to marginal revenue in the long-term (Lazonick & O'Sullivan 2000). In the short-term, costs may increase due to the transformation of technological and market conditions but rather than accepting these conditions as constraints on the firm's activities (i.e. similar to the adaptive firm), the innovating firm produces high quality product and service outputs and declines unit costs as its market share increases. The innovating firm becomes dominant by transforming industry cost and by competing for market share and prices that are related to the generation of surplus revenues and investment in new technologies. It can enable the innovative firm to outperform the optimising firm (i.e. produces at smaller volumes and at higher prices) in terms of producing outputs and costs, transferring productive capabilities to produce outputs for other markets, differentiating from competitors, and gaining sustainable competitive advantage that shows differences from the neoclassical theory of marginal cost equals marginal revenue and its output and pricing decision mechanism (Lazonick & O'Sullivan 2000). However, the innovating firm can face fundamental challenges, which include the design and implementation of opportunities and customer-value-and-captured strategies and mechanisms and not just the coordination to overcome transaction costs (Teece 2010). The firm's strategies and mechanisms substantially influence its organisational structure, behavioural activity, relationship to market, and business growth performance difference in which it engages in (Tucker 2002; Drucker 2003; Vanhaverbeke & Peeters 2005; Laforet & Tann 2006). Normann and Ramirez (1993) and Teece (2010) recognise which strategies and mechanisms are keys the innovating firm utilises to solve problems, create new organisational capabilities and values, and improve business performances through providing the framework that permit managers to assemble particular complementary and co-specialised assets and identify opportunities for producing values of innovative products and services to customers and delivering those values at higher profits in the marketplace. These actions are the fundamental function and nature of the innovating firm that is different from the Coasian firm in the transaction costs theory (Teece 2010).

2.2.2.5 The Theory of the Firm Remarks

Many of today's available theories have appeared to provide a false impression of the innovating firm (Roberts 2004). The theories of the firm are described as the theories of the boundaries of the

firm that are more appropriate for the descriptive model of the firm's decision-making process (Gibbons 2005), such as the behavioural theory of the firm (Cyert & March 1963). In this review of influential theories of the firm, there are a number of significant emerging trends for discussion (Slater 1997; Kantarelis 2007; Teece 2010). First, the neoclassical theory of the firm is rejected based on faulted assumptions of the firm rationality (i.e. perfect and costly information and profit maximisation) and has failed to provide satisfactory answers to issues addressed by the theory of the firm. Second, the theory of the firm begins to more emphasise the role of manager as an active decision maker working with imperfect information compared to a deterministic model of the firm's conduct. Third, the theory of the firm requires improvement to account for opportunism and opportunity, coordination within and outside the firm, the firm-level of capability variations, and the firm superiority over market for creation, transfer, and protection of intangible assets. Fourth, the non-neoclassical theory of the firm, the competence-based view, declines the equilibrium and profit maximisation assumptions and focuses on knowledge competencies as the main reason for the existence of the firm. Fifth, the external and internal environmental factors (i.e. government, educational institution, customer, management, and technology) are excluded in much theorising about the firm's capability and business growth performance. Sixth, the theory of the firm needs to account for the nature of the firm and not only the development and maintenance of competitive advantage, earning, and profit. Finally, innovation matters start to emerge and gain importance in areas related to the existence, organisational structure, behavioural activity (i.e. scale, scope, and type), relationship to market, and business growth performance difference of the firm.

2.2.3 The Business Strategy and Management Perspective of the Firm

In the context of modern business and market environments, a strategy as an embodiment of the firm's vision, can be a set of policies, objectives, and plans, which defines its scope and process in handling complex competitive environments and matching dynamic market environments (Rumelt 1991; Markides 1995; Teece, Pisano & Shuen 1997; Means & Faulkner 2000). It encompasses the plans and resources of the firm and focuses on technological and product development (Rothwell 1994). The preferred outcome of a strategy is an alignment with its corresponding environmental constraint and an achievement of sustainable competitive performance (Ginsberg & Venkatraman 1985; Grant 2002). In agreement with the "contingency perspective", a firm can formulate the best strategy by matching its organisational approaches to its pace of environmental contexts (Ginsberg & Venkatraman 1985). These organisational approaches are: building a position in an industry and defending it against the competitive forces by anticipating shifts of the forces and responding to

them (Porter 1980); focusing on its own resources and capabilities to leverage them against the resources of competitors (Rumelt 1984; Wernerfelt 1984; Barney 1991); selecting a number of significant processes (i.e. strategic alliances or building customer relationships), and having a guidance through the changing marketplace (Dorf & Byers 2008). However, firms can differ in how they undertake strategy building activities. The analysis and implementation of a strategy can be distinct activities that are carried out by different individuals and units in large firms, and in small firms a single person performs these activities (Curran 1996; O'Gorman 2006).

The strategy of the firm is no longer a matter of positing a fixed set of activities in changing global business and market environments (Brown 1990; Sim & Teoh 2011). As the external and internal environments change, the strategy of the firm should be adjusted in a timely manner and kept in a dynamic balance (Aaker 2001; Xu et al. 2007). However, strategic innovations can be detected and imitated by other firms. This forces firms to pay more attention to their competitive advantage (Sim & Teoh 2011). Hence, the control of strategic assets (i.e. innovative capabilities) is important since losing control can lead to poor value creation and imitation by competitors (He, Brouthers & Filatotchev 2013). Brown (1990, p.257) also stresses that "a firm gains competitive advantage by performing its activities more cheaply or better than its competitors". Competitive advantage is defined as a distinctive component providing the firm with a favourable position in relation to its competitors and stems from the different discrete activities within and outside the firm (Porter 1980; Dorf & Byers 2008). Barney (1991, p.102) calls a firm having a sustainable competitive advantage "when it [the firm] is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors and when others are unable to duplicate [its] benefits". It can direct the firm to keep exploring new processes and technologies in order to satisfy customers' demands and gain competitive advantage over competitors, and not just to keep pace (Hamel & Prahalad 1989; Dickson 1992; Humphrey & Schmitz 2004; Otero-Neira, Lindman & Fernandez 2009). Salavou, Baltas, and Lioukas (2004) analyse the strategy-related (i.e. learning and market orientations) and competition-related (i.e. industry concentration and barriers to entry) characteristics of small and medium firms and they find that strategy-driven firms increase their innovative performance, whereas competition-driven firms have significant effects on their innovative activities. Research studies on innovation with a number of determinants (i.e. impact of firm-specific characteristics and effect of external environments) have placed more emphasis on the effects of structural factors, which are more suitable for large firms (Kim & Lim 1988; Hult, Hurley & Knight 2004; Salavou, Baltas & Lioukas 2004), while at the same time increasing

research studies have looked at the impact of strategic variables such as learning, flexibility, and closeness to customer as advantages of small and medium firms (Allocca & Kessler 2006).

2.2.3.1 Management Strategic Orientation and Miles-Snow Typology

The strategic orientation of the firm becomes the ongoing reconfiguration and integration of its capabilities and competencies by creating a better fit with its environment. It is more difficult for the small and innovative firms because the globalisation phenomenon has increased competition and the innovation lifecycle timeframe is nowadays more compressed than in the past due to the demand of market competitiveness (Roure & Keely 1990; Sim & Teoh 2011). The ability of the firm to maintain a balance among a group of competitive components, external and internal to a firm, in a manner that facilitates higher business performance, can be a key to successful strategic management (Blumentritt & Danis 2006). In the strategic choice perspective, Child (1972) argues that top management's strategic orientation contributes to the firm's dynamic interactions with its environments rather than simply reacting to them. For the firm to achieve strategic alignment, it is required to align its resources (i.e. physical, financial, human, and organisational), capabilities (i.e. skill and process), and competencies with changing environmental opportunities and threats (Bourgeois 1980; Hrebiniak & Joyce 1985; Dorf & Byers 2008). The firm's "strategic fit" requires internal consistency with its overall activities (Porter 1980) and dynamically regulates the relation with its environment (Blumentritt & Danis 2006). This highlights the "dynamic fit" or interplay between the firm and its environment and the distinctions between rational and extemporaneous aspects of strategic management.

A firm can select to adopt a number of business-level strategic positions and orientations (Seveg 1989; Snow et al. 2011). First, in the competitive position, Porter (1980, 1985) looks at a firm adopting a competitive position as being: a cost leadership leading to aggressive pursuance of a lowest cost position producer that is perceived as low industry-wide; a differentiation leading to development of distinctive capability that is perceived as unique by customers and industry-wide; a focus leading to concentration of strength by a certain segment or niche by targeting particular customers, limited geographical areas, and narrow product and service ranges; or a stuck in the middle. Second, in the organisational level typology, Miles and Snow (1978) view a firm as a complete and integrated system being in dynamic interaction with its environment that its overall strategy fits its environment (external fit), its internal structure and process (internal fit), and the entire firm continually adapts to maintain fit over a period of time (dynamic fit). Other strategies

are the blue ocean strategy leading to the creation of new market space, making the competition irrelevant, and creating and capturing new demand, which is opposite to the red ocean strategy leading a firm to compete in an existing or a congesting market and trying to beat competition by spending more on research and product development and promotion (Mauborgne & Kim 2005).

The Miles and Snow (1978) business-level typology views a firm as a complete and integrated system in a dynamic process and interaction with its environment (i.e. adaptive cycle) by implying different management strategic orientations (Ghoshal 2003), whereas "organizational effectiveness hinges largely on top managements' perceptions of environmental conditions and their decisions about how to cope with these conditions" (Blumentritt & Danis 2006, p.277). This business-level typology captures the strategic choice and dynamic capability perspectives of the firm by offering different routes that a firm can take as it moves through its adaptive cycle (Blumentritt & Danis 2006; Snow et al. 2011). It has four distinct archetypal strategic orientations, including prospector, defender, analyser, and reactor (Miles et al. 1978; Sim & Teoh 2011; Snow et al. 2011), which is theoretically tested and empirically validated (Hambrick 1983; Shortell & Zajac 1990; Aragon-Sanchez & Sanchez-Marin 2005; Slater, Olson & Hult 2006). First, the prospector operates in a dynamic environment, searches continuously for new market opportunities, possesses flexible structures and technologies, develops innovative processes, products, and services, and initiates changes and uncertainties to infuriate competitors. Second, the defender operates in a stable environment, focuses on narrow and limited product-market-domains, rarely makes adjustments to structures, processes, and technologies, and devotes primary attention to improving efficiencies and protecting market shares. Third, the analyser acts prospectively or defensively, combining both centralisation and decentralisation characteristics, depending on environmental settings and efficiency-and-innovation balances. Finally, the reactor provides stable processes, products, and services and is incapable of responding effectively to competitive and environmental changes due to perpetual instability and inconsistency that is inherently unstable, having a non-viable strategy and seldom leads to satisfactory performance. In most environments, the prospector and defender reside at opposite ends of the strategic spectrum, with the analyser being in the middle (Miles & Snow 1978); however, previous research studies have produced mixed results (Sim & Teoh 2011).

2.2.3.2 Strategic Choice and Environmental Determinism

Innovation, as a strategic choice, is critical to how the firm adapts to changes and challenges in the business and market environments, which requires making systemic adjustments (Cromer, Dibrell

& Craig 2011). The role of the environmental determinism perspective has an impact on variables like goals, structures, and technologies of the strategic choice of the firm (Child 1972). According to Sadler and Barry (1970, p.58), the firm must always "bow to the constraints imposed on it by the nature of its relationship with [its] environment". The distinctions among the variables of strategic choice and environmental determinism confine organisational behaviour and change. The rational is that a firm is an open system in a dynamic equilibrium with its environment through exchanging and transforming information to yield higher business growth performance (Miller 1965; Bourgeois 1986). Under the open system perspective, the term "equifinality" suggests that there might be multiple ways for a firm having different resources and capabilities in achieving organisational outcomes (Hrebiniak & Joyce 1985). Hrebiniak and Joyce (1985, p.338) stress on "equifinality" in which an "organizational choice nonetheless exists as a separate, independent variable important to the development of a dynamic equilibrium with the external environment, [where] choice can be separated from environmental determinism in a logical way". However, the level of variation and complexity presented by the environment might affect the strategy of the firm rather than the firm influence the environment (Bourgeois 1986; Miller 1988; Child 1972). The deterministic perspective has a few limitations, as argued by Child (1972), that a firm might select its operating environment and where large firms might influence the conditions prevailing within its environment and as argued by Bourgeois (1986), that a human agent choice might take actions to distinguish a firm from its competitors. Despite of the external (government, industry, and economy) and the internal (human need, power structure, and information system) constraints of the firm, managers always retain a certain amount of judgment to select the firm's operating environments so as to obtain satisfactory outcomes (Bourgeois 1986).

Hrebiniak and Joyce (1985) describe the interactions between strategic choice and environmental determinism as independent and can result in four typological types of organisational adoption. First, the condition of low strategic choice and high environmental determinism (natural selection, minimum choice and adaptation) requires the firm to have appropriate variations and adaptations or it can be selected out. It is a very competitive condition and the firm needs to keep abreast of technological and market changes to be able to survive and control price and profit. However, strategic choice and managerial action are difficult and limited due to high environmental control having options through technological discoveries and innovations to change against environmental demands and affect competitive advantage forces; and an example is cost leader and defender with low innovations. Second, the condition of high choice and high determinism (differentiation, high

choice and adaptation) enables the firm to develop several strategic options, follow differentiation or focus strategies, choose market segments, and/or peruse effective generic strategies despite the existence of external forces and conditions; an example is analyser with medium innovations. Third, the condition of high choice and low determinism (strategic choice, maximum choice and adaptation by design) requires the firm to acquire resource dependencies and powers over others within its task environment. It allows the firm to move within and among market segments with less exit and entry barriers and more options through innovation and more effect on the external conditions; an example is prospector with high innovation. Finally, the condition of low choice and low determinism (undifferentiated, incremental choice and adaptation by chance) leads the firm to exhibit an incoherent strategy and to take advantage of environmental conditions and appears reluctant and unable to create dependencies or alterations favouring the impact of either organisation or environment; an example is reactor with low innovation. The firm adoption process is dynamic and shifts among typologies concurrently according to its strategic choices or external environmental changes (Hrebiniak & Joyce 1985), while the firm innovation strategy can fail unless it has the right structure to tackle environmental changes (Miller 1988).

2.2.3.3 Size Implication and Strategic Adaptation

The size of the firm can have an effect on the nature of external environmental impacts and their mechanisms through which they are transmitted, in addition to the ability of the firm to respond to external environmental forces (Curran 1996). The limited resource base of small and medium firms compared to larger firms (i.e. management and finance) can further influence their ability to scan, analyse, and respond to major environmental changes (Smallbone, North & Kalantaridis 1999). The size of a firm can be a proxy for resources as larger firms usually possess more product lines and higher production capacities together with more resources and capabilities (Penrose 1959; Koh & Venkataraman 1991). Small firms might perhaps be more vulnerable than larger firms to market shifts and usually operate with narrower product portfolios that render them at greater risk from industry-related downturns; yet some research studies found that small firms report more limited impacts than larger ones (Shama 1993). Small firms are constrained to react to their environmental shifts and are less likely to direct and adjust their activities but with their flexibility to adjust their inputs, processes, products, and prices, these firms can quickly respond to environmental shifts, which is crucial to business survival (Berry, Rodriquez & Sandee 2002; Reid 2007). They may be more prepared than larger firms to engage in risky investments and innovative behaviours so as to improve their business growth performance (Latham 2009). In small business populations there

are likely to be variations in how firms adapt reflecting on the growth performance outcomes that arise from adaptation strategies (Blackburn & Jennings 1996). Several firms adapt proactively through investment, innovation, and market diversification while others adapt through cutback, yet others combine both approaches. Other actions may include cost and/or price reduction responses (European Commission 2004). Smaller firms differ from larger firms due to their vulnerability to external shocks and insufficient time to accumulate resources to be resilient, which increase their dependence on supporting institutions and agencies.

Finding and developing new innovation is a challenge for the growth oriented firms of all sizes (Cohn, Katzenbach & Vlak 2008). The size of the firm plays a major role in how successful the firm's innovation efforts are. For example, it is both the largest (more than 50,000 employees) and smallest (less than 500 employees) firms that are most effective when it comes to innovation. Medium-sized (5,000 to 10,000 employees) firms are 'stuck in the middle' and at the same time are struggling with their innovation efforts (Emerald Group 2007). Rothwell and Zegveld (1982) looking at firms across various industries further argue that factors such as different phases in the industry cycle that would vary with government policies, technologies, and markets can influence the size and innovation of the firm. Innovation barriers as well might vary with the size of the firm and that can create challenges (Piatier 1984; Mohnen & Rosa 2000; Hadjimanolis 2003). Further, the size perhaps determines not only the nature of barriers but the significance of barriers, with small firms perceiving their impact as more relentless (Hadjimanolis 2003). Vossen (1998) argues that the main innovation barriers in large firms are internal (i.e. bureaucracy or resources), while such firms have the resources and know-how to overcome any existing external barriers (i.e. market access and regulation) where in small firms, external barriers are very important, while internal-resources-related ones can be critical to their success and business growth performance (Hadjimanolis 2003).

2.2.3.4 Strategic Response to Financial and Economic Crisis

Strategic change is a complex process that involves planning by a firm and brings about long-term consequences for business growth performance. In a highly competitive or crisis situation, a firm might consider short-term planning or a restructuring in the form of replacement of management, functional re-organisation, and other internal organisational arrangements which are often a precursor to, or as a result of, strategic adaptations to difficult financial and economic conditions (Whittington 1991; Geroski & Gregg 1997). The financial and economic conditions can change

overtime due to various rationales that are related to macroeconomic downturn (i.e. falling national gross domestic product) and environmental shocks (i.e. decline in industries). Some analysts attribute economic fluctuations to innovations and others connect them to the collapse of aggregate demand and the decline in investment; yet others view the recurrent upswings and downturns as an inherent feature of the market system rather than as a result of shocks or new innovations (Graham & Senge 1980; Sterman 1985; Nijkamp 1987). The causes of events like the global financial and economic crisis of 2008 and the weight to be attached to it, in particular national contexts, continue to be debated (Ip 2009). However, the immediate trigger can be related to the under-regulated financial market that started with banks and other financial institutions, engendered by the widespread default of mortgage holders in the United States alongside a number of other conditions that include the limited reach of regulatory framework; the availability of funds to capital markets; the rise of a "shadow banking system"; the global trading of securities; the failure of credit rating agencies and auditors; the financing of debt; and the housing and asset bubbles (Blackburn 2008; Hildyard 2008; Peston 2008; Banerji 2009; Cloke 2009; Jain 2009; Swan 2009; Wong 2009; WEF 2010).

Difficult financial and economic conditions present a firm with a dilemma (Chastain 1982). The "pit-stop" theory of business behaviour suggests that during difficult conditions a firm is more willing to increase investment and innovate due to the opportunity costs of not undertaking such actions is lower than during more buoyant conditions (Mensch 1979). Failure to innovate induces unsuccessful firms to search for alternative ways of conducting activities (Cyert & March 1963). Under such circumstances, a firm might bring forward investment and innovation plans to take up its resource surplus and then incentives to continue business as usual. It shows the importance of adopting innovation into a firm strategy over the business cycle (Madrid-Guijarro, Garcia-Perez-de-Lema & Van Auken 2013). A firm can adopt different business strategies, first, a retrenchment strategy involves cutting operating costs and investments of non-core assets which appears to be a common short-term approach adopted to deal with difficult conditions mainly (Geroski & Walters 1995; Michael & Robbins 1998), second, an investment strategy involves spending on innovation and market diversification that is seen as an opportunity to implement strategic change, which might otherwise not have occurred (Bryan & Farrell 2008; Rumelt 2008; Lynn 2009), and finally, an ambidextrous strategy combines retrenchment and investment strategies. It is likely that firms adapt through well-judged cost/asset-cutting behaviour and through investment in innovation and market development. Choosing the right strategy to cut costs during difficult conditions when

market selection pressures are at their most severe is very important (Tushman & O'Reilly 1996; Raisch & Birkinshaw 2008; Sebag-Montefiore & Monteiro 2008).

2.2.4 The Innovation Management of the Firm

Innovation is "central to the role of the enterprise in modern society" (Teece 2010, p.724), which is considered to be a central activity that involves the entire firm and conditions its behaviour to facilitate value creation of competitive advantage and business performance (Zaltman, Duncan & Holbek 1973; Sundbo 1998; Linder, Jarvenpaa & Davenport 2003; Rogers 2003; Cho & Pucik 2005; Martinez-Roman, Gamero & Tamayo 2011; Yam et al. 2011). Innovation can have different meanings in different disciplines (O'Dwyer, Gilmore & Carson 2011). It is an indefinable concept that has complexity and interactive processes of demand-and-supply-side elements of customers and research and development outcomes (Mowery & Rosenberg 1979; Mole & Worrall 2001; Samara, Georgiadis & Bakouros 2012). Early contributions to the classical innovation literature include the Schumpeter (1939) micro-economic view on innovation that contains entrepreneurial innovations. Schumpeter (1934, 1993) has also used the term "creative destruction" to describe the process of creation and reinvention to continually destroy the old and create new ones.

Innovation can be related to the ability of the firm to seek new and better ways to identify, acquire, and implement ideas and tasks that come in different forms (i.e. management and administrative systems, internal cultures, processes, products, services, distributing channels, and marketing methods-segments) within the organisation (Slater & Narver 1995; North & Smallbone 2000; Boer & During 2001; Calantone, Cavusgil & Zhao 2002; Drucker 2003; Haour 2004; Deschamps 2005; Blumentritt & Danis 2006; Brem & Voigt 2009; Hjalager 2010). It can be described as either an invention which may be considered completely new, an improvement of an existing product or system, and/or a diffusion of an existing innovation into a new application (Zhuang, William & Carter 1999; Dorf & Byers 2008). Innovation can be further "concerned with the creation of new businesses within the existing business or the renewal of ongoing businesses that have become stagnant or in need of transformation" (Slater 1997, p.165). Haour (2004, p.1) argues that "innovation manifests itself in many different ways and it is very hazardous to predict, both in its timing and in its consequences", which can be envisaged as an incremental innovation (i.e. exploit existing technology, low uncertainty, and improve competitive advantage within current industry and market) or radical innovation (i.e. explore new technology, high uncertainty, and dramatic change within current or new industry and market) (Dewar & Dutton 1986; Christensen

2003; Dorf & Byers 2008; O'Connor et al. 2008). Whereas the latter one "needs a new market to bear fruit" (Mole & Worrall 2001, p.354) and can significantly change product category, industry, and market (Utterback 1994; Christensen 2003; Dorf & Byers 2008). Other types of innovation are based on certain characteristics that are related to competence enhancing as opposed to competence destroying (Tushman & Anderson 1986; Berkun 2007) and technical as opposed to administrative (Damanpour 1991).

Innovative capability is considered on different levels and from a broad perspective, depending on a firm strategy and its market condition (Guan & Ma 2003; Martinez-Roman, Gamero & Tamayo 2011), which is related to the firm's capacity to respond properly to changes in the environment (Neely et al. 2001; Akman & Yilmaz 2008). It allows a firm to adapt to competition and achieve success in the marketplace (Guan & Ma 2003). It is consistent with the resource-based view in explaining how a firm derives competitive advantage by channelling resources, capabilities, and competencies into innovation (Hult, Hurley & Knight 2004; Martinez-Roman, Gamero & Tamayo 2011). Successful innovation requires "exploration competencies" that is the capability of the firm to harvest ideas and expertise from different sources (Wolpert 2003). Systematic innovation can lead to the observation of different sources of innovative opportunities within and/or outside a firm, which is vital to identifying the unexpected (i.e. unforeseen opportunity), incongruity (i.e. opportunity between reality and behaviour), industry and market restructures, demographics (i.e. change in population and perception), process need, and localised, embedded, and research-based knowledge (Drucker 1993; Hjalager 2010). Along with implicit knowledge, tacit knowledge is another key source of innovation (BAH 2006) that is an unspoken knowledge (i.e. observations, ingrained habits, inspirations, hunches, or other forms of awareness) that are typically not written down or codified providing the firm much of its distinctive edge over competitors compared to explicit knowledge that is absorbed intellectually or delivered in trainings session (Helgesen 2008). Other sources are emerging knowledge and technology, academic and research institutions, customer feedback and observations, and external changes in the environment (Etzkowitz & Leydesdorff 1995; Haour 2004; Dorf & Byers 2008; O'Sullivan & Dooley 2009).

2.2.4.1 Culture and Diffusion of Innovation

Examination of the innovation literature has found two main research streams: research into the influence of organisational cultures, processes, and individuals on innovation and research into the diffusion of innovation across organisations and industries (Cromer, Dibrell & Craig 2011). In the

first stream, the internal culture within the firm plays an important role to inspire innovation and give individuals plenty of space to make mistakes creating more opportunities for serendipity and valuable learning (Peebles 2003). A well-established culture and process of innovation inside the firm is a key factor influencing the rate of creation and commercialisation of innovation outcomes (Myers & Marquis 1969; Xu et al. 2007). Therefore, organisational innovation is not "only an important form of creating value (for the firm in the market) but of capturing it as well" (Teece 2010, p.696). The critical factors to create entrepreneurial and innovation culture inside the firm and how it overcomes the resistance to innovative environment are suggested in Table 2.2.

Table 2.2: Entrepreneurial and innovation culture factors.

Policy	▪ Innovation preserves and perpetuates organisation.
	▪ Innovation needs and its timeframe.
	▪ Innovation plan with specific objectives and:
	  ▪ Systematic policy of abandoning obsolete things
	  ▪ Free people to innovate and seek new things
	  ▪ Allocate financial resources
	  ▪ Requirements, areas, and timeframe.

Managerial Practice	▪ Focus managerial vision on opportunity (report problem vs. opportunity). ▪ Generate entrepreneurial spirit through entire management group. ▪ Top management meet with junior personnel.
Innovation Performance Measurement	▪ Feedback from results to expectation in innovative project. ▪ Systematic review and valuation (objectives vs. performance).
Framework	▪ Includes structure, staffing, compensation, incentives, and rewards. ▪ People to be entrepreneurial and innovative rewarded not penalised. ▪ Separate new unit (innovative project) from old unit. ▪ Assign a special manager for new unit. ▪ Separate and apply different measurement for return-on-investment analysis. ▪ Accountability.
The Don'ts	▪ Mix managerial units and entrepreneurial units. ▪ Diversify innovation, focus on similar business field. ▪ Acquire small entrepreneurial venture.

Source: Adopted from Drucker (1993).

Kenny and Reedy (2006) identify four types of attitudes that are needed to exist in the firm's innovative culture in order to succeed and flourish, including risk-taking management, members' participation, creativity stimulation, and sharing responsibility. An organisational culture based on

innovation must possess a certain level of importance to deal with goal commitment, exemplary behaviour, team work approach, client orientation, and continuous improvement; and without a shared innovation-oriented culture it is hard to compete (Deshpande, Farley & Webster 1993).

In the second stream, Rogers (2003, p.5) defines an innovation diffusion as "the process by which an innovation is communicated through certain channels overtime among the members of a social system". The innovation diffusion theory has four elements: (1) an innovation that is something perceived; (2) a communication system that is the transmission channel; (3) a social system that is the diffusion process domain; and (4) time that the period extends from the point of innovation awareness to the time of adoption saturation in a social system (Rogers 2003). Adoption includes the entire information gathering, conceptualising, and planning that leads to the decision to adopt innovation, whereas implementation includes the entire events, actions, and decisions that leads to putting innovation into usage and application. Individuals might be able to identify and decide on innovation with the required changes for adoption but might not be capable of implementing innovation (Rogers 1995; Carlopio 1998). There are certain features to be considered for a firm to adopt innovation more rapidly as shown in Table 2.3.

Table 2.3: Features for adopting innovation.

Relative Advantage	Innovation degree perception is better than superseded idea.
Compatibility	Innovation degree perception is consistent with existing values, past experiences, and potential adopters' needs.
Complexity	Innovation degree perception is difficult to understand and use.
Trial-ability	Innovation degree experimentation is with limited basis.
Observe-ability	Innovation results are visible to others.

Source: Adopted from Rogers (1995).

The diffusion of an innovation process within the firm often requires external attempts to stimulate adoption efforts, which might include the collective redefinition of the industry business model, the development of necessary infrastructure, ecosystem, complementary products, institutional process, and the creation of professional firms (Miller & Floricel 2004). The firm innovation can be further discussed as the degree to which the firm is relatively earlier in adopting an innovation than other individuals of a social system (Rogers 2003). Innovation also measures the individual's tendency to learn new ideas and keep-up with and explore new technologies. It refers to the firm's

predisposition to purchase and use new technologies, products, and brands rather than to stick with the pre-existing alternatives (Hofstede 1991; Venkatraman 1991). Mahemba and De Bruijn (2003) propose a foundation of adopting innovation that is imitative, acquisitive, and incubative, which require different levels of requirements from the firm to be used more effectively. Imitative is the ability to imitate innovation quickly when others develop it, in contrast, acquisitive is the ability to obtain innovation by licensing, acquisition, or merger, whilst incubative is the ability to develop own innovation internally or through joint ventures.

2.2.4.2 Strategy and Business Model of Innovation

Today's changing and competitive business and market environments inspires, the firm to rely on innovations to stand out from competitors, create customer value, and accelerate business growth performance (Yanadori & Cui 2013). It is crucial for a firm to plan a competitive strategy through innovation by anticipating market trends, customer needs, and competitor actions, which is considered as part of a firm's roadmap and a crucial component of its approach to success and growth (Hamel 2000; Christensen 2003; Haour 2004; Australian Chambers Business Congress 2011; Parrilli & Elola 2011). Dorf and Byers (2008, p.103) suggest that the firm seeks to build "an innovation strategy that involves new technologies, ideas, and creativities that lead to invention and ultimately commercialization". Innovation is widely regarded as central to the firm's strategy for creating and sustaining long-term growth and survival in different environments (Tucker 2002; Drucker 2003; Vanhaverbeke & Peeters 2005; Amabile & Khaire 2008). For this reason, strategy and innovation are intertwined to achieve better business performance and sustainable competitive advantage (Knott 2003; O'Brien 2003).

Normann and Ramirez (1993) recognise innovation strategy as an important key to improving business performance and create customer value by providing intellectual frameworks, conceptual models, and governing ideas and by allowing management to identify opportunities for bringing value to customers and for delivering that value at a profit to the market. Hamel (2000) also argues that innovation is the most important component of a firm's strategy. Innovation is no longer just a tool for the implementation of the strategy but actually is the strategy (Vanhaverbeke & Peeters 2005). Jaruzelski and Dehoff (2007) reveal three distinct innovation strategies the firm can adopt to be more customer-driven: need seekers (i.e. engage current and potential customers), market readers (i.e. watch market and create value through incremental change), and technology drivers (i.e. apply own technological capabilities, leverage investments in research and development, and

solve unarticulated customer needs). Further, Deschamps (2005) specifies four dimensions of innovation strategy, including objective or goal (why?), scope or focus (where?), boundary or limit (with whom?), and intensity level (how much?). Previous research studies have identified various critical success factors for innovative strategy at the level of SMEs (Bowen & Rickets 1992; Laforet & Tann 2006), which are promoting a shared culture, creating a structure and a process (to reflect the use of systems and technology and to invest in individuals), analysing a competitor, and developing an alliance and a network.

On the contrary, the business model defines the firm's organisational and financial architectures that are integrated in a consistent fashion with a strategy toward its rivals (Teece 2010). When the firm is seeking to grow through innovation, it is important to develop a robust business model and good cross-functional capabilities throughout by establishing the features of products and services, benefits (i.e. value proposition) of using products and services, target market segments, design of revenue streams and cost structures, ways of offering products and services to customers and, mechanisms of capturing values (BAH 2006; Teece 2010). The business model consists of four interlocking elements that taken together can create and deliver value to firms and their customers, which include resources, processes, customer value proposition, and profit formula (Dorf & Byers 2008; Johnson, Christensen & Kagermann 2008). Lafley and Charan (2008, p.41) further argue that "the heart of a company's business model should be game-changing innovation", which is not just the invention of new products and services; however, the innovation business models ability to systematically convert ideas into new offerings that alter business context, reshape industry and marketplace, and redistribute values that should be based on unique competencies, technologies, or both (Dorf & Byers 2008).

The dynamic of the innovation model, by William Abernathy in 1974, display the dynamic links between changes in the process and product innovation and in the organisational structure which occurs in patterns that are observable across industry and market. The innovation business model should further take into consideration marketplace realities and competitive environments, which contain three phases - fluid, transmission, and specificity - in dealing with innovation dynamics (Utterback 1994). The understanding of innovation model development has evolved overtime. Hargadon and Sutton (2001) describe the best innovators as ones who use old ideas as raw materials for new ideas in a system that is called the "knowledge-brokering cycle". The system includes four parts: capturing good ideas, keeping ideas alive, imagining new uses for old ideas,

and putting promising concepts to the test. Rothwell (1994) and Xu et al. (2007) define five generations of the innovation model development that have been steadily increasing in efficiency over time. The models of innovation have evolved overtime from a simple linear model to an integrated and networked model to a total innovation management model as shown in Table 2.4.

Table 2.4: Five generations of innovation models.

Generations/Phases	Innovation Models/Main Constitutes	Theory Foundation
First (1950s-1960s)	Individual, process, factors and technology-push	Driving force
Second (1960s-1970s)	Internal resources, promotion, R&D, and market-pull	Newton classical mechanism
Third (1970s-1980s)	Coupling, outsiders involved, and user as innovator	Newton classical mechanism
Fourth (1980s-1990s)	Portfolio, integrated, parallel, and systematic	System theory
Fifth (21st century)	Networked and total innovation management	Ecosystem

Source: Adopted from Rothwell (1994) and Xu et al. (2007).

The innovation model is rapidly shifting from a manufacturer-centred innovation paradigm that is: manufacturers identify consumer needs, develop improved or new products at private expense, and protect and sell what they developed for profits to a collaborative user-centred innovation paradigm that is: lead-users develop improvised versions of improved or new products to serve their own needs at private expense and freely reveal their innovation (Hippel, Thomke & Sonack 2001; Von Hippel 2006). Selden and MacMillan (2006) confer the customer-centric innovation model for making innovation deliver results that meet or exceed market expectations. It is about sustained and profitable top-line growth that in turn raises market capitalisation helping a firm continually improves its understanding of its customer needs. The benefits are to gain knowledge and increase customer engagement that leads to innovation and closes the growth gaps (Selden & MacMillan 2006). Recently, the innovation model that the firm uses to compete in the 21st century has evolved from being an individual process within a firm to an interactive process between firms and institutions, that is by being more reliant on collaborative idea generation and less protective of intellectual property at the domestic and global levels (Tapscott & Williams 2008; Wynarczyk, Piperopoulos & McAdam 2013). The firm looks beyond its own internal environment and limited resources for ideas, opportunities, and partners, making use of the new "open innovation" model (Chesbrough 2003; Spithoven, Vanhaverbeke & Roijakkers 2013). Open innovation is defined as "the use of purposive inflows [inside] and outflow [outside] of knowledge to accelerate internal

innovation and to expand the markets for external use of innovation" (Chesbrouh et al. 2006, p.1). However, open innovation in large and small firms can differ due to their different contributions to innovation (Lee et al. 2010). For example, the term "wikinomics" is born to describe the Internet evolution in which a firm can collaborate with peer-production communities (Tapscott & Williams 2008). It is essential for small and medium firms (Colombo, Piva & Rossi-Lamastra 2013) to look beyond their institutional boundaries, particularly in an emerging market (Hossain 2013; Xiaobao, Wei & Yuzhen 2013). Due to their resource constraints, scale limitations, limited technological assets, small innovation portfolios, and market channels, small and medium firms in particular can benefit from open innovation to reduce operating costs and to improve internal processes (Scott & Chaston 2013). Despite this, they still implement open innovation far less than large firms (Narula 2004; Van de Varde at el. 2009; Dahlander & Gann 2010).

2.2.4.3 Determinants and Driving Forces of Innovation

Innovation in firms, including small and medium firms, are inspired and affected by a range of external and internal factors (Hjalager 2010). The identification of these determinants and driving forces offers firms a better understanding of their innovation potential. The classical innovation literature has addressed the matter from three different theoretical schools, listed below.

First, the Marshallian (1920) view is that the innovation system is seen in terms of the original concept of industrial districts and/or industry clusters. Marshall (1920) also argues that industrial districts comprise different components of inherited business traditions, specific infrastructure, competences and skills, and trade systems (i.e. similar to the Dubai free trade zone and industry cluster). These industries can be embedded in certain areas and resource compositions in these areas and localities are crucial to the development of firms and the place (i.e. similar to the modern concept of innovation system and innovation cluster) that social networks and their geographical proximity play important roles in disseminating and implementing novelties (Hjalager 2010).

Second, the Schumpeterian (1934) view is that an entrepreneur is perceived as causing a continual disturbance to the equilibrium of the market and then makes a major contribution to innovative dynamics. Schumpeter (1934) has described entrepreneurs as "creative destructors", who are able to radically shift the preferences of their consumers because of their ideas and concepts setting new standards alongside their innovativeness. When one adopts a firm-level view, it is apparent that firms are constantly seeking to create "new combinations" of resources and capabilities and

they are continuously attempting to improve their capabilities and competencies, or to imitate their competitors. Such a process can result in "creative destruction" (Schumpeter 1934). This creates organisational and market disturbance and, if successful, can result in profits and competitive advantage (Cromer, Dibrell & Craig 2011). Firms should have the capability and competency to continuously develop and/or renew their configurations of intellectual, informational, financial, technological, human, and other resources (i.e. engage in a continuous cycle of internal "creative destruction") (Schumpeter 1939; De Oliveira Teixeira & Werther Jr. 2013). This constant renewal forces firms to rethink their current configurations or face destruction by their competitors.

Finally, the technology-push/market-pull view is that the rate and direction of innovation within a firm can be determined by technology-push based on scientific and technological changes and/or by market-pull based on unmet customer and market needs (Chidamber & Kon 1994; Nemet 2009). Firms are compelled to find new methods and models and come-up with modified and/or new products and services to efficiently cater for existing and/or new markets (Brem & Voigt 2009). These concepts are two ways where innovation can differ. Technology-push is described as radical innovation (i.e. destructive with new improvement) having technical capability and know-how commercialisation (Walsh, Kirchhoff & Newbert 2002). Further, market-pull is described as incremental innovation (i.e. substitute with modified improvement) having demand or need of individuals or groups representing different customers in the marketplace (Chidamber & Kon 1994; Walsh, Kirchhoff & Newbert 2002). Another view is that technology-push is relevant at the early-stage of the product life cycle and is subsequently followed by market-pull at the further stage of diffusion (Abernathy & Utterback 1978; Pavitt 1984). Nowadays, the firm is experiencing a shift from technology-push to market-pull because of the increase in customer sophistication and complexity demands and needs (Shepherd & Ahmed 2000) that determines market needs rather than technological needs. Firms creating products and services in response to market-pull rather than technology-push have higher success in meeting customers' demands, leading to successful innovation for responsive producers and manufacturers (Von Hippel 1988). Successful innovation entails involving scientific and technical opportunities and market opportunities in the firm (Nemet 2009; Ellonen, Jantunen & Kuivalainen 2011).

2.2.4.4 Indicators, Measurements, and Performance of Innovation

The innovation research literature focuses on the identification and measurement of research and development intensity as an indicator within a firm to evaluate its innovation (Smith 2005). Other

indicators are input resources (i.e. finance and personnel) and the extent of collaborations between commercial firms, academic institutions and research laboratories that might eventually lead to the introduction of new processes, products, or services (Hjalager 2010). Further, innovation activities and business growth performance of the firm can be evaluated using other indicators that include sales growth, return on investment, return on assets, and market capitalisation. Three dimensions turned out to be noteworthy and statistically significant, including sales growth, return on invested capital, and innovation compared to industry average (Miller & Floricel 2004). O'Connor et al. (2008) also discovered no relations between research and development spending and expenditure as a percentage of sales and innovation activities. Other business performance potential indicators to measure the affect that process, product, and service innovations has on the operations of the firm include sales, efficiency, speed, and market share (Allocca & Kessler 2006; O'Sullivan & Dooley 2009). Firms can choose some indicators that measure the way innovation is managed and executed. Mole and Worrall (2001) describe different innovation measures as being incremental (percentage of modifying existing products and services to the market), diffusion (percentage of introducing new products and services to the firm), and radical (percentage of introducing new products and services to the market). Kim and Mauborgne (2001) further introduce three tools to evaluate the commercial readiness of new business ideas: buyer utility map, price corridor of mass, and business model. These tools guide and investigate the roots of profitable growth and find out that innovation is a key driver. The next phase of innovation performance and business growth improvement can be evaluated by intelligent innovation in a comprehensive approach. Successful innovation demands an equally deft balance among analytical rigour of control-system and the softer-side encompassing creativity, leadership, agility, learning culture, and teamwork (BAH 2006). The business growth performance indicators that the firm now adopts can be non-financial and focus on measuring issues such as customer satisfaction, internal business process efficiency, idea generation rate, lead-time for new product and service development, and staff satisfaction and retention (O'Sullivan & Dooley 2009; Avci, Madanoglu & Okumus 2011).

2.2.4.5 Barriers and Challenges of Innovation

Firms operating in competitive and dynamic environments are faced with numerous barriers when considering innovation (Gilmore, Galbraith & Mulvenna 2013). To understand the necessity for an effective innovative environment within firms it is important to look at the barriers and obstacles to innovation (Piatier 1984; Hadjimanolis 2003). Kelly and Littman (2001) identify many barriers to innovation that includes: hierarchy, bureaucracy, anonymity, clean environment, and expertise.

Excessive hierarchy is a barrier in a firm when decisions and ideas need to pursue vertical paths through the decision-making hierarchy (O'Sullivan & Dooley 2009). Instead, a flat organisation that is more willing to accept ideas based on value, is supportive of innovative activities (Beaver & Price 2002). Bureaucracy can suppress innovation and slow the needed innovation that sustains business growth performance (Quinn 1985; Pavitt 1991). O'Sullivan and Dooley (2009) further emphasise that greater autonomy permits individuals to acquire the risks necessary for change. Anonymity becomes an obstacle when individuals do not notice changes. Another barrier can be creating a clean environment in which procedures and methods are strict to follow and individuals fulfil specific roles and functions. However, the innovative firm tends to be messier and based on bringing unfamiliar objects and materials together to nurture activities. Other barriers are outlined by Sheth and Ram (1987) that include: regulations, resources, operations, expertise outside main activities, and market access. Expertise outside the main activities of the firm is a barrier when inherited cultures are rigid to establish core expertise and perform tasks outside its main domains. Existing operational environments (i.e. manufacturing or service) as inhibitors are often incapable of producing a radically new product and service away from the firm's core activities. Small firms can face problems of access to funding, ability to cope with legal and regulatory issues, market challenges and competition, and lack of specialist management expertise (Rothwell & Zegveld 1982; Gill & Biger 2012). Further, resources are obstacles when insufficient funds are available (Quinn 1985). Mas-Tur and Soriano (2013) argue that young innovative firms face limited internal recourse and capabilities and access to technology and consulting services. Another barrier is in creating regulations where the status quo is kept by governments and industrial agencies. Market access as a barrier exists where a firm is unable to access potential customers because of physical distances and regulations (O'Sullivan & Dooley 2009).

2.3 The Macro-Environment and SMEs

Countries can have different institutional settings (i.e. different politics, regulations, and cultures), which can impact the resource and capability advantage and innovation of the firm (North 1990), particularly in emerging market economies (similar the emerging Dubai market in the United Arab Emirates) under investigation (Brouthers, Brouthers & Werner 2008; Meyer et al. 2009).

2.3.1 The Conceptualisation of SMEs

The term "small and medium-sized enterprises" refers to all independent businesses with less than 250 employees, less than USD$ 190m capital investments, and less than USD$ 70m annual turnovers (Ghobadian & O'Regan 2000; CR 2003/361/EC 2003). However, SMEs can be defined in a different way in different markets and economies. A commonly used method is the number of employees (Rothwell & Zegveld 1982; Adams & Hall 1993; Freel 1999). Other methods include the capital investments and the annual turnovers of the firm (Wijewardena & Cooray 1995).

2.3.1.1 Definition of SMEs

The definition of SMEs varies from country to country, market to market, and industry to industry, therefore, there is no single common used definition (Gunasekaran, Forker & Kobu 2000). In the Dubai market, the definition of SMEs is based on the number of employees, which is used in this study and is according to the Dubai Chamber of Commerce and Industry classification: small (1-9 employees), medium (10-199 employees), and large (more than 200 employees) firms as shown in Table 2.5 (DCCI 2010).

Table 2.5: Classifications of SMEs.

Firm Classification	Annual Work Unit
Small	1-9
Medium	10-199
Large	> 200

Source: Adopted from DCCI (2010).

This classification is adopted because there is no official definition that has been established in the Dubai market through the Dubai Department of Economic Development and the Dubai Chamber

of Commerce and Industry (DDED 2008; DCCI 2010; DSC 2010). However, the UAE Ministry of Economy and Planning is in the process of developing a common definition and flexible federal law for small and medium firms according to international standards to enable them to participate and compete more effectively in the local and global markets and economies (UAE MEP 2005; Arabic Gulf News 2010; DDED 2011).

2.3.1.2 Prominence of SMEs

Worldwide, most business establishments are small and medium firms (Lin 1998; Zhu, Wittmann & Peng 2011; Kamalian, Rashki & Arbabi 2013). In the Dubai market, the majority of firms in the service and manufacturing sectors are SMEs (DCCI 2010; DSC 2010). These firms account for approximately 90.16% of private business and market commotions and are distributed in a number of economic activities and industries related to trading and repairing services 50.9%; real estate, renting, and business services 12%; construction 11.3%; transport, storage, and communication 7.75%; manufacturing industries 3.8%; financial services 1.75%; hotels and restaurants 1.16%; health and social work 0.21%; education 0.12%; agriculture 0.3%; mining and quarrying 0.06%; electricity, gas, and water 0.03%; fishery 0.001%; other social and personal services 0.78%; and extra-territorial organisations and bodies 0.002% (DCCI 2010; DSC 2010). SMEs establishing in the Dubai market must have a minimum of 51% UAE national-ownership (with full profit repatriation is permitted), *kafeel in Arabic*, or a local agent and their staff must have a three-year work visa cycle (BMI 2007; DDED 2011).

In addition to the legal requirements of the commercial or sponsorship law, visa cycle stipulations, limited access to resources and funds and weak market regulations in the emerging Dubai market have created more obstacles and unstable business and market environments and facilitated high competitions for small and medium firms, which can be reflected in their innovative potentials and long-term investment (Elewa 2007; Brik, Rettab & Mellahi 2011). These small and medium firms focus on head-to-head competitive-based approaches through the buying and selling of existing products and services, thus decreasing their stickiness (not easily moveable) in the local Dubai market and limiting their innovation outcomes and contributions to the local market and economy (Hertog 2010). Further, the features of business practices of SMEs tend to emphasise continuous improvement and adjustments to structure, methods, or technology. Their survival objective when market conditions are stable is to decrease costs and increase short-term profits (i.e. sales and marketing orientations), and when market conditions are dynamic and/or turbulent their survival

strategy is to cautiously move into new market domains (Lamb, Hair & McDaniel 2000; Hertog 2010; Valos & Bednall 2010).

2.3.2 The Contribution of SMEs to the Modern Economy

Small and medium firms play a significant role in the modern economy as they have done in the old economy (Khan & Manopichetwattana 1989; Zhu, Wittmann & Peng 2011) and are known as being the life-blood of modern economies (Ghobadian & Gallear 1996). SMEs are valuable assets of both developed and developing markets and economies (Grandon & Pearson 2004; Harrigan, Ramsey & Ibbotson 2011). However, due to globalisation and technological changes SMEs are not in danger of becoming obsolete, rather their roles have changed as the competitive market environments have shifted toward knowledge-based economic activities (Audretsch & Thurik 2001; Sim & Teoh 2011). The re-emergence of SMEs has influenced the supply-and-demand sides (Asheim et al. 2003). On the supply-side, SMEs are encouraged by the technological changes and new knowledge activities due to the development of new products and services, whereas on the demand-side, their growth is connected to structural shifts between manufacturing and services, alongside an increase in the demand for services. Asheim et al. (2003) also argue that the increase in consumer demands for a different range of products and services is owing to the increase in real incomes, all of which have created niche opportunities for SMEs to advance and transform.

Small and medium firms offer the innovation outcomes of the 21th century (Rothwell & Zegveld 1982; Jovanovic 2001; OECD 2010). These firms participate in the flexibility and resilience of the local market economy in areas such as entrepreneurship, innovation, productivity, diversification, competition, growth, and import and export rates in countries where market and economic reforms are currently underway (Nooteboom 1994; Jovanovic 2001; Mahemba & De Bruijn 2003; Verhees & Meulenberg 2004; Scozzi, Garavelli & Crowston 2005; Massa & Testa 2008; O'Dwyer, Gilmore & Carson 2011; Wonglimpiyarat 2011; Gilmore, Galbraith & Mulvenna 2013). In the emerging Dubai market, the role of SMEs is crucial in improving national competitiveness and economic development and in contributing to the flexibility and resilience of the economy (Hertog 2010; Harrigan, Ramsey & Ibbotson 2011; Zhu, Wittmann & Peng 2011). Further, the level of entrepreneurial activity and rate of new business start-ups have a significant correlation with the level of economic developments and employment growth rates (Hindle 2002), which are seen by more start-ups and fast growth SMEs. Economic growth can arise from innovation in competitive and dynamic environments where SMEs faced with more challenges should consider innovation

as a constant driver for their survival and further development (Verhees & Meulenberg 2004; Gilmore, Galbraith & Mulvenna 2013).

The important role of small and medium firms is recognised by economics and policymakers in all countries (Salavou, Baltas & Lioukas 2004; DDED 2011); however, there is limited literature that has specifically addressed the determinants (i.e. external and internal) of innovation in emerging markets and smaller developing economies (Souitaris 2001), although their industrial structure is dominated by SMEs, similar to the Dubai market in this study. SMEs constitute the majority of firms in a number of business and economic activities in the emerging Dubai market (DCCI 2010; DSC 2010). In the Dubai market, the imports of firms amounted to USD$ 30.8b in Q3 2011 with a growth rate of 22.8% compared to Q3 2010, exports amounted to USD$ 7.3b in Q3 2011 with a growth rate of 53.1% compared to Q3 2010, and re-exports amounted to USD$ 10.8b in Q3 2011 with a growth rate of 6.8% compared to Q3 Y2010 (DCCI 2011; DSC 2011), which demonstrate that SMEs have the potential to drive innovation in the emerging Dubai market. However, the availability of information to support how SMEs fundamentally undertake innovation activities in emerging markets and economies remains limited (Hoffman et al. 1998). SMEs face resource and fund limitations that need to be addressed and supported to acquire the capabilities needed to compete more successfully (Gill & Biger 2012). This is why it is very important to investigate the determinants behind innovation practices and their business performance of SMEs in an emerging market and economy similar to Dubai in the UAE.

2.3.3 The Outlook of the Political and Economic Environments in Dubai

The United Arab Emirates is a complex federation of seven states, *emirates in Arabic*, consisting of Abu Dhabi, Dubai, Sharjah, Ajman, Umm AlQuwain, Fujairah, and Ras AlKhaima (UAE MFT 2012). The economic resources are characterised by the lack of natural resources, except for oil, natural gas, and some raw minerals. The economic policy of the Government of the United Arab Emirates is based on safeguarding and respecting the freedom of individuals in ownership and in practicing a range of business activities by providing all supporting facilities. To attract businesses and investments from many parts of the world, the United Arab Emirates has pursued an outward-oriented development strategy by prioritising economic policy reforms and diversifications and streamlining foreign investment regulations (BMI 2007; Grant, Golawala & Mckechnie 2007). It has combined features of developed and developing market economies to become commercial and industrial hubs in the region in creating a hybrid situation and offering a mixture of challenges and

opportunities for firms of all sizes in order to transform their current businesses and/or create new ones to meet new market conditions (Rettab, Brik & Mellahi 2009; Hertog 2010).

The United Arab Emirates has been showing good to excellent results on economic indicators that include the Global Competitive Index, which ranks the UAE in the top three of Arab countries and 25th of nations worldwide. These indicators however, occasionally reveal weak spots, which can hinder the progress of the economy or in some respect diminish the attractiveness of the country's cosmopolitan business and market environments. The Global Competitive Index 2010-2011 that measures the ability of the local economy to accomplish sustained economic growth over medium to long term, ranks the UAE 12th among 139 countries (WEF 2010-2011) and on its Networked Readiness Index, the Global Information Technology Report ranks the UAE 24th among 138 countries (GITR 2010-2011). This report ranks the countries business environments according to their use of information and communication technology. Further, the United Arab Emirates is one of only six Arab countries classified as having a mostly free economy (HFDJ 2009). The overall performance of the Arab world on the Economic Freedom Index 2009 has slightly improved in the last few years largely due to an unprecedented surge in the inflation rate, which the financial institutions in the UAE have taken measures to control. The UAE has the highest inflation rate in the world, and is ranked 35th in international comparisons (WEF 2010-2011). Although the United Arab Emirates is performing well on fiscal burden in the areas of: government, monetary policy, trade policy, and informal market, improvements are still required in government intervention, foreign investment, and banking and finance services (HFDJ 2009).

The emirate of Dubai is well-established as the trading and commercial hub of the Middle East, building its reputation from humble origins as a small fishing and trading town in the 18th century (UAE MFT 2012). It is one of the trades (i.e. export and import) and entrepreneurial centres in the Gulf region and it has a vision to be the financial and economic hub of the Middle East and North Africa (DCCI 2006; Grant, Golawala & Mckechnie 2007). It has achieved its position due to its strategic competitive location (i.e. between the East and West), free and balanced economic policy, and modern infrastructure and services. Its economy is based on three economic activities: non-oil trade; tourism and hospitality; and exporting and importing (DCCI 2010). It has witnessed an improvement in trade and industrial activities growth rates (i.e. small to medium manufacturing industries) to diversify the sources of its income. The Dubai strategic plan is ambitious in its goal to maintain future economic growth (DSP 2007). The strategic plan focuses on developing the

most dynamic economic industry sectors related to tourism, trade and commerce, real estate, and construction that have been the key contributors to Dubai's annual real gross domestic product growth rate of 13% since 2000 (Arabian Business 2007). It can further optimise the trade sector (i.e. three ports and two airports), which has noticed the highest increase in gross domestic product share of all parts of service sectors (real estate, business services, tourism, construction, transport, storage, and communication), (DCCI 2010). Its economic development plan for the future is to sustain real gross domestic product growth of 11% per annum for the next ten years, increase real per capita gross domestic product from USD$ 31,000 to USD$ 44,000 by 2015, and productivity by 4% per annum by creating new services and manufacturing sectors in order to sustain future competitiveness and growth (Arabian Business 2007). As a result, Dubai is used as a proxy in the UAE for international indicators.

The gross domestic product (GDP) of Dubai is distributed into oil and non-oil types at constant prices, with the latter representing the overwhelming part of its gross domestic product. Dubai has a total GDP of USD$ 80.4b in 2010, increasing from USD$ 78.3b in 2009, USD$ 80.5b in 2008, USD$ 78.0b in 2007, and USD$ 66.0b in 2006 (DSC 2010), that is growing on an average of 15.4% in 2007, 3.1% in 2008, -2.8% in 2009, and 2.6% in 2010. It continues to perform well economically, despite the recent financial crisis, increasing its GDP by an average of 4.6% a year from 2006 to 2010 (DSC 2010). The non-oil GDP is driven by the high contribution of major economic activities in areas that are related to wholesale, retail trade, and repairing services (29%), transport, storage, and communications (14%), real estate and business services (14%), manufacturing industries (12%), financial services (11%), construction (11%), tourism (4%), and others (5%), including social and personal services, agriculture and fishery, mining and quarrying, and electricity and water (DSC 2010). The economy of Dubai still remains dependent upon a small number of sectors that are deeply interconnected and is based on the tourism, trade, and construction sectors, concentrating risk and leaving it susceptible to another downturn similar to the global financial and economic downturn situation in late 2008. These front-line sectors have high contributions to the UAE sectoral GDP. They determine both the economic structure and the short-term economic outlook of Dubai heading for new developments that are efficiently utilising existing resources and potentials and relying on its competitive advantage (i.e. strategic location and attractive investment opportunities). However, the economic perspectives of the second-line sectors (i.e. manufacturing industries and financial services) depend on new opportunities to be offered in the future in terms of incremental demand, which is boosted by new legislation (DCCI

2006), allowing foreign ownership, institutional efforts for supporting financial facilities, regional and international monetary integrations, intellectual property rights, international academic centres and institutions, and flexible importing and exporting regulations, whether in bilateral or multi-lateral collaboration agreements (UAE MFT 2012). The distinction between the front-line and second-line categories is a demonstration of the economic perspectives of Dubai.

Before the global financial and economic crisis (GFC) Dubai borrowed capital and labour to be able to advance real estate projects and free trade zone and business park developments (The Economist 2009). However after the GFC slowdown that created a negative growth rate in 2009 (WEF 2010), policymakers in Dubai are looking to build an economic breakwater that can protect the emirate's prosperity and success from adverse financial and economic tides, including: plunging property prices, declining trade and tourism sectors, and refinancing ambitious projects. The debt of the Government of Dubai and its government agencies is about USD$ 80b that is almost USD$ 11b was due in 2009 and USD$ 12.4b was due in 2010 (The Economist 2009). Through the Federal Government and the UAE Central Bank, Dubai bought USD$ 20b of Dubai's bonds in February and August 2009 and another USD$ 10b in January 2010. The bailout scheme has restored calm momentarily, as shown by falling insurance costs against default. One of the solutions includes borrowing money from the Federal Government, Abu Dhabi, and another one is reshaping the archipelago of semi-government private agencies (i.e. Dubai World and Dubai Holding) known as "Dubai Inc.", (The Economist 2009). The economy has continued its recovery in 2010-2012 with some concerns that this quick rebound may result in more financial and economic difficulties in the future (OBG 2013).

The Dubai market and economy in the United Arab Emirates is of interest for different reasons. It is considered to be the fastest growing market in the Middle East and North Africa regions (WEF 2010). It has reflected the characteristics of the United Arab Emirates economy in a number of areas including: infrastructure, business activities, global investments destination, competitive environment, and economic and social changes (Rettab, Brik & Mellahi 2009; DCCI 2010). It is ranked as the most innovation-driven economy in the Arab world and is moving from an oil-based economy to a knowledge-based economy, which is changing to a free market system and is integrating into the world market economy (Grant, Golawala & Mckechnie 2007; DCCI 2010; EW 2010; Knight 2011). It is able to absorb the impact of the global financial and economic crisis, adapt international technological knowledge, and achieve faster economic growth with a strategic

plan that forms a base for its sustaining competitive advantage in the knowledge-driven economies era. It is the first to implement restructure reforms, increase spending on infrastructure, and is open to greater public-private sector participation that has contributed to the development of the non-hydrocarbon sector and diversification of the economy (EW 2010; UAE MFT 2012). Dubai establishes various clusters through free trade zones and business parks (BMI 2007). However, regardless of the strong entrepreneurial traditions and the dominant SMEs sectors, it has not fully lived up to its potential of economic development and diversification (Hertog 2010). The total early-stage entrepreneurial activity by phases of economic development confirms that the United Arab Emirates including Dubai have a low early-stage entrepreneurial activity in the innovation-driven economies (GEM 2011).

2.3.4 The Outlook of the Business and Market Dynamics in Dubai

The World Bank Group report ranked the United Arab Emirates, including Dubai, among the top five Arab countries and 46th globally in terms of facilitating the set-up and running business firms. The Doing Business Report 2009 determines the ease of doing business index in 181 countries. The index is mainly concerned with the scope and enforcement manner of government regulations and their role in enhancing or restraining business activities. The UAE is ranked first in the Arab world in facilitating trading across borders, as it requires a total of only five to seven documents and 10 days for shipping for exports and imports; is highly competitive in terms of registering property, where it ranks 11th globally, as it requires only three procedures and six days to complete at zero cost in terms of percentage of property value; and has gained an impressive ranking of fourth worldwide in paying taxes, which are extremely minimal, after clocking only 12 hours per year in average total time businesses spend for paying taxes. However, the UAE is ranked 113th in starting a business, 41st in dealing with construction permits, 47th in employing workers, 68th in getting credit, 113th in protecting investors, 145th in enforcing contracts, and 141st in closing a business (IFC 2009). These ratings suggest that the UAE has a long way to go in terms of reaching the global acceptable levels of doing business, but the task is not insurmountable.

The United Arab Emirates economic incentive regime has received a score of 6.75 points, which is the normalised score resulting from three specific variables that are tariff and non-tariff barriers, regulatory quality, and rule of law (KEI 2009). The UAE's performance on some of the variables; however, is occasionally poor due to certain controversial laws that remain in force, for example, the UAE commercial law. The commercial law mandates majority ownership (51% equity) by

UAE nationals for business ventures, except those that are engaged in hydrocarbons, electricity, or water desalination production and distribution, or those that are located in designated free zone areas (BMI 2007; Elewa 2007). The solution can be the free zone business model, which is almost a national phenomenon in the past years due to an environment where individual and multinational firms enjoy 100% foreign ownership, complete exemption from customs and commercial taxes, full repatriation of profits and capitals, one-stop-shop to government transactions, and extended leases. One of the economic incentives that can protect and nurture start-up ventures is the right to private ownership outside the free zone areas (Madar Research 2006). Another key element is contracts enforcement; currently settling contractual disputes takes an average of 53 steps within 614 calendar days at the cost of 16% of the debt (IFC 2009). This solution suggests that the UAE has a potential in attracting individual and multinational firms to be present in the local economy.

Over the past ten years, Dubai has recurrently been transforming into a destination for new private businesses, investments, setting-up operations, and doing business in the Middle East and North Africa. The government controlled monopoly is being deregulated and exposed to competition and is supported by a favourable business and market environment and a liberal economic policy, with foreign direct investment (FDI) still at least 4% of its GDP (DSC 2007). Its FDI has increased by 13.1% in 2010 around USD$ 25.1b in 2006 compared to USD$ 21.8b in 2009 (DSC 2010). The rate of increase in FDI has varied between economic activities with the highest in financial services 45.3%; real estate, renting, and business services 25.1%; and wholesale, retail trade, and repairing services 13.7%. Research and development in telecommunication and technology are thriving and free zones and clusters have attracted international firms. For example, local firms are investing in networking and communication software and manufacturing is on the rise (Saddi, Sabbagh & Shediac 2008). The region, including Dubai, has begun to transform itself from an end consumer into a supplier in the world market economy, which can translate into unprecedented opportunities for investment. For example, the lack of direct income taxation allows Dubai to continue attracting foreign firms and investment, supporting the goals of its strategic plan and continuing diversification of its economy (Forbes Global 2004; Dudley 2008). However, inbound foreign investment is a positive sign for the Dubai economy when it results in more capital projects, innovation increases, productivity improvements, and job creation. However it is still in the early-stages of entrepreneurship and innovation generation such as the recent establishment of Mohammed bin Rashid Establishment for Young Business Leaders aiming at nurturing the local entrepreneurial spirit and catalysing the development of small and medium business sectors.

Dubai is an encouraging model for countries in the Middle East and North Africa in achieving world-class government performance, focusing on self-assessment and continuous improvement, and launching new and successive development initiatives (DCCI 2006).

The United Arab Emirates stock exchange market is small, in terms of the number of listed firms, and it is still at an early-stage of development having several restrictions on trade. There are two official stock exchange floors, the Abu Dhabi Securities Market (ADSM) and the Dubai Financial Market (DFM) that are controlled by the Emirates Securities and Commodities Authority (ESCA), (UAE MFI 2006). According to the Arab Monetary Fund, the ADSM is a smaller security market and the DFM tops the Arab capital markets in terms of annual growth that reached 219% in 2005, in comparison to 2004. For example, the ESCA index grew by 110.3% reaching 6839.97 points in 2005 (DCCI 2006). Further, the DFM is in the process of converting into a public shareholding organisation in which the Government of Dubai contributes 80% of its capital and the remaining 20% is to be offered to individuals as an initial public offering (DCCI 2006). The DFM accounts for 82% of the value of shares traded on the UAE capital markets. It has 57 listed companies in 2010 and the number has grown to 87 listed companies in 2013. However, the UAE index of economic freedom, ranked at 54th and scored at 64.7 points, states that the financial industry has a high level of restrictions due to a number of reasons including 20% tax levied on foreign bank profits, disallowing commercial banks from engaging in non-banking activities, and disallowing banks from lending more than 7% of their capitals to other institutions (HFDJ 2009). Thus, a new regulatory authority in the Gulf Co-operation Council (GCC) capital markets is evolving as part of a new project, which can help the regional financial market to transform and become more responsive to actual market needs (HFDJ 2009). This is raising more incentives for foreign firms with interest in the regional markets to build a presence in the local market.

2.3.5 The National Development System in Dubai

Openness to change and innovation is a salient characteristic of a nation that is an economic leader (Aghion & Howitt 1997). Since 1990, Dubai has progressed through a period of macroeconomic stabilisations and structural reforms, particularly in government institutions and the public sector. It has transformed from a highly protected and regulated economy with a number of intrusive and expensive interventions, to a moderately open and deregulated market economy with an efficient and supportive public sector (Smit 2010; UAE MFT 2012). It is further characterised by economic transformations inspired by its visionary leader HH Sheikh Mohammed Bin Rashid Al Maktoum,

the UAE Vice-President, the Prime Minister, and the Ruler of Dubai, by introducing progressive and transparent government implementation programs of social and economic infrastructure, encouraging vigorous diversification of the economy, and reducing dependence on oil through the development of a number of sectors (DSP 2007). This strategic planning is to transform Dubai into a knowledge-based society and its local economy into an information-based economy. Thus, strategic planning, heavy investment in infrastructure, and undertaking outstanding projects in addition to aggressive marketing are working out positively for Dubai, by turning a momentous disadvantage into a major attraction. Simply put, the limited supply of oil wealth has been wisely used to transform the surface into a socially and commercially attractive and distinguished habitat and a viable source of sustainable revenue in a global market economy (Madar Research 2006; EW 2010). This is particularly true as far as Dubai is concerned. It has outgrown its local habitat to be an emerging regional market and economic powerhouse with a global presence and boosting the regional presence as a thriving economy and market.

2.3.5.1 The Government Policies and Strategic Plan

"It is far easier to build financial capital than it is to build intellectual, psychological, and moral capital. We live, today, in the ever changing era of knowledge, requiring continuous learning, which does not end at a certain level, or by attaining a certificate, or certain expertise" (HH Sheikh Mohammed bin Rashid 2007). Dubai is already reforming its industries and transitioning from a government-centric control of key sectors to one which features private equities, vertical clusters, and balances as being the fastest growing market in the Middle East and North Africa regions and integrated into the world economy. It has recognised that global public and private partnership is the way to promote creativity and innovation and the degrees of economy and business control are shifting from public to private sectors across the region (Festival of Thinkers Conference 2007). In Dubai, the economy is moving from an oil-based economy to a knowledge-based economy and is changing continuously to a free market system that is no longer dominated by government-owned agencies and at the same time the entry of large foreign firms leads to high competitive pressure for local small firms (Knight 2011). Further, the 2015 Strategic Plan of Dubai has been launched under the name *Dubai, Where the Future Begins*, which is fully incorporated to ensure a common framework for the integrated operations of all governments' and semi-governments' entities, focusing on key areas and showing the highest level development potential. The plan has six building blocks including: economic development; social development; infrastructure; land and environment; security, justice and safety; and public sector excellence, and is supported by seven

horizontal growth enablers including: human capital; productivity; innovation, cost of living and doing business; quality of life; economic policy and institutional framework; and laws and regulations (DSP 2007; DCCI 2010). However, limited policy directions in this strategic plan are aimed at locals who comprise a very small percentage who engages in and would be prepared to be involved in new business ideas and ventures. Further, large foreign firms who make a large percentage of the business activities are not prepared to invest in long-term projects beyond the three-year visa cycle (BMI 2007). This situation calls for a rethink of the mix of present strategies. Small and medium firms are major players in the local Dubai market, equally attention should be given along with the same incentives as large firms rather than overburden them with unnecessary additional costs and restrictive practices (Hertog 2010).

2.3.5.2 Economic Diversifications, Initiatives, and Free Trade Zones

A nation having an economic concentration and diversification based on a wide range of profitable sectors has been thought to play an important role in its sustainable economy. A study by Shediac et al. (2008) looks at the case where there is a link between economic diversity and sustainability that reduces a nation's economic volatility and increases real activity performance by assessing the national, regional, and transformational economies (see Appendix A). The United Arab Emirates, mainly Dubai, has been the fastest country in the Gulf region to diversify its economy away from oil dependency, from being one of the most dependent on oil, of about 90% of its total GDP in 1980 to 50-60% in 2004 (IFM 2005). The Government of Dubai has also accelerated its economic diversification from oil-and-trade-based systems to free trade zone and business park models, designed to attract local and foreign talents and investors, to a knowledge-driven economy to create value-driven relations and value-added products or services (BMI 2007; Saddi, Sabbagh & Shediac 2008; Knight 2011). There are needs to have a "creative class" of talents in metropolitan regions who can achieve a higher level of economic development by fostering an open, dynamic, personal, and professional urban environment (Florida 2002). This can encourage Dubai to attract and retain high-quality talent while at the same time focusing on its projects (i.e. iconic buildings and shopping centres) to manage its resources for long-term growth (Florida 2005).

In the Middle East and North Africa, Dubai has the basic ingredients required for a knowledge-based economy through strong government support, well-developed infrastructure, and business and industry clusters (1st WSIEC 2006; UAE MFT 2012). To embrace and exploit its potential of economic diversification and knowledge-based economy, the development has been focused on

three horizons, including the strengthening of existing expertise in trading, logistic, and tourism sectors; the application of proven competencies in information technology and telecommunication and media service sectors; and the development of new competencies in high-value sectors such as education, healthcare, biotechnology, and wireless technology (DSP 2007). In the previous years, it has developed its commercial investments in various free trade zones and industry clusters like Academic City, Internet City, Media City, Healthcare City, Biotechnology and Research Park, Silicon Oasis, Techno Park, Sports City, and Jabal Ali Port Zone to facilitate more entrepreneurial, innovative, and technology transfer environments (Walters, Kadragic & Walters 2006; Grant, Golawala & McKechnie 2007; Abdelal, Khan & Khanna 2008). It is driven by market demand to diversify its local economy, aiming to attract foreign investment and to foster a high level of knowledge and technology transfers among its nationals (Burton 2006). However, there is no guarantee that these clusters can succeed in facilitating innovation and creating sustainable new and innovative firms unless there is the right integration of physical and business infrastructure, funding, government policies and regulations, knowledge sources, networks and collaborations, tangible and intangible services, market proximities, economic-based diversities, and international trades (Porter 1990; Mytelka 2000; Bullinger, Auernhammer & Gomernger 2004; Szirmai, Naude & Goedhuys 2011). Knowledge sourcing that is not only a tacit transfer of knowledge in the collaboration process but a physical transfer of individuals from different cultures and academics and research institutes to provide a talent pool for innovative firm becomes important (Haour 2004). This is important for Dubai as in has previously had rely on foreigners for introducing and running new businesses.

2.3.5.3 Entrepreneurial Culture and Innovation-Based Activity

Entrepreneurial culture has been responsible for economic development and growth (Stel, Carree & Thurik 2005; Siems & Ratner 2006). Baumol and Strom (2007, p.233) argue that "a close look at the extraordinary economic growth of the last two centuries suggests that the market mechanism does not do its work without the input of individual actors, the entrepreneurs who bring cutting edge innovation to market". Drucker (2003) describes entrepreneurship as an area of innovation being a highly visible one that is widely credited in playing a vital role in economic development (Salgado-Banda 2007). The rationale for moving towards a knowledge-driven economy in Dubai is to create value-driven networks and value-added products and services through encouraging entrepreneurship and discovering opportunities in dealing with challenges that are important for its economic development (Khaleej Times 2006; Haour & Mieville 2010). So far, in terms of its

economic diversification, Dubai has accomplished the growth of the service sectors generally and the establishment of different industry clusters. The Government of Dubai provides government and financial support and other logistics to local entrepreneurs and small businesses (Kargwell & Inguva 2012), which are successful in creating a large innovation mass; however, the model has to be sustained and the vision of the government must be cascaded down to the level of the firms.

Dubai has embarked on a process of *emiratisation* of the labour force since the 1990s whereby UAE nationals are prioritised for senior management roles (Grant, Golawala & Mckechnie 2007). Educational institutions are considered a platform to establish an entrepreneurial and innovative culture (Drucker 1993; Knight 2011). Human capital is unquestionably the dominant factor in the development of many nations (World Bank 2008). Investing in education is a key for Dubai to ensure that its young nationals have an understanding of the resources and capability requirements needed to build a knowledge capacity, to instil an innovation culture, and to strengthen a social and economic growth link (Barnes, Pashby & Gibbons 2002; Walters, Kadragic & Walters 2006). Entrepreneurs need the support of expert advisors and financial contributors that can be provided by venture capitalists (SMEs Conference 2006; Kellogg 2011; Samila & Sorenson 2011; Tian 2012). However, venture capital money is very limited in the market, either from commercial banks or Islamic financial service agencies (Monger 2007). Thus, "the financial institutions in the Middle East need [to have] a greater understanding of entrepreneurship and risk-taking in the development of financial products and services" (SMEs Conference 2006). Banks in Dubai are lower-risk lenders and tend to work with relatively low returns and margins as a trade-off against high securities when compared to developed markets where banks are leaning towards providing more risk-taking products (Mishkin 2001). The UAE and Dubai is measured among the lowest countries in early-stage entrepreneurial activities (Monger 2007; GEM 2011). The Government of Dubai realises that SMEs are basic to its economy and has established the Mohammed bin Rashid Establishment for Young Business Leaders to tackle this issue and encourage start-up ventures among its local populations (MBREYBL 2009).

2.3.5.4 Legal-and-Regulatory Frameworks and Other Institutional Supports

The legal-and-regulatory frameworks and market conditions play important roles by encouraging the investment of the firm (Rahl 2008) and by impacting on the competitive position of the firm in the marketplace (Haour 2004; Hynynen 2013). To create a supportive environment for innovation, the United Arab Emirates is party to the Patent Cooperation Treaty to protect a patent locally and

internationally and is a member of the World Intellectual Property Organization (Jaruzelski et al. 2012). In 2002, the UAE ratified a number of federal laws to govern intellectual property rights, trademarks (Law no.8), industrial patent regulations and protections, industrial drawings and designs (Law no.17), and copyrights and neighbouring rights (Law no.7) (UAE MEP 2005). The latter includes protection of computer software and applications. The United Arab Emirates is one of the only Arab countries to make the top-20 list and has reigned in piracy rates at 34% over the past years (BSA & IDC 2006). In 2004, the United Arab Emirates became signatory to the WIPO Copyright Treaty that incorporates information technology copyrights and related intellectual rights. To implement the intellectual property rights laws, in 2005 the Dubai Custom Authority established a dedicated IP Rights Unit to ensure the enforcement of national and international laws and conventions by preventing goods that violate these laws from entering into the Dubai market (DCCI 2010). The UAE is ranked seventh and fourth in terms of efficiency of property right and legal framework among 16 Arab countries (WEF 2010-2011). The UAE Ministry of Information and Culture is responsible for the enforcement of copyright laws, while the UAE Ministry of Economy is responsible for the enforcement of patents, and design laws falls under the UAE Ministry of Finance and Industry (UAE MCI 2007). There is a patent system in Dubai, but it is not strictly enforced and there is a need to establish a specialised court (Crighton 2006b; Brik, Rettab & Mellahi 2011). The best way moving forward for Dubai is to enter into the international system by using its existing World Intellectual Property Organisation membership.

Looking at other institutional supports, "any country without a healthy supply of young scientists, technologists, and engineers will not be able to compete" in the future (Sullivan 2008, p.35). A UNESCO report on the state of science in the world states that in 2005 the Arab States in the Middle East and North Africa have contributed just 0.3% of the world's spending on research and development. Considering that Asia invests 37%, and Singapore alone invests more than 2% of its annual GDP in research and development, the Government of the United Arab Emirates would have to find nearly USD$ 2b for scientific research and development. However, the absence of a strong research and development environment on university campuses further poses a problem, calling the link between university teaching, research, and industry a three way divorce (Crighton 2006a). In order to understand the potential of the United Arab Emirates in terms of engineering and science graduates and to make a comparison, Singapore has transformed from a developing nation into a vibrant market economy in less than ten years. According to the World Economic Forum, the UAE is ranked 21st out of 139 countries in 2010 and Singapore is ranked tenth (WEF

2010-2011). By looking at the two most important pillars of growth and development related to this point, compared to the UAE rank of 38th on the pillar health and primary education, Singapore is ranked third. On the pillar of higher education and training, compared to the UAE rank of 36th, Singapore is ranked fifth. The UAE lags behind in terms of its international benchmarking in these key areas of human development and economic growth.

2.3.6 The Global Competitiveness Index in Dubai

The Dubai market environment has unique value propositions in the Middle East and North Africa regions distinguishing itself from the surrounding nations (DCCI 2006). First, strategic location, it is a destination bridging the East and the West, a centre to large and diverse organisations, and an island of calm in a turbulent region (UAE MFT 2012). Second, a thriving business hub, it is a diversified and fast growing market and economy, and a trading centre for the Middle East region, a central node for transportation and logistics, a pre-eminent tourist destination, and a home for regional headquarters of multinational organisations and robust zones and clusters (DCCI 2010). Third, as a unique environment it is a broadly diverse and cosmopolitan city with a high quality of life and cultural diversity. Finally, it has a pro-business government with a visionary leadership and fast track initiatives likely to keep alive most of the economic activities in the UAE over a long period. Although when compared to other emerging markets and economies, Dubai has to overcome challenges and turn them into opportunities so its international competitiveness can shape its firms' international competitiveness (Smit 2010).

The United Arab Emirates, as a proxy for Dubai, shows low levels of innovative efforts when compared to countries in the Organisation for Economic Co-operation Development and Southeast Asia. In order for the country to be a stronger innovation-driven economy, improvements must be made along several parameters, including factor-driven: basic requirements (i.e. infrastructure and health and primary education), efficiency-driven: efficiency enhancers (i.e. higher education and training and technological readiness), and innovation-driven: innovation and sophistication factors (i.e. business sophistication and innovation). The Global Competitiveness Index parameters rank (out of 139 countries) and score (out of 7) for the United Arab Emirates have an overall of 25 and 4.9, basic requirements of 8 and 5.8, efficiency enhancers of 21 and 4.8, and innovation and sophistication factors of 27 and 4.4 (WEF 2010-2011). Thus, there are areas for improvement in the innovation and sophistication factors parameter where the Dubai market lags behind compared to developed and developing markets, with an innovation score of 3.4 and index of 6.69, which is

below the World Index average of 8.11 (KEI 2009). The Dubai based innovation related indices rank uncover that there are areas and parameters for improvements relative to rankings of similar markets (Ireland, Qatar, and Singapore) and peer zones as shown in Table 2.6. These parameters include capacity for innovation (35), quality of scientific research institutes (45), firm spending on research and development (28), university-industry research collaborations (43), availability of scientists and engineers (20), number of patents granted (42), and intellectual property protection (19) among other indices (el-Baltaji 2008; WEF 2010-2011).

Table 2.6: The UAE innovation environment indices.

Innovation Related Indices Ranking (out of 139 countries)	**Ireland**	**Qatar**	**Singapore**	**UAE***
Innovation				
Capacity for innovation	31	45	17	35
Quality of scientific research institutes	16	22	11	45
Firm spending on R&D	21	41	8	28
University-industry research collaborations	17	27	6	43
Government procurement of advanced technology products	75	1	2	3
Availability of scientists and engineers	16	9	10	20
Number of patents granted	23	48	11	42
Intellectual property protection	15	28	3	19
Total Innovation	22	23	9	30
Business Sophistication	20	21	15	22
Infrastructure	38	25	5	3
Health and Primary Education	10	15	3	38
Higher Education and Training	23	32	5	36
Technological Readiness	21	36	11	14

Source: Adopted from WEF (2010-2011). *The four-year UAE innovation data at the macro-level is shown in Appendix A.

While Dubai has some of the required core ingredients to promote a knowledge-driven economy and an innovative environment in conjunction with strong government supported developments, well-established physical and business infrastructure, and a vibrant business environment, it has yet to overcome some challenges. These include the focus on large firms; the encouragement of individual firms to take more risks; the creation of innovation clusters; the control of small locals who mostly cannibalise small progressive firms and restrict them from being more innovative; the present *kafeel* commercial law of 51% ownership and the visa law of a three-year resident system

prevent knowledge-transfer and innovation by dissolving firms when their owners/managers leave the local market; the lack of market research and information; the high levels of competition and economic risk; the allocation of fewer resources to academic researchers, in relation to GDP, and the translation of applied research into innovative products and services; the high level of inflation rate (it was estimated in 2008 to be 13.7% in Qatar, 12% in the UAE (10.77% Dubai), 4% in Oman, 3.9% in Kuwait, 3.5% in Bahrain, and 3.4% in Saudi Arabia.); and the evasion of the DFM due to the UAE's commercial law requiring the firm from the private sector to float at least 50% of its capital if it decides to hold an initial public offering (Dutta 2006; Khaleej Times 2006; Gulf Business 2007; Grant, Golawala & McKechnie 2007; el-Baltaji 2008; Hadfield 2008; Index Mundi 2008; HFDJ 2009; DDCI 2010; Haour & Mieville 2010; Jaruzelski et al. 2012; Spithoven, Vanhaverbeke & Roijakkers 2013; UAE MFT 2012). Despite its challenges, opportunities abound and can be exploited using its strengths (see Appendix B). In comparison to the Dubai market, the national (Abu Dhabi) and regional (Qatar) markets have followed a lower-profile and slower-moving development path (Dudley 2008). Dubai has first-mover advantage in the region but it is facing competition from neighbouring cities (Munroe 2008). However, Morgan Stanley's report, *Winners and Losers in MENA Property*, has selected Abu Dhabi and Qatar over Dubai as preferred markets. The report is less positive on Dubai beyond the short-term due to an oversupply in 2009 and a possible price correction (Shahid 2008).

2.3.7 The Innovation Milieu and National Innovation System

Innovation varies at different stages of economic development and can be examined by looking at: (1) factor-driven stage, that has a high rate of unemployment and small business start-up resulting in a large informal sector and 5% of innovation activity; (2) efficiency-driven stage, that has a decline rate of small business start-up because of the efficient use of capital and other production factors resulting in a larger firm and 10% of innovation activity; and (3) innovation-driven stage, that considers knowledge as a driver of growth resulting in 30% of innovation activity (Acs & Szerb 2009). An understanding of innovation influences the current system of innovation thinking in various ways, most notably in the way innovation resides at the heart of expanding markets and economies and has been widely recognised in economic research as the driving force for economic development (Schumpeter 1934; Drucker 2003; Lasagni 2012). The innovative potential is higher in the UAE, which is ranked first among the Arab world and 30th globally for innovation-driven economies (WEF 2010; WEF 2010-2011). At the level of Dubai, the strategic sustainable growth path is based on six combinations of industry sectors that are discussed in Section 2.3.5.1 together

with seven horizontal enablers where innovation is one of the important strategic thrusts for the achievement of economic development and growth (DSP 2007). However, for innovation capacity building to prosper and produce end results, there are needs to establish a clear innovation policy and system to encompass different players at different levels.

A government and its agencies seek to improve innovation to enhance their regional competitive advantage (Park 2001) and accordingly the regional environment can enhance or deter firm-level innovation (Mole & Worrall 2001). This is why some regions have an environment conducive to innovation as described by Camagni's (1991, 1995, p.318) framework of "innovative milieu", in that there is a connection between innovation at the individual and regional firm-level, as having "strong elements of local entrepreneurship, close interaction and cooperation among companies and relevant externalities associated with specialized labour market". The combination of the level of innovations and synergies between firms can produce a powerful endogenous spur to economic growth (Mole & Worrall 2001). Camagni (1995) further consider that the local labour market is an important source of information and knowledge as individuals spread tacit knowledge and diffuse best practice throughout the region when they move from one place to another. The innovative milieu can be explained in three ways: management structure to reduce transaction costs under uncertainty (micro-analytical view); organisation to exchange learning and knowledge (cognitive dimension); and organisation strategy structure (organisational dimension) (Ritsila 1999). Mole and Worrall (2001, p.355) also summarise the innovative milieu concept as "a collective learning process stimulated by interactions". Innovative milieu is described by Camagni (1995) as four regional types: (1) with no innovation and no milieu; (2) with innovation and no milieu (regional integration policy); (3) with firm synergy with little innovation (regional innovation policy); and (4) with innovation and milieu (innovative milieu). This framework provides a medium for Dubai to develop policy interventions to transform areas into innovative milieu (Mole & Worrall 2001). Camagni (1995) offers two routes to an innovative milieu that are regionalised integration policy and regionalised innovation policy. Large firms can dominate innovation in the innovative without milieu region (regional integration policy) and small firms can be more innovative in innovation and milieu (innovative milieu) while there is a connection between innovations at the individual and regional firm-level (Mole & Worrall 2001).

The increasing relevance of innovation as being interactive, collaborative, and inter-disciplinary establishes the foundation for the national innovation system (NIS) approach (Samara, Georgiadis

& Bakouros 2012). In emerging countries, the characteristics of a system of innovation that are embedded within can benefit a firm in tapping into local and global knowledge and technology, which are better circulated in the local economy resulting in more businesses embarking on the process of technological upgrading and economic development and growth (Szirmai, Naude & Goedhuys 2011). The concept of a national innovation system has been encompassed since the beginning of the 1990s as the theoretical structure for science and technology policy (Freeman 1987; Wonglimpiyarat 2011). In the beginning of the 1990s, the focus shifted from a single firm to a network of participants (innovation network) and from a university and research funding and technology program to a holistic view that interconnected these separate entities (Mothe & Paquet 1998). The innovative performance of a country depends on how different entities and agencies interact with each other that can result in a collective system of creating and applying knowledge and technology (Calia, Guerrini & Moura 2007).

It is important to understand the new concept of a national innovation system in both historical and political contexts with instrumental function for economic achievements and policymakers rather than a scientific theory following from the original concepts of industrial districts (Marshall 1920; Hjalager 2010). The national innovation system is an interactive system, which can give rise to the rapid growth of the technological and innovation developments when for example: the local economy is liberated to create new market opportunities; the local government develops support programs, infrastructure, and legal and regulatory frameworks; the governance and cross-sectoral networks and collaborations are open and transparent; the public-private sector partnerships are increased; the funding institutions are available; the academic and research institutions and skill building facilities are advanced and accessible; and the inter-organisational structures are reflected (Cooke, Uranga & Etxebarria 1997; Svensson, Nordin & Flagestad 2005; Hjalager 2010; Szirmai, Naude & Goedhuys 2011; Al-Abd, Mezher & Al-Saleh 2012). Wonglimpiyarat (2011, p.156) also stresses that "the new focus … commences from the allocation of given and scarce resources to the creation, distribution and use of new resources", which aims at the production, diffusion, and application of knowledge and technology into new processes, products, and services within the national borders (Samara, Georgiadis & Bakouros 2012).

The linkages and interactions among these actors involved are important in shaping the national innovation system (Cooke, Uranga & Etxebarria 1997; Samara, Georgiadis & Bakouros 2012). For example, the challenge in Dubai is that the cross-stakeholder interaction is limited and only

occurs through bilateral exchanges (Jaruzelski et al. 2012). This calls for the orchestration of the innovation agenda to provide effective interaction among all relevant stakeholders that result in a thriving innovation system. However, there are limited empirical evidence and research studies to document the nature of these driving elements in the NIS (Hjalager 2010). The increased interest in the national innovation system is due to the new understanding of innovation processes that are pointed to new opportunities in innovation growth performance and new possibilities in designing innovation policy for firms, mainly small and medium firms (Asheim et al. 2003). The modern interactive innovation model has been developed as a result of criticism of the traditional linear innovation model and as a strategy for national research and development policies. The traditional linear innovation model is research-based, sequential, and technocratic compared to the bottom-up interactive innovation model, where more can be adapted from the modern interactive model to the traditional SMEs and the learning-based economy (Lundvall & Johnson 1994; Asheim & Isaksen 2002; Asheim et al. 2003).

It should be further noted that the dynamics of the industrial change impacts industry clusters and in turn the national innovation system. The globalisation phenomenon has profound consequences for the local system at the level of industrial sectors where the tendency has been to identify a national innovation system with industry clusters formed by participants along the value chain (Mytelka 2000). The free zone model and industry cluster approaches in Dubai is to apply the cluster concept to, for example, the computer industry (i.e. inbound component, assembly line, and outbound supply) and the automobile industry (i.e. auto parts manufacturers, assemblers, and suppliers). However, this industry and sector-based cluster approach may generate a static bias (i.e. fixed boundaries and configured participants in connection with existing production processes and products) and may not be able to capture situations in which industrial boundaries are blurring (Mytelka & Delapierre 1999). The introduction of new policies and regulations, the emergence of new technologies, the entry of new competitors, and the change of market rules that combined can alter the shape of industries and opportunities for growth and sustained competitive advantage for firms of all sizes within these industries (Mytelka 2000).

2.4 The Micro-Environment and SMEs

To become outstanding in the marketplace, a firm needs to build an economic engine, regardless of its industry and sector (Collins 2001) that it might be able to do so because it attains profound insights into the market and economy. Collins (2001) also argues that a firm can greatly improve its business performance and becomes great, if it diligently applies the framework of ideas that is a focus on what to do and not to do-stop-doing; a technology-driven change to accelerate change; and an attention to managing change, motivating staff, and creating alignment.

2.4.1 The Characteristics of SMEs

Small and medium firms have different structures and can behave differently in analysing and interacting with their environments when they are compared to large firms. They can be faced with challenges, including lack of economies of scale, limited resources and capabilities, operation scales and scopes, market shifts, environmental shocks, and smaller market size (Schuman & Seeger 1986; Julien 1993; Cagliano, Blackmon & Voss 2000; Aragon-Sanchez & Sanchez-Marin 2005; Gilmore, Galbraith & Mulvenna 2013). Firms of all sizes have different characteristics in relation to management (Hargadon & Sutton 2001), resources and portfolios (Christensen 2003; O'Sullivan & Dooley 2009), strategic orientations (Porter 1985; Fahey & Randell 2000), internal structures and learning cultures (Collins & Porras 1994; Markides 1998; Johnson & Scholes 2002; O'Sullivan & Dooley 2009), technologies and innovations (Haour 2004; Aragon-Sanchez & Sanchez-Marin 2005), product and service offerings (Porter 1980; Cooper 1998), and customer closeness and marketing channels (Ali 1994a; Jin 2000; Pearson 2003; Deschamps 2005). For that reason, adopting different characteristics can have positive impacts on the reputation and business performance of firms of different sizes and especially SMEs alongside encouraging creativity and innovation to become outstanding ones in the marketplace.

SMEs can be examined through three main features and dimensions, which might have different impacts on their decisions to adopt and/or generate innovations for their strategic orientations and competitive advantages. These are: (1) environmental uncertainties, such as government policies and regulations, competitions, market downturns, and inflation and interest rates, can have major impacts on small firms with limited financial resources and market shares (Edmunds 1979; Blili & Raymond 1993; Reynolds, Williams & Savage 2000); (2) psycho-sociological, owners/managers

have central roles in SMEs related to business strategies, decision-making, and internal structures and cultures (Miller, Kets de Vries & Toulouse 1982); and (3) organisational decision, SMEs can have simple, flexible, and centralised management structure with multifunctional management teams, have low employment turnover rates, and have short timeframes and intuitional decision-making processes (Mintzberg 1979; Rice & Hamilton 1979; Thong & Yap 1995; Murphy 1996; Reynolds, Williams & Savage 2000).

Small and medium firms are different from large firms in their innovative behaviours and actions (Tether 1998; OECD 2010) that is relevant to examine their innovation practices (Grundstrom, Oberg & Ronnback 2011). They are not smaller scale versions of large firms and have unique features and attributes regarding innovation activities, which are close managers' roles, informal structures and flexible cultures, high adaptation abilities, fast movers, less reluctant to explore new technologies, specialised marketing and technical expertise, and close market proximities (Julien & Lafrance 1977; Mintzberg 1979; Allocca & Kessler 2006; O'Regan, Ghobadian & Gallear 2006). However, these firms have limited financial and technical resources to apply to research and development and less adequate budgetary control (Rothwell 1989; Vossen 1998). SMEs lack presence in large markets and have less well-recognised brands (Allocca & Kessler 2006). When compared to large firms, small and medium firms have less-experienced owners and managers, less-formal processes, informal strategic planning and communications, limited human assets, flexible organisational cultures, and more networks (Gibb & Scott 1985; Ali 1994b; Nooteboom 1994; Miles, Preece & Baetz 1999). Further, the innovative attributes of the firm can be examined through two levels: the organisational and management levels.

At the organisational level, attributes, for example, managerial characteristic, resources, structure, administrative intensity, and internal and external communications are investigated (Damanpour 1991), which can distinguish innovative and non-innovative firms (Blumentritt & Danis 2006), but few explanatory variables have emerged (Wolfe 1994). The attributes of risk-taking, vision, and aspiration, systematised for innovation and networked (internally and externally), are part of the innovative firm whereas the successful one constantly seeks advice from industry participants (Duchesneau & Gartner 1990). Innovative firms share common traits that are defining leaders' role and commitment in the innovation process; setting aspirations to drive innovation; generating ideas and selecting winners; capturing value through utilisation of strong cross-functional teams; and creating an innovative environment (Grady et al. 1993). Grady and colleagues (1993) further

stress that it is a challenge to define the ideal environment that promotes innovation. However, successful firms are more likely to create their informal networks to foster innovation, appoint the right individuals, and provide rewards and incentives. At the management level, the management characteristics of the innovative firm are known for their ability to address a number of initiatives concurrently; to channel a team's discontent; and to openly encourage inquiry and reflection from others (Sinkula 1994; Herb, Leslie & Price 2001). Herb, Leslie, and Price (2001) emphasise that SMEs are small businesses by nature, those firms are privileged that most individuals might have direct access to customers and provide feedback on their needs and accordingly provide improved solutions to problems.

2.4.2 The Contribution of SMEs to Innovation

Innovation is not something that is limited to large firms (Carrier 1994). Small and medium firms are important engines for innovation and technological advancement (Mulhern 1995). They are key players in the innovation process across different sectors (OECD 2010). They have a number of roles to play in supporting innovation. These roles include upgrading the aggregate productivity of the economy; bring new ideas and initiatives to the market; enabling the commercialisation of knowledge; being active in breakthrough innovation; and participating in the flow of knowledge within the innovation system (OECD 2010). They are best seen as agents who bring change to the local economy by introducing new processes, products, and services and more efficient ways of working (Curran & Blackburn 1994), despite their low research and development expenditures, SMEs account for a disproportionate share of new product innovation (Acs & Audretsch 1990). However, the contribution of SMEs to innovation is debatable. The literature contains various arguments linked to the relative contribution of firms of different sizes (i.e. small, medium, and large) to innovation (Asheim et al. 2003). The debate seems to continue because different research studies typically use different databases and methods to examine the researched issue. Further, Pavitt, Robson, and Townsend (1989) and Tether, Smith, and Thwaites (1997) argue that there is no optimal size for firms to innovate across all industry sectors and dynamic complementarities can exist among different firms. Storey (1994) puts more emphasis on the ability of SMEs to make incremental innovations due to their niche roles in the marketplace. Arguably, SMEs can have the potential to be the embodiment of innovation in modern society (Rothwell 1994; Haour 2004).

Asheim et al. (2003) support the notion that small firms can be a source of important innovation, which can be commercialised by large firms. Asheim et al. (2003) has further classified small and

medium firms into two types with respect to innovation. One type is a conservatively managed traditional SMEs operating in a niche market that is relatively untouched by technological and market changes, in which innovation is not an issue for their managers. Another type is highly innovative and technology-based SMEs with a knowledge-based approach that makes these firms potential leaders in a specific field in the marketplace. Likewise, Hassink (1996) has developed a typology to distinguish between three types of technology-based SMEs, they are: technology-driven SMEs keeping abreast of leading-edge technologies; technology-following SMEs obtaining available technology; and technology-indifferent SMEs rarely investing in new technology. The role of innovation plays in the competitiveness and business performance of SMEs can differ among industries and markets, which can have implications for what innovation means in practice and for the policy support that is appropriate to these firms.

2.4.3 The Establishment of Innovation within SMEs

The firm's primary goal in innovating is to differentiate itself from others and to maximise profits and market share (Garcia, Bardhi & Friedrich 2007). McAdam, Stevenson, and Armstrong (2000, p.140) define the effectiveness of business innovation as "the harnessing of creative ability within individuals and the workforce in response to change, by doing things differently or better across products, processes, or procedures through the continual process of improvement of techniques and the successful production, assimilation, and exploitation of novelty", that lead to competitive advantage and better business performance. O'Connor et al. (2008) further argue that the secrets to breakthrough innovation are more mundane through building a permanent capacity in the firm and assigning this challenge to an independent unit to distinguish it from a new product development. A firm should organise the innovation process in a way that can consistently nurture and deliver big and new ideas, accelerate these ideas into the marketplace, while not cutting funding in a tough fiscal year, no matter how tempting the idea may be. Drucker (1993) recommends various steps to implement successful innovation, including opportunity analysis, environmental look out, interaction with customer, simple focus, and starting small. The outcome of innovation should be market focus and innovators should build on their strengths.

A firm encouraging creativity and inventiveness can create the ingredients of sustained innovation (Dorf & Byers 2008; Nonaka, Toyama & Hirata 2008). It can lead the way with a new product and a service and into a new market space anticipating locking in a competitive advantage that ensures superior profits over a long-term (Tushman & Anderson 1997). For example, the approach of the

Dubai Camelicious firm for initiating and supporting the innovative project of commercialising camel milk. The firm has to develop special tools and machines to industrialise camel milk and is planning to commercialise a whole range of products including different camel milk flavours and chocolate bars. It has to further develop various partnerships to move from the innovative idea to the final production stage. The challenge is that camel milk is considered hardly profitable but it can be possible only by developing a new market space. The firm needs to establish particular practices, such as specific ways of performing tasks and behaviours, to manage the innovation process successfully. These innovative practices differentiate the firm and can play important roles in the success or failure in the long-term (Tidd, Bessant & Pavitt 1997; Pitt & Clarke 1999).

Mahemba and De Bruijn (2003) use the term "innovation management" as a process of searching for additional effective practices. Innovation practice within SMEs is defined by Mahemba and De Bruijn (2003, p.162-163) as "the activities that small and medium-sized enterprises undertake in order to provide in new solutions for their products, production, marketing, and administration to cope with dynamics of the markets". These practices are further considered to be specific and difficult to imitate because of their development over a long-time via trial and error. Further, there are different streams in the innovation literature of SMEs orientations when looking to establish innovation that include economic-oriented, organisation-oriented, and project-oriented (Brown 1998). In the economic-oriented stream, a firm plays an important role in driving innovation and it can be as innovative as a larger firm; the organisation-oriented stream shows that a firm manages innovation effectively and efficiently through optimising internal structures, building appropriate strategies, networking, and increasing performance; and the project-oriented stream prescribes that customers and competitors are important sources of innovation (Laforet & Tann 2006). Vossen (1998) believes that innovation in SMEs can be effective and efficient when it is well-established within the firm. The innovation literature is divers that much remains to be discovered about the determinants for successful innovation in SMEs in different industries and markets (Brown 1998).

2.4.3.1 Continuous and Business Improvements

Nowadays, continuous improvement throughout the firm is the norm in innovative cultures by means of generating and implementing new ideas and initiatives (Kenny & Reedy 2006). This type of improvement is different from one socio-economic culture to another and what is practiced in one firm may not be suitable for other (Leseure 2000). The concept of continuous improvement is described as a "management or an evolutionary incremental process, which leads to a better way

to compete and that adds value to existing process", which is in light of flexibility, effectiveness, and efficiency (McAdam, Stevenson & Armstrong 2000, p.140). Bessant et al. (1994) believe that the focus on continuous improvement is an important complement to radical step-change forms of innovation particularly since this type of innovation may often result from an internal learning process by doing. The innovating SMEs can learn continuously from interacting with customers, competitors, and consultants (Rosenberg 1976) and from training (Mole & Worrall 2001). SMEs should consider continuous improvements as a starting point towards becoming more innovative (Harris et al. 2013), which is linked to increased competitiveness in the marketplace (Tushman & Anderson 1997). SMEs should then can move beyond continuous improvement (or *kaizen*) in developing business initiatives through improving standardised activities and processes and start to embrace a culture of innovation (Wiele & Brown 1998), despite the increasing market pressure and fragmentation in many economies (Kinni 1995; McAdam, Stevenson & Armstrong 2000). Continuous improvement and innovation are integrated in an evolutionary process that can be turned into successful innovation and business excellence (Kanji 1996; Harris et al. 2013).

2.4.3.2 Innovation Potential and Development Capability

Research studies have discussed different factors influencing the innovative potential and process within SMEs (Cohen & Levinthal 1990; Asheim et al. 2003). These factors can be external and internal to the firm that can important play roles on the nature and extent of innovative behaviours and activities of SMEs. These factors can be government policies and regulations; managements' characteristics and experiences; organisations' resources and capabilities; and the interaction among them (Freel 2000). The ability of SMEs to identify and exploit external knowledge and technology is critical to the innovation process (Cohen & Levinthal 1990; Hadjimanolis 2003). However, few Dubai SMEs alongside firms in the Middle East and North Africa regions tap into different types of knowledge (Knight 2011). Other key factors are the nature and effectiveness of firms' marketing activities in product planning and development, and in some industry sectors the competence of the firm in areas of technical strategies (Hoffman et al. 1998) that is, their ability to commercially exploit the potential benefits of their innovative efforts.

The routine behaviour of the firm includes practices developed and nurtured over time to facilitate innovation and behavioural patterns evolved in relation to the perception of management about the obstacles to innovation, which are likely to be informal and implicit rather than more formalised and explicitly embedded in the firm (Tushman & O'Reily 1997; Asheim et al. 2003). This routine

behaviour of the firm is tacit and difficult to imitate, so the capabilities and skills associated with innovation are particularly difficult to emulate. The role of networks and long-term relationships is further important to the ability of SMEs to innovate and to enter into interactive learning networks and long-term relationships (Cooke & Morgan 1993; Karlsson & Olsson 1998), which can be a critical stimuli to innovation (Baum, Calabrese & Silverman 2000). The innovative firm is well plugged into the marketplace and to external sources of technology, according to Rothwell (1991) who describes innovation as a process of know-how accumulation. However, some innovative firms do not consider networks to be important due to the concern for commercial confidentiality which prevents them from collaborating with others (Asheim et al. 2003). The external resources of knowledge through the collaboration with higher education and research institutions as sources of innovative ideas and technical supports for SMEs can play active roles in supporting them to acquire resources and capabilities for innovation (Adams & Comber 2013).

Innovative capability of the firm can be related to internal process, organisational culture, or the ability to respond well to changes in the environment (Neely et al. 2001; Akman & Yilmaz 2008). SMEs need to focus on internal cultures (i.e. norms, values, and beliefs) and not only on processes and technology to develop an effective innovation environment (Gunasekaran et al. 1996). This requires a climate conducive to creativity (Ahmed 1998), a strong focus on multiple stakeholders (Cagliano, Blackmon & Voss 2000), and a well understanding of end user-needs (Rothwell 1992). Further, previous research studies have focused on the quality movement of incremental process and product improvements; however, there is a need to understand innovation capabilities beyond continuous improvements (McAdam, Stevenson & Armstrong 2000; Lawson & Samson 2001). O'Sullivan and Dooley (2009) further argue that in striving to become innovative, the firm needs to look within themselves and assess what takes it forward and what holds it back, realising the four key factors that are people, structure, culture, and environment. However, SMEs are faced with more challenges such as lack of economies of scale and limited resources and capabilities to effectively implement innovation processes (McAdam 2000).

2.4.3.3 Innovation Adoption and Generation Processes

A firm (such as small and medium firms), adopting and/or generating innovation, depends on its internal resources and strategic orientations (Mahemba & De Bruijn 2003; Perez-Luno, Wiklund & Cabrera 2011). The innovation decision process, as described by Rogers (2003), is a process by which a firm's decision to proceed with an innovation depends on: knowledge of an innovation,

forming an attitude towards an innovation, adopting or rejecting an innovation, implementing a new idea/task, and confirming a decision. The innovation decision can be classified into optional (of independent choice), collective (of group choice), and authority (of few individuals with power or expertise choice). The innovation adoption process contains the borrowing and/or adaptation of existed technologies in use by the industry to further develop simpler innovations (Roger 1995). However, the innovation adoption process does not have the same requirements as the innovation generation process. The innovation generation process requires technological capabilities, research and development activities, and multidisciplinary skilled individuals.

To manage innovation as a process, the firm should unbundle and map the innovation process as a set of interlocking and dynamic sub-processes, allocate clear process management responsibilities, assess effectiveness of each sub-process, manage programs in an integrated way (i.e. from A to Z), assemble and use cross-functional teams, and set-up and track process performance (Deschamps 2007). However, a method and a model alone cannot bring success to the innovation development process, but they are an enabling tool to support a design of objectives and strategies (Scozzi, Garavelli & Crowston 2005). The innovation process can be viewed as: sequence of tasks and over time decisions (Saren 1984; Van de Ven & Poole 1990; Scozzi, Garavelli & Crowston 2005); strategic processes (Abernathy & Clark 1985; Chaffee 1985; Stacey 1995; Harrington et al. 2004; BAH 2006); quality cultures (Humphreys, McAdam & Leckey 2005); interpretive processes, generating ideas, selecting winners (Dougherty 1992; Scozzi, Garavelli & Crowston 2005); and creative processes of capturing values (Burgelman & Sayles 1986; Tang 1998; Miller & Floricel 2004). It is viewed as networks, communications, and information flows (Katz & Allen 1982; Scozzi, Garavelli & Crowston 2005; Catmull 2008; Dorf & Byers 2008).

Innovation is perceived as an organised, systematic, and rational process (Drucker 1993). Aaker (2001) suggests that innovation and change are easier when the firm is relatively small and flat, commonly found in SMEs, allowing for more flexibility and responsiveness to their environments (Beaver & Price 2002). According to Rogers (1995), a series of decisions based on identified need and research and development activity of the firm are the basis of the innovation development process, whereas these decisions, mainly the strategic ones, are integral in the strategic planning process and involve managing opportunities and capabilities to meet the firm's objectives. Further, the effective and efficient design of innovation development processes and organisation structures and the appropriate methods depend on a variety of contingency factors (Bullinger, Auernhammer

& Gomeringer 2004). Examples of these factors are the specific market environment of the firm, the type and complexity of the product, the position in the product and technology lifecycle, and the innovation ranges and specific rules of different industry sectors (the role of system suppliers). The innovation development process has various phases of all decisions and activities and their impact begins from the recognition of needs and necessities, through to research, development, and commercialisation of innovation, and finally to diffusion and adaption of innovation and its consequences by end users (Rogers 1995). Further, Miller and Friesen (1982) encourage a more pragmatic approach to implementation through advocating an effective control or a monitoring system to significantly improve the scope, expense, and pace of innovation and its development process within a firm. Carlopio (1998) observes the innovation development process differently through noting that the process, at a strategic organisational level, begins when individuals have knowledge and awareness of internal and external opportunities and propose innovation, which is aligned with the sources of innovation within and/or outside their firm.

In relation to the innovation process, Barnett and Storey (2000) discovered that innovation is part of the long-term organisational evolution and customer relationships are important to the long-term sourcing of knowledge acquisitions and financial terms, with human resource development to underpin the above elements. There is a link between process innovation and product innovation (Barnett & Storey 2000; Georgellis, Joyce & Woods 2000). In some countries such as the United States, SMEs focus on process innovation more than new product innovation. However, Mosey (2005) suggests that product innovation is the cornerstone of better-performed firms seeking future aggressive growth. In the emerging markets (similar to the Dubai market), the innovation generation process might not be feasible as a result of the limited resources and capabilities and management strategic orientations of the firm in these market (Mahemba & De Bruijn 2003), which requires a number of factors, including high technological capabilities, strong research and development bases, and multidisciplinary skills compared to the innovation adoption process. Adeboye (1997) argues that these developing nations should adopt innovations already generated. Other solutions include knowledge-transfer and/or technology transfer (Buratti & Penco 2001) or well-organised technology and/or innovation centres (De Bruijn & De Boer 1989).

2.4.4 The Implementation of Innovation within SMEs

The implementation of innovation within small and medium firms needs commitment and ongoing effort beyond their continuous improvement (Humpherys, McAdam & Lackey 2005). SMEs are

required to develop innovation capabilities beyond that of science and technology innovations (Davenport & Bibby 1999; Porter & Stern 1999). The innovation implementation process requires ongoing improvement and renewal because the capacity to innovate is much easier to loss than acquire (Leonard-Barton 1995). Firms that develop the most suitable fit with their structure, internal flexibility, and operating contingency incline towards innovation (Tidd, Bessant & Pavitt 2005). According to Humpherys, McAdam, and Lackey (2005), the innovation process can join both incremental and radical changes within SMEs. Incremental changes, being in the form of continuous improvement or total quality management, is often supported by local authority grants, whereas periods of incremental changes are combined, when necessary, with transformational and radical change (Bessant & Caffyn 1997; Bessant & Francis 1999).

The principles of innovation implementation in large firms are not directly transferable to SMEs as they are a smaller scale version (Teece 1996). SMEs can implement innovation (Mahemba & De Bruijn 2003), depending on resources, competencies, capabilities, and management strategic orientations (Blumentritt & Danis 2006). SMEs have to acquire a number of factors to be able to implement innovation that includes a high level of technological capabilities, strong research and development capabilities, and a team of multi-tasked individuals (Mahemba & De Bruijn 2003). In emerging markets and economies, the key implications from the preceding discussion is that SMEs are encouraged to implement an innovation adopting process (incremental innovation), otherwise an innovation generating process (radical innovation) may demand more organisational and environmental resources and capabilities (Mahemba & De Bruijn 2003; Scozzi, Garavelli & Crowston 2005; Szirmai, Naude & Goedhuys 2011). The solution could lie in the launching of technology transfer centres to narrow the technological gaps (Buratti & Penco 2001) or in the adaption of innovations already in use in the industry and other markets with the intention to generate simple innovations in the future (Gopalakrishnan & Damanpour 1994).

Innovation cannot be a spontaneous action rather it is a process that occurs over time and consists of a series of overlapping actions (Rogers 1995). Innovation entails activities that occur in a series of stages, from initiation to implementation in order of awareness, interest, evaluation, and trail-adoption (Mahemba & De Bruijn 2003). The diffusion of innovation out into the marketplace is as important as the implementation of innovation within the firm. It is important for the individuals and their firms to have an emotional and a rational connection with innovation (Williams 1999). Further, other characteristics that can explain the rate of innovation adoption in the firm in more

rapid ways are relative advantage, compatibility, trial-ability, observe-ability, and less complexity as discussed before. Rogers (1995) further reports different adopter categorisations on the basis of innovation when individuals/firms first begin using a new idea. These categories are innovators, early adopters, early majorities, late majorities, and laggards, which can decide the speed and the implementation of innovation. The early majorities unique position between the very early and the relatively late to adopt innovation makes them an important link in the diffusion process. Hence, the implementation of the innovation in SMEs depends on their internal resources and capabilities, entrepreneurial characteristics, and management strategic orientations.

2.4.5 The Innovation Management within SMEs

Schumpeter (1934) thought that innovation is the critical driving force of economic growth. Later, research studies on innovation have shifted focus from the economic growth (macro-level) to the innovation management of the firm (micro-level) (Xu et al. 2007). According to Xu et al. (2007), historically there are five main phases of research on innovation management that are discussed in the literature: individual innovation, process, and success factors (1940s-1950s); organisational promotion, research and development management, and internal sources (1960s-1970s); outsider involvement (1970s); business portfolio, integrated, and systematic innovation (1980s-1990s); and total innovation management (21st century). Innovation management is a process of managing innovation within the firm and it is a shift from the traditional management principles, processes, and practices and from customary organisational forms and cultures that change the way in which the attempt of management (i.e. managing ideas, projects, communications, and innovative teams) is performed to advance the firm's goals (Afuah 2003; Hamel 2008). It is a process of managing information, people, and technology linked to innovation to influence the outcome and is related to plans and routines the firm has developed over time to nurture innovation from its origin to the marketplace (O'Sullivan & Dooley 2009).

A firm implements organisational innovations to strengthen its capabilities and competencies to continuously develop new products and services and to renew its knowledge base such as the HP implementation of total innovation management (Brown 1998; Xu et al. 2007). Xu et al. (2007, p.13) explain the concept of total innovation management as the "reinvention and management of an innovation value network that dynamically integrates the conception, strategy, technology, structure and business process, culture, and people at all levels of an organization". Further, total quality management and total innovation management can enhance innovation competence of a

firm, create value for customers, and sustain its competitive advantage (Powell 1995; Prajogo & Sohal 2004; Xu et al. 2007). The total innovation management approach has three alignments that are: at the level of strategy, culture, organisation, market, and in all human technological and non-technological activities (activity); at the level of individual implicated in the specific process of enhancing the competences of the firm (people); and at the level of the firm and in every time period of activity (time-space) (Xu et al. 2007). However, Badea, Marin, and Palotog (2009) argue that the total innovation management approach is non-scientific and non-rigorous due to non-homogenous and dimensional variables. Despite these propositions of innovation management, innovation management is a challenge to firms of different sizes and particularly to SMEs (Freel & Robson 2004; Kenny & Reedy 2006). Innovation management presents ongoing challenges to the firm because of increasing costs and complexity of products and services, increasing IT-based innovation networks, accelerating industrial changes, and shortening product and life cycles (Xu et al. 2007; Amabile & Khaire 2008).

2.5 Summary

This chapter provided a summary of Sections 2.2 to 2.6 by reviewing the current business and innovation management literature to synthesise the various theories and models and establish the theoretical foundations. The parent disciplines in Sections 2.2 to 2.4 examined and analysed the firm's theory, business strategy, and innovation management in general and the macro-(external) and micro-(internal) environments in the context of the SMEs in the emerging Dubai market and economy in the UAE in particular. There was evidence from the detailed discussion on the extant business management literatures that there are a number of determinants influencing SMEs and their innovation practices. Further discussions of the business management literature are presented in the next chapter to particularly understand the innovation practices of SMEs and their impact on business growth performance in the context of Dubai in the UAE. The following chapter builds on the theoretical foundation of this chapter by synthesising the relevant theories and models with a view to introducing the research questions, hypotheses, and conceptual model and to address the overall research problem and objectives.

The next chapter, Chapter 3, presents a detailed description of the immediate discipline and the conceptual model development for this study.

CHAPTER 3 LITERATURE REVIEW II: CONCEPTUAL DEVELOPMENT

3.1 Introduction

This chapter integrates the three parent disciplines from the previous chapter into the immediate discipline and generates the hypothesised conceptual model. It identifies and examines the gaps and shortcomings in the extant business management literature and establishes the foundation for developing the research questions and hypotheses and conceptual model upon which this study endeavour is based for further exploitation and investigation.

It presents the immediate discipline on the innovation practices of SMEs and their impact on business growth performance in the emerging Dubai market in the United Arab Emirates, which identifies the research gaps and the macro-and-micro-environmental determinants in supporting the initial hypothesised conceptual model components. The research questions and hypotheses and conceptual innovation-based model of SMEs are outlined. Finally, the chapter is summarised.

3.2 The SMEs Innovation Practices and Business Growth Performance in the Emerging Dubai Market

Addressing the research problem and objectives of investigating the enabling factors for SMEs innovation practices and business growth performance in the emerging Dubai market required the assessment of various theories and perspectives. In particular, both the macro-(external)-driven and the micro-(internal)-driven determinants of SMEs innovation practices and business growth performance are assessed.

3.2.1 SMEs Innovation Research

Innovation is critical to many firms, despite their size, in providing ways to adapt to changes in areas such as knowledge, technology, customer, competition, market, and economy (Dougherty & Hardy 1996). The traditional innovation literature has focused on manufacturing industries and patenting intensities in developed markets and economies (Dosi 1988; Salavou, Baltas & Lioukas 2004; Hjalager 2010; Avci, Madanoglu & Okumus 2011). Previous research investigations and empirical evidence are drawn from large firms and developed markets and economies despite the growing importance of small and medium firms and of emerging markets and economies leaving generalisability and transferability of outcomes across boundaries for further discussions (Pugh et al. 1968; Welsh & White 1981; Kim & Lim 1988; Blili & Raymond 1993; Mahemba & De Bruijn 2003; Hult, Hurley & Knight 2004; Aragon-Sanchez & Sanchez-Marin 2005; Gao, Zhou & Yim 2007). The uprisings of developing markets and economies have created conspicuous changes in understanding innovation (Miles 2003; Hjalager 2010) because these markets and economies are experiencing changes through structural and market reforms and growth-enhancing investment, offering more opportunities and propitious environments (Arnold & Quelch 1998; Mytelka 2000; Al-Mahrouq 2010; Hertog 2010; WEF 2010-2011). However, Hofstede (1991) argues that using the outcome of innovation research studies in developed countries to explain the firm's innovative behaviours in developing countries are inappropriate. The "one-size-fits-all" model of innovation is insufficient (Todtling & Trippl 2005) that there could be a gap discontinuity earlier research studies have overlooked, including SMEs and emerging markets (Dutta 2006; Hossain 2013).

Innovation has created many opportunities for firms to not only improve their current business operations and competitive advantages as well as to engage in new ones (Forsman & Temel 2011).

Firms are increasingly relying on innovation to face competitors, to create value for customers, and to increase their performance (Porter 1990; Australian Chambers Business Congress 2011). However, previous research has focused mainly on the relationship between a firm's capabilities and performance outcomes (Lieberman, Lau & Williams 1990; Henderson & Cockburn 1994) and on the sources internal to the firm's capabilities, paying less attention to other sources (i.e. where and how) of the capabilities of the firm (Penrose 1959; McEvily & Zaheer 1999; Leiblein 2011). There are important sources, internal and as well external, to the firm to utilise and acquire more capabilities and competencies (Hsu & Ziedonis 2013). This study looks at the support to identify opportunities and pursue sustainability through resource efficiency which has focused on large firms but there are needs to report the characteristics of small and medium firms (Chell 1985; Hoffman et al. 1998). Empirical research investigations on SMEs and emerging markets and economies are recently increasing (Salavou, Baltas & Lioukas 2004; Aragon-Sanchez & Sanchez-Marin 2005; Scozzi, Garavelli & Crowston 2005; Akman & Yilmaz 2008; Sanz-Valle & Jimenez-Jimenez 2011; Wonglimpiyarat 2011; Kang & Park 2012; Peroni & Ferreira 2012).

Research on innovation, in most cases, has focused on organisational attributes that differentiate firms, which are innovative from those that are less innovative (Blumentritt & Danis 2006; Laforet & Tann 2006). These features include structures, managerial characteristics, accessible resources, administrative intensities, and internal and external communications (Damanpour 1991). Limited groups of explanatory variables has emerged for the reason that most research studies in the past have been centred on whether or not firms innovate rather than on how they innovate (Wolfe 1994). Research on innovation type is more concerned with industry-level environmental changes (Tushman & Anderson 1986) and innovation diffusion (Rogers 2003) with less focus on the firm-level innovation determinants, adoption, and business growth performance (Ettlie, Bridges & O'Keefe 1984; Damanpour, Szabat & Evan 1989). Therefore, this study examines the innovation determinants and business growth performance in SMEs with a more process-oriented approach rather than an adoption-decision approach. It offers answers to recent calls to differentiate among components of a firm's strategic orientations, for example technology and market orientations (Spanjol, Muhlmeier & Tomczak 2012). It addresses the concern that more evidence is required to understand the impact of innovation on business performance in SMEs (Frosman & Temel 2011).

Previous research studies have investigated factors contributing to the success of innovation and the increase of business growth performance of the firm, including entrepreneurship, management

strategic orientation, organisational culture and learning orientation, competitive structure, internal processes, networking, benchmarking, conducting research and development, and capability to respond to changes in the environment (Cobbenhagen 2000; Mitra 2000; Neely et al. 2001; Massa & Testa 2004; Raymond & St-Pierre 2004; Salavou, Baltas & Lioukas 2004; Blumentritt & Danis 2006; Laforet & Tann 2006; Linder 2006; Akman & Yilmaz 2008). However, research studies on factors that promote innovation in a firm have produced mixed results (Poolton & Barclay 1998; Henard & Szymanski 2001; Hult, Hurley & Knight 2004). Innovation studies on SMEs investigate issues associated with regional variations in the innovation level activities, types and typologies of innovative enterprise, and barriers to innovation (Hisrich & Drnovesk 2002). These innovation studies have also covered a range of topics that are related to innovation and regional differences, adoption-diffusion, entrepreneurship, management and mismanagement, and technology-push and market-pull (Laforet & Tann 2006; Hjalager 2010).

The study of organisational and environmental determinants that condition innovation offers an interesting additional way to understand the innovative capabilities of the firm (Martinez-Roman, Gamero & Tamayo 2011). The firm's innovative behaviour is a complex process that is influenced by external and internal determinants, while they may be difficult to evaluate in practice they are explanatory factors of the firm's innovative developments (Bell 1984; Martinez-Roman, Gamero & Tamayo 2011). Innovative capabilities can be considered on different levels, depending on the strategic orientations and market conditions of the firm (Guan & Ma 2003). For innovation to exist in the firm, it is necessary to cultivate both the external and internal environments (i.e. external and internal determinants) and the driving forces to provide a better understanding of innovative potential and continue innovative activities (Neely et al. 2001; Hjalager 2010). A limited number of research studies have examined the links between the contextual external-driven and internal-driven factors and innovation in an integrated and comprehensive manner in an emerging market (Hult, Hurley & Knight 2004; Martinez-Roman, Gamero & Tamayo 2011). There are needs to stimulate the development of innovation and to examine the influence of the external-driven and internal-driven determinants on innovation in SMEs in an emerging market similar to the Dubai market (Zirger & Maidique 1990; Neely et al. 2001; Salavou, Baltas & Lioukas 2004; Llorens, Ruiz & Garcia 2005; Hjalager 2010). Therefore, this study combines recent research areas, namely innovation theory and the theory of the firm such as the national innovation system and the resource-based view in an emerging market by examining the external and internal environments. The effective and efficient design of an innovation process of a firm depends on the environmental

(external) and organisational (internal) determinants (Bullinger, Auernhammer & Gomeringer 2004; Hjalager 2010). It examines differences in how SMEs having contrasting resources and capabilities view their external and internal environments that might influence their innovation practices as sources of business growth performance (Gregersen 1992; Blumentritt & Danis 2006; Spithoven, Vanhaverbeke & Roijakkers 2013).

Previous sections in this study identifies various external-driven and internal-driven determinants (i.e. government policies and regulations, funding, management orientation, learning orientation, and networking) through having significant influences on a firm's (i.e. small and medium firms) resources and capabilities to increase innovation practices and contribute to business performance (Miles & Snow 1978; Teece 1986; Cooper 1994; Freel 2000; Mole & Worrall 2001; Calantone, Cavusgil & Zhao 2002; Mahemba & De Bruijn 2003; Haour 2004; Hult, Hurley & Knight 2004; Salavou, Baltas & Lioukas 2004; Scozzi, Garavelli & Crowston 2005; Blumentritt & Danis 2006; Kenny & Reedy 2006; Wright 2008; Teece 2010; Martinez-Roman, Gamero & Tamayo 2011; Jaruzelski et al. 2012). The relevant determinants are divided into macro-(external-driven) and micro-(internal-driven) environmental conditions as to be further examined.

3.2.2 The Macro-Environment: The National Innovation and SMEs Innovation Practices

Based on the reviewed literature regarding the innovation milieu and national innovation system in Sections 2.3.4, 2.3.5, and 2.3.7, previous research studies illustrate that the continuous and consistent enhancement of the level of productivity and competitiveness of a country's economic-base necessitate tapping into resources and making strategic investments in sectors where there are new market and growth potentials occurred (Cooke, Uranga & Etxebarria 1997; Szirmai, Naude & Goedhuys 2011). The literature; however, is not well integrated to explaining the externally-driven innovation factors at the firm-level, and includes such as national and regional innovation systems, clusters, and ecosystems (Teece 2010). Nelson (1993) also argues that the national and regional business ecosystems supporting innovation needs to be clearly defined. They are expressed at the NIS level that depend on public policy and guidelines ranging from "taxes, direct subsidies, public education and training facilities, ... research and development institutions, infrastructure facilities, financial support, regulation, standards, to public procurement" (Gregersen 1992, p.144), while at the firm innovation level it depends on the government, judiciary and legal systems, talented and skilled individuals, research and educational institutions, financial institutions, domestic market, suppliers and complementors, and other firms presence in similar and/or related industries (Teece

2010). Fu, Pietrobelli, and Soete (2011) and Mani (2011) accentuate that the authority's, like the Government of Dubai's, efforts having a system to support innovation that can be directed in establishing infrastructure and institutional supports by developing policies and regulations; enhancing financial capitals by establishing funding schemes and mechanisms; enhancing human capital by increasing education levels and attracting skilled workers; enhancing technologies and knowledge by entrenching commercialisation; and optimising search by using natural resources.

The firm is considered to be one of the main components of the innovation system, among others such as public agencies, financial institutions, and educational and research institutions, and the locus of innovative activities in the market (OECD 1999; Edquist 2001). This is why the firm (i.e. SMEs) is taken as the subject for this study. However, the study of the national innovation system and capacity can provide a better understanding of the accessibility of external resources and competences for a firm to innovate. The national innovation capacity is the ability of the nation to not only produce new ideas, but (by its firm) to commercialise a flow of innovative technologies over a longer-term (Veuglers 2005). In a national innovation system, knowledge is circulated in the local economy and the local economy can embark more promptly on technological upgrading (Szirmai, Naude & Goedhuys 2011). Veuglers (2005) suggests that regional differences within a nation, such as other states in the UAE, with respect to innovation and economic growth reflect not just differences in endowments of labour, capital, and knowledge but also the degree of the knowledge distribution power and the efficiency of the innovation system. Hence, the innovative firm can search, absorb, and utilise the new knowledge and respond to changes and opportunities in the external environment (OECD 1999). The Dubai innovation system may need an integrative model, which include innovation infrastructure (i.e. science and technology policies, know-how stocks, and research and development supports), technology-cluster conditions (i.e. innovation incentives and supporting industries), and quality linkages between clusters and common factors (i.e. academic-industry collaborations and efficient labours and capital markets). For this reason the innovation milieu can connect innovation at the individuals and the firm's regional level to produce endogenous economic growth making small firms more innovative and shifting the national innovation system from a single firm to a network of participants (Camagni 1995). The effectiveness of the country innovation system depends on the balanced combination of creative, diffusion, and absorption capacities, which requires widespread evolution of public innovation support systems alongside with stronger institutional and organisational supports from industries (Cooke 2001). Further, the structure and competition of the market dynamics play significant roles

in determining the firm-level innovation despite that there are still weak links in the Dubai market (Broome 2007; Teece 2010; Norback & Persson 2012).

There are strong intentions by both government and non-government agencies in the Dubai market to generate a business model that promotes innovation and embeds the same into the academic, social, and economic systems and policies. Since innovation is considered to be a major driver to the economy and its future growth, the determinants that lead to innovation are considered to be critical to policymakers in Dubai (UAE MEP 2005; DSP 2007). A government (funded) research project can support to "create vibrant technological environments with multiple resources of new technology [by] fueling venture-funded new businesses" (Teece 2010, p.688). Walters, Kadragic, and Walters (2006) argue that the role of education is important to build knowledge capacity, to drive innovation, and to strengthen collaboration between social and economic developments. The Government of Dubai is encouraging the concept of "entrepreneurial society" through government and non-government agencies and firms to facilitate new policies, systems, and models (Drucker 1993; UAE MEP 2005; Jaruzelski et al. 2012). Entrepreneurial behaviour is generally believed to be an important aspect and driver of the firm in industries most conducive to innovative activities and unrestrained competition (Stel, Carree & Thurik 2005; Nasution et al. 2011). Further, Dubai has designed a consistent strategy to promote large scale innovation and to provide financial and logistic supports to firms that have a great potential for becoming an innovation hub for the region (Dutta 2006; UAE MFT 2012); however, the challenge remains in the existence of the right environment at the level of the firms to be more innovative in the local market. For example, the Taiwanese model to support industry innovation includes encouraging networks among firms (allowing some anti-competitive behaviour); setting-up industry bodies; creation of science parks; openness to outsiders; developing of entrepreneurs; and leveraging of external networks.

In agreement with the "institutional perspective", country-specific settings are referred to as a firm's institutional environment (i.e. different politics, regulations, and cultures). The institutional environment can impact how a firm conducts business, manages people, connects with customers, faces competitors, and interacts with public and private institutions (DiMaggio & Powel 1983; Kostova & Zaheer 1999). An understanding of the importance of these differences can lead a firm to investigate them so that it will be able to develop more effective business strategies and make better use of opportunities for innovation (Chan & Makino 2009). For example, the decision of a firm to maximise its effectiveness by getting the best out of its innovation processes can be

influenced by a rational decision-making process and the institutional context in which it operates (Kostova 1999). Further, the established policies and systems should be designed to promote and facilitate the operation of innovation practices within SMEs with substantial expansion of this type of effort, since firms with less than 250 employees are responsible for much of the business and market activities in Dubai (Hoffman et al. 1998; Madar Research 2006; DCCI 2010; DSC 2010; Wonglimpiyarat 2011). This effort can represent the firm's relative emphasis on understanding and managing the external environmental forces. The external environment plays an important part in the success of SMEs and their innovation activities as innovation is regarded as a process of a firm and its external environment (Mahemba & De Bruijn 2003; Blumentritt & Danis 2006). It can be described as the demand on the firm in terms of customer requirements, opportunities, and constraints. Therefore, sourcing ideas, accessing knowledge and information, and utilising technologies are prerequisites for innovative activities to arise within the firm. For example, the internal activities of SMEs must be integrated with their external environmental determinants to be able to be more creative and imaginative (Porter 1980; Mahemba & De Bruijn 2003). Liao, Welsch, and Stoica (2003) further emphasise that the responsiveness of SMEs with more growth orientation is expected to increase if they have well-built external knowledge acquisitions and internal knowledge dissemination and adopt more proactive strategies and approaches. Whether or not such an intervention centralised model in innovation is suitable for the Dubai market context; however, is open to future discussion (Al-Abd, Mezher & Saleh 2012).

Considering the above discussions, the macro-(external-driven) environmental determinants can be government supported developments, financial resources, academia-industry collaborations, and market dynamics.

3.2.3 The Micro-Environment: The Resource-Based Perspective and SMEs Innovation Practices

Based on the reviewed literature regarding the resource-based and contingency perspectives and innovation development capabilities of the firm in Sections 2.2.2, 2.2.3, and 2.4.3, the resource-based view contains two parts of resources and capabilities for securing competitive advantage of the firm. Resources of both tangible and intangible assets are linked to the firm in semi-permanent ways (Aragon-Sanchez & Sanchez-Marin 2005), whereas capabilities are linked to how the firm performs different tasks and activities and is dependent on the available resources (Grant 2002). The contingency perspective requires the firm to match strategy with the corresponding external

environmental contexts and constraints in order to achieve the best possible competitive advantage and business growth performance (Ginsberg & Venkatraman 1985). Innovative capability should be considered on a different level and from a broad perspective, depending on the strategy of the firm and on the condition of the market (Guan & Ma 2003; Martinez-Roman, Gamero & Tamayo 2011) that allows the firm to adapt to competition to achieve success in the marketplace (Sirmon & Hitt 2009). Thus, it is the management of resources and capabilities that are the key to a firm's profitability (Aaker 1989). This view, consistent with the resource-based view, can explain how a firm derives competitive advantages by channelling resources and capabilities into strategic and innovative orientations that have the effect to increase its net revenues and business performance (Wernerfelt 1984; Barney & Arikan 2001; Martinez-Roman, Gamero & Tamayo 2011).

The strategic management literature has indicated a number of internal-driven determinants (or strategic assets) of the firm's competitive advantage and success, including technological capital and innovation (Hitt, Hoskisson & Ireland 1990), human resource management practice (Bacon et al. 1996), and internal structure (Feigenbaum & Karnani 1991). Previous research studies further emphasise the importance of intangible resources and capabilities of a firm to keep its competitive advantage (Hall 1992, 1993; Oliver 1997), which are based on tacit knowledge and non-codified data, which are more difficult to imitate by others (Peteraf 1993). Intellectual capital, including human (characteristics, knowledge, skills, and capabilities), organisational (technology, processes, patents, and networks), and social (links with customers, suppliers, and partners) are important strategic assets, which the firm needs to internally focus on to increase its innovation efforts by controlling and exploiting resources and nurturing and enhancing competences and capabilities (Xu et al. 2007; Dorf & Byers 2008; Martinez-Roman, Gamero & Tamayo 2011). Other resources are culturally oriented, for example, the emerging Dubai business and market environments place importance on the characteristics and interpersonal skills of the owners and the managers of the firm by creating trade relationships, networking, and liaising with customers and partners, having an on-the-spot presence and dealing with an individual who keeps professionalism and personal contacts and who can be trusted, which is more important and provides the business with distinct competitive advantages to ease its operation and facilitate growth (Grant, Golawala & McKechnie 2007).

As local and global competition intensifies, SMEs that have focused on existing products and services are being frequently challenged by the need for new resources and capabilities to achieve

sustainable competitive advantages and to meet new market demands (Forsman & Temel 2011). However, SMEs might be faced with difficulty when they are investing in strategic resources and creating capabilities due to their economies of scale, limited resources, professional expertise, and size implications (Hoffmann & Schlosser 2001). Hoffmann and Schlosser (2001) suggest that the solution might lay on alliances with other firms and institutions to reach enough dimensions to have the advantages of being large and to preserve the advantages of being small in terms of flexibilities, specialisations, and cost reductions. They can have more advantages over their larger counterparts that are entrepreneurial dynamism, multifunctional management, less bureaucracy, internal flexibility and short-term re-orientation, relationship with customer, receptive to technical and market shifts, and responsiveness to changing circumstances (Julien & Lafrance 1977; Nooteboom 1994; Reynolds, Williams & Savage 2000; Scozzi, Garavelli & Crowston 2005; Zhu, Wittmann & Peng 2011). They further have the internal and innovation process of rapid response to external threat and opportunity, efficient internal communication, and interactive management style (Rothwell 1994; Allocca & Kessler 2006). Laforet and Tann (2006) discovered that the innovation drivers of small and medium manufacturing firms are committed owners/managers to a new process and product development, customer focus, and technology and market anticipations. However, SMEs can suffer from a number of constraints (Spithoven, Vanhaverbeke & Roijakkers 2013), which are the inability to spread risk over a range of product portfolios, difficulty in start-up in new and overseas markets, and funding longer-term projects (Nooteboom 1994; Rothwell & Dodgson 2007), limited technology and knowledge acquisitions and absorptions capacities and customer dependencies (Vossen 1998), lack of access to financing (Zhu, Wittmann & Peng 2011), and lack of information and limited synergies (Nooteboom 1994).

Considering the above discussions, the micro-(internal-driven) environmental determinants can be management orientation, organisational culture, technology orientation, alliance and cooperation, and market orientation.

3.2.4 Business Growth Performance and SMEs Innovation Practices

In connection with the reviewed literature regarding the business growth performance in Section 2.2.2.1, Zahra, Nielsen, and Bognar (1999) emphasise that innovation is increasingly seen both as a contributory factor to a higher business growth performance and as a strengthening factor to a competitive advantage of the firm in a number of industries and sectors in the marketplace (Mone, McKinley & Barker 1998; Gunasekaran, Forker & Kobu 2000; Sanz-Valle & Jimenez-Jimenez

2011; Talke, Salomo & Kock 2011). The business performance of the firm can be determined by its innovation capability and investment (Hurley & Hult 1998; Mone, McKinley & Barker 1998; Cooper 2000; Ali, Ciftci & Cready 2008; Francis et al. 2012). Hult, Hurley, and Knight (2004, p.430) argue that "adoption of innovation is generally intended to contribute to the performance or effectiveness of the firm". Small and medium firms are well-known for their creativity and new product and service development (Kenny & Reedy 2006). However, SMEs sometimes do not succeed in recognising the opportunities that are available to them in the marketplace, including the flexibility of customising products and services to the needs of their customers (O'Regan, Ghobadian & Sims 2006). Therefore, the firm has to be a strong competitor, a smart evolver, and innovative, ahead of the market, or an early adopter within the market in order to better perform and grow in the long-term (Beinhocker 1997).

SMEs with innovative behaviours have appropriate outlooks on obstacles and barriers as learning opportunities rather than as negative incidents (Mahemba & De Bruijn 2003). Keskin (2006) also argues that SMEs with innovative capabilities can have a positive effect on their business growth performance. Innovation can positively influence the business growth performance of the firm (Otero-Neira, Lindman & Fernandez 2009) when different performance levels are linked to the type of innovation developed. For evaluating the business performance and growth outcomes of SMEs, a group of different indicators such as new products and services, growth sale, profitability, productivity, and market share are used, where the most profitable and productive firm is strategic behaviour-oriented towards quality, innovation, and customer satisfaction (Aragon-Sanchez & Sanchez-Marin 2005). These indicators have been used in various research studies to evaluate business growth performance and are able to distinguish among good and/or poor performing firms (Hadjimanolis 1999; Calantone, Cavusgal & Zhao 2002; Mahemba & De Bruijn 2003). A similar approach is used to evaluate the business growth performance of SMEs in the emerging Dubai market in order to distinguish among different firms according to their innovation practices.

3.2.5 Previous Studies on Innovation and Business Growth Performance

Although previous research studies have been conducted to understand innovations in developed markets and economies, there are still gaps on the acceptance of outcomes and the enabling factors of innovation practices within small and medium firms to achieve business growth performance in developing markets and economies (i.e. similar to the emerging Dubai market). Whereas many research studies, for example, indicate that academic-industry collaborations and organisational

culture positively affect innovations (Parker 1992; Deshpande, Farley & Webster 1993; Martins & Terblanhe 2003; Peebles 2003; Wright 2008; Nelson 2011), others discover that technology orientation and alliance and cooperation negatively affect innovations (Gomez Arias 1995; Tripsas & Gavetti 2000; Bougrain & Haudeville 2002; Srinivasan, Lilien & Rangaswamy 2002; Asheim et al. 2003; Laforet & Tann 2006; Gao, Zhou & Yim 2007; Bao, Chen & Zhou 2011) as shown in Table 3.1. The inconsistent findings suggest that the impact of the macro and micro environmental determinants might be robust in somewhat homogenous contexts but dynamic in heterogeneous contexts, which are needed to be investigated (Voss & Voss 2000; Gao, Zhou & Yim 2007).

Table 3.1: Previous studies on innovation and business growth performance.

Author(s), (Year)	Sector	Linked to Innovation	Country
Government Supported Developments			
Furman, Porter & Stern (2002)	Manufacturing and services	Positive (openness to international trade and intellectual protection and overall innovation	United States
Hadjimanolis (1999)	Manufacturing and services	Positive (government role, assistance, and regulation and overall innovation)	Cyprus
Niosi (2000)	Manufacturing and services	Positive (governmental institution role and overall innovation)	Canada
Wonglimpiyarat (2011)	Manufacturing and services	Positive (technology development and overall innovation)	Malaysia and Thailand
Financial Resources			
Giudici & Paleari (2000)	Manufacturing and services	Positive (external funding such as debit and credit and overall innovation)	Italy
Hadjimanolis (1999)	Manufacturing and services	Positive (financing and overall innovation)	Cyprus
Tian (2012)	Manufacturing and services	Positive (venture capital and overall innovation)	United States
Wonglimpiyarat (2011)	Manufacturing and services	Positive (venture capital policy and overall innovation)	Malaysia and Thailand
Zhu, Wittman & Peng (2011)	Manufacturing and services	Positive (finance and overall innovation)	China
Academia-Industry Collaborations			
Furman, Porter & Stern (2002)	Manufacturing and services	Positive (shared academic research and overall innovation)	United States
Johnson & Tilley (1999)	Manufacturing and services	Positive (overall innovation)	United Kingdom
Kamalian, Rashki & Arbabi (2013)	Manufacturing and services	None (overall innovation)	Iran
Mahemba & De Bruijn (2003)	Manufacturing	Positive (overall innovation)	Tanzania
Veugelers & Cassiman (2005)	Manufacturing and services	Positive (overall innovation)	Belgium
Wright (2008)	Manufacturing and services	Positive (overall innovation)	United States
Market Dynamics			
Abernathy & Clarke (1985)	Manufacturing and services	Positive (rivalry and competition and	United States

		overall innovation)	
Fernandez et al. (2010)	Manufacturing and services	Positive (market conditions and turbulence and overall innovation)	Spain
Mahemba & De Bruijn (2003)	Manufacturing	None (competition and overall innovation)	Tanzania
Rothwell (1996)	Manufacturing and services	Positive (competition and overall innovation)	United Kingdom
Salavou, Baltas & Lioukas (2004)	Manufacturing	Negative (competition and overall innovation)	Greece
Management Orientation			
Aragon-Sanchez & Sanchez-Marin (2005)	Manufacturing and services	Positive (overall innovation)	Spain
Blumentritt & Danis (2006)	Manufacturing and services	Positive (overall innovation)	United States
Cromer, Dibrell & Craig (2011)	Manufacturing and services	Positive (overall innovation)	United States
Mahemba & De Bruijn (2003)	Manufacturing	None (personal characteristics and overall innovation)	Tanzania
Martensen et al. (2007)	Manufacturing	Positive (overall innovation)	Denmark
Organisational Culture			
Allocca & Kessler (2006)	Manufacturing	Positive (flexibility and overall innovation)	United States
Aragon-Sanchez & Sanchez-Marin (2005)	Manufacturing and services	Positive (flexibility and structural design and overall innovation)	Spain
Calantone, Cavusgal & Zhao (2002)	Manufacturing and services	Positive (learning orientation and overall innovation)	United States
Baker & Sinkula (1999)	Manufacturing and services	Positive (learning orientation and overall innovation)	United States
Kenny & Reedy (2006)	Manufacturing	Positive (organisational culture and overall innovation)	Ireland
Nasution et al. (2011)	Services	None (learning orientation and overall innovation)	Indonesia
Salavou, Baltas & Lioukas (2004)	Manufacturing	Positive (learning orientation and overall innovation)	Greece
Sanz-Valle & Jimenez-Jimenez (2011)	Manufacturing and services	Positive (learning orientation and overall innovation)	Spain
Technology Orientation			
Aragon-Sanchez & Sanchez-Marin (2005)	Manufacturing and services	Positive (overall innovation)	Spain
Gatignon & Xuereb (1997)	Manufacturing and services	Positive (radical innovation) / Negative (incremental innovation)	United States
Jeong, Pae & Zhou (2006)	Manufacturing	Positive (overall innovation)	China
Laforet & Tann (2006)	Manufacturing	Positive (overall innovation)	United Kingdom
Salavou, Baltas & Lioukas (2004)	Manufacturing	None (overall innovation)	Greece
Spanjol, Muhlmeier & Tomaczak (2012)	Manufacturing and services	Positive (manufacturing and only radical innovation) / Positive (services and radical and incremental innovations)	Germany and Switzerland
Zhou, Yim & Tse (2005)	Manufacturing	Positive (technology-based and only radical innovation) / None (market-based and only radical innovation)	China
Alliance and Cooperation			
Aragon-Sanchez & Sanchez-Marin (2005)	Manufacturing and services	None (cooperation and overall innovation)	Spain

Hadjimanolis (1999)	Manufacturing and services	Positive (local linkage and overall innovation)	Cyprus
Hoffman & Schlosser (2001)	Manufacturing and services	Positive (strategic alliance and overall innovation)	Austria
Kang & Park (2012)	Manufacturing and services	Positive (collaboration and overall innovation)	Korea
Laforet & Tann (2006)	Manufacturing	None (overall innovation)	United Kingdom
Lasagni (2012)	Manufacturing and services	Positive (overall innovation)	Europe
Romijn & Albaladejo (2002)	Manufacturing and services	None (overall innovation)	United Kingdom
Soda (2011)	Manufacturing and services	Positive (collaboration and overall innovation)	Asia-Pacific, Europe, and United States
Market Orientation			
Baker & Sinkula (2007)	Manufacturing	Positive (overall innovation)	United States
Grinstein (2008)	Manufacturing and services	Positive (overall innovation)	United States
Han, Kim & Srivastava (1998)	Services	Positive (overall innovation)	United States
Hult, Hurley & Knight (2004)	Manufacturing and services	Positive (high market turbulence) / None (low market turbulence)	United States
Lee & Tsai (2005)	Manufacturing and services	Positive (overall innovation)	Taiwan
Reijonen et al. (2012)	Manufacturing and services	Positive (overall innovation)	Finland
Zhou, Yim & Tse (2005)	Manufacturing	Positive (market-based radical innovation) / Negative (technology-based radical innovation)	China
Business Growth Performance			
Calantone, Cavusgal & Zhao (2002)	Manufacturing and services	Positive (overall innovation)	United States
D'Angelo (2012)	Manufacturing	Positive (overall innovation)	Italy
Forsman & Temel (2011)	Manufacturing and services	Positive (radical innovation) / None (incremental innovation)	Finland
Han, Kim & Srivastava (1998)	Services	Positive (overall innovation)	United States
Mahemba & De Bruijn (2003)	Manufacturing	Positive (overall innovation)	Tanzania
North & Smallbone (2000)	Manufacturing and services	Positive (overall innovation)	United Kingdom

3.3 The Conceptual Model Development

The knowledge-intensity of Dubai's economic activities has grown substantially, relying on public agencies and foreign multinationals to drive innovation. This has created a significant innovation mass through many large projects. However, the existence of the right environment for innovation at the level of the individual firm is unclear and under discussion. This study focuses on important aspects of the innovation practices of small and medium-sized enterprises in the emerging Dubai market. It considers the external-driven and the internal-driven determinants of innovation and innovation as a driver to business growth performance at the level of the individual firm.

3.3.1 The Dubai SMEs and Innovation Practices

In Dubai, small and medium firms comprise the majority of firms and play important roles in new innovation creation and industrial and economic developments and diversifications (Mulhern 1995; Freeman & Soete 1997; UAE MEP 2005; Massa & Testa 2008; DCCI 2010; DDED 2011; Wonglimpiyarat 2011). Dubai is the first to implement major reforms, which introduce changes to the local market and opens it to global markets, creating complex and heterogeneous industrial dynamics that challenge business operations and change competitive landscapes (Salavou, Baltas & Lioukas 2004; Grant, Golawala & McKechnie 2007). To survive these changes and achieve long-term success, SMEs are encouraged to actively incorporate innovation into their business strategies and activities and continuously provide new and/or better products and services (Vossen 1998; Tucker 2002; Brem & Voigt 2009; Forsman & Temel 2011), although compared to large firms, they are faced with more challenges such as lack of economies of scale, limited resources, and market shifts (Tether 1998; Cagliano, Blackmon & Voss 2000; Aragon-Sanchez and Sanchez-Marin 2005). SMEs in the Dubai market have also constraints to cope with the local government legislations and regulations, access to funding and local talents, lack of management expertise and market characteristic, and high competition (Rothwell & Zegveld 1982; Denis 2004; Iyer, LaPlaca & Sharma 2006). Hence, these legal requirements and weak regulations have created an unstable business environment and facilitated a high competition between firms, thereby reflected in their innovative potentials and long-term investments (Elewa 2007; Brik, Rettab & Mellahi 2011).

In the Dubai business and market environments, SMEs have focused on head-to-head competitive-based approaches through buying and selling existing products and services, which can decrease

their presence and stickiness in the market and limit their innovation outcomes and contributions to the local economy (Kim & Mauborgne 2001; Hertog 2010). Their business practices tend to emphasise continuous improvement and adjustments to structure, methods, or technology when market conditions are stable to decrease costs and increase short-term profits (sales and marketing orientations), and when market conditions are dynamic or turbulent their survival strategy is to cautiously move into new domains (Lamb, Hair & McDaniel 2000; Hertog 2010; Valos & Bednall 2010). These firms are known for their authoritative and paternalistic approaches to management, and for their adoption of imported management practices. These firms tend to have centralised internal structures, a short-term focus, high administrative intensity, and top-down and formal communication (Iseri & Demirbag 1999; Kabasakal & Bodur 2002; Hertog 2010). To complicate the situation, the above features that might lend insights into their strategic orientations toward innovation such as an entry into a new market and/or a dynamic environment and develop new products and services incline to indicate more conservative orientations (Hertog 2010; Avci, Madanoglu & Okumus 2011). Other examples include the reliance on foreign labour sources with locals prioritised for senior management roles (Grant, Golawala & McKechnie 2007), the potential for partnerships are based on personal and social networks (Hutchings & Weir 2006), and the lack of market research is a limiting factor to understand customer and competitor behaviours (Iyer, LaPlaca & Sharma 2006; DCCI 2011). The outcome can be business models that undermine the accumulation of the sufficient resources and capabilities needed to implement new innovations that provide an interesting setting for further investigation.

The circumstance of SMEs in the Dubai market has been changing because of the entry of large foreign firms, the opening of new markets, the competitive business and market environments, the globalisation phenomenon, and the magnitude of the global financial and economic crisis, which have major impacts on their business and management practices, resulting in challenges such as high economic uncertainty, high dependency on foreign-managed firms, less access to finance, high set-up and operating costs, high inflation rates, and closure of a number of small and large firms and in opportunities such as new knowledge and technology, management styles and organisational practices, and marketing methods (Rettab, Brik & Mellahi 2009; DCCI 2012; DSC 2010; WEF 2010). As both local and global competition intensifies, the Dubai SMEs are largely focused on existing products and services that are being challenged by the need for new business models and innovations to achieve sustainable competitive advantages and to meet new market conditions (DCCI 2010). SMEs in the Dubai market are no exception to firms in other markets

who not only compete head-to-head but need to consider innovation as a tool to improve their business growth performance and to derive their competitive advantage (Forsman & Temel 2011). Further, the innovation literature indicates a necessity to study innovation and its determinants on a local and a national level (Audretsch 1998; Cooke, Uranga & Etxebarria 1997; Porter & Stern 2001; Todtling & Trippl 2005; Szirmai, Naude & Goedhuys 2011) and on an integrated and a comprehensive level (Hult, Hurley & Knight 2004; Martinez-Roman, Gamero & Tamayo 2011). Innovation determinants of SMEs might be derived from reaching in (internally) to organisational culture (i.e. flexibilities and better communications and collaborations); others might be required reaching out (externally) to government support and funding opportunities. This study examines the innovation practices of firms in the emerging Dubai market, a local economy that is dominated by SMEs, which offers insufficient data and research on innovation and its macro and micro-environmental determinants.

3.3.2 The Macro-Environmental Determinants and SMEs Innovation Practices

The macro-environmental determinants are those external factors that can directly affect the firm's attitude toward innovation, either by stimulating or inhibiting its innovative activities (Avlonitis & Gounaris 1999). Previous literature has identified a number of external-driven determinants for the firm to improve its innovation (Gregersen 1992; Cooke, Uranga & Etxebarria 1998; Broome 2007; Mani 2011; Jaruzelski et al. 2012) that include government supported developments, financial resources, academia-industry collaborations, and market dynamics. From the above perspectives, the following research question is proposed:

RQ1: Which of the macro-(external-driven) environmental determinants can influence SMEs innovation practices?

3.3.2.1 Government Supported Developments

This concept is regarded as policies, infrastructure, and institutional support. Policies (and mainly innovation policy) by the government can stimulate a business and market environment conducive to innovation (Rodas & Bozic 2009). An innovation policy can be "a set of policy actions to raise the quantity and efficiency of innovative activities", (CEC 2000, p.5). If innovation is to succeed, a process of continuous foresight, policy development, implementation, and monitoring needs to be set up (Forfas 2004). However, a policy alone to promote innovation among firms when there is a lack of synergies between industry players might be inappropriate and is likely to fail (Mole &

Worrall 2001; Wonglimpiyarat 2011). The role of government is needed to establish policies and incentives to improve its capacity to promote national competitive advantage and technological development that enable firms to develop innovations and strong competitive positions at the local and global levels (Nelson & Soete 1988; Hadjimanolis 1999). Innovation needs to be supported in terms of business models and product and/or service innovations. Wonglimpiyarat (2011, p.156) further elaborates that "innovation policies need to be linked to the overarching economic goals and adequately supported by specific programmes to remedy market failures". If the existing boundaries in Dubai firms are to be broken, for example, a new collaborative network of public and private agencies, academic institutions, and industries needs to be fortified. Policies to stimulate innovative behaviours are encouraged by building innovation centres where ideas and tasks are tested by firms working outside their conventional boundaries (Gibbs 2000). Further, infrastructure and communication networks are key drivers for ensuring the effective and efficient functioning of the local market economy (Cooke, Uranga & Extebarria 1998; WEF 2010-2011). Smith (1997) argues that evidence of high investments in infrastructure is linked, cross-nationally, with high growth productivity and accordingly firms are encouraged to innovate. Firms require world-class distribution networks (i.e. ports and airports) with more openness to international trade similar to the Dubai market to ensure cost effective supply chains and reduce time to market (Furman, Porter & Stern 2002). Communication networks also provide a new sales and marketing vehicle and channel. Other infrastructure is energy, water, and waste management.

Institutional supports of legal and regulatory frameworks are prerequisites for firms and industries to invest in innovation initiatives and sustainable growth (Niosi 2000; Jeon, Han & Lee 2006). Legal certainty, intellectual protection, predictability, and clear procedural rules are only a few demands from firms in the local market that require the adopted processes to deal with patents and claims to be timely and responsive (Furman, Porter & Stern 2002; Haour 2004). Other institutional supports are the enhancement of human capital and educational institutions that can lead to the development of new knowledge and technologies and better productions (Aghion & Howitt 1997; Mani 2011). For example, knowledge-institutions that are investing in knowledge and technology to obtain growth and return on investments, if successful can produce knowledge spill-over and stimulate creativity (Penrose 1959; Cooke & Memedovic 2003; Carayannis et al. 2006; Landstrom 2008; Sullivan 2008). However, small and medium firms in weakly developed learning regions are less innovative compared to firms in better provided regions (Cooke, Uranga & Extebarria 1997; North & Smallbone 2000). Further, in an emerging market, the national innovation system

concept can be applied to improve the innovation capacity of a country (Wonglimpiyarat 2011). Aubert (2005, p.21) further argues that the obstacles to innovation are "institutional environment, government authorisation, government procurement, technical norms and standards, competition, customs, industry-university relations, finance and banking, intellectual and other property right". Such obstacles are not different from those to be found in developed markets and economies but they are more difficult to address, mainly due to the absence of efficient legislation. However, the Government of Dubai has implemented and improved a number of elements of the basic and competitive conditions, which include infrastructure, set-up and operation supports, legal-and-regulatory frameworks, taxation regimes, procurements, education institutions, free trade zones and business parks, and stable political, social, business, and market environments to encourage innovative behaviours and activities of firms of different sizes (Grant, Golawala & McKechnie 2007; DCCI 2010; DDED 2011; Knight 2011; Jaruzelski et al. 2012; UAE MFT 2012). From the above discussions, the following hypothesis is proposed:

H1A: Government supported developments will have a significant positive effect on a firm's innovation practices.

3.3.2.2 Financial Resources

This concept is regarded as capital and funding support. A firm can be more innovative and search for better solutions when funds are available. A government can have a direct stake in financial institutions, enabling investments for innovation and funding supports for specific technology projects (Czarnitzki & Bento 2011; Wonglimpiyarat 2011). Financial support should be viewed as having some form of leverage and as generating new business ideas and ventures rather than as saving firms and/or industries to continue with their existing business models (i.e. products and services). The focus (in the Dubai market) of funding should not only continue supporting firms whose business models are outdated and no longer suitable for the knowledge-based economies but should focus more on supporting new business models and initiatives (Greene & Brown 1997; Cooke, Uranga & Extebarria 1997). As the global financial and economic crisis is prolonged, the need for finance and capital funding particularly for SMEs and other high-risk ventures, is more evident than before (DCCI 2010). Most often, sources of financing for SMEs in order to obtain equity capital or develop and introduce new products and services into the marketplace, is one of the single highest priorities (Giudici & Paleari 2000; Ayyagari, Demirguc-Kunt & Maksimovic 2007). Once these small and medium firms have an available product and are near going public,

the difficulty facing SMEs is not simply a lack of equity capital and financial institutions but a lack of the risk equity capital needed, which can be offered by venture capital (Hadjimanolis 1999; SMEs Conference 2006; Zhu, Wittmann & Peng 2011; Tian 2012).

Small and medium firms have more tendencies towards short-term planning due to their lack of financial resources and they have fewer abilities to absorb and recover unsuccessful investments (Welsh & White 1981; Thong 1999). In Dubai, there is a need to find a solution to the private sector funding gap, which is referred to as pre-seed to seed funding supports. Financial resources (loans and other funding products) from commercial banks, well-regulated securities exchanges, and venture capitals can make equity capital and funding support more available for private sector investment (Kellogg 2011; Tian 2012). Banks and financial institutions in Dubai, however, should provide firms of all sizes with more risk taking products, that are acquisitions rather than just tangible assets (Mishkin 2001; Monger 2007; Zhu, Wittmann & Peng 2011), in order to ensure the innovating firms with good ideas and concepts can have the necessary funding to turn those ideas and concepts into commercially viable products and services in the marketplace (Teece 1986; Acs, Carlsson & Karlsson 1999). This further emphasises the important role of venture capital, which is a key part in providing funding, establishing legal structures, and marketing strategies, particularly for SMEs in the Dubai market (Gompers & Lerner 2001; DCCI 2010). From the above arguments, the following hypothesis is proposed:

H1B: Financial resources will have a significant positive effect on a firm's innovation practices.

3.3.2.3 Academia-Industry Collaborations

This concept is regarded as accessing talent, transferring technologies, and sourcing ideas. A firm is constantly searching for new knowledge as a way to pursue innovation (Powell et al. 2005; Arvanitis, Kubli & Woerter 2008; Nelson 2011). The relationship between firms and academic institutions can "play an important role in everything from product research and development to decisions about corporate strategy, but only if you know how to make those relationships work" (Wright 2008, p.75). There are two ways this relation can be approached; either as a vendor or as a source of knowledge and technology that the firm needs in order to enable innovation and deliver business impact (Haour & Mieville 2010; Nelson 2011). Further, academic institutions possessing knowledge and technologies might be able to tackle the needs and challenges of limiting resources of firms but in order to develop and sustain a successful relationship, the firm's perception is

important in how to work with academic institutions. Firms are encouraged to establish close ties with academic institutions physically and intellectually to maintain ongoing relationships gaining the benefits of talent recruitment, technology transfer, research and development capability, and innovation stimulation (Parker 1992; Schmoch 1999; Haour 2004; Veugelers & Cassiman 2005; Perkmann & Walsh 2007; Segarra-Blasco & Arauzo-Carod 2008; Teece 2010; Ankrah et al. 2013) that can be important for SMEs with limited resources and capabilities (Johnson & Tilley 1999; Zeng, Xie & Tam 2010).

The firm sometimes needs to access relevant research to be able to build knowledge and capability when it develops products and services. Academia-industry collaborations can enable the firm to access talent, knowledge, technical know-how, and contract research leading to more innovation (Furman, Porter & Stern 2002; Keizer, Johannes & Halman 2002; Perkmann & Walsh 2007; Haour & Mieville 2010). Further, the mobility of researchers between industry and academia via sabbaticals and secondments need to be promoted to benefit industry and academia (Forfas 2004). For example, industry is exposed to current practice in research and technology and academics are exposed to industry problems and market-related issues and are offered more opportunities of commercialising their research results. SMEs should also utilise more academia links and cluster networks to develop and spread innovation capabilities to overcome their limited resources and competencies of conducting research and development activities alone and to facilitate their innovations (Lin 1998; Mahemba & De Bruijn 2003; McAdam, Reid & Gibson 2004; Nelson 2011; Kamalian, Rashki & Arbabi 2013). The recent investment of the Government of Dubai in academic institutions and research centres (i.e. Academic City) is a step-change in the level of collaboration between academia and industry that requires a broad approach to develop networks and reinforce innovation clusters (Madar Research 2006; Saddi, Sabbagh & Shediac 2008; Knight 2011). From the above discussions, the following hypothesis is proposed:

H1C: Academia-industry collaborations will have a significant positive effect on a firm's innovation practices.

3.3.2.4 Market Dynamics

This concept is regarded as market interaction and competition. It is important for governments to transit toward a market economy and to operate market more efficiently. The nature of the market interactions and competitions might influence the firm's innovative capability allowing the firm to

adapt to the local market and its competition (Kraft 1989; Iyer, LaPlaca & Sharma 2006; Bao, Chen & Zhou 2011; Martinez-Roman, Gamero & Tamayo 2011). Changes in market conditions offer firms with more opportunities to innovate and fulfil unmet demands (Nemet 2009). SMEs are crucial for a healthy dynamic market economy (Hillary 2004). A healthy market competition in both domestic and foreign markets are vital to drive market efficiency and business productivity allowing efficient firms producing demanded products and services to survive (Abernathy & Clarke 1985; Raider 1998; Zhu, Wittmann & Peng 2011). Further, the size of a market can affect its productivity because a large market allows firms to exploit economies of scale (WEF 2010-2011), which is by looking at a small domestic market, trade is positively related to growth and with complex and dynamic markets continuous innovation drives sustainable growth (Xu et al. 2007). Further, a market competitive intensity is designated by "the number of competitors and the frequency and intensity of use of certain marketing techniques [such as pricing] to gain high market shares" (Gao, Zhou & Yim 2007, p.6) and to obtain competitive advantages (Song & Parry 2009; Zhou & Li 2010). Firms of different sizes face market competition differently. Loury (1979, p.397) argues that a firm competes to have a continuous flow of rewards that is "available only to the first firm that introduces innovation". Increased market competition is previously perceived as beneficial for the functioning of a market but there are concerns that incentives for entrepreneurial innovations can be reduced when market competition is high (Norback & Persson 2012).

Markets with competitive environments demonstrate more research and development intensities and faster rates of innovation than do markets facing less competitive pressures (Raider 1998). Other research studies have discovered that markets with high industry concentrations have either significant negative effects (i.e. small firms' innovations) or significant positive effects (i.e. large firms' innovations) on innovation outputs that is more consistent with the modern Schumpeterian proposition (Koeller 1995; Mahemba & De Bruijn 2003). Previous research studies on market structure and innovation found that the link is weak and just holds when controlling a particular situation (Gilbert 2006). Market concentration and innovation activity could either coevolve or be simultaneously determined (Dasgupta & Stiglitz 1980; Salavou, Baltas & Lioukas 2004). Further, market environment (i.e. conditions and turbulence) can affect the firm's innovative intensity and activity (Fernandez et al. 2010). The opening of the local Dubai market has created rapid changes and complex and heterogeneous industrial dynamics, which challenge business operations and change competitive landscapes (DCCI 2010; Hertog 2010). The market is no longer dominated by state-owned enterprises and the entry of large and foreign firms creates high competitive pressures

for small and local firms and some industry sectors are more exposed to market competition while others receive protection from the local government (Grant, Golawala & McKechnie 2007; Rettab, Brik & Mellahi 2009). SMEs in the Dubai market face high competition and are more focused on sales and marketing activities, raising long-term concerns about the dynamic evolution of the market (Hertog 2010; Brik, Rettab & Mellahi 2011; UAE MFT 2012). From the above arguments, the following hypothesis is proposed:

H1D: Market dynamics will have a significant positive effect on a firm's innovation practices.

3.3.3 The Micro-Environmental Determinants and SMEs Innovation Practices

The micro-environmental determinants are those internal factors that can facilitate or hinder the firm's ability to innovate, either by enhancing or inhibiting its innovative behaviours (Avlonitis & Gounaris 1999). Previous literature has identified a number of internal-driven determinants for the firm to improve innovation (Wolfe 1994; Slater 1997; Lyon & Ferrier 2002; Salavou, Baltas & Lioukas 2004; Humphreys, McAdam & Leckey 2005; Martensen et al. 2007; Teece 2010; Martinez-Roman, Gamero & Tamayo 2011) that include management orientation, organisational culture, technology orientation, alliance and cooperation, and market orientation. From the above perspectives, the second research question is proposed:

RQ2: Which of the micro-(internal-driven) environmental determinants can influence SMEs innovation practices?

3.3.3.1 Management Orientation

This concept is related to the management characteristics and strategic directions of a firm. The characteristics and basic competences (i.e. leaderships and interpersonal skills) of managers are important indicators for innovation potential (Snow & Hrebiniak 1980; Smith, Guthrie & Chen 1986). Unlike large firms, small and medium firms usually reflect the personalities of the owners and/or the managers who have the capacity to influence day-to-day operations (Nooteboom 1994) and their strategic orientations mirror the strategic directions and managerial practices of the firms that in turn can guide suitable activities and face challenges (Dandridge 1979; Gatignon & Xuereb 1997). They are important movers in the structural change processes and their managerial beliefs, perceptions, and strategic options can strongly affect the decision of the firms to successfully integrate and facilitate innovations (Rizzoni 1991; Hoffman et al. 1998; Lyon & Ferrier 2002;

Szirmai, Naude & Goedhuys 2011). Teece (2010, p.680) further argues that managers are able to "sense opportunities, craft a business model, and reconfigure their organisations and industries" through indicating that owners and/or the managers of SMEs are closer to the action therefore they can make rapid decisions and drive innovation (Ghobadian & Gallear 1997; Voss 1998; Cromer, Dibrell & Craig 2011). Management orientation seems to play an important role in determining and supporting the decision of a firm to adopt and/or generate innovation (Baldridge & Burnham 1975; Cannon 1985; Webster 1988). Firms with different management strategic directions differ in how they implement and conduct their innovative behaviours (Ettlie, Bridges & O'Keefe 1984). They might adopt strategies to generate and sustain different interpretations of environmental information, which can influence the innovative behaviours and activities of their firms (McGinnis & Ackelsberg 1983; Blumentritt & Danis 2006). The firm (as an interconnected and integrated system in a dynamic interaction with its environment) needs to align its competitive strategy with its environmental requirement to outperform other firms that fail to do so (Miles & Snow 1978; Allocca & Kessler 2006), whereby its manager's perception of the environmental conditions plays an important part of the firm's effectiveness in how to choose to handle these environmental conditions (Blumentritt & Danis 2006).

In the small and medium firms context, innovation-oriented strategy firms (similar to prospectors) are more innovative having better technological positions, followed by customer-oriented strategy firms (similar to analysers) and modernisation-oriented strategy firms (similar to defenders) (Mahemba & De Bruijn 2003; Aragon-Sanchez and Sanchez-Marin 2005; O'Regan & Ghobadian 2005). Successful innovation requires strong managerial support and a resource commitment (Cromer, Dibrell & Craig 2011). So, managers of high-performing prospector firms have output-oriented backgrounds focusing their resources on growth opportunity by monitoring and adjusting products and services along with external competitive forces and customer needs, while managers of high-performing defender firms have throughput-oriented backgrounds focusing their resources on improving internal processes (Thomas, Listschert & Ramaswamy 1991; Christensen 2003). Blumentritt and Danis (2006) emphasise that they do not assume that prospector-orientated firms are better or worse innovators than defender-orientated firms. Rather, they expect them to place innovative activities in different areas of their value chain activities. However, the local directive and paternalistic and foreign imported management styles of Dubai SMEs have created different forms of management characteristics and strategic directions that might influence their motivation to innovate (Granell 2000; Suliman 2006) despite the working environment is being described by

open communication among personnel at different levels within a firm (Suliman 2006). Dubai has also embarked on an *emiratisation* process where nationals are prioritised for senior management roles within an organisation that can impact the firm's decision to innovate due to their lack of experience in innovation and its process (Grant, Golawala & McKechnie 2007; UAE MFT 2012). From the above discussions, the following hypothesis is proposed:

H2A: Management orientation will have a significant positive effect on a firm's innovation practices.

3.3.3.2 Organisational Culture

This concept is related to the organisational learning processes, designs, and flexible practices of a firm. Organisational culture and learning within a firm can inspire innovation and give individuals the needed space to take risks, make mistakes, and create opportunities for valuable learning and successful solutions (Martins & Terblanche 2003; Peebles 2003; Forsman 2011), which can influence the continuity of innovation (Xu et al. 2007). Tushman and O'Reily (1997) further argue that a firm that integrates innovation into their organisational culture and management process can achieve long-term success. Kenny and Reedy (2006, p.124) stress the positive influence of the internal culture of a firm in which it "affects the extent to which creative solutions are encouraged, supported, and implemented". A supportive culture can also drive value creation and encourage innovative ways of representing problems and searching for solutions (Buckler 1997), which sees the firm as an open system of different sub-systems interacting together (Martins & Terblanhe 2003). The firm needs to change its behaviour through facilitating limited hierarchy, empowering individuals, designing flexible structure and teams, promoting effective two-way communication, and employing performance-based incentives (Ghobadian & Gallear 1997; Davenport & Bibby 1999; Teece 2010). The firm needs to adopt a learning philosophy through developing knowledge integration mechanisms to deliver more innovation capabilities and customer values (Hurley & Hult 1998; Baker & Sinkula 1999; Chaston, Badger & Sadler-Smith 1999, 2001; Hitt, Ireland & Lee 2000). To further encourage innovation, knowledge already available within a firm has to be captured, made explicit, properly understood, and adopted into specific innovations (Hjalager 2010). Internal learning can enhance the creativity of firms and their ability to identify innovative opportunities, involving different learning providing incremental and discontinuous skills and techniques and endorsing the institutionalisation of innovation (Van de Ven 1986; McKee 2003; Freel 2005; Jimenez-Jimenez, Valle & Hernandez-Espallardo 2008). Previous research studies on

learning have produced mixed results. Some scholars have found a positive relationship between organisational learning culture and financial and non-financial innovation performances (Twati & Gammack 2006; Spicer & Sadler-Smith 2006; Sanz-Valle & Jimenez-Jimenez 2011) while others have found a negative relationship or no relationship at all (Nasution et al. 2011).

Small firms are likely to signify one culture, compared to large firms, that is important for their owners/managers to understand when implementing innovation (Schmidt 1990). Their orientations towards knowledge and learning and continuous improvement can generate new ideas to possess new technologies that can develop core competency, encourage innovation, and renew competitive advantage (Stata 1989; Cohen & Levinthal 1990; Gatignon & Xuereb 1997; Hurley & Hult 1998; Morgan, Katsikeas & Appiah-Adu 1998; Calantone, Cavusgil & Zhao 2002; McAdam & McClelland 2002b; Keskin 2006). SMEs possess informal, flexible, and less bureaucratic design structures (Mintzberg 1979; Nooteboom 1994) without the long chain of decision-making process (Julien & Lafrance 1977; Mahemba & De Bruijn 2003). Further, the level of structural designs and flexibilities in a firm can differ according to its management strategic orientation. SMEs with innovative and proactive orientations (similar to prospectors) have more flexibility due to their requirements for constant innovation and to their adaptions to product-market-domains than do firms with other orientations (similar to defenders) where flexibility might obstruct their efficiency maximisation and cost minimisation (Conant, Mokwa & Varadarajan 1990; Slater & Narver 1993; Aragon-Sanchez & Sanchez-Marin 2005). Given Dubai SMEs follow directive management styles and centralised organisational structures, short-term focuses, high administrative intensities, and top-down and formal communication (Sinangil 2004; Allocca & Kessler 2006; Suliman 2006). This might impact their learning and flexibility that is typically linked with organisational culture and is considered optimal for innovation engagements. From the above arguments, the following hypothesis is proposed:

H2B: Organisational culture will have a significant positive effect on a firm's innovation practices.

3.3.3.3 Technology Orientation

This concept is related to the technological policy, position, and adoption of a firm. Technology is a success factor of the firm in achieving both competitive advantage (Simon 1996) and successful innovation (Henard & Szymanski 2001). Technological opportunities can influence the rate and

direction of innovation (Nemet 2009), whereas a firm with a technology orientation outlook has the capability "to acquire a substantial technological background and use it in the development of new products" utilising its resources and capabilities to develop and acquire new technological opportunities (Gatignon & Xuereb 1997, p.78). A technology-oriented firm offers consumers, who prefer products and services of technological superiority, with new and better technologies and technical solutions (Gao, Zhou & Yim 2007). For firms to explore new technologies, and to get these technologies effectively launched, depends on the existence of niche and fringe markets, or experimental users, or both (Crane 2007; Malerba et al. 2007). A firm's technological capability, in creating products and services according to consumer and market needs, produces successful innovation (Zhou, Yim & Tse 2005; Berkhout, Hartmann & Trott 2010). Accepting and exploring new technology enables a firm to gain better quality and productivity and to produce new products and services (Hjalager 2010). A firm having technological resources and capabilities can support its operations and develop new processes and products (Hadjimanolis 1999; Humphreys, McAdam & Leckey 2005; Ellonen, Jantunen & Kuivalainen 2011; Spanjol, Muhlmeier & Tomaczak 2012). Further, internal technology policy reflects the attitude and commitment of the firm to innovate (Ettlie & Bridges 1982; Ettlie 1983; Wilson, Ramamurthy & Nystrom 1999). The technological position of the firm can further determine its technology leadership successes, product and service differentiations, competitive advantages, and better performances (Hitt, Hoskinsson & Ireland 1990; Hamel & Prahalad 1994; Gatignon & Xuereb 1997). Firms that proactively obtain and adopt new technologies might be more innovative due to their emphasis on applying these technologies for new process, product, and service developments (Cooper 1994; Laforet & Tann 2006). A firm that combines customer value innovation and technology use innovation has a better chance of enjoying sustainable profits (Kim & Mauborgne 1999; Humphreys, McAdam & Leckey 2005).

The use of technology in administrative tasks by SMEs is measured to be an innovative behaviour (Cumming 1998). However, SMEs are challenged in their ability to afford the heavy investments and the qualified individuals needed for the generating and/or adopting of new technologies that may lead these firms to seek technology through outsourcing and/or through value chain activities (Alstrup 2000; Mahemba & De Bruijn 2003; Salavou, Baltas & Lioukas 2004). The government technology policy should be adapted to account for the needs of SMEs in that they offer more support throughout the innovation process from pre-competitive research to product development and focus on facilitating vertical (supplier-manufacturer-customer) linkages (Rothwell & Dodgson 2007). The level of technological positions SMEs occupy compared to their competitors depends

on their management strategic orientations (Aragon-Sanchez & Sanchez-Marin 2005). Firms with prospector orientations have more consolidated technological positions than defender and analyser orientations (Snow & Hrebiniak 1980; Conant, Mokwa & Varadarajan 1990). Thus, technological adoption and/or generation in Dubai differs for different SMEs depending on the dynamism and competition of the marketplace, the speed of technological change, and the short visa cycle period, which might not encourage long-term investments in technological resources and capabilities (Srinivasan, Lilien & Rangaswamy 2002; Brik, Rettab & Mellahi 2011). However, there is a general recognition of the importance of technology in Dubai with the development of the Internet and technology parks (Grant, Golawala & McKechnie 2007). From the above discussions, the following hypothesis is proposed:

H2C: Technology orientation will have a significant positive effect on a firm's innovation practices.

3.3.3.4 Alliance and Cooperation

This concept is related to the collaborative agreements and networks with business groups and supporting industries of a firm. Having well-developed collaborative agreements and networks of firms with public and private organisations is becoming an important mechanism for acquiring resources and capabilities and driving competitive advantage and success (Hoffmann & Schlosser 2001; Batonda & Perry 2003a, 2003b; Soda 2011; Kang & Park 2012). It can benefit the firm in a number of ways including accessing resources and capabilities, enhancing learning, transferring technology and expertise, facilitating innovation, developing market focus, accelerating market penetration, increasing production efficiency, promoting public and private partnerships, creating revenue, and reducing cost and risk (Rich 2003; Allocca & Kessler 2006; Soda 2011). Strategic business alliances and external networks with such innovative partners are very important to firms of all sizes as bases of resources and capabilities (Stuart 2000; Ireland, Hitt & Vaidyanath 2002; Teece 2010; Snow et al. 2011) as these can provide more access to information, knowledge, and technologies for firms to compete and grow more effectively in the marketplace (McEvily & Zaheer 1999; Gulati, Nohria & Zaheer 2000; Landsperger & Spieth 2011). This is very important for small and medium firms with limited internal resources and capabilities (Starr & MacMillan 1990; Hoffmann & Schlosser 2001). Establishing alliances and cooperation and developing them into effective networks and collaborations can enhance the innovation success and survival of SMEs (Cooke & Morgan 1993; Karlsson & Olsson 1998; Hadjimanolis 1999; Baum, Calabrese &

Silverman 2000; Zeng, Xie & Tam 2010), thereby their innovation can be linked to a higher level of communication and collaboration (Freel 2000). Free trade zones and business parks, similar to the ones established in the Dubai market, through networking and collaborations can promote more innovation within SMEs (Porter 1985; Mitra 2000).

Consistent with the status-transfer arguments, SMEs benefit more from innovative strategic alliance partners than do large firms (Stuart 2000). SMEs might develop collaborative agreements and networks as strategic advantages to improve their innovation and competitive advantage (Stuart 2000; Aragon-Sanchez & Sanchez-Marin 2005; O'Dwyer, Gilmore & Carson 2011). It is important for SMEs in Dubai to establish trade relations, network with business partners, and connect with customers (Grant, Golawala & McKechnie 2007), which can further enable them to access resources without merging with others; maintain internal flexibility; and adapt to changing environments (Glaister & Buckley 1996). Collaboration with research partners is another strategy that SMEs can pursue to counter their size-imposed resources and capacities constraints and to enhance their learning, knowledge, technologies, and discoveries (Davenport, Grimes & Davies 1999; Wincent 2005; Lasagni 2012). Eisenhardt and Schoonhoven (1996) also find that there is a link between SMEs with more proactive and innovative strategies (similar to prospectors) and alliance and collaboration agreements than other orientations (similar to defenders and analysers). Given Dubai SMEs have followed individualistic business behaviours (i.e. personal connections and social networks) with limited network and collaboration on purchasing, supply chains, and marketing activities; as well as their limited involvement in free trade zones and business parks and shared infrastructure which impacts on effective strategic alliance and cooperation, this can all significantly impact their innovative capabilities and practices (Hutchings & Weir 2006; Hertog 2010). From the above arguments, the following hypothesis is proposed:

H2D: Alliance and cooperation will have a significant positive effect on a firm's innovation practices.

3.3.3.5 Market Orientation

This concept is related to the customers, competitors, and inter-functional market information sharing of a firm. A firm having market orientation is "acquiring knowledge about customers and other market participants, sharing that knowledge widely throughout the organisation, achieving consensus on its meaning, and taking action to deliver superior customer value" (Slater 1997,

p.165). Market orientation is an outward focus on customers and competitors to be able to increase knowledge to generate actions and facilitate innovations (Day & Wensley 1988; Gray et al. 1998; Varadarajan & Jayachandran 1999; Tajeddini, Trueman & Larsen 2006; Dibrell, Craig & Hansen 2011). Previous research studies have established a positive link between market orientation, innovation, and business performance (Han, Kim & Srivastava 1998; Lee & Tsai 2005; Tajeddini, Trueman & Larsen 2006; Baker & Sinkula 2007). Market orientation "involves doing something new or different in response to market conditions, it may be viewed as a form of innovative behaviour" (Jaworski & Kohli 1993, p.56), which "helps managers to be more connected to the business environment, such an orientation appears to play a role for allowing the industrial firm to devise innovative solutions to business problems" (Hult, Hurley & Knight 2004, p.436). Jaworski and Kohli (1996) further stress that innovation has not been presented in the market orientation model and that innovation should be considered as an outcome of market orientation; however recently, the effect of market orientation on innovation has been recognised (Salavou, Baltas & Lioukas 2004; Tajeddini, Trueman & Larsen 2006; Grinstein 2008; Reijonen et al. 2012). Firms with strong market orientations might have more innovative outlooks to meet customers' demands and market conditions, to proactively imitate competitor actions, and to disseminate knowledge and information gained among individuals internally to contribute to new products and services and achieve higher business growth performance outcomes (Twiss 1974; Narver & Slater 1990; Deshpande, Farley & Webster 1993; Slater & Narver 1994; Henard & Szymanski 2001; Zhou, Yim & Tse 2005; Dibrell, Craig & Hansen 2011). Firms with close links to customers, suppliers, and external knowledge acquisitions are likely to have innovation success (Ritter & Gemunden 2003; Lukas & Ferrell 2008; Kamalian, Rashki & Arbabi 2013).

Small and medium firms having strong market orientations might be more innovative and have a better understanding of customer needs and competitive situations to contribute to new products and services and business performance (Morris & Lewis 1995; Lin 1998; Henard & Szymanski 2001; Iyer, LaPlaca & Sharma 2006; Verhees & Meulenberg 2004; Keskin 2006). These firms can react quickly in response to changes in the marketplace (Kim & Mauborgne 2001; Mahemba & De Bruijn 2003) by serving a niche market and by establishing a close relationship with customers (Rothwell & Zegveld 1982). To achieve higher business performance, SMEs can choose carefully the markets in which they operate by focusing on exact product groups, avoiding a wide spread of their marketing activities, and avoiding operating in markets dominated by large firms (Adams & Hall 1993). SMEs are also encouraged to conduct market research to be able to better understand

customers and competitors (Brush 1992; Callahan & Cassar 1995). However, Allocca and Kessler (2006) argue that SMEs have less marketing resources, do less market research, lack presence in readily accessible markets, and have less well-recognised brands. There is increasing evidence to propose that emerging markets have a higher proportion of demand uncertainty where customers want to be directed rather than listened to, as they explore various product and service categories (Gao, Zhou & Yim 2007). The lack of market research and information in Dubai is an additional limiting factor to SMEs seeking to understand customer and competitor behaviours and to have future diversifications; as well as the weak market regulations and the high market competition that might influence their innovation initiatives to respond to continuously changing market needs (Rettab, Brik & Mellahi 2009; Hertog 2010; Brik, Rettab & Mellahi 2011). From the above discussions, the following hypothesis is proposed:

H2E: Market orientation will have a significant positive effect on a firm's innovation practices.

3.3.4 The SMEs Business Growth Performance

The firm's innovation capability can impact on its business growth performance. Business growth performance reflects "the achievement of organizational goals related to profitability and growth in sales and markets share and general strategic objectives" (Hult, Hurley & Knight 2004, p.430-431). Performance has been measured in accounting terms such as profit, cost, and market share (Conant, Mokwa & Varadarajan 1990; Laitinen 2002; Walker & Brown 2004). However, it should be measured using both financial and non-financial terms to enable efficient strategic decision-making, where non-financial terms focus on the long-term success of the firm, including customer satisfaction, internal business process efficiency, and innovation (Avci, Madanoglu & Okumus 2011). Innovation and its links to business growth performance have been studied in the past and produced mixed results (Heunks 1998; Swierczek & Ha 2003; Forsman & Temel 2011). From the above perspectives, the following research question is proposed:

RQ3: What is the impact of SMEs innovation practices on business growth performance?

The work on the relationship between innovative behaviours and business growth performances of SMEs is limited (Forsman & Temel 2011). Previous research studies have indicated that there is a significant relationship between innovation and profitability (Roberts 1999; Gunasekaran, Forker & Kobu 2000), which is consistent with the theory of the growth and the innovative enterprise

perspectives (Kim & Mauborgne 2001). Innovation is linked with sales growth in the case of new products and services and with productivity in the case of new processes (Cainelli, Evangelista & Savona 2006; Alvonitis & Salavou 2007). It allows a firm to build a monopolistic position and improve its business growth performance (Han, Kim & Srivastava 1998; Forsman & Temel 2011). However, Neely, Adams, and Kennerley (2002) argue that there are a number of factors that contributes to performance and innovation is not the only one. The adoption of innovation can contribute to the effectiveness and business performance of the firm whereas the application of management strategic orientation and the size of the firm are useful factors to predict its efficiency and business performance (Smith, Guthrie & Chen 1986; Doty, Glick & Huber 1993; Hult, Hurley & Knight 2004). Previous research studies have indicated mixed results of different performance outcomes for different management strategic orientations (i.e. defenders, prospectors, analysers, and reactors) and for size-related issues in different industries (Snow & Hrebiniak 1980; Zahra & Pearce 1990; Forsman & Temel 2011). It is argued that SMEs with proactive strategy-orientations towards innovation and more service quality and customer satisfaction are the most profitable and productive ones (Miles & Snow 1978; Aragon-Sanchez & Sanchez-Marin 2005).

Innovation is related to better business growth performance in terms of productivity, efficiency, and profitability (Tidd 2001; Shefer & Frenkel 2005; Forsman & Temel 2011). However, there is an interdependent and mutually reinforcing relationship between innovation and business growth performance rather than a simple one (North & Smallbone 2000). Innovation does not necessarily equate to improved business performance, and business performance can be a result of a wide range of performance and growth factors (Neely & Hii 1998). A firm with innovative activities (i.e. more differentiated products and services) can result in a higher business growth performance (Sirelli 2000; Zahra, Ireland & Hitt 2000). In the context of SMEs, Aragon-Sanchez and Sanchez-Marin (2005, p.294) argue that Camison (1997) discovered "the most profitable and productive organizations ... are [SMEs] with ... proactive strategic behaviors integrated into groups oriented towards innovation and quality, and towards customer satisfaction, in that order". The innovation capability of the firm is an important determinant to its competitive advantage and at the same time can have a positive impact on its business growth performance (Mone, McKinley & Barker 1998; Calantone, Cavusgil & Zhao 2002; Talke, Salomo & Kock 2011; D'Angelo 2012). In the Middle East and North Africa region, 77% (out of 200) of surveyed business leaders are aware that innovation is an important factor in driving business growth performance and is important for

strategic planning and future survival in the marketplace (Dutta 2006; Khaleej Times 2007). From the above arguments, the following hypothesis is proposed:

H3: Innovation practices will have a significant positive effect on a firm's business growth performance.

3.3.5 The Hypothesised Conceptual Innovation-Based Model

This study investigates the innovation practices of small and medium-sized enterprises, their antecedents, and their impact on business growth performance in the emerging Dubai market in the UAE. The research questions and hypotheses are summarised in Table 3.2.

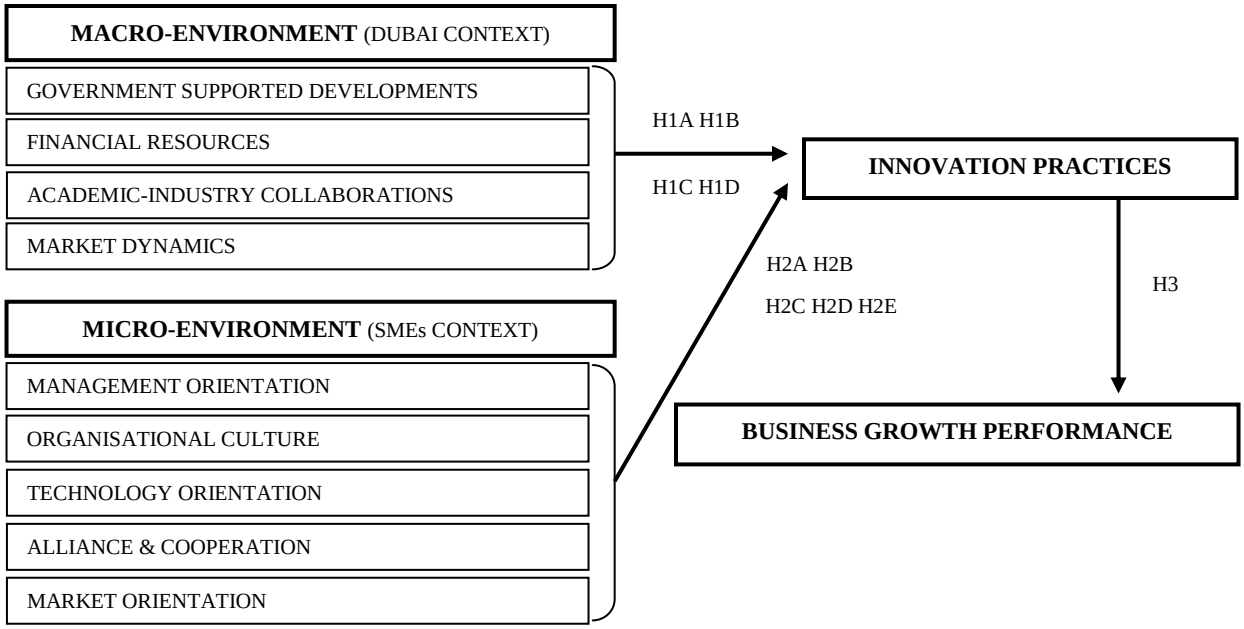
Table 3.2: Summary of research questions and hypotheses.

Research Questions	Research Hypotheses
Q1: Which of the macro-(external-driven) environmental determinants can influence SMEs innovation practices?	H1A: Government supported developments will have a significant positive effect on a firm's innovation practices.
	H1B: Financial resources will have a significant positive effect on a firm's innovation practices.
	H1C: Academia-industry collaborations will have a significant positive effect on a firm's innovation practices.
	H1D: Market dynamics will have a significant positive effect on a firm's innovation practices.
Q2: Which of the micro-(internal-driven) environmental determinants can influence SMEs innovation practices?	H2A: Management orientation will have a significant positive effect on a firm's innovation practices.
	H2B: Organisational culture will have a significant positive effect on a firm's innovation practices.
	H2C: Technology orientation will have a significant positive effect on a firm's innovation practices.
	H2D: Alliance and cooperation will have a significant positive effect on a firm's innovation practices.
	H2E: Market orientation will have a significant positive effect on a firm's innovation practices.
Q3: What is the impact of SMEs innovation practices on business growth performance?	H3: Innovation practices will have a significant positive effect on a firm's business growth performance.

The review of the extant business and innovation management literature in Sections 2.2, 2.3, 2.4, and 3.2 has showed that there is no single conceptual model of innovation practices for SMEs in

all situations. It is tailored for small and medium firms rather than accepting scaled down version of large firms earlier constructed models (McAdam 2000; Scozzi, Garavelli & Crowston 2005), and excludes the relationship between the personal characteristic of the entrepreneur and success and failure of the firm (Sandberg & Hofer 1987). This conceptual model is based on extensive reviews of relevant literature, group discussions, and attendance of key seminars and conferences to collect additional qualitative information. It is comprehensive and testable and combines the least number of necessary constructs that employ the greatest relative impact of the phenomenon under investigation as shown in Figure 3.1. The conceptual model differs from other models in aspects such as: it provides an understanding of how models developed in an advanced market and economy might (or might not) be applicable in the emerging market and economy (that is similar to Dubai); integrates government policy, infrastructure, and institutional supports for developing the Dubai national innovation system, which is supported by an entrepreneurial culture, risk-taking, and investment diversification at the SMEs level; and suggests SMEs achieving business growth performance through innovation practices considering a new business model.

Figure 3.1: Hypothesised conceptual model of SMEs innovation practices.



3.4 Summary

This chapter provided a summary of Sections 3.2 to 3.3 by noting the discussions and arguments established in each section. The immediate discipline in Section 3.2 delivered detailed discussions to identify the shortcomings in the business management literature and to develop the research questions and hypotheses and the conceptual innovation-based model in Section 3.3 that combined the macro and micro environments and looked at the enabling factors of innovation practices for SMEs and their impact on business growth performance in the emerging Dubai market in the UAE. The testing of the research hypotheses and the conceptual model is further developed in the next chapter to answer the research problem, objectives, and questions through investigating the innovation practices of SMEs and their impact on business growth performance in the emerging Dubai market in the UAE.

The next chapter, Chapter 4, builds on the reviewed literature and research issue and discusses the research design and methodology used to conduct this study.

CHAPTER 4 RESEARCH DESIGN AND METHODOLOGY

4.1 Introduction

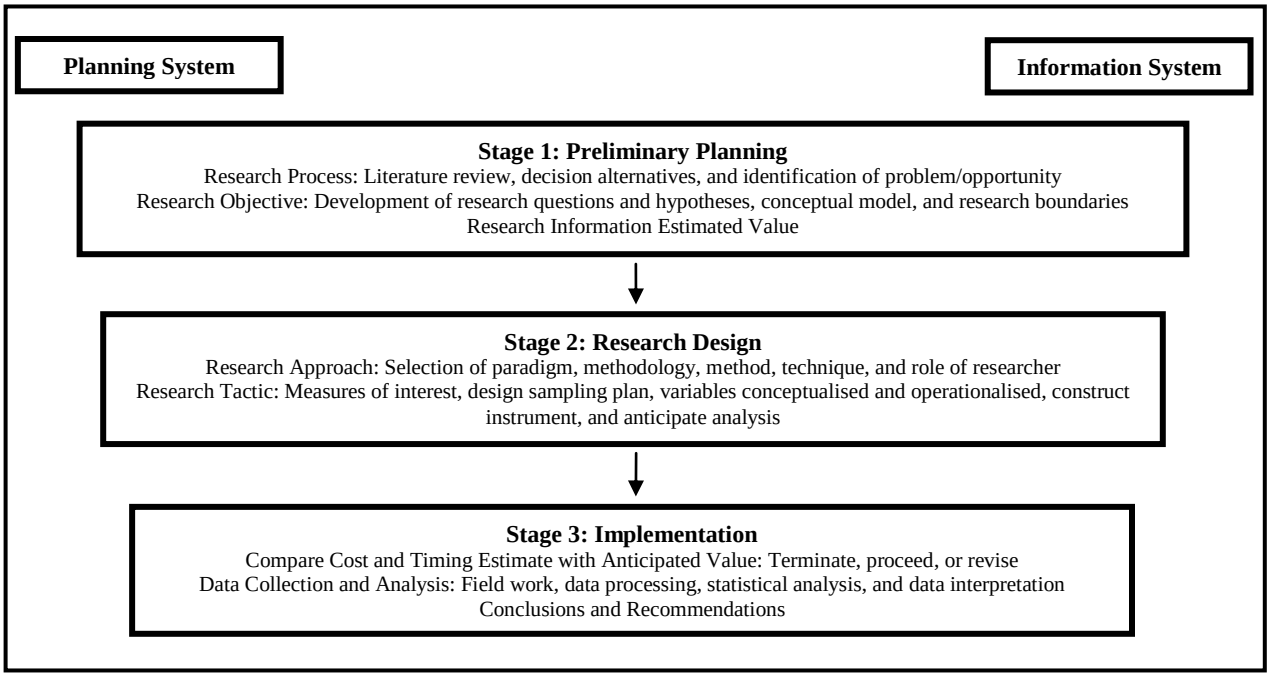
This chapter provides an outline of the research paradigms and methodologies that can be applied to this research study and the foundation of the developed research hypotheses and conceptual model that can be empirically tested.

It presents the research foundations overview of research questions and hypotheses and conceptual model. The selection and justification of paradigms and methodologies are summarised, and then followed by an examination and a justification of different methods and techniques. The research study measurement implications are considered. Finally, the chapter is summarised.

4.2 Research Foundations Overview

A scientific theory must "be empirically grounded because its ultimate purpose is the explanation and prediction of occurrences in reality" (Davis 2005, p.49). The analytical process of a scientific theory building has seven steps, which are relevant assessment of existing knowledge, formulation of concept and proposition, statement of hypothesis, research study design of hypothesis testing, acquisition of meaningful empirical data, analysis and evaluation of data, explanation of research study, and statement of a new identified problem and issue (Zikmund 2000, p.44). The research study planning process has a number of stages that provide a systematic approach to making all decisions related to the research study prior to its initiation (Neuman 2006). It predominantly follows a logical positivist paradigm, while other paradigms (i.e. constructivism/interpretativism) can be used in this research study (Creswell 2003). The undertaken tasks in this research study interact simultaneously and imbed in ongoing planning processes that determine the investigation information and strategies (Aaker, Kumar & Day 2004) as shown in Figure 4.1.

Figure 4.1: Research planning model.



Source: Developed for this research with parts adopted from Aaker, Kumar & Day (2004).

Aaker, Kumar, and Day (2004) further describe the research planning model through three stages, including preliminary planning (i.e. research process, objective, and information estimated value),

research design (i.e. research approach and tactic), and implementation (i.e. research cost and time estimated, data collection and analysis, and conclusion and recommendation). This research study approach includes primary and secondary investigations. The primary research involves a survey questionnaire (and group discussions / focus groups) while the secondary research involves books, academic journals, local and international reports, industry presses and databases, and seminars and conferences.

In accordance with this research study, the parent disciplines discussed in Chapter 2 provide the background for the immediate discipline in Chapter 3. These disciplines also provide knowledge and foundation for developing the hypothesised conceptual model for small and medium-sized enterprises in an emerging market, connecting the research questions and hypotheses based on the research objectives, which have been developed from the main research problem (Neuman 2006). This research study is conducted to examine and identify the enabling factors that influence the innovation practices of SMEs and the relationship between their innovation practices and business growth performance in the emerging Dubai market in the United Arab Emirates. The proposed research questions and hypotheses and conceptual model detailed in Chapter 3 are investigated by field data from SMEs covering a number of manufacturing and service industries to build the underlining knowledge for achieving the research objectives that are: (1) to provide new insights into the innovation development activities of an emerging market (the macro-environmental perspective); (2) to gain a better understanding of SMEs' innovation capabilities and practices (the micro-environmental perspective); and (3) to determine the impact of innovation practices on the business growth performance of SMEs.

4.3 At the Paradigm Level

Paradigm has different meanings. Neuman (2006, p.81) defines a paradigm as "a basic orientation to theory and research", when an individual conducts a research study. It is considered: a belief system, a worldview in natural science, an application, a perspective in social reality (Guba & Lincoln 1994; Heron & Reason 1997; Perry, Riege & Brown 1999; Ticehurst & Veal 2000), an overall approach underlying a worthy problem to explore, a methodology (Deshpande 1983), and a knowledge claim (Creswell 2003) that an investigator begins a research project with a certain assumption about how and what can be learned during the entire inquiry. These paradigms can be commonly divided into a number of orientations that include: positivist and phenomenological (Easterby-Smith, Thorpe & Lowe 1991), rationalist and interpretativist (Seymour & Rooke 1995), qualitative and quantitative (Bonoma 1985), inductive and deductive (Parkhe 1993), and feminist and postmodern (Neuman 2006).

4.3.1 Paradigm Understandings

The social science research has a number of modern and comprehensive philosophical stances and paradigms (Guba & Lincoln 1994; Crotty 1998; Perry, Riege & Brown 1999). These contain four paradigms, which are known as a view of reality as singular or objective (positivism), a view of reality as individually, multiple, or subjective and culturally constructed (constructivism), a view of reality as individually, multiple, or subjective and historically contingent (critical theory), and a view of only one reality and modified objective to discover (realism). The subject of paradigms is often debated among two philosophical schools: the traditional natural science school (positivism) and the humanistic school (constructivism/interpretativism) (Gummesson 2000). The positivism paradigm is concerned with theory testing and confirming (Deshpande 1983) and is not theory discovery and development (Lincoln & Guba 1985), which can be described as a deductive and a quantitative method. Other paradigms, constructivism and critical theory, are concerned with a theory development and phenomena description (Lincoln & Guba 1985), which can be described as an inductive and a qualitative method. In most cases, the adopted paradigm by the investigator has a key influence over the methodology that not only has to match the investigator style but informs the selection and development of the research instrument. Further, these paradigms can indicate distinctive views of reality and what knowledge (ontological) is; views of knowing and relationship between knower and to-be-known (epistemological); views of inquiry mode and

process (methodological); views of writing about knowledge (rhetorical); and views of what is valuable (axiological) (Guba & Lincoln 1994; Perry, Riege & Brown 1999; Sandelowski 2000; Creswell 2003). Table 4.1 describes each philosophical stance and paradigm.

Table 4.1: Overall description of paradigms.

Element	Positivism	Constructivism	Critical Theory	Realism
Presumption	To discover natural laws where individuals can predict and control events and situations and is logically connected to laws	To understand and describe meaningful social action and value relativism to those being studied by looking for internal realities	To emphasise multiple levels of reality and to change myths and empower individuals to change society with the tools supplied	To emphasise reality is apprehensible and science is able to discover the true nature of reality and is called critical realism or post-positivism
Ontology	Based on a real reality and understanding reality exists and is driven by natural mechanisms and involved in the analysis and measuring of the causal relations between constructs across time	Based on a critical relativism constructed by individuals' perceptions of actuality with no truth and with multiple realities that are socially and experimentally based	Based on historical structures shaped by social, political, economical, cultural, gender, and ethical value and in perceptions held by a group of individuals over the long terms	Based on critical reality where difference between reality and perception can only be imperfectly and probabilistically understandable due to the human limitations and world complexity
Epistemology	Investigator is independent of reality and is looking through a one-way mirror presuming the outcomes are true	Investigator, "passionate participant", and its subject are mutually interactive and create findings from numerous sources	Investigator and its subject are interactively linked and create value-mediated findings to transform misconceptions into a new consciousness	Investigator is not centrally involved in the inquiry and is looking through an open window view
Methodological	Quantitative method, well-structured experiment, and survey to verify theory, hypothesis, or conceptual model	Qualitative method, in-depth interview, dialogue, participant observation, action research, and grounded theory	Qualitative method, focus group, action, long-term ethnographic, and historical studies	Quantitative/qualitative methods (triangulations), modified experiment, case study, and structured and convergent interviews to capture phenomena
Assessment	Rigour, reliability, validity, verification, and falsification	Trustworthiness criteria and authenticity	Trustworthiness criteria and authenticity	Reliability, validity, trustworthiness criteria, and authenticity
Limitation	Strips context from meanings in the process of developing quantified measures of phenomena	Lack rigour, discipline, and objectivity leaving reliability and validity to discussion	Value (of investigator) influence reality	Not completely value-free (of investigator) and intend to be value-aware

Source: Adopted from Hirschman (1986); Easterby-Smith, Thorpe & Lowe (1991); Guba & Lincoln (1994); Charmaz (1995); Perry, Alizadeh & Riege (1997); Perry, Riege & Brown (1999); Healy & Perry (2000); Carson et al. (2001); Neuman (2006).

4.3.2 The Selective Paradigm Justification

Based on the preceding discussion of the four paradigms, the positivism paradigm was suitable for this research study. It allows the investigator to determine "how things really are" and "how things really work" (Guba & Lincoln 1994, p.111). The ontological position, as a positivist, views reality

(established industries in the Dubai market) independent of the investigator, based on socially stable constructs (quasi facts) and quantitative data (facts). The epistemology, as explanatory, sets to explain reality (to make a statement of knowing about the relation between innovation practices and business growth performance). The methodology, as chosen ontology and epistemology, is quantitative and is achieved by hypothesis testing and statistical analysis. Further, this research study adopts a reductionist approach to simplify the real world environment and to explore the relationships between the studied constructs by developing a research hypothesis and a conceptual model to be empirically tested; views reality by examining the hypothesised conceptual model, applying the application of the structural equation modelling technique, on the influences of the enabling factors on the SMEs innovation practices and their business growth performance in the emerging Dubai market; focuses on measuring and analysing data of the causal relationships that are constant across time, on confirming of hypothesised conceptual model, and on concentrating on description and explanation of a specific phenomenon; the researcher is independent of the research process and collects data from a large sample of respondents without influencing them through the application of a survey methodology technique; the researcher does not need close interactions to build subjective relationships with the respondents to create findings and outcomes; the information per respondent is varied and specific to a question and the outcome is replicable and statistical oriented; and simple and advanced statistical analyses are applied to make certain parsimonious results and to incorporate complex interdependencies by using multi-item scales to measure unobservable constructs (Tabachnick & Fidell 2001; Stevens 2002; Hair et al. 2006).

4.4 At the Methodology Level

Methodology is related to the principles and practices that underline research and the science of determining appropriate methods of how individuals can conduct research (Burns & Bush 2006; Neuman 2006). Research methodology can be classified into both theory building emphasises on meaning and theory testing emphasises on measurement (Healy & Perry 2000).

4.4.1 Business Research Approach

Business research approach as being "a systematic objective process of gathering, recording, and analysing data for support in making business decisions" (Zikmund 1997, p.6) is used to identify and evaluate problems and opportunities, diagnose causal factors, explain past difficulties, forecast future conditions, and suggest alternatives (Ticehurst & Veal 2000). This research study approach is classified into theoretical and methodological approaches (Zikmund 2003).

The theoretical approach is inductive or deductive and can be used to build and/or test a theory (Bryman 2004; Neuman 2006) and they draw primarily different conclusions (Cooper & Schindler 2003). The inductive approach (theory building) starts with observations of particular facts and moves toward abstract generalisations and ideas arriving at conclusions (Sekaran 2003; Zikmund 2003). For example, the interpretativism paradigm emphasises the inductive approach (Ticehurst & Veal 2000), having relatively underdeveloped theory based situations (Yin 1989). However, the deductive approach (theory testing) begins with an abstract of a particular known premise, logical relationships between concepts, and moves toward empirical evidence (Sekaran 2003; Zikmund 2003). For example, positivism paradigm emphasises a deduction approach (Ticehurst & Veal 2000), leading to the discovery dimension of the research study that could direct conclusions to be made from assertions and premises (Parkhe 1993; Guba & Lincoln 1994; Cooper & Schindler 2003).

The methodological approach is qualitative, quantitative, or mixed of both (i.e. triangulation) that is used to conduct research studies (Guba & Lincoln 1994; Yin 2002; Creswell 2003; Zikmund 2003; Burns & Bush 2006). The qualitative approach tries to understand what a respondent meant, going one stage more than the persuasive declaration, and to discover what promoted it (Wardle 2002). The focus is on the understanding that is derived from the social and cultural constructions

of the phenomena and their contexts (Guba & Lincoln 1994; Ticehurst & Veal 2000). Examples include ethnography, grounded theory, case study, narrative research, and action research (Cooper & Schindler 2003; Zikmund 2003; Burns & Bush 2006). However, the quantitative approach tries to understand the relationships between various constructs and quantify the data collection and analysis procedures (Creswell 2003; Sekaran 2003; Bryman 2004) that is suitable to measure attitude (Malhorta 2004). The focus is on collecting, analysing, and presenting numerical data in a structured way using statistical techniques and a large representative sample of the population (Creswell 2003; Zikmund 2003). Examples include observational techniques, experimentations, and survey techniques (Cooper & Schindler 2003; Sekaran 2003; Burns & Bush 2006). The comparison between the qualitative and quantitative research approaches is shown in Table 4.2. The process of triangulation looks at cases from multiple point of view by using a mixed method of qualitative and quantitative research approaches in a single research study. Examples include sequential, concurrent, and transformative procedures (Creswell 2003; Neuman 2006).

Table 4.2: Comparison of qualitative and quantitative research approaches.

Qualitative Approach	Quantitative Approach
Construct social realities and constructs	Measure objective facts
Focus on interactive process and event/exploratory	Focus on variable/explanatory
Authenticity	Reliability
Theory and data fused/theory building	Theory and data separate/theory testing
Situationally constrained	Independent of context
Few cases and subjects (non-representative)	Many cases and subjects (representative)
Researcher involved	Researcher detached
Open-ended questions, text, image, and observational data	Close-ended questions, predetermined methods, and numeric data
Thematic analysis and develop initial understanding	Statistical analysis and recommend final course of action

Source: Adopted from Ticehurst & Veal (2000); Cooper & Schindler (2003); Creswell (2003); Bryman (2004); Sarantakos (2005); Neuman (2006).

4.4.2 Business Research Design

Business research design is a plan and a framework that combines both the method and procedure of data collection and analysis to provide a better answer to the basic research question (Churchill 1999; Cooper & Schindler 2003; Burns & Bush 2006). Emory and Cooper (1991) further argue

that the research design can initiate the needed information, conceptual model, selected method, sampling method, sampling size, measurement procedure, and data analysis process, which is all about planning (Leedy 1989) and linking the collected data to the initial research question in the research study (Yin 1994). Business research design is classified into descriptive and predictive, diagnostic, exploratory, and explanatory and causal research types depending on the nature and the aim of the research study and research problem (Yin 2002; Davis 2005; Burns & Bush 2006).

First, descriptive and predictive research focuses on the study of the features of the population or phenomenon with respect to conditions and answers the questions "who, what, when, where, and how" without any explanations for the causes of the findings (Cooper & Schindler 2003; Zikmund 2003; Burns & Bush 2006; Neuman 2006). It is used in a research study with the aim of providing a systematic description that is factual and as accurate as possible and when the problem is well-structured without the intention to investigate cause-and-effect relationships (Hussey & Hussey 1997). Second, diagnostic research focuses on the understanding of attitude and behaviour and is closely aligned with the descriptive research (Zikmund 2003). It does not provide evidence of the causal nature and the research problem is known in a research study. Third, exploratory research focuses on the discovery of information related to the research problem, which is the investigator lacks a clear idea of the research problem and the real scope is unclear, and on clarifying and reaching an understanding of the nature of the research problem without providing conclusive evidence (Cooper & Schindler 2003; Zikmund 2003; Burns & Bush 2006; Neuman 2006). It is flexible and able to adapt to changes and is used to test concepts through providing respondents with a written concept and a prototype for revised, new, or repositioned products and/or services (Gay & Diehl 1992; Saunders, Lewis & Thornhill 2000; Ticehurst & Veal 2000; Zikmund 2003). Finally, explanatory and causal research focuses on the studying of the research problem and phenomenon in order to establish causal relationships between constructs that are causing certain behaviours (Saunders, Lewis & Thornhill 2000; Cooper & Schindler 2003; Zikmund 2003; Burns & Bush 2006). It is used in a research study with one construct causing and determining the values of other constructs, which is constant to determine causality and to measure the changes that are made in other constructs (Cooper & Schindler 2003; Zikmund 2003).

4.4.3 The Selective Methodology Justification

Based on the preceding discussion of the business research designs and approaches, this research study combines a number of theoretical and methodological research approaches assigning each

method different purposes and strengths (Morgan 2007), which are partially high level mixed concurrent dominant status research approaches (Denzin 1978; Leech & Onwuegbuzie 2009).

This research study used the inductive theoretical and qualitative methodological approaches to review the body of literature to gain in-depth knowledge of the subject and to conduct pilot group discussions with SMEs owners/managers, academic researchers, and industry and market experts, as well as attending key seminars and conferences. It was followed by identifying the research gaps, developing research questions, formulating research hypotheses, and building a hypothetical conceptual model that had the potential to surface drivers of important behaviours of SMEs. Then, the deductive theoretical and quantitative methodological approaches were predominantly used in this research study to: analyse and explain (causal) dependencies among social phenomena to enable the research to describe social structures and processes that are not directly observable and to identify factors having influenced the outcomes; compare and quantify the relationships among constructs and use statistical techniques to describe changes in standard and assumed replicated procedures; test a hypothesised conceptual model that the researcher begins with; use a large sample of firms covering a broad range of economic activities that can market the research study in which policymakers and management feel comfortable about the generalisability of outcomes (Easterby-Smith, Thorpe & Lowe 1991); apply systematic and standardised measures through employing the structured survey questionnaire technique to data collection; process data collection and analysis outcomes in the presentation of numerical information and statistical significance levels; present the outcome as a recommendation of an action; and involve limited timeframe, cost, and the minimisation of risks.

This research study further used the exploratory, descriptive and predictive, and explanatory and causal research designs to describe the characteristics and measure the phenomenon in relation to the investigated topic, the enabling factors on the innovation practices of SMEs and their impact on business growth performance in the emerging Dubai market, and to identify the cause-and-effect relationships between constructs. These research designs were useful in investigating a number of business and management situations (Zikmund 2003) such as: exploratory research was used to gain more knowledge regarding the research problem, to clarify the research problem, and to construct the research hypotheses and conceptual model; descriptive and predictive researches were used to gain additional knowledge of previous understanding of the nature of the research problem and to collect data by using a survey technique (structure survey questionnaire) and a

large number of respondents to answer the research questions under study; and explanatory and causal researches were used to identify the cause-and-effect relationships among constructs and to allow the researcher to look for certain information to understand the links by creating a controlled condition to test the research hypotheses and conceptual model.

4.5 At the Method and Technique Levels

A good research (method and technique) is having "a careful sampling, precise measurement, and sophisticated design and analysis in the test of hypotheses derived from tentative general laws" (Behling 1991, p.44). An investigator, for example, in the positivism or the critical theory viewing positions, might use interviews and standardised measures to answer the research questions but might use these techniques analytically to treat their results differently (Sandelowski 2000). A combination of techniques involves the application of sampling, data collection, and data analysis techniques that are commonly known as qualitative or quantitative methods. The combinations at the method and technique level allow creative uses of a number of techniques for a number of purposes (Greene, Caracelli & Graham 1989; Sandelowski 2000).

4.5.1 Business Research Strategy

Business research strategy can provide an answer to the proposed research question, hypothesis, and conceptual model of a study, which is divided into history, archival analysis, experimentation, observation, stimulation, survey, and case study (Yin 2002; Cooper & Schindler 2003).

First, historical research strategy is involved in the past. It is conducted by an investigator when there is no relevant information to be reported and no living individual available at the time of research to be interviewed (Yin 2002). It is to describe the content, structure, and function of the collected data. It has research questions in the form of how and why, does not require control over behavioural events, and does not focus on current events and issues (Yin 2002). Second, archival analysis research strategy is involved in describing the incidence and prevalence of a phenomenon that existed in the past that can be applied to the present problem (Zikmund 2003; Burns & Bush 2006). It is to study historical documents and textual materials that have been created in the past. It has research questions in the form of who, what, where, how many, and how much, does not require control over behavioural events, and focuses on current events and issues (Yin 2002). Third, experimentation research strategy is involved in establishing causality between constructs through experimenting and manipulating one construct to understand if changes in this construct cause changes in others (Ticehurst & Veal 2000; Zikmund 2003; Burns & Bush 2006; Neuman 2006). It uses control method, random task, and variable manipulation to test different specific hypotheses (Cooper & Schindler 2003) and it is a form of quantitative method but depends on how

an experiment is set-up, which might be more related to an observation rather than a direct communication (Gay & Diehl 1992; Ticehurst & Veal 2000). It is suitable for an investigator who is comparing two constructs and examines their cause-and-effect relationships (Malhorta 2004). It has research questions in the form of how and why, requires control over behavioural events, and focuses on current events and issues (Yin 2002). Fourth, observation research strategy is involved in gathering data through individuals and mechanical, electrical, or electronic means and it might be by direct contact and communication with respondents whose behaviours are being recorded (Ticehurst & Veal 2000; Zikmund 2003; Burns & Bush 2006). It has the advantage of directly recoding respondents' behaviour without relying on respondents reporting back and free from respondents' biases (Cooper & Schindler 2003; Sekaran 2003). It uses qualitative and quantitative methodology approaches (Gay & Diehl 1992; Hussey & Hussey 1997; Sekaran 2003). However, it does not offer an insight into the respondent's thinking and motivation, or cognitive phenomenon (Hussey & Hussey 1997; Sekaran 2003; Zikmund 2003).

Fifth, simulation research strategy is involved in creating causality between constructs (Ticehurst & Veal 2000). It applies complicated mathematical formulas to simulate and replicate a real life situation through selecting one construct to determine the effect of others (Cooper & Schindler 2003; Sekaran 2003). It can be known as a quantitative method and based on a secondary research approach (Gay & Diehl 1992; Hussey & Hussey 1997; Sekaran 2003). Sixth, survey research strategy is involved in collecting standardised information about studied subjects (i.e. individual, group, application, project, system, and organisation) by asking the same questions and recording findings to the selected representative sample of the population (Ticehurst & Veal 2000; Yin 2002; Cooper & Schindler 2003; Burns & Bush 2006; Neuman 2006). It uses a qualitative method where information is collected through using interviews with a large number of participants and through using a pre-designed survey questionnaire technique with distinctive characteristics of purpose, procedure, and analysis (Zikmund 2003). It provides the investigator with quantitative description of the selected studied population, involves steps in the collection of information, and analyses relationships between constructs statistically (Yin 2002) that can compare and contrast answers of the respondents (Ticehurst & Veal 2000). It has research questions in the form of who, what, where, how many, and how much, does not require control over behavioural events, and focuses on current events and issues (Yin 2002; Creswell 2009). Finally, case study research strategy is involved in developing a comprehensive knowledge regarding a particular number of cases for one period or across a period of time (Robson 1993; Neuman 2006). It is a description of

a situation to study the relations between constructs to provide a deeper understanding of the studied research problem (Yin 2002). It puts participants in the decision making roles and allows them to decide which elements or factors are important to them. When an investigator has limited control over a situation or when there is a contemporary focus in a real life context, then a case study research strategy is suitable (Yin 2002). It has research questions in the form of how and why, does not require control over behavioural events, and focuses on current events and issues (Yin 2002).

4.5.2 The Selective Research Strategy Justification

Based on the previous discussion of the business research strategy, the investigator can determine the right research strategy to test the research hypotheses and conceptual innovation-based model. The strength of the survey method is being able to measure attitudes and intentions (Mitchell & Jolley 1996) and its extensive use by investigators in the relevant areas of this research study. The literature review exercise revealed a number of empirical studies, which have often employed quantitative methodology and survey method to examine hypotheses and test a conceptual model with a number of relationships among important constructs (Mole & Worrall 2001; Calantone, Cavusgil & Zhao 2002; Mahemba & De Bruijn 2003; Hult, Hurley & Knight 2004; Salavou, Baltas & Lioukas 2004; Aragon-Sanchez & Sanchez-Marin 2005; Scozzi, Garavelli & Crowston 2005; Blumentritt & Danis 2006; Kenny & Reedy 2006; Laforet & Tann 2006). In view of that, this research study follows a similar vein and presents a similar method (i.e. survey). Considering the characteristics of the present research study, the survey research strategy is adopted and is suitable for this research study due to the intention of identifying macro and micro environmental determinants, which influence innovation practices of a large scale of SMEs and their business growth performance in a particular context (i.e. the Dubai market) and investigate and analyse the relationships between constructs in the conceptual model.

4.5.3 Survey Method Plan Components

The survey research strategy "provides a quantitative and numeric description of trends, attitudes, and opinions of a population through studying a sample of that population" (Creswell 2009, p.234). The investigator generalises and makes claims about the population. In preparing to design the survey method plan components into an applicable survey questionnaire, the researcher should consider identifying the purpose of survey research, nature of survey research (i.e. cross-sectional vs. longitudinal), population and sample procedure, instrument design and structure (i.e. research

questions, constructs, and items/indicators), data collection procedure and justification (i.e. self-administered questionnaire, interview, structured record review, and structured observation), and data analysis procedure and measurement that are discussed next in more detail.

4.5.4 Sampling Procedures and Data Sources

A sample is "a smaller set of cases a researcher selects from a larger pool and generalises to the population" (Neuman 2006, p.219). A sampling is a "process of selecting a sufficient number of elements from the population so that by studying the sample, and understand the properties or characteristics of the sample subjects, it would then be possible to generalize the properties or characteristics to the population elements" (Sekaran 2000, p.268). Strauss and Corbin (1998, p.202) emphasise the aim of the purpose or theoretical sampling is "to maximise opportunities to compare [different situations] to determine how a category varies in terms of its properties and dimensions". That is, a good sample must be chosen at random, large, and unbiased (Hussey & Hussey 1997). The sampling process in this research study is divided into a number of steps: defining the population, selecting the sample frame and unit, choosing the sampling technique, deciding on the sample plan, and determining the sample size (Luck & Rubin 1987; Kinnear & Taylor 1996; Churchill 1999; Zikmund 2003; Neuman 2006). The population is the entire group of individuals that this research study needs to investigate and the element is a single member of that population (Zikmund 2003; Bryman 2004; Davis 2005; Burns & Bush 2006; Neuman 2006). The target population within the entire group of individuals is the specific pool of cases that need to be investigated (Zikmund 2003; Neuman 2006). The sampling frame includes a specific list that closely approximates all the elements in the population from which the sample may be drawn, that is, the "working population" (Sekaran 2003; Zikmund 2003; Davis 2005; Burns & Bush 2006; Neuman 2006). The sample frame for this research study comprised all small and medium firms, which are listed in the Dubai Chamber of Commerce and Industry commercial database. The sampling unit includes a single element or group of elements under discussion to be selected in the sample and is divided into primary and secondary stages (Zikmund 2003). It involves listing and describing specific units of analysis for data collection (Davis & Cosenza 1993).

4.5.4.1 Sampling Technique and Plan

The sample survey is conducted to achieve a representative sample of the target population by contacting individuals and respondents (Bryman 2004), which can be a "method of primary data collection based on communication with representative sample of individuals" (Zikmund 1997,

p.202). The sampling techniques have various considerations that are: necessity, effectiveness, and time and cost limitations (Saunder, Lewis & Thornhill 2000; Sekaran 2003; Sarantakos 2005). The sampling technique is divided into probability sampling and non-probability sampling (Cooper & Schindler 2003; Sekaran 2003; Zikmund 2003; Davis 2005; Burns & Bush 2006; Neuman 2006) (see Appendix C). The probability sampling focuses on the techniques that produce a highly representative sample (Neuman 2006). The goal is to collect a representative sample and a small unit collection from a population and to produce an accurate generalisation. Examples include: simple random, systematic, stratified, and cluster (Saunders, Lewis & Thornhill 2003; Zikmund 2003; Berg 2004). The probability sampling applies statistical means to select the sample, which reflects a more technical superiority and reduces sampling bias and error (Sekaran 2003; Zikmund 2003). However, the non-probability sampling focuses on how a sample and a small collection of cases or units describe social phenomena (Neuman 2006). The goal is to collect specific cases, events, or actions and elucidates and deepens the understanding of the process of social life and its context. Examples include: haphazard, quota, purposive, snowball, deviant case, sequential, and theoretical (Saunders, Lewis & Thornhill 2003; Zikmund 2003; Berg 2004). In the non-probability sampling, the chosen item of the population is unknown and the judgment of the investigator impacts the selection of a sampling unit (Sekaran 2003; Zikmund 2003). The sampling techniques should fit the research methodological approach, by this means in this research study, the stratified random sampling of various SMEs in the Dubai market was used.

The sampling plan concerns the development of specific procedures and operational methods in selecting the sample (Zikmund 2003; Davis 2005) that can be followed to avoid potential errors (Davis & Cosenza 1993). In this research study, the primary sampling frame consisted of a total of 16,300 firms whose names were obtained from the Dubai Chamber of Commerce and Industry commercial database along with employment sizes and economic activities (DCCI 2010). The sample was stratified by employment size because firms were geographically diverse populations and this allowed enough variance with respect to the determinants under study (Aragon-Sanchez & Sanchez-Marin 2005; Homburg & Jensen 2007). Data collection was carried out using a sample design that follows the principles of stratified sampling in the target population. The sampling procedure involves a process of stratification through dividing the sample into mutually exclusive subgroups or strata according to some common characteristics that are relevant and meaningful to the context of the research study, and then randomly sampling from each group (Zikmund 2003). The outcome yields a richer source and has a smaller standard of error that ensures homogeneity

in each stratum and heterogeneity among all strata (Cavana, Delahaye & Sekaran 2001). In this research study, the population was segmented from the DCCI database according to employment size. It was divided into three groups: 1 to 9, 10 to 199, and more than 200 employees (DCCI 2010). Only two groups: 1 to 9 and 10 to 199 employees were selected according to this research study. The sample size distribution over the specified strata was carried out using a proportional affixation criterion where the sample of firms in each stratum is proportional to the relative weight of the stratum in relation to the population (Aragon-Sanchez & Sanchez-Marin 2005). Within each stratum, the selection was conducted by simple random sampling. The sample size was 600 firms, considering an overall maximum error of 5% with a 95% level of confidence.

This research study draws on a sample of small and medium firms from a range of industries on the basis of their contributions to the local economy and in the modern economy most industries are technology-driven creating innovation challenges for emerging markets (North & Smallbone 2000; Calantone, Cavusgil & Zhao 2002; Blumentritt & Danis 2006; Szirmai, Naude & Goedhuys 2011). Various manufacturing and service industries were included in this sample to generalise beyond particular industries, to the population of SMEs, to produce unbiased final results, and to accommodate for the nature of this research study (Dawes 2000; Scozzi, Garavelli & Crowston 2005; Martinez-Roman, Gamero & Tamayo 2011). It is to contrast the hypothesised conceptual model related to the firm's innovative behaviour in a specific context (Montalvo 2006; Marcati, Guido & Peluso 2008). Further, the randomly selected firms from the commercial database were contacted by telephone and by email to ask for their participation. The sampling frame contained a target respondent of owners/managers of SMEs operating in the Dubai market who are directly involved with their firms as SMEs usually reflect the personalities of their owners/managers (Kets de Vries 1977). The rationale for selecting individuals with senior-level responsibilities as key informants was based on the fact that their values and philosophies influence their firms' strategic direction, innovation activities, and businesses performances (Covin & Slevin 1990; Kumar, Stern & Anderson 1993), which is comparable to the owners and/or the managers of SMEs. They often rely on self-reports and tend to provide reliable and objective data (Podsakoff & Organ 1986).

4.5.4.2 Sample Size

A sample size is the number of observations that are included in the research study (Cooper & Schindler 2003; Zikmund 2003) and the "absolute size of the sample that is important, not its size relative to the population," (Ticehurst & Veal 2000, p.164). Neuman (2006) argues that the best

sample size depends on the degree of accuracy required, the degree of variability and diversity in the population, and the number of different constructs examined simultaneously when analysing data. Sample size can be determined by precision and confidence (Sekaran 2003). Precision is how close the research study estimate is to the true population as a function of the range of variability in the sampling distribution of the mean while confidence is how true the research study estimate is to the population, that is, the greater the precision required the larger the sample size needed. The confidence level can range from 0% to 100% where a 95% confidence level (significant level of $p \leq 0.05$) is the conventionally accepted level for most social sciences and business research studies (Cavana, Delahaya & Sekaran 2001; Sekaran 2003; Burns & Bush 2006). The contributing element of a sample size involves the magnitude of population correlations, number of constructs, level of analysis details, level of result precision, and availability of times and budgets (Ticehurst & Veal 2000; Tabachnick & Fidell 2001). The minimum sample size is "to have at least five times as ... the number of variables to be analysed, and the more acceptable sample size would have a 10:1 ratio" (Hair et al. 2006, p.112). To select an optimum sample size, Roscoe (1975) emphasises that between 30 and 500 is suitable for most research studies; however, Green (1991) argues that it is based on the number of independent latent variables in the conceptual model and later Bartlett, Kotrlik, and Higgins (2001) recommend that it is five to ten times more than the number of independent constructs for multivariate research. Hoelter (1983) recommends that the respondent sample size is between 100 and 200 when a quantitative method is used. The sample size plays an important role in the proposed data analysis technique of around 100 and 200 responses in the case of advanced statistical methods, such as the Partial Least Squares in the structural equation modelling technique (Bagozzi 1997; Chin & Newsted 1999; Hair et al. 2006). A sample size in a range of 150 to 400 is suggested that is subject to considerations of model complexity, missing data, and error variance of questions and items (Hair et al. 2006; Manning & Munro 2007).

As this research study relates to the activities of small and medium firms, firms with over 200 employees were eliminated according to the DCCI classification. In order to assess the level of innovation practices and business growth performance, firms in the sample would have to originate in the Dubai market and operate on a full-time basis. It was decided to eliminate small and medium firms with the "establishment" legal status from the sampling frame. The rationale was based on the DCCI figures that show approximately 45% of the small and medium population comprises of one individual who is only liable for the firm's debts and is only interested in day-to-day activities of wholesale, retail trading, and repairing services (DCCI 2010). The commercial

database was further screened for SMEs, which were branches and franchises of foreign offices, gone out of business, merged with other firms, acquired by other firms, refused to participate for confidentiality reasons, and were no longer operating in the local marketplace. According to these above criteria, a sample size of 600 SMEs was randomly drawn using a disproportionate stratified sampling technique from the DCCI commercial database, which covered a range of economic activities and industries (DCCI 2010). That was 600 survey questionnaires were distributed to the respondents of SMEs with the expectation of obtaining a high response rate (Burns 1994).

4.5.5 Instrument Design and Constructs and Items Developments

Survey questionnaires are techniques of collecting data where individuals are required to respond to a similar set of questions formally designed in predetermined order as interview schedule or questionnaire involving only proportion and sample of the population (Ticehurts & Veal 2000; De Vaus 2002). Ticehurts and Veal (2000) stress that it is useful when the research questions indicate the condition for relatively structured data and when data are needed from samples representative of a defined population. This is why the design of the questionnaire is very important in business research and influences the structure and content of the questionnaire survey affecting its accuracy and relevancy (Sekaran 2003; Zikmund 2003; Burns & Bush 2006). Ticehurts and Veal (2000) emphasise the concepts and constructs involved and the relationships being investigated should be clear and guide the questionnaire design process. Tanur (1992) further identifies several factors that an investigator needs to consider when designing a survey questionnaire, this includes: decide on what to look for and find, keep questions simple and clear, decide on choice of closed-ended and open-ended questions, avoid leading questions, consider the arrangement of questions, and pre-test questions. Other factors are: avoid leading questions implying certain answers, loading questions slanted with social desirability and biased with emotional accuse, double barrelled questions addressing a number of issues, and burdensome questions demanding the respondent's memory (Sekaran 2003). In the survey questionnaire, the questions and items were worded both positively and negatively to minimise the tendency of mechanically circling the points at the end of the scale (Sekaran 2003; Zikmund 2003). These questions usually act as cognitive speed bumps that require respondents to engage in controlled, as opposed to automatic, cognitive processing

The process of the initial development of the survey questionnaire has two stages. First, the survey questionnaire is developed during a period of six months where the items used to measure the constructs in the initial survey questionnaire are based on extensive reviews of related literature,

two pilot group discussions with 20 individuals (i.e. including SMEs owners/managers, academic researchers, and industry and market experts), and attendance of key seminars and conferences in Australia, Germany, Oman, Switzerland, United Kingdom, United Arab Emirates, and United States to collect additional qualitative information. Second, the drafted survey questionnaire is pre-tested for refinement, deletion, and addition of questions and items and adjustment is made to its formatting. The survey questionnaire was printed in a colour booklet format and was divided into sections and subsections with separate topics (Dillman 2007). In contrast to Dillman's (2007) recommendation, it was not feasible to have the back cover of the survey questionnaire contain an invitation for respondents to provide further comments and suggestions. Instead, questions (i.e. closed-ended and open-ended) were continued on the back page and some space left at the end of the page. An expression of appreciation and a reminder of the purpose of the research study to respondents for participation were included at the end of the survey questionnaire. Altogether, the entire design process included: specific constructs development, operational definitions, draft questionnaire preparation, questionnaire pre-testing and modification, survey type specification, questionnaire pre-assessments, and final questionnaire administration (Churchill 1979; Zikmund 2003; Malhotra 2004).

4.5.5.1 Measurement Scales Determination

The designed questions and items capture quantifiable data allowing the investigator to conduct statistical analysis by using different mathematical software programs. This is to determine the correlations between the survey questionnaire respondents and to use the emerging patterns as a foundation for deriving conclusions and formulating recommendations. The questionnaire uses multiple-item measurement scales to ensure that the overall observed score is a reliable reflection of the underlying true score and the improvement on the confidence level of measure by proving greater exploratory power (Peat et al. 2002). Further, the measurement of constructs requires a system for organising information into a different level of measurements, which include nominal, ordinal, interval, and ratio scales (Cooper & Schindler 2003; Zikmund 2003; Davis 2005; Burns & Bush 2006; Hair et al. 2006; Manning & Munro 2006; Neuman 2006). First, the nominal-level measurement identifies only differences in types among the categories of constructs and classifies objects, individuals, and groups. Second, the ordinal-level measurement identifies differences among the categories of constructs allowing the categories to be ordered or ranked and provides information about relative amount of traits possessed by objects, individuals, and groups. Third, the interval-level measurement identifies differences among the attributes of constructs, ranks of

categories, and measures of distances; however, there is no true zero. Finally, the ratio-level measurement identifies differences among the attributes of constructs, ranks of categories, and measures of distances; however, there is a true zero making it possible to state the relations in terms of proportion and ratio. The lowest and least precise level of measurement is nominal and the highest and most precise level of measurement is ratio (Neuman 2006). Neuman (2006) argues that the quantitative method can use different measurement scales in a survey questionnaire to capture intensity, direction, level, and potency of constructs along the continuum. In designing the survey questionnaire, nominal, ordinal, and interval scale-level measurements were used in order to measure the objective and subjective characteristics of the respondents and their firms.

Zikmund (2003) and Davis (2005) further identify two groups of scales that are rating and attitude with each one having advantages and disadvantages. The rating scale is to evaluate a phenomenon at a period along a continuum or in a category. It includes graphics, itemised, and comparative. The attitude scale is to provide the respondent's predisposition toward phenomena and is easy to respond it but it cannot provide the distinction in the respondents' attitudes. It includes Likert and Sematic differential. In survey questionnaire research, Likert scale is used in which respondents express their attitudes and responses to propositions and the importance they attach to constructs in terms of ordinal-level categories that are ranked along a continuum (Ticehurts & Veal 2000). Likert scale can be ordinal and/or interval (Neuman 2006) and many investigators consider it as being an ordinary interval in character (Hair, Bush & Ortinau 2003; Aaker, Kumar & Day 2004). The advantages of using Likert scale are the variability of scores increasing the spread of variance of responses in providing a stronger measure of relationship, the favourable responses to attitude in exploratory research, and the ease of construction and administration (Malhotra 2004; Burns & Bush 2006). However, the disadvantages of using Likert scale are the tendency for the aggregate total score for respondents to be identical and the length of time to complete the question is longer than the itemised rating scales (Malhotra 2004).

This research study adopted the seven-point Likert scale (as being interval-level measurement) as the measured scale in the survey questionnaire because it is simple to administer and code, offers more options for respondents (with less skewed distribution), and is adaptable to varied statistical analyses (Burns & Bush 2006; Manning & Munro 2006). The constructs in the hypothesised conceptual model were measured with a multiple-item scale due to common practice and usage by other researchers in the innovation management literature (Mole & Worrall 2001; Calantone,

Cavusgil & Zhao 2002; Mahemba & De Bruijn 2003; Hult, Hurley & Knight 2004; Salavou, Baltas & Lioukas 2004; Aragon-Sanchez & Sanchez-Marin 2005; Scozzi, Garavelli & Crowston 2005; Allocca & Kessler 2006; Blumentritt & Danis 2006; Kenny & Reedy 2006; Laforet & Tann 2006; Martensen et al. 2007). Therefore, well-validated measures reported in previous research studies were used when questions and items had to be developed and/or modified, multiple-step and multi-validation methods were to be followed (Churchill 1979).

4.5.5.2 Constructs and Items Determination

The term construct is used by psychologists and the term latent variable is used by social scientists to carry out the connotation of more than abstract ideas and they are specifically defined terms (Creswell 2003). Neuman (2006, p.161) argues that "variables are classified depending on their location in a causal relationship". There are three latent variables: independent, intervening, and dependent constructs (Cooper & Schindler 2003; Creswell 2003; Sekaran 2003). For example, the independent latent variable, of prior causes, has a cause effect on the dependent variable in a causal hypothesis and is called predictor variable, the intervening latent variable stands between the independent and dependent variables through which their causal relationship operates, and the dependent latent variable is the outcome of the influence of the independent variable and is called predicted variable. It is useful to relate alternatively to constructs as independent, intervening, and dependent latent variables and manifest variables as questions, items, and indicators to the specific hypothesis and on the survey instrument (Creswell 2003).

The exploratory approach is used here to provide further input into the identification of items and latent variables, including the literature review in Sections 2.2, 2.3, 2.4, 3.2, and 3.3; the pilot group discussions comprising 20 individuals of small and medium firms owners/managers, academic researchers, and industry and market experts; and the attendance of key seminars and conferences in the Dubai market and other markets. In the two-pilot group discussions, dialogue regarding the initial survey questionnaire was primarily dominated by the participants, with the researcher contributing only at times when paraphrasing, probing, and promoting were necessary (Blaikie 2000). The process seeks to verify the latent variables and generate more questions and items for the draft survey questionnaire design and layout. Individuals were asked more questions in order to express their opinions and experiences concerning the Dubai SMEs' innovation practices in terms of macro and micro environmental factors and business growth performance (see Appendix D). Although these viewpoints are confined in Dubai, they are nevertheless useful

in understanding the conditions prevailing and the factors that shape SMEs' behaviour in similar emerging markets and economies. The outcomes support the latent variables identified in the literature and depicted in the conceptual innovation-based model. These inputs resulted in the assembly of the 11 latent variables and the initial pools of 66 questions and items of the initial survey questionnaire of which 54 were from the literature reviews and 12 were from the pilot group discussions and the selection and formatting of scales that the outcomes of which are the production of the initial draft survey questionnaire. Table 4.3 illustrates the cross-reference of the independent, intervening, and dependent latent variables, items, and the research questions and hypotheses.

Table 4.3: Latent variables, items, and research questions and hypotheses.

Latent Variables and Items	Research Questions & Hypotheses
Independent variable 1: Government Supported Developments (5 Items)	Descriptive research question 1 & Hypothesis 1A
Independent variable 2: Financial Resources (5 Items)	Descriptive research question 1 & Hypothesis 1B
Independent variable 3: Academia-Industry Collaborations (5 Items)	Descriptive research question 1 & Hypothesis 1C
Independent variable 4: Market Dynamics (5 Items)	Descriptive research question 1 & Hypothesis 1D
Independent variable 5: Management Orientation (5 Items)	Descriptive research question 2 & Hypothesis 2A
Independent variable 6: Organisational Culture (5 Items)	Descriptive research question 2 & Hypothesis 2B
Independent variable 7: Technology Orientation (5 Items)	Descriptive research question 2 & Hypothesis 2C
Independent variable 8: Alliance and Cooperation (5 Items)	Descriptive research question 2 & Hypothesis 2D
Independent variable 9: Market Orientation (5 Items)	Descriptive research question 2 & Hypothesis 2E
Intervening variable: Innovation Practices (10 Items) (Independent and/or dependent latent variable)	Descriptive research questions 1, 2, and 3 and Hypotheses 1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D, 2E, and 3
Dependent variable: Business Growth Performance (11 Items)	Descriptive research question 3 & Hypothesis 3

Source: Developed for this research with parts adopted from Creswell (2003).

4.5.5.3 Conceptualisation and Operationalisation of Latent Variables

The definition of latent variables in the conceptual model is developed from the literature review of Sections 2.2, 2.3, 2.4, 3.2, and 3.3 along with the pilot group discussions. The conceptual and operational definitions of latent variables are needed before the data is collected and the precise delineating of how latent variables are to be measured and analysed (David & Cosenza 1993; Manning & Munro 2006). It is important to provide clear, specific, and unambiguous definitions

of latent variables for observations and manipulations, which are linked to the proposed research hypotheses and conceptual innovation-based model to avoid any misunderstanding and improve understanding and generalisation in this research study (Gill & Johnson 1991; Cooper & Schindler 2003; Allocca & Kessler 2006; Neuman 2006).

The term conceptualisation demonstrates the process of applying theoretical and abstract sets of meanings to the latent variables in order to specifically explain and define the constructs (Cooper & Emory 1995; Cooper & Schindler 2003). For example, the concept "innovation practices" is conceptually defined as "the determination in terms of the ability of the firm to seek new and better management and administrative systems, internal cultures, processes, products, services, distributing channels, and marketing methods-segments". Further, the term operationalisation exemplifies the process of defining unobservable latent variables to be measurable in a series of scale questions and items in order to describe the observable characteristics in terms of specific testing criteria (Cooper & Schindler 2003; Sekaran 2003; Hair et al. 2006). It can connect the conceptual definitions to the latent variables measurements and improve the internal validation of the correlations and relations between the independent and dependent latent variables within the proposed conceptual model (Schwab 1999). For example, the concept of "innovation practices" is operationally defined as "the level of agreement with statements in an interval scale about how the firm performs related to management and administrative systems, internal cultures, processes, products, services, distributing channels, and marketing methods-segments innovations". In this research study, the latent variables and item measurements were selected due to their alignment with the conceptual definitions (Neuman 2006).

4.5.5.3.1 Macro and Micro Innovation Indicators Measurements

The independent latent variables are divided into two main categories, including macro and micro environmental determinants, which are sometimes referred to as environmental and organisational factors, affecting the firm's innovation practices and business growth performance (Avlonitis & Gounaris 1999). Accordingly, the macro-environmental determinants (external-driven) are factors that can directly affect the firm's attitude toward innovation, either by stimulating or inhibiting its innovative activities such as government supported developments, financial resources, academia-enterprise collaborations, and market dynamics. Further, the micro-environmental determinants (internal-driven) are factors that can facilitate the firm's ability to innovate, either by enhancing or inhibiting its innovative behaviours such as management orientation, organisational culture,

technology orientation, alliance and cooperation, and market orientation. These independent latent variables are divided into nine independent latent variables to be further defined conceptually and operationally that include four external-driven and five internal-driven factors of the firm's ability to innovate and perform in the emerging Dubai market. The conceptual and operational definitions and measurement scales of each construct included in the survey questionnaire are illustrated in Table 4.4. Each construct was evaluated using a five-item scale and was measured with end points of "1-strongly disagree" and "7-strongly agree".

Table 4.4: Innovation indicators definitions and scales.

Latent Variables	Conceptual Definitions	Operational Definitions	Scales
Government Supported Developments (gov_sdev)	The determination in terms of the ability of government to establish policies, infrastructure, and institutional support and the degree of importance to the firm's innovation activities and growth (Teece 1986; Gregersen 1992; Smith 1997; Cooke, Uranga & Etxebarria 1997, 1998b; CEC 2000; Gibbs 2000; Kuhlmann 2003; Haour 2004; Veuglers 2005; Carayannis et al. 2006; Rahl 2008; Sullivan 2008; Lee et al. 2010; Teece 2010; Mani 2011).	The level of agreement with statements in an interval scale about what the firm needs related to policy, infrastructure, and institutional support to encourage innovation activities. It is subdivided into the effectiveness of state government macro and micro policies, quality of overall infrastructure, presence of supportive institutions and development agencies, and existence of commercialisation mechanisms. Arithmetic mean of responses to questions and items 21-25 of the government policy, infrastructure, and institutional support scale. (Question and item 25 is negativity-worded)	Interval
Financial Resources (fin_resrcs)	The determination in terms of the availability of capital and funding support and the degree of importance to the firm's innovation activities and growth (Teece 1986; Gregersen 1992; Greene & Brown 1997; Cooke, Uranga & Etxebarria 1997; Mishkin 2001; Veuglers 2005; Siems & Ratner 2006; SMEs Conference 2006; Szadkowska 2007; Teece 2010; WEF 2010-2011; Mani 2011).	The level of agreement with statements in an interval scale about what the firm's needs related to capital resources and funding to encourage innovation activities. It is subdivided into the access to funding schemes and programs, existence of venture capital and funding mechanisms to raise funds and turn commercialise viable ideas into products and services, presence of customised SMEs, financial and technical support to stimulate research and development investment, ability of listing in the local capital market to raise equity capital, and protection of investments and innovators in the local market via financial transparencies and accountability standards. Arithmetic mean of responses to questions and items 26-30 of the financial resources capital and funding scale. (Question and item 27 is negativity-worded)	Interval
Academia-Industry Collaborations (acdindstr_collbs)	The determination in terms of the partnership between academia and industry and the degree of importance to the firm's innovation activities and growth (Parker 1992; Keizer, Johannes & Halman 2002; Haour 2004; McAdam, Reid & Gibson 2004; Veuglers 2005; Siems & Ratner 2006; Walters, Kadragic & Walters 2006; Segarra-Blasco & Arauzo-Carod 2008; Wright 2008; Haour & Mieville	The level of agreement with statements in an interval scale about what the firm needs related to talent, transfer technologies, and sourcing ideas to encourage innovation activities. It is subdivided into the access of talent and competencies, outputs of educational institutions related to needed industrial skills, access to local academic institutions and technology centres research capabilities, collaborative research between	Interval

	2010; Teece 2010).	academic institutions and industries to provide technological information and new ideas, and development of entrepreneurial skills and attitudes. Arithmetic mean of responses to questions and items 31-35 of the talents and technology-transfers scale. (Question and item 35 is negativity-worded)	
Market Dynamics (mrk_dynmcs)	The determination in terms the interaction and competition of market and the degree of importance to the firm's innovation activities and growth (Porter 1990; Raider 1998; Mahemba & De Bruijn 2003; Broome 2007; Gao, Zhou & Yim 2007; Shediac et al. 2008; Teece 2010; WEF 2010-2011; Bao, Chen & Zhou 2011; Martinez-Roman, Gamero & Tamayo 2011; Zhu, Wittmann & Peng 2011).	The level of agreement with statements in an interval scale about what the firm needs related to market interaction and competition to encourage innovation activities. It is subdivided into the presence of suppliers and supportive industries to access raw materials and components, efficiency of the local market by understanding market demand conditions and consumer orientations, effectiveness of anti-monopoly policy and healthy market competition, presence of risk-taking business climate and culture, and presence of an exit mechanism in the local market. Arithmetic mean of responses to questions and items 36-40 of the interactions and competitions scale. (Question and item 39 is negativity-worded)	Interval
Management Orientation (mgmt_orint)	The determination in terms of the extent of management characteristic and strategic directions and the degree of agreement to the firm's innovation activities and growth (Kets de Vries 1977; Miles & Snow 1978; Snow & Hrebiniak 1980; Smith, Guthrie & Chen 1986; Lampikoski & Emden 1996; Hoffman et al. 1998; Motwani et al. 1999; Aragon-Sanchez & Sanchez-Marin 2005; Blumentritt & Danis 2006; Wheeler, McFarland & Kleiner 2007).	The level of agreement with statements in an interval scale about how the firm directs related to management orientation to encourage innovation activities. It is subdivided into the importance of innovation to achieve strategic goals and ambitions, focus on long-term goals and objectives, favour of high-risk projects with aggressive posture to explore new potentials, commitment and involvement in development of new initiatives and programs, and allocation of resources to support and sustain innovation programs. Arithmetic mean of responses to questions and items 41-45 of the characteristic and strategic orientation scale.	Interval
Organisational Culture (org_cltr)	The determination in terms of the extent of learning processes, designs, and flexible practices culture and the degree of importance to the firm's innovation activities and growth (Feigenbaum & Karnani 1991; Pavitt 1991; Nooteboom 1994; Chaston, Badger & Sadler-Smith 1999, 2001; Crossan, Lane & White 1999; Calantone, Cavusgil & Zhao 2002; Martins & Terblanhe 2003; Kenny & Reedy 2006; Zhang, Macpherson & Jones 2006).	The level of agreement with statements in an interval scale about how the firm sets related to organisational culture to encourage innovation activities. It is subdivided into the willingness for openness and change, sharing of information (i.e. both success and failure) and customer feedback, flexible organisational structure, and learning process and environment. Arithmetic mean of responses to questions and items 46-50 of the learning process, designs, and flexible practice scale.	Interval
Technology Orientation (tech_orint)	The determination in terms of the extent of technology policy, position, and adoption and the degree of agreement to the firm's innovation activities and growth (Ettlie & Bridges 1982; Ettlie 1983; Hitt, Hoskisson & Ireland 1990; Porter 1990; Cooper 1994; Hamel & Prahalad 1994; Gatignon & Xuereb 1997; Cumming 1998; Hadjimanolis 1999; Humphreys, McAdam & Leckey 2005).	The level of agreement with statements in an interval scale about how the firm acquires related to technology orientation to encourage innovation activities. It is subdivided into the importance of obtaining technological policy, use of technology to face competition, willingness to try new methods and technologies, and degree of long-term commitment to resources involving up-to-date technological issues. Arithmetic mean of responses to questions	Interval

		and items 51-55 of the technology policy, position, and adoption scale.	
Alliance and Cooperation (allnc_coorp)	The determination in terms of the extent of collaborative agreements and networks and the degree of agreement to the firm's innovation activities and growth (Gulati 1998; Davenport, Grimes & Davies 1999; Baum, Calabrese & Silverman 2000; Diez 2000; Gulati, Nohria & Zaheer 2000; Stuart 2000; Hoffmann & Schlosser 2001; Ireland, Hitt & Vaidyanath 2002; Lank 2006).	The level of agreement with statements in an interval scale about how the firm acquires related to alliance and cooperation to encourage innovation activities. It is subdivided into the nature and importance of business relations and agreements, importance of membership of business associations, identification of strategic partners to explore new knowledge, participation in internal and external activities and networks, and utilisation of collaboration and network benefits. Arithmetic mean of responses to questions and items 56-60 of the collaborations and networks scale.	Interval
Market Orientation (mrk_orint)	The determination in terms of the extent of customers and competitors orientations and inter-functional market information sharing and the degree of agreement to the firm's innovation activities and growth (Kohli & Jaworski 1990; Jaworski & Kohli 1993; Day 1994; Slater 1997; Gray et al. 1998; Han, Kim & Srivastava 1998; Voss 1998; Varadarajan & Jayachandran 1999; Dawes 2000; Hult, Hurley & Knight 2004; Laforet & Tann 2006; Slater & Mohr 2006; Lukas & Ferrell 2008).	The level of agreement with statements in an interval scale about how the firm performs related to customers, competitors, and inter-functional market information sharing to encourage innovation activities. It is subdivided into the nature of dialogues and relationships with customers, understanding and responding to customer needs, capturing dimension of customer orientation and market-driven strategy implementation, taking advantage of competitors' weaknesses, and sharing of market information between individuals to understand customers and competitors. Arithmetic mean of responses to questions and items 61-65 of the customers and competitors orientations and inter-functional market information sharing scale.	Interval

4.5.5.3.2 Innovation Practices and Adoptions Measurement

The intervening latent variable is innovation practice. Innovation practice(s) has been changing from being an internal process in firms to an interactive process between firms and other public and private institutions (Wynarczyk, Piperopoulos & McAdam 2013). It is a one-dimensional phenomenon developing specific activities and practices in a firm in performing organisational (innovative) behaviours and tasks (Tidd, Bessant & Pavitt 1997; Salavou, Baltas & Lioukas 2004). It is related to the firm's ability to seek new and better ways to identify, acquire, and implement a number of ideas and tasks (Calantone, Cavusgil & Zhao 2000; North & Smallbone; Brem & Voigt 2009). Innovation can be understood through different aspects within an organisational setting that can be technology-related, behaviour-related, and/or product-related innovations (Rogers 1995; Hurley & Hult 1998). Further, the concept can be viewed from two different perspectives that are the rate of adoption and the willingness to change (Hurt, Joseph & Cook 1977). Technological innovation is applied to the development of new products, services, or processes whereas non-

technological innovation includes design, brand, business process re-engineering, and new sales and marketing methods, which is typically applied in different phases of modification process. The conceptual and operational definitions and measurement scales of this construct included in the survey questionnaire are illustrated in Table 4.5. The construct was evaluated using a ten-item scale and was measured with end points of "1-much below" and "7-much above".

Table 4.5: Innovation practices definition and scale.

Latent Variable	Conceptual Definition	Operational Definition	Scale
Innovation Practices (innv_prcts)	The determination in terms of the ability of the firm to seek new and better management and administrative systems, internal cultures, processes, products, services, distributing channels, and marketing methods-segments within a determined time period (Utterback 1994; Slater 1997; Rogers 1995; Zhuang, William & Carter 1999; Boer & During 2001; Mole & Worrall 2001; Christensen 2003; Blumentritt & Danis 2006; Dorf & Byers 2008).	The level of agreement with statements in an interval scale about how the firm performs related to management and administrative systems, internal cultures, processes, products, services, distributing channels, and marketing methods-segments innovations within a determined time period (i.e. last three years). It is subdivided into various items including the trial of new ideas, introduction of new innovations, pioneer nature of marketing new innovations, management search of new systems and methods, creative in methods of operation, usage of up-to-date technologies, development of new market segments, usage of new marketing methods, new ways of establishing relationships with customers, and spending resources on research and development for new innovations. Arithmetic mean of responses to questions and items 66-75 of the innovation practices.	Interval

4.5.5.3.3 Business Growth Performance Measurement

The dependent latent variable is business growth performance (that is divided into innovation and general business growth performance at later stage of factor analysis). It is a challenging concept to evaluate when using both the quantitative (accounting/financial) and qualitative (non-financial) measures (Snow & Hrebiniak 1980; Aragon-Sanchez & Sanchez-Marin 2005; Avci, Madanoglu & Okumus 2011). Further, financial measures are adequate in a general industry except for small and medium firms that are usually considered private entities and their financial information are unavailable to public disclosure (Reginald 2000). Previous research studies have used different approaches that include objective (absolute value), perceptual (expectation), and managerial self-reported measures (Dess & Robinson 1984; Knights & McCabe 1997). Both the financial and non-financial performance items are used to evaluate firms. The scale measures business growth performance in absolute terms, rather than a comparison against competitors or relative to the firm expectations, reducing the random error associated with single-item scales (Dawes 2000). The

conceptual and operational definitions and measurement scales of this construct included in the survey questionnaire are illustrated in Table 4.6. The construct was evaluated using a ten-item scale and was measured with end points of "1-much worse" and "7-much better".

Table 4.6: Business growth performance definition and scale.

Latent Variable	Conceptual Definition	Operational Definition	Scale
Business Growth Performance (innv_bgrwthprfm and gnrl_ bgrwthprfm)	The determination in terms of the ability of the firm to perform and obtain growth and the degree of agreement to the firm's innovation activities and growth (Knights & McCabe 1997; Mone, McKinley & Barker 1998; Dawes 2000; North & Smallbone 2000; Sirelli 2000; Calantone, Cavusgil & Zhao 2002; Mahemba & De Bruijn 2003; Hult, Hurley & Knight 2004; Aragon-Sanchez & Sanchez-Marin 2005).	The level of agreement with statements in an interval scale about how the firm performs related to innovation activities within a determined time period (i.e. last three years). It is subdivided into various items including the innovation and general performance items and is evaluated through the qualitative (non-financial) measures mean value of capacity to provide new products, services, and processes, ability to provide quality products and services, and customer satisfaction; while the quantitative (financial) measures mean value of innovation patent award, sales growth, sales growth of innovation, profit growth, profit growth of innovation, return on investment, return on investment of innovation, and market share. Arithmetic mean of responses to questions and items 76-86 of the business growth performance scale.	Interval

4.5.5.4 Specification of General Information and Control Variables

The survey questionnaire can generally gather information on respondents such as individual and firm characteristics, activities, behaviours, attitudes, and opinions, which differ according to the research study constructs (Ticehurts & Veal 2000). These data are related to the firm's individuals, general demographic information, and general business management and market environments. The control variables and their implications on the research study are discussed. The operational definitions of general data of the firm's individuals, general demographic information, and general business management and market environments for this research study are presented next.

4.5.5.4.1 Demographics and Control Variables Measurements

The measurements of demographic include the individual's and firm's general characteristics and features. At the individual respondent level, the information includes: gender, age, education level, role, and employment length. While at the firm respondent level, the information includes: current business idea, industry and sector type, legal status, size, age, target market and customer, and capital investment and annual revenue that are eliminated at later stages. It uses nominal-scale and ordinal-scale. In the survey questionnaire, control variables are introduced through the role and

education level of management and the size and age of firm (Narver & Slater 1990; Salavou, Baltas & Lioukas 2004; Aragon-Sanchez & Sanchez-Marin 2005; Martinez-Roman, Gamero & Tamayo 2011). These measures are looking at the type of position and ownership and level of professional qualification the owner/manager obtained and the number of individuals within the firm (Kimberly 1976), as well as the number of years passed since the establishment of the firm (Heunks 1998), in that order. Other firm's characteristics such as market share, capital ownership, and administrative intensity have different impacts on organisational innovation (Narver & Slater 1990; Salavou, Baltas & Lioukas 2004), particularly in large firms.

4.5.5.4.2 General Business Management and Market Environments Measurements

The measurements of the firm's general business management and market environments in the last three years include management strategic archetypes, presence of innovation strategy, description of innovation types, drivers of innovation practices, platform of innovation developments and modifications, source of innovative ideas, number of new innovations launched (i.e. new products and/or services), research and development investment, and constraint of innovation practices. It uses nominal-scale and ordinal-scale. Further, the innovation types of the firm can be classified into three groups: incremental innovation, radical innovation, or non-innovation rather than into only two groups as either innovative or non-innovative (Mole & Worrall 2001; Scozzi, Garavelli & Crowston 2005; Laforet & Tann 2006). The management strategic archetypes can be classified into four groups by using a paragraph method (qualitative variable) that involves showing the respondents different paragraphs with alternative descriptions of Mile and Snow (1978) strategic archetypes: defender, analyser, prospector, or reactor (Snow & Hrebiniak 1980; Aragon-Sanchez & Sanchez-Marin 2005). This paragraph method has been used and is accepted in the strategic and innovation management literature despite its stated limitation (McDaniel & Kolari 1987; Conant, Mokwa & Varadarajan 1990).

4.5.5.5 Questionnaire Structure Development

The survey questionnaire was divided into eight core sections: (1) instructions were provided in a short preamble and repeated for every question and on every page; (2) the demographical data in sections one and two consisting of both the individual's and the firm's characteristics; (3) general business management and market environments data in section three consisting of the firm's general business and market environments; (5) the research study constructs (latent variables) data in sections four to seven consisting of the enabling factors (the macro and micro environmental

determinants) affecting the innovation practices and business growth performance of SMEs; and (6) the open-ended question in section eight consisted of additional comments and suggestions. The questionnaire contained 86 questions. Other factors are that the questionnaire was designed to be completed within 20 to 25 minutes and had only eight pages; the information sheet, sections, and subdivisions were clearly labelled; and the division and subdivision were clear and numbered with a vertical column to answer each question.

In the first and second sections, the opening questions consisted of 11 questions that were simple and interesting requesting the demographic data of the individual's gender, age, education level, role, and employment length and the firm's current business idea, industry and sector type, legal status, size, age and target market and customer (Zikmund 2003). In the third section, the firm's general business management and market environments in the last three years consisted of nine questions to further identify the strategic archetypes of management, presence of innovation strategy, description of innovation types, driver of innovation practices, platform of innovation developments and modifications, source of innovative ideas, number of new innovations (i.e. new products and/or services) launched, research and development investments, and constraint of innovation practices. The respondents were asked to mark a box relevant to their individual's and firms' information. In the fourth to seventh sections, the latent variables data consisted of 66 items to measure the factors affecting innovation practices and business growth performance of SMEs. There were nine independent latent variables, including government supported developments, financial resources, academia-industry collaborations, market dynamics, management orientation, organisational culture, technology orientation, alliance and cooperation, and market orientation; one intervening latent variable, including innovation practices; and one dependent latent variable, including business growth performance. Further, respondents were asked to indicate their opinions by circling a number regarding factors that best represented the view of their firms in the market. Responses were converted into a directory for each question/item and analysed. In section eight, the last question invited the respondents to provide more suggestions regarding the studied issue.

The initial survey questionnaire was developed from an extensive review of related literature and was based on two-pilot group discussions (n=10+10) with owners/managers of small and medium firms (n=8), academic researchers (n=4), and industry and market experts (n=8) along with their knowledge and expertise regarding SMEs, innovation, and the local market (Churchill 1979). The

draft survey questionnaire was continuously evaluated during the whole process of the initial development. The draft paid careful attention to the areas related to research objective, potential respondent, communication method, and time and cost availability, and stressed good questions and items design and layout structure (i.e. content, wording, language, structure, sequence, and length) and motivational and instructional introductory cover letter to respondents. The survey questionnaire structure prior to pilot testing is illustrated in Table 4.7.

Table 4.7: Survey questionnaire structure.

Variables/Constructs	Questionnaire Questions/Items*	Literature Sources
General Demographic Information	Qs 1 to 5: Individual demographic information (gender, age, education level, role, and employment length).	Mahemba & De Bruijn 2003; Aragon-Sanchez & Sanchez-Marin 2005; Scozzi, Garavelli & Crowston 2005; Williams & Cowling 2009.
	Qs 6 to 11: Firm demographic information (business idea, industry and sector type, legal status, size, age, size, and market and customer). *Note:* Q 6 was generated from the pilot group discussions and supported by the literature; Q 6: There are different business concept descriptions in the market.	Mahemba & De Bruijn 2003; Aragon-Sanchez & Sanchez-Marin 2005; Scozzi, Garavelli & Crowston 2005; Kenny & Reedy 2006; DDED 2008; DSC 2010; Williams & Cowling 2009; DCCI 2010. (Certain items were developed for this research)
General Business Management and Market Environments	Qs 12 to 20: General firm business environment and market (strategic archetypes of management, presence of innovation strategy, description of innovation types, driver of innovation practices, platform of innovation developments and modifications, source of innovative ideas, number of new innovations launched (i.e. new products and/or services), research and development investments, and constraint of innovation practices).	Miles & Snow 1978; Mahemba & De Bruijn 2003; Aragon-Sanchez & Sanchez-Marin 2005; Scozzi, Garavelli & Crowston 2005; Blumentritt & Danis 2006; Kenny & Reedy 2006; Williams & Cowling 2009.
Government Supported Developments	Qs 21 to 25: Government policies, infrastructure, and institutional support for firm's decision to encourage innovation activities. *Note:* Qs 21, 22, 23, and 25 were generated from the pilot group discussions and supported by the literature; Qs 21 & 22: Government policies have to be more effective. Q 23: Infrastructure quality is essential for firms. Q 25: Presence of commercialisation mechanisms helps to introduce new ideas.	Teece 1986; Gregersen 1992; Camagni 1995; Smith 1997; Cooke, Uranga & Etxebarria 1997; 1998; Mole & Worrall 2001; Asheim et al. 2003; Kuhlmann 2003; Mahemba & De Bruijn 2003; Veuglers 2005; Carayannis et al. 2006; Rahl 2008; Sullivan 2008; Lee et al. 2010; Teece 2010; Mani 2011. (Certain items were developed for this research)
Financial Resources	Qs 26 to 30: Financial resources for firm's decision to encourage innovation activities. *Note:* Qs 28, 29 and 30 were generated from the pilot group discussions and supported by the literature; Q 28: There are needs for tailored financial and technical supports.	Teece 1986; Gregersen 1992; Greene & Brown 1997; Cooke, Uranga & Etxebarria 1997; Mishkin 2001; Veuglers 2005; Siems & Ratner 2006; SMEs Conference 2006; WEF 2010-2011; Mani 2011. (Certain items were developed for this research)

	Q 29: Firms should be able to list in the stock market. Q 30: Financial transparency and accountability standards have to be enforced.	
Academia-Industry Collaborations	Qs 31 to 35: Academia-Industry collaborations of talents, technology-transfers, and sourcing ideas for firm's decision to encourage innovation activities. *Note:* Q 32 was generated from the pilot group discussions and supported by the literature; Q 32: The educational outcomes of local institutions must match industrial needs and challenges.	Parker 1992; Drucker 1993; Keizer, Johannes & Halman 2002; Mahemba & De Bruijn 2003; Haour 2004; Stel, Carree & Thurik 2005; Siems & Ratner 2006; Walters, Kadragic & Walters 2006; Segarra-Blasco & Arauzo-Carod 2008; Wright 2008; Haour & Mieville 2010. (Certain items were developed for this research)
Market Dynamics	Qs 36 to 40: Market dynamics of interaction and competition for firm's decision to encourage innovation activities. *Note:* Qs 37, 38, 39, and 40 were generated from the pilot group discussions and supported by the literature; Qs 37: It is important to understand market demand conditions and consumer orientations. Qs 38: Competition between firms has to be healthy and government implements anti-monopoly market policy. Qs 39: Local market should embrace the concept of risk-taking business cultures. Qs 40: Small and medium firms should have options to exit market through clear mechanisms.	Porter 1990; Broome 2007; Haour & Mieville 2010; WEF 2010-2011. (Certain items were developed for this research)
Management Orientation	Qs 41 to 45: Management orientation for firm's decision to encourage innovation activities.	Heunks 1998; Rogers 2003; Salavou, Baltas & Lioukas 2004; Aragon-Sanchez & Sanchez-Marin 2005; BAH 2006; Blumentritt & Danis 2006; Laforet & Tann 2006; Martensen et al. 2007.
Organisational Culture	Qs 46 to 50: Organisational culture of learning processes, designs, and flexible practices for firm's decision to encourage innovation activities.	Feigenbaum & Karnani 1991; Nooteboom 1994; Hurley & Hult 1998; Calantone, Cavusgil & Zhao 2002; Mahemba & De Bruijn 2003; Salavou, Baltas & Lioukas 2004; Aragon-Sanchez & Sanchez-Marin 2005; BAH 2006; Blumentritt & Danis 2006; Kenny & Reedy 2006; Martensen et al. 2007.
Technology Orientation	Qs 51 to 55: Technology orientation of technological policy, position, and adoption for firm's decision to encourage innovation activities.	Ettlie & Bridges 1982; Ettlie 1983; Hitt, Hoskinsson & Ireland 1990; Cooper 1994; Mahemba & De Bruijn 2003; Salavou, Baltas & Lioukas 2004; Aragon-Sanchez & Sanchez-Marin 2005; Allocca & Kessler 2006; Martensen et al. 2007.
Alliance and Cooperation	Qs 56 to 60: Alliance and cooperation of collaborative agreements and networks for firm's decision to encourage innovation activities.	Gulati 1998; Davenport, Grimes & Davies 1999; Baum, Calabrese & Silverman 2000; Gulati, Nohria & Zaheer 2000; Hoffmann & Schlosser 2001; Mahemba & De Bruijn 2003; Aragon-Sanchez & Sanchez-Marin 2005; Allocca & Kessler 2006; Lank 2006; Martensen et al. 2007.
Market Orientation	Qs 61 to 65: Market orientation of customers, competitors, and inter-functional market information sharing for firm's decision to encourage innovation activities.	Narver & Slater 1990; Brush 1992; Kohli, Jaworski & Kumar 1993; Day 1994; Deng & Dart 1994; Callahan & Cassar 1995; Pelham & Wilson 1996; Dawes 2000; Salavou, Baltas & Lioukas 2004; Allocca & Kessler 2006; BAH 2006; Kenny & Reedy 2006; Laforet & Tann 2006; Martensen et al. 2007.

Innovation Practices	Qs 66 to 75: Firm's innovation practices and adoptions in the sector and industry in the last three years.	Hurt, Joseph & Cook 1977; North & Smallbone 2000; Mole & Worrall 2001; Calantone, Cavusgil & Zhao 2002; Aragon-Sanchez & Sanchez-Marin 2005; Scozzi; Garavelli & Crowston 2005; Blumentritt & Danis 2006; Laforet & Tann 2006.
Business Growth Performance	Qs 76 to 86: Firm's growth performance indicators in the last three years.	Bettencourt 1997; Klomp & Van Leeuwen 1999; Sirelli 2000; Mairesse & Mohnen 2001; Mole & Worrall 2001; Calantone, Cavusgil & Zhao 2002; Mahemba & De Bruijn 2003; Hult, Hurley & Knight 2004; Aragon-Sanchez & Sanchez-Marin 2005; Linder 2006; Martensen et al. 2007; Leiponen & Helfat 2010; Terziovski 2010.

Note: Some Qs/items were generated from the pilot group discussions.

4.5.5.6 Pre-Testing and Questionnaire Modification

The primary data and pre-testing of the survey questionnaire can provide useful information for conducting a situational analysis (Ticehurts & Veal 2000; Cooper & Schindler 2003; Creswell 2003) and uncovering biased or ambiguous questions and items through pre-testing the adequacy, reliability, and validity of the research instrument (Saunder, Lewis & Thornhill 2003; Sekaran 2003; Zikmund 2003). Zikmund (1997, p.108) defines the pre-testing process as "a collective term for any small scale exploratory research technique that uses sampling but does not apply rigorous standards". Latent variables are validated (content validity) and the scales are subjected to a pre-testing technique to assure that the wording of individual questions and items are understandable and that the different questions and items developed measure similar dimensions. The collected feedback from the pre-testing process is used to revise the draft survey questionnaire in order to modify and further improve it (Ticehurts & Veal 2000). The selected group for pre-testing is not different from the actual participants (Zikmund 2003). However, the main disadvantage is that the pre-testing participants are excluded from the main research study investigation (Peat et al. 2002).

The literature has different viewpoints regarding the pilot study sample size. Hunt, Sparkman, and Wilcox (1982) recommend a sample size between 12 and 30, however, Emory and Cooper (1991) and Cooper and Schindler (2003) recommend a sample size of between 25 and 100. The first version and prototype of the survey questionnaire was pre-tested on a convenience sample of 30 knowledgeable individuals using the simple random sampling technique to underline difficulties in completion and understanding questions and items, to improve investigator familiarity with respondents, and to evaluate fieldwork arrangement and average completion time and cost (Calder, Phillips & Tybout 1981; Hunt, Sparkman & Wilcox 1982; Sekaran 2003), which can help to establish the content validity (Saunder, Lewis & Thornhill 2003). These individuals included

owners/managers of small and medium firms (*n*=14), academic researchers (*n*=10), and industry and market experts (*n*=6). The respondents were contacted with a cover letter through mail and email and were asked to evaluate each statement and comment on wording, presentation, design and layout, syntax, question and item validity, integration, comprehensibility, ambiguity, and time duration (Dillman 2007). Based on the 30 returned responses, the survey questionnaire was further amended where it was appropriate (see Appendix E). Issues were found to include the followings: the instructions and wording were generally understandable; the time duration for completion the questionnaire was around 15 to 25 minutes; questions and items 11, 12, and 16 were deleted; and questions and items 14, 20, 24, 28, 30, 31, 37, 41, 54, 59, 65, 69, 71, and 76 were modified and reworded.

The final version of the survey questionnaire was sent to another sample of 24 small and medium firms to be pilot tested. The reliability (i.e. coefficient alpha) and validity and internal consistency (i.e. item-to-total and inter-item correlations) among latent variables and items were assessed. As suggested by Hair et al. (2006), the item-to-total and inter-item correlations above 0.50 and 0.30, in that order, mean that items display adequate homogeneity (i.e. internal consistency), and the coefficient alpha of 0.60 or above mean that items are performing well in capturing a specific latent variable. Items were all found to display item-to-total correlations greater than the criterion of 0.50 and inter-item correlations greater than the criterion of 0.30. However, item 45 displayed an item-to-total correlation greater than the criterion of 0.50 but an inter-item correlation lower than the criterion of 0.30. The overall results of latent variables coefficient alpha fell within the acceptable ranges that were from 0.86 to 0.98. Items with moderate to low correlations were not eliminated at this stage of the research study as it would make only a small difference in the coefficient alpha. The final version of the questionnaire comprised of eight pages, eight sections, and 86 questions and an open-ended question encouraging the respondents to provide additional comments and suggestions of their own thinking related to the research study of innovation and small and medium firms in the Dubai market, which was a reduction from 88 questions and items in the prototype stage of the survey questionnaire (see Appendix F).

4.5.6 Data Collection Procedures and Justifications

The data collection procedures and their instruments depend on the availability of facilities, time, costs, the degree of accuracy, the expertise of investigator, and other data gathering resources and techniques (Sekaran 2003). The procedure gives a snapshot of a single fixed time point of the

phenomenon selecting different units in different contexts with in-detail data analyses of how other variables differ across these units that is known to be a cross-sectional research compare to a longitudinal research with multiple time points of the phenomenon selecting a small number of units (Easterby-Smith, Thorpe & Lowe 1991; Petrie & Sabin 2000; Cooper & Schindler 2003; Burns & Bush 2006; Neuman 2006). The cross-sectional design time dimension was consistent with the descriptive research approach and due to time and cost constraints for this research study. A top-down approach was selected as the most appropriate method for executing the questionnaire due to the nature of information and data required can be best provided by the owners/managers of firms under research (Mahemba & De Bruijn 2003; Martinez-Roman, Gamer & Tamayo 2011).

4.5.6.1 Interview and Questionnaire Survey Types

The selected survey research strategy and type depends on a balance of features and elements in all research situations, which have advantages and disadvantages (Emory & Cooper 1991; Allen & Rao 2000; Hair, Bush & Ortinau 2003; Sekaran 2003). The advantages of the survey approach are the ability to accommodate a large sample size and to increase the generalisability of the results, the ability to distinguish small differences, the ease of administrating and recording questions and answers, the capability of using advanced statistical analysis, and the ability to tap into factors and relationships not directly measurable. However, the disadvantages are the difficulty in developing an accurate survey instrument, the limited in-depth details of data structure, the lack of control over timeless and potential low response rates, and the effort in determining the respondents' bias.

A survey research strategy has two types of data collection techniques that include interview and questionnaire (Cooper & Schindler 2003; Zikmund 2003). Interview is a direct verbal interaction between the interviewer and the respondent to collect information satisfying the objectives of the research study, which provides depth and detail of the available information (Cooper & Schindler 2003). Examples include personal-administered (face-to-face interview) and telephone interview. Alternatively, the questionnaire is a list of questions and statements in that the answers are filled by a respondent, which provides quantifiable data from a representative sample (Ticehurst & Veal 2000; Zikmund 2003). Examples include self-administered (drop-and-collect), mail questionnaire, fax questionnaire, and web survey. Cobanoglu, Warde, and Moreo (2001) found that the fastest questionnaire survey type is fax survey with four days respond rate, followed by web survey with 5.97 days respond rate, and the lowest is mail survey with 16.46 days respond rate. Ticehurts and Veal (2000) suggest the following types of survey instruments that are used with questionnaires:

household, telephone, mail, hand-delivered, captive group, web, and organisation. A comparison of the type of surveys and their features are provided in Table 4.8.

Table 4.8: Type of surveys and features.

Features / Elements	Type of Surveys				
	Personal-Administrated (Face-to-Face Interview)	Telephone Interview	Self-Administrated (Drop-and-Collect)	Mail	Web Survey
Administrative Cost	Expensive	Moderate	Expensive	Cheap	Cheapest
Administrative Speed	Slow/Moderate	Fast	Moderate	Slowest	Fastest
Length of Questionnaire	Longest	Short	Moderate	Moderate	Moderate
Respond Rate	Highest	Moderate/High	High	Lowest	Moderate
Visual Observation	Yes	No	No	No	Yes
Visual Aids	Yes	No	Limited	Limited	Yes
Obtain Sensitive Information	Low	Moderate	High	High	High
Interviewer Bias	Worse	Some	Some	No	No
Anonymity of Respondent	Worse	Some	Yes	Yes	Yes
Respondent's Reading Skills	No	No	Yes	Yes	Yes
Sample / Quality Control	Highest	Moderate	High	Lowest	Low

Source: Adopted from De Vaus (1995); Ticehurts & Veal (2000); Cobanoglu, Warde & Moreo (2001); Cooper & Schindler (2003); Zikmund (2003); Aaker, Kumar & Day (2004); Burns & Bush (2006); Neuman (2006).

4.5.6.2 Questionnaire Administration

A survey questionnaire can be administered through two approaches: interview-completed, where the interviewer reads the questions and the statements and records the respondent's answers; and respondent-completed, where the respondent reads and fills out the questionnaire without help (Ticehurst & Veal 2000). Other elements of questionnaire administration are that the investigator considers the quality and rate of responses and the practicalities and problems of administration to be able to reduce the possibility of non-response bias and common method bias (De Vaus 1995; Podsakoff et al. 2003; Malhotra 2004). Thus, the self-administrated (drop-and-collect) and mail questionnaires and respondent-completed techniques were selected in this research study to obtain information from the respondents and informants, the owners and/or the managers of firms, and were conducted using the method of successive waves where responses were created by a follow-

up reminder (Armstrong & Overton 1977). The rationale behind this selection was to be able to offer benefits, as shown in Table 4.8, such as reduction of interviewer bias, accommodation of long survey, and to obtain a large sample. The self-administrated survey was used due to the sampling group in recognised locations in the Dubai marketplace with the intention to allocate enough time for the respondents to complete the questionnaire and ask questions for clarification (Creswell 2003; Sekaran 2003; Zikmund 2003). The researcher was present upon request to probe any incomplete answers and to clarify any unclear questions (Sekaran 2003). The possibility of using the mail questionnaire was also considered, upon request, to increase the response rate.

The self-administrated (drop-and-collect) survey was used with the advantages of: administrative speed, response rate, questions and items clarity, motivation, anonymity, and sample and quality control (Baruch & Holtom 2008). The information was kept confidential and the research study outcomes were provided upon request. The disadvantages include: administrative cost, interviewer bias, and data collection length. These disadvantages were minimised where possible and did not outweigh the benefits provided by high response rates in a short period of time. Then again, the face-to-face interview has cost and time constraints. The intention is to gather data from across Dubai and the privacy and anonymity issues are other reasons for not using this type of survey (Cooper & Emory 1995; Zikmund 2003). Further, telephone interview has a low acceptance rate among respondents with issues related to privacy and excludes individuals without telephones. Mail questionnaire has a low response rate with the possibility of misunderstanding questions, while web survey has an unrepresentative sample issue and excludes individuals without Internet access. In this research study, small and medium firms were initially contacted representing a mix of manufacturing and service industries (O'Dwyer, Gilmore & Carson 2011), for the intention was for 600 firms to participate forming the sample size. Data were collected in two waves (Armstrong & Overton 1977). All contacted firms were sent survey questionnaires by drop-and-collect and/or mail. Procedures for the survey questionnaire administration are detailed below:

- Obtain a list of firms with name, address, telephone number, and email address from the Dubai Chamber of Commerce and Industry commercial database.
- Contact potential firms by telephone or email to encourage them to participate.
- If agreed, survey questionnaire was dropped at the firm's premises and collected three weeks later.
- Questionnaire was given to the respondents with a covering letter describing the conducted research study (i.e. researcher, research institution, objective, and instruction).

- Respondents were given the option to post back the questionnaire providing them with a self-addressed return stamped envelope.
- Undertake telephone and email follow-up, call-back and email were used when necessary to non-respondents two weeks after first delivery.
- Initial contact and cut-off day for returned survey questionnaires were conducted over a five month period.

4.5.6.3 Response Rate

The response rate refers to the percentage of the total completed attempts in gathering information by the investigator (Ticehurst & Veal 2000; Sekaran 2003) and is calculated by the number of completed survey questionnaires returned divided by the total number of eligible respondents who are contacted or are requested to participate in the research study (Zikmund 2000, p.203). The response rate is important for validity and analysis leading to statistical inference and bias in terms of data reliability and quality (Cooper & Schindler 2003; Zikmund 2003). Baruch and Holtom (2008) discover that the average response rate for a research study that utilises data collected from individuals is 52.7% (+/- 20.4) and the average response rate from firms is 35.7% (+/- 18.8). The response rate for the survey questionnaire technique is found to be between 10% and 50%, which is fairly typical for a large sample of firms (Burns 1994). This is further supported by Baruch (1999) that for a research study directed toward top management or representative of firms, the norm may be 36% (+/- 13).

The response rate can be influenced by a number of factors such as: survey introduction, content, time, design, and burden on the respondents (Platek 1977). Failure to obtain a response from a sample respondent is due to several reasons: respondents could not be contacted, or respondents are contacted but are unable to complete the questionnaire because of language problems or time constraints, respondents refuse to complete the questionnaire, or respondents refused to answer some questions and items for confidentiality reasons (Neuman 2000, p.266). Having the intention of increasing the response rate, the combination of self-administered (drop-and-collect) and mail questionnaires were used to obtain information from respondents. The response rate has also been increased by various strategies including pre-notification of respondents by telephone and email to participate in this research study, supportive covering letter from the Business School at Southern Cross University, post-notification of respondents one to two weeks after delivery, offering the results to respondents, and assurance of anonymity and confidentiality of firms for sensitive issues

(Lambert & Harrington 1990). Dillman's (2007) Total Design Method (TDM) was followed in order to increase the response rates. Table 4.9 summarises the TDM approach applications.

Table 4.9: TDM applications.

TDM Step	Applications in Research Study
Maximise Reward	Respondent were told that they are selected to take part of a major study across Dubai and their feedback is important. The cover letter explained the relevance of this research study to their business using real signatures in all letters. Questionnaire was made interesting and outcomes will be shared with respondents.
Minimise Cost	Respondents were told of average questionnaire completion time. Multi-item scales were used to reduce the mental effort in answering questions and effort was made to eliminate chances of embarrassment and implications of subordination. Pre-addressed, stamped envelopes were provided with each questionnaire.
Establishing Trust	The university logo was used in the cover letter and questionnaire. Outcomes will be shared with respondents and confidentiality was assured at all times.
Questionnaire Design/Printing	A graphic design company was used to set the questionnaire in a booklet format and printed in colour.
Questions Format	Questions are grouped into sections divided by clearly marked headings and bold letters were used when relevant. Lower case was used for questions. One to seven interval scales was used for the majority of the answers and each question was followed by an answering scale. Clear directions for answering were provided after each question.
Front Page	Contained title page, university logo, and name, address, and contact details of the researcher.
Back Page	There were remaining sections of the questionnaire and some space for respondents to add additional comments. Statements of confidentiality and gratitude in italic were inserted at the very end.
Pre-testing	Questionnaire was tested on SMEs owners/managers, academic researchers, industry/ market experts, and colleagues.
Pre-notice Letter/Email	A pre-noticed letter/email with university logo noting that a questionnaire for an important survey will be arriving and their input was essential to the success of the overall study.
Cover Letter	A letter with university logo emphasizing usefulness, importance of study to target group, confidentiality and gratitude, length of time to complete questionnaire, and university ethics approval.
Questionnaire Pack	It included questionnaire, cover letter, and stamped white A4 addressed envelopes using regular mail.
Letter/Email Reminder	Reminder letter/email was sent after two weeks.
Appreciation	Thank you letter/email was sent to participating firms.
Questionnaire Outcomes	Respondents were promised to receive the outcomes of the research study.

Source: Developed for this research with parts adopted from Dillman (2007) and Kenny (2009).

4.5.6.4 Ethical Consideration and Anonymity

The guideline provided by the Southern Cross University's Human Research Ethics Committee (SCU-HREC) is followed in this research study. The University's Expedited Ethics Committee approval document numbers were ECN-10-094 and ECN-12-088. Further, the confidentiality of

this research study was assured to the respondents to encourage their participation and honest responses. The introductory and covering letter to the respondents included anonymity promise according to the SCU-HREC's regulation. The survey questionnaire did not include questions and items identifying the respondents firms, names, or addresses and pre-paid envelops in the mail survey did not include the respondents names and addresses.

4.5.7 Data Analysis Procedures and Measurements

The data analysis procedures consist of organising, categorising, tabulating, and examining raw data and transforming them into "a body of facts that are in a format suitable for decision making" and hypotheses testing (Emory & Cooper 1991; Zikmund 2000, p.416; Davis 2005; Burns & Bush 2006). A survey questionnaire forms the empirical basis for this research study where; a simple approach with simple statistical measures by using descriptive information of different innovation practices and an advanced approach with latent variables by using derived importance based on a structural equation modelling technique linking innovation practices and their antecedents and their impact on business growth performance and assessing a model fit with multiple relationships are discussed (Burns & Bush 2006; Manning & Munro 2006; Martensen et al. 2007).

4.5.7.1 Data Processing Procedures and Statistical Programs

Data conducted through survey-based business research is suitable for computer analysis because of the large amount of raw data gathered during this research study that requires editing, sorting, coding, error check, and mathematical calculation (Ticehurst & Veal 2000; Stevens 2002; Cooper & Schindler 2003; Zikmund 2003; Davis 2005; Neuman 2006). Raw data is subject to editing and coding to check and verify errors before the statistical analysis is conducted (Cooper & Schindler 2003; Zikmund 2003). The data editing process checks and adjusts data for omissions, reliability, and consistency before coding and later transferring to data storage processes (Emory & Cooper 1991; Ticehurst & Veal 2000; Sekaran 2003; Zikmund 2003; Malhotra 2004). Upon receiving, the investigator checks the survey questionnaire completeness and eligibility of respondents. Then, the data coding process identifies and classifies each response with numerical scores and symbols (Ticehurst & Veal 2000; Zikmund 2003). After that, cleaning and screening data requires data to be coded, consistent, and checked for missing values (Tabachnick & Fidell 2001; Hair et al. 2006; Manning & Munro 2006). Lastly, data is entered into the computer using a number of statistical software programs (i.e. SPSS 20.0 and Smart-PLS 2.0 M3) to obtain descriptive and inferential statistical analyses, to summarise information and data, and to examine the research questions and

hypothesised conceptual model (Barclay, Higgins & Thompson 1995; Tabachnick & Fidell 2001; Ringle, Wende & Will 2005; Manning & Munro 2006).

4.5.7.2 Descriptive Statistics

The description and summary of information and raw data about basic patterns in the population and sample in allowing its understanding and interpretation can be done through simple statistics: the descriptive statistics (Gay & Diehl 1992; Davis 2005; Burns & Bush 2006; Manning & Munro 2006; Neuman 2006). These measures give indications of frequency distribution, central tendency, dispersion, and involve mean, medium, mode, standard deviation, and error (Render & Stair 1994; Petrie & Sabin 2000; Tabachnick & Fidell 2001). Further, cross-tabulation is mostly used to arrange data in a table format by counting the frequency of responses and classifying the data against other data sets (Cooper & Schindler 2003). Descriptive statistics are useful to gain a better understanding of data but are not appropriate to provide useful information on research situations and multiple relationships between many latent variables (Sekaran 2003).

4.5.7.3 Inferential Statistics

The interference and judgment of information about the level of confidence in the population on the basis of a sample can be conducted by the inferential statistics (Gay & Diehl 1992; Sekaran 2003; Neuman 2006). It is useful to test hypotheses and conceptual models about the relationships in the population on the basis of measurements made on samples (Ticehurst & Veal 2000; Sekaran 2003). They test the relationships between questions/items/indicators (i.e. manifest variables) and corresponding constructs (i.e. latent variables) and the relationships between constructs (i.e. latent variables). Further, the selected statistical test types are to be based on the format of data, level of measurements, and number of constructs and variables (Sekaran 2003), enabling the investigator to evaluate the reliability and validity of the measured questions and items (measurement model) and to assess the relationships between the constructs and latent variables (structural model). The simple and advanced approaches of inferential data analyses to evaluate the research questions and hypotheses and conceptual model are classified into two techniques that are: first-generation and second-generation (Haenlein & Kaplan 2004).

4.5.7.3.1 First-Generation Technique

The first-generation statistical technique is described as a regression-based approach (i.e. Multiple Regression Analysis, Multiple Discriminant Analysis, Logistic Regression Analysis, Conjoint

Analysis, Canonical Correlation Analysis, and Analysis of Variance) and a factor-based approach (i.e. Exploratory Factor Analysis, Confirmatory Factor Analysis, and Cluster Analysis), which is the central part of the statistical instruments that are used to either identify or confirm theoretical hypothesis based of the empirical data analysis (Haenlein & Kaplan 2004). The first-generation statistical tests for the data analysis process are based on the following techniques: testing outlier assumptions and normality distributions, evaluating reliability (Cronbach's alpha) and validity (homogeneity and internal consistency), conducting factor analysis, looking for cause-and-effect relationships between latent variables, and testing hypothesised conceptual model relationships.

The first-generation techniques have some limitations according to Haenlein & Kaplan (2004) that are the assumption of a simple model structure consisting of one independent and one dependent latent variable (i.e. that is limited for the analysis of a more complex model with both mediating and intervening latent variable), the assumption of all latent variables to be observable, and the assumption of all latent variables to be measured without error. However, to overcome these limitations of the first-generation techniques, a Structural Equation Modelling technique as a second-generation technique is used as an alternative to analyse more than one layer of linkage between the independent and dependent latent variables. The second-generation potent technique is "an alternative to other multivariate techniques [Regression Analysis], which are limited to representing only a single relationship between the independent and dependent variables" (Cooper & Schindler 2003, p.623). For example, this research study requires the assessment of the effect of independent latent variables (i.e. external and internal factors) on an intervening latent variable (i.e. innovation practices) at the same time as assessing the effect of innovation practices on a dependent latent variable (i.e. business growth performance).

4.5.7.3.2 Second-Generation Technique

The second-generation statistical technique can be described as a component-based approach to the Structural Equation Modelling (SEM), known as Partial Least Squares (PLS) path modelling, which is also a variance-based approach to test a priori theoretical and measurement assumptions against empirical data analysis (Wold 1985; Haenlein & Kaplan 2004; Vinzi et al. 2010). The PLS modelling technique "focuses on maximizing the variance of the dependent variables explained by the independent ones instead of reproducing the empirical covariance matrix" (Haenlein & Kaplan 2004, p.209) that is a substitute estimation technique to the traditional SEM (Fornell & Cha 1994; Chin 1998a; Hair et al. 2006). PLS studies variables simultaneously and not partially, that is the

problem becomes more structured and easier to understand and the improved behaviours depend on the end-goal (Haenlein & Kaplan 2004; Martensen et al. 2007). It has been used by a growing number of researchers from various disciplines including strategic management (Hulland 1999), innovation management (Martensen et al. 2007; Vieites & Calvo 2011), organisational behaviour (Higgins, Duxbury & Irving 1992), marketing (Reinartz, Krafft & Hoyer, 2004; Tenenhaus et al. 2005), and consumer behaviour (Fornell & Robinson 1983).

Prior to the testing of the conceptual model, the latent variables and the items need to be specified. The relationship between a latent variable and its item can be modelled as either reflective (effect indicator) or formative (cause or induced indicator) indicators (Vinzi et al. 2010). For example, if the latent variable is considered as "giving rise to something observed" such as an individual trait and attitude, reflective indicators should be used, whereas formative indicators are employed if the latent variable is considered as "being explanatory combinations of items" such as individual health and life stress (Haenlein & Kaplan 2004, p.289). This research study has a straight forward conceptual model with no latent variable being a cause and an effect of another latent variable that is described as a recursive model (Schumacker & Lomax 1996; Byrne 2001; Hair et al. 2006). All items are modelled as reflective indicators because they are viewed as effects (not causes) of latent variables (Bollen & Lennox 1991) that depend on their latent variables (Haenlein & Kaplan 2004; Diamantopoulos & Siguaw 2006; Vinzi et al. 2010). The technique has two-step methods to be undertaken to simultaneously test a measurement (outer) model and a structural (inner) model (Haenlein & Kaplan 2004; Vinzi et al. 2010). Thus, the second-generation statistical (PLS) test for the data analysis process are based on the following techniques: reliability (individual, Cronbach's alpha, and composite), average variance extracted, validity (convergent and discriminate), Squared Multiple Correlations, Goodness-of-Fit, Stone-Geisser Test, and path coefficients, testing for cause-and-effect relationships among latent variables, and testing for hypothesised relationships in a conceptual innovation-based model.

The Partial Least Squares path modelling technique was selected in this research study mainly due to its ability to deal with normality violations (i.e. multivariate normality); it does not require the hard assumption of the distributional properties of raw data, among other rationales that include: PLS ensures against improper solutions by the removal of factor indeterminacy; PLS is robust in dealing with data noise and missing data; PLS applies many parameters in a complex model with normal residual distributions; PLS handles collinearity in the independent latent variables; PLS

has more statistical power than a maximum-likelihood covariance-based SEM method and is a prediction-oriented technique in maximising the variance explained in the latent variables; PLS allows simultaneous modelling of the relations among latent variables; PLS combines regression and factor analysis within the measurement model in each run; PLS is more advantageous in case of new and refined measures; and PLS does not necessitate a large sample size (for example, 200 or fewer cases), (Fornell & Bookstein 1982; Falk & Miller 1992; Johansson & Yip 1994; Barclay, Higgins & Thompson 1995; Cassel, Hackl & Westlund 1999; Chin 2002; Gustafsson & Johnson 2004; Haenlein & Kaplan 2004; Henseler, Ringle & Sinkovics 2009; Ronkko & Evermann 2013). The PLS technique is suitable for research studies when the phenomenon under study is new or changing, the model is relatively complex (i.e. large number of items and variables), and data does not satisfy the normality assumptions and large sample size (Chin & Newsted 1999).

4.6 Research Measurement Implications

The scientific research is "focused on the goal of problem solving and peruses a step-by-step logical, organized, and rigorous method to identify problems, gather data, analyse them, and draw valid conclusions there from" that is described by purposiveness, rigour, testability, replicability, precision and confidence, objectivity, generalisability, and parsimony (Sekaran 2000, p.20).

4.6.1 Research Quality

The research quality is tested by the reliability and validity of the research instrument (Creswell 2003) to establish credibility and believability (Ticehurts & Veal 2000; Zikmund 2003). Zikmund (2003) argued that a research instrument is valid if it measures what it is supposed to measure. Further, during the development phase of the survey questionnaire in this research study, specific consideration was given to issues such as reliability and validity among other design measures to assure the quality of the research study outcomes. These research quality measurements, including objectivity, generalisability, reliability, validity, and possible existing errors are presented during the field research investigations are explored in the next subsections.

4.6.2 Objectivity and Conformability

The basic matter is whether the research study conclusions depend on the subjects and conditions of the inquiry or inquirer (Guba & Lincoln 1994) and play off against subjectivity and emotional values (Lincoln & Guba 1985; Sekaran 2003). The research study investigation can be framed as being one of relative neutrality and reasonable freedom from investigator influences and biases (Miles & Huberman 1994). LeCompte and Goetz (1982) argue that objectivity and conformability domains are labelled as external reliabilities with the emphasis on the replicability of the research study by others. Objectivity should also be based on facts resulting from the findings from the actual data and is threatened by using imperfect methodologies (Lincoln & Guba 1985; Sekaran 2003). In this research study, objectivity was established by the actual data outcomes of the advanced statistical analysis with care given to the process of research design and methodology.

4.6.3 Generalisability

Generalisability refers to the scope of applicability of the research study findings and outcomes in one organisational setting to another (Sekaran 2003) and requires making connections to unstudied

parts of the original case or to other cases (Maxwell 2002). There are three levels of generalisation that include: from sample to population, analytic (i.e. theory-connected), and case-to-case transfer (Firestone 1993). Noblit and Hare (1988) note that the generalising process is not mechanical but it is more like translating, refuting, or synthesising two or more studies of similar phenomena with careful interpretations. To be able to generalise about regularities in human and social behaviours it is important to select a sample size that is sufficient (Easterby-Smith, Thorpe & Lowe 1991). In this research study, generalisability was established by selecting a large sample size and applying stratified (i.e. disproportion) sampling techniques to the population.

4.6.4 Reliability, Dependability, and Audibility

The underlining matter is whether the process of the investigation is dependable and consistent, reasonably stable over time, and across investigators and methods, which is similar to the concept of quality control that typically rests with replication and yields consistent results if the research study is performed on a different subject sample (Lincoln & Guba 1985; Davis & Cosenza 1993; Guba & Lincoln 1994; Miles & Huberman 1994; Yin 1994; Ticehurst & Veal 2000; Cooper & Schindler 2003; Sekaran 2003; Zikmund 2003; Davis 2005; Burns & Bush 2006; Neuman 2006). Reliability should minimise errors and biases (Hussey & Hussey 1997; Yin 2002; Zikmund 2003) and demonstrate operations that data collection procedures under identical or similar conditions can be repeated by achieving the same results (Easterby-Smith, Thorpe & Lowe 1991; Neuman 2006). Miller and Kirk (1986) argue that the stability of observations over time is different from the stability in the same timeframe and warned about the case when multiple respondents give monolithic and party-line answers.

According to Bryman (2004), reliability can be internal (i.e. the degree in which items making-up scale consistent) and external (i.e. the stability of variables/test-retest). There are three types of reliability: stability (i.e. across time), representative (i.e. across subpopulation), and equivalence (i.e. across multiple measures). Neuman (2006) argues that reliability is rarely perfect and it can be improved through clearly conceptualising the latent variables and using precise measurement levels, multiple items, and pilot tests. Reliability can be further tested through three methods that are: test-retest, administering the same measure and scale to the same respondents at two separate times; split-half, checking one half of results of a set of scaled items against the other half; and equivalent-form, measuring the correlation between alternative instruments administered to the same group of assessed subjects (Zikmund 2003). In this research study, the internal reliability

was established by extensive literature review, constructs conceptualisations and measurements, survey questionnaire design with multiple items, questionnaire pre-testing, and coefficient alpha and composite reliability evaluation (Tabachnick & Fidell 2001; Davis 2005; Manning & Munro 2007). It was not possible to conduct testing of external reliability of the same respondents at a different time because of time and cost constraints and the research study was cross-sectional.

4.6.5 Validity

Validity is the ability of scale or instrument to measure what it is required to measure (Davis & Cosenza 1993; Zikmund 2003) and the integrity in which constructs are generated (Bryman 2004). Validity can be further evaluated through three methods: content or face validity (i.e. how well dimensions and elements of concept delineated and subjective agreement among professionals on a scale logically appears to accurately reflect what it intends to measure); construct validity (i.e. degree of confirmation by network measurements and scale representations of related hypotheses developed from theory on basis of concepts); and criterion validity (i.e. ability of items/measures to correlate with other items/measures of the same construct and degree of scaleablilty to predict variables designating a criterion) assessments (Sekaran 2003; Cooper & Schindler 2003; Zikmund 2003; Davis 2005; Burns & Bush 2006; Hair et al. 2006). Validity can be internal and external as discussed in the next subsections.

4.6.5.1 Internal Validity, Credibility, and Authenticity

The matter is whether the findings of the research study make sense and their credibility to the studied individuals and to the readers (Miles & Huberman 1994). It means that any change, cause-and-effect relationships, to the dependent latent variable can only be attributed to the manipulation of the independent latent variable (Lincoln & Guba 1985; Yin 1994; Zikmund 2003). It is the central means and degree of confidence for ascertaining "true value" that how things really are and whether they really work given the research study situation (Guba & Lincoln 1994; Sekaran 2003; Davis 2005; Neuman 2006). Brewer and Hunter (1989), in the classic measurement-oriented view, differentiate between different types of validity. Further, the natural validity is emphasised by Warner (2008) whereas the studied events and settings are uncontrived and unmodified by the investigator's presence and action. Kvale (1989) also considers validity as a process of checking, questioning, and theorising, and not as a strategy for establishing a rule-based correspondence between the research study findings and the real world. In reality, "validation becomes the issue of choosing among competing and falsifiable explanations" of matters (Miles & Huberman 1994,

p.279). Maxwell (2002) describes theoretical validity as a presence of a more abstract explanation of described actions and interpreted meanings, which can be an internal validity, and can be more significant if these actions or meanings are linked to a network of theories beyond the immediate research study. Internal validity is secured by ensuring the survey questionnaire content covers the research study issues (Neuman 2006). In this research study, internal validity and content validity were established by extant literature review, feedbacks from experts, and questionnaire pre-testing and modification (Dillman 2007; Warner 2008). Then, construct validity was established by the adequate definition of concepts and usage of statistical tests (Westen & Rosenthal 2003). The measurement model validity is tested by convergent validity by measurements of all items as a single underlining construct that are strongly correlated to its assumed construct and discriminate validity by measurements of each construct different from each other that each item is weakly correlated to other constructs except for its own construct (Steenkamp & Van Trijp 1991; Bagozzi 1994; Gefen & Straub 2005). After that, criterion validity was established by a substantiated measures with information in the exploratory stage and measurement of concurrent (same time) and predictive (future) through measuring instrument and scale differentiate among individuals on the basis of a time dimension (Sekaran 2003).

4.6.5.2 External Validity, Transferability, and Fittingness

The matter is whether the conclusions of an investigation have any larger import, are transferable to other contexts, and can be fitted and generalised beyond the particular research study context (Guba & Lincoln 1994; Miles & Huberman 1994; Yin 1994; Zikmund 2003; Davis 2005) in the form of statistical confidence limits (Lincoln & Guba 1985). Hence, the respond rate of the survey questionnaire is vital (Sekaran 2003). In this research study, the external validity was secured by a moderately large sample size where a higher level of response rate results in a higher probability of valid conclusion being drawn (Neuman 2006).

4.6.6 Errors

Statistical error can occur if "there is a difference between the value of a sample statistic of interest and the value of the corresponding population parameter" (Zikumnd 2003, p.376). These measurement errors can be: random sampling error (i.e. statistical fluctuation between sample result and census conducted by identical procedures), systematic error (i.e. non-sampling factors in research study design and research execution), sampling frame error (i.e. eliminate potential respondents or include non-listed respondents in population), and non-response error (i.e. sample

representation of actual and ideal samples) (Zikmund 2003; Burns & Bush 2006). The pre-testing of the survey questionnaire questions can contribute to minimising errors. Errors can be divided into type I error and type II error (Cooper & Schindler 2003; Neuman 2006). A type I error occurs when a relationship exists during the analysis but in fact it does not exist. It is the logical error of falsely rejecting the null hypothesis. However, a type II error occurs when a relationship does not exist during the analysis but in fact it does exist. It is the logical error of falsely accepting the null hypothesis. In this research study, error was minimised by careful attention given to the research study design, sampling, survey questionnaire questions, and statistical analysis.

4.8 Summary

This chapter provided a summary of Sections 4.2 to 4.8 by perceiving the discussions and justifications established in each section. The discussions in Sections 4.3 to 4.4 (paradigm and methodology levels) provided the fundamentals for the techniques in Section 4.5 (method and technique levels) that were justified in detail to investigate and analyse the conceptual model and the research questions and hypotheses with attention to the research measurement implications of Section 4.6 of this research study. This study adopted a positivist paradigm to test the research hypotheses and conceptual model and as a result selected a quantitative research approach that leads to the development of the survey questionnaire instrument for further data collection and analysis. The collection and analysis of data conducted in the next chapter can predict the overall research hypotheses and conceptual model looking at the innovation practices for SMEs and their impact on business growth performance in the emerging Dubai market in the UAE.

The next chapter, Chapter 5, presents the results of the collection and analysis of the data for this study.

CHAPTER 5 DATA COLLECTION AND ANALYSIS

5.1 Introduction

This chapter offers analyses and interpretations of findings from the field survey questionnaires. Once the raw data has been collected, the emphasis in the research process turns into the analysis of data for interpretations by applying simple and advanced statistical approaches.

It presents the data preparation processes and examines the assumption testings of identification of outliers and normality of distributions. The descriptive statistics for the individuals' and the firms' demographic information are presented. It conducts the inferential statistics for evaluating the hypothesised conceptual model a using structural equation modelling technique (i.e. Partial Least Squares technique) and discusses the open-ended questions. Finally, the chapter is summarised.

5.2 Data Preparation

The process of raw data preparation is conducted prior to the process of data analyses. Raw data should be converted into a format suitable for decision-makings and conclusions (Zikmund 2003). Data is needed to be edited, coded, cleaned, screened, and entered into a mathematical computer software programme for further analyses and interpretations that is the investigator is familiar with detailing the datasets and the relationships among constructs (latent variables) under exploration and investigation (Sekaran 2003; Hair et al. 2006).

5.2.1 Data Editing and Coding

The raw data was subjected to editing and coding to check and verify errors before the process of data analyses was conducted (Cooper & Schindler 2003; Sekaran 2003; Zikmund 2003). The process of data editing provided a check for data omission, reliability, and validity before coding and later transferring into the data analysis software (Emory & Cooper 1991; Ticehurst & Veal 2000). Upon receiving the survey questionnaires, they were checked for both completeness and eligibility of respondents, resulting in five survey questionnaires that were found to be incomplete and discarded. Further, the process of data coding was to identify and classify each response with numerical scores and symbols (Ticehurst & Veal 2000; Zikmund 2003). The survey questionnaire consisted primarily of pre-coded questions and items except for the ones where the option of 'other' could have been selected and respondents were asked to provide more information. Then, the reverse scored questions and items were deliberately included to require respondents to engage in a more controlled cognitive process that were re-coded. Finally, the last part of the survey questionnaire, the open-ended question, encouraged respondents to provide more comments and suggestions related to the study were grouped into meaningful categories. All questions and items were examined and checked to ensure that they were consistent with pre-coded data (Davis 2005).

5.2.2 Data Cleaning and Screening: Missing Values

The processes of data cleaning and screening required data to be coded, consistent, and checked for missing responses and values in the returned survey questionnaires (Tabachnick & Fidell 2001; Hair et al. 2006; Manning & Munro 2006). These processes improved the accuracy of data analyses and ensured that assumptions for data analysis techniques were not violated (Tabachnick & Fidell 2001; Hair et al. 2006). Checking the accuracy of data was important by verifying out-of-

range responses, values, means, and standard deviations in order to be credible (Tabachnick & Fidell 2001). Missing data occurred either as a systematic event external to respondents (i.e. data collection problems and/or data entry errors) or an action on part of respondents (i.e. refusal to participate) that could lead to missing information (Berg 2005; Hair et al. 2006). In dealing with missing data, Byrne (2001) suggests three methods that are pair-wise deletion (exclude missing data on variables involved in a particular computation), list-wise deletion (exclude missing data on variables involved in all computations), and imputation (replace missing data with mean estimate values). Missing data was not an issue in this research study as only five survey questionnaires were returned incomplete. Further review of missing data was performed during data entry.

5.2.3 Data Entry

Data was entered into statistical computer software programs. This study used both the SPSS 20.0 and Smart-PLS 2.0 M3 statistical software programs to check assumption testings (i.e. outliers, normalities, and transformations) and conduct descriptive and inferential statistical analyses to further test the research hypotheses and conceptual innovation-based model (Petrie & Sabin 2000; Tabachnick & Fidell 2001; Burns & Bush 2006).

5.2.4 Response Rate

The survey questionnaire research strategy was selected to study 600 cases of the population of small and medium firms using the disproportional stratified sampling technique type with 208 returned survey questionnaire samples, 203 samples were selected, excluding some incomplete ones. Allocca and Kessler (2006, p.279) argue that "much of the research for SMEs is based on case studies and therefore limited generalisability". The response rate can help safeguard against non-response bias and offered generalisation. Survey questionnaire responses were from 208 small and medium firms after two reminders. There were two survey questionnaires returned after the cut-off date and as a result could not be included. Excluding five cases with severe internal non-response or incomplete one and/or more sections, there was an effective sample of 203 to proceed with the survey questionnaire analysis process, which represented 33.83% of the total number of survey questionnaires sent (Sekaran 2003). The response rate fell within the average response rate range of 35.7% (+/- 18.8), which was normal for a research study conducted at the organisational level (Baruch & Holtom 2008; Anseel et al. 2010). However, this study uses the Partial Least Squares technique that could accept a smaller sample size (Johansson & Yip 1994). Thus, a total of 203 usable and completed survey questionnaires were received for a response rate of 33.83% as

shown in Table 5.1. The response rate level was satisfactory. Additional feedback related to the survey questionnaire layout, design, and overall professional appearance was very positive, with some respondents adding additional complimentary slips and business cards with invitations to return if additional information was required. Some firms were even impressed with the subject matter and requested copies of the survey questionnaire for their future improvements.

Table 5.1: Response rate.

Categories	Number of Firms	Percentages
Population/Sample	600	100
Total Responses	208	34.67
Incomplete	5	0.83
Total Usable Responses	203	33.83

5.2.5 Non-Response Bias

Non-response bias "exists when respondents to a survey are different from those who did not respond in terms of demographics or attitudinal variables" (Sax, Gilmartin & Bryant 2003, p.409). Although the existence of a high response rate provided some confidence that non-response was not an issue in this study (Weiss & Heide 1993). Yet, non-response bias needed to be addressed for reassurance between respondents and non-respondents (Lambert & Harrington 1990; Hill et al. 1997). Non-response bias could be answers classified unusable, respondents refused to participate, respondents discontinued answering questions, and/or respondents refused to answer particular questions but continued with other questions (Burns & Bush 2006). In this study, the first and the second groups returned the survey questionnaire and the third group was described by the five cases with severe internal non-response or incomplete sections of the survey questionnaire.

Non-response to survey questionnaires might potentially bias the results, as those who responded to such survey questionnaires might differ in some systematic way from non-respondents (Hill et al. 1997). A high non-response rate could create a heightened probability of statistical biases and any level of non-response could induce non-response bias in the survey questionnaire estimates (Baruch & Holtom 2008). The potential problem of non-response argument was a critical step in order to conduct high quality research using survey questionnaire data (Berg 2005). Thus, the simplest way to reduce non-response bias was to attempt to increase the response rate (Lambert &

Harrington 1990). There could also be different ways in dealing with the potential problem of non-response bias such as estimating effect of non-response biases over subjective and extrapolation techniques and adjust accordingly; comparing composition of responders and non-responders on features relevant to the study; and sampling of non-responders after planned waves completed to determine presence and direction of non-response bias (Armstrong & Overton 1977; Lambert & Harrington 1990). Armstrong and Overton (1977) further emphasise that the argument behind estimating of non-response bias was to re-analyse previous survey questionnaires to save time and money. The most appropriate approach carried out in this study was the extrapolation approach technique in which assessing the difference between early-responders and late-responders of the returned survey questionnaires (Armstrong & Overton 1977; Lambert & Harrington 1990). This technique, as presented by Armstrong and Overton (1977), was based on the contention that contrary to early-responders, late-responders were more likely to be similar to non-responders. According to Weiss and Heide (1993), early responders were defined as the first 75% of firms returning the survey questionnaires while the last 25% of firms were considered to be late-respondents and representative of firms that did not respond to the survey questionnaires.

In this study, 75.4% of the completed responses were received within the first two weeks and 24.6% in the last week (Weiss & Heide 1993). The three week period was used as a cut-off time for the return of the survey questionnaires. In the extrapolation technique, non-response bias was assessed by a comparison of sample and population means statistics of early-respondents (n=153) and late-respondents (n=50) data to check for any significant differences. Using an independent-samples t-test ($p < 0.05$), early and late data respondents were compared on a number of key characteristics such as: firms' description of current businesses, number of employees, number of years established, strategic orientations, innovation strategies, and innovation types. The Levene's test for homogeneity of variances was also not significant with $p > 0.05$ and the t-value is statistically not significant with $p < 0.05$. Based on these and considering that the response rate was relatively high and neither procedure revealed significant differences between sampled and target population, it was concluded that non-response bias did not appear to be a significant issue between the sampled and targeted populations (Armstrong & Overton 1977). The data suggests that there were no significant differences at the 0.05 level between the means of the early and late responders as shown in Table 5.2. The two samples were from the same population. These results suggest that non-response bias did not appear to be a problem. The researcher also contacted ten individuals of the non-responders category by telephone to find out the reasons for their non-

responses (Hill et al. 1997). Thus, the offered reasons for non-responses included: confidentiality, internal policies, time constraints, and travel commitments.

Table 5.2: *t*-test of difference between early-responders and late-responders data.

Demographics and Variables	Early-Respondents Means	Late-Respondents Means	*t*-Values	*p*
Description of Current Businesses	2.52	2.60	-0.677	0.499
Number of Employees	2.18	2.40	-0.991	0.323
Number of Years Established	3.01	3.14	-0.456	0.649
Strategic Orientations	1.67	1.90	-1.644	0.102
Innovation Strategies	1.12	1.08	0.603	0.547
Innovation Types	1.76	1.70	0.495	0.621

5.2.6 Common Method Bias

Common method bias is "variance that is attributed to the measurement method rather than to the constructs the measures represent" (Podsakoff et al. 2003, p.879). It is a subset of method bias (Burton-Jones 2009), which occurs in quantitative research when the covariance is caused by the measurement approach rather than the measured trait. This can cause the measured relationships between latent variables to either inflate or deflate when compared to the true value, thus leading to a systematic measurement of both type I and II errors (Podsakoff & Organ 1986; Williams & Brown 1994; Doty & Glick 1998; Podsakoff et al. 2003). As this study collected data from a single respondent in each responding firm using a similar response format and tool (i.e. survey questionnaire) and at a same time period (i.e. cross-sectional research design) a potential common method (variance) bias might be introduced.

Methodologically, this potential problem could be tested using Harman's single factor test using unrotated Principal Component (factor) Analysis with varimax rotation to determine the number of factors that were necessary to account for variance in latent variables (Harman 1967; Podsakoff et al. 2003). Accordingly, if common method bias existed, either a single factor emerged from the unrotated factor analysis of all questions and items (Podsakoff & Organ 1986), or one general factor accounted for most of the common variance existing in the data emerges (Doty & Glick 1998). In this study, an exploratory factor analysis using a Principal Components Analysis of 203 cases sample size was conducted on the 66 items making-up 11 latent variables with eigenvalue

greater than one criterion revealed 13 distinct factors that accounted for 70% of variance. So, the first factor captured only 29% of variance in the data. As a single factor did not emerge and the first factor did not account for most of the variance, common method bias did not appear to be a problem affecting the results. Another test was performed at a later stage of analysis to examine the latent variables correlation matrix as calculated by the PLS technique and whether any latent variables correlate is extremely highly (> 0.90) (Pavlou, Liang & Xue 2007) (see Appendix J). None of the latent variables were highly correlated, which further indicates that common method bias is not a problem.

5.3 Assumption Testings

Statistical tests have different sets of assumptions (i.e. identification of univariate and multivariate outliers and normality of distributions) underlying each test such as if respondents and scores are from the same and/or another population and if they are normally distributed (Manning & Munro 2006; Neuman 2006).

5.3.1 Outliers Identifications

Outliers are observations distinct from the main data falling outside the control line. Outliers can be either univariate with an extreme score on a single latent variable and/or multivariate with an unusual score pattern across a range of different latent variables (Schumacker & Lomax 1996; Petrie & Sabin 2000; Cooper & Schindler 2003; Hair et al. 2006; Manning & Munro 2006). The existence of univariate and/or multivariate outliers can be either due to an unusual pattern of cases compared to the rest of the cases or an unusual combination of scores on two or more latent variables (Tabachnick & Fidell 2001). Outliers can be identified by graphical methods and single latent variable data display (Petrie & Sabin 2000). Outliers sometimes can exist when considering the relationships between latent variables. The identification of univariate and multivariate outliers among the latent variables were performed.

For univariate outliers on a single latent variable, in an attempt to identify univariate outliers for all latent variables, histograms and box-plots were visually inspected and standard z-scores were calculated for each respondent. Three potential outliers (cases 50, 97, and 196) were identified. Each of these respondents displayed extreme distribution of scores and absolute values in excess of 3.29 ($p < 0.001$). For multivariate outliers across a set of latent variables, tests for multivariate outliers were conducted for the latent variables using the techniques described by Tabachnick and Fidell (2001). Using data from the set of latent variables the Mahalanobis distance was calculated for each case. The Mahalanobis distance should be interpreted as an X^2 statistic with the degrees of freedom equal to the number of independent latent variables and a criterion of $p < 0.001$ used to evaluate whether a case is judged to be a multivariate outlier (Tabachnick & Fidell 2001), and hence critical values of $X_{10}^2 = 27.877$ and $X_1^2 = 10.828$ were used. Three cases (50, 97, and 196) were identified with Mahalanobis scores in excess of these critical values and so multivariate outliers were identified. The identified outliers were also examined for possible procedural errors

such as data entry. With further restriction data analyses were based on complete data and the covariance matrix was based on a sample size of 200 (Bentler & Chou 1987). Therefore, there was effectively a sample size of 200 cases for the subsequent survey questionnaire analyses.

5.3.2 Normality Distributions

The normality of distributions of latent variables with interval and ratio scales is tested to examine the data for a normal outcome having a bell shape (Neuman 2006). The common problems with normality of distributions are skewed (positive or negative), too flattened (platykurtic), or too peaked (leptokurtic). One solution can be a transforming process to perform further analysis using transformed scores (Manning & Munro 2006) or using non-parametric tests (Petrie & Sabin 2000). The normality of distributions was performed by calculating the values of skew and kurtosis for the distribution of scores for the latent variables.

The skew value provided an indication of the symmetry of the distribution while the kurtosis value measured whether the distribution was flatter or more peaked than a normal distribution (Collis & Hussey 2009; Pallant 2011). To test whatever the distribution's skew significantly deviated from normal distribution, the value for skew was divided by the standard error of skew and a similar procedure was conducted for kurtosis where the value for kurtosis was divided by the standard error of kurtosis (Tabachnick & Fidell 2001; Manning & Munro 2006). This yielded a z-score (i.e. standardised score) based on the number of standard deviation of above or below the mean, which was interpreted to be significant if it exceeded an absolute value of 2.58 ($p < 0.001$) for a sample less than 300 (Tabachnick & Fidell 2001; Neuman 2006). Following similar general procedures, the values for skew of the 11 latent variables investigated were calculated, four were normally distributed: government supported developments (-0.523), financial resources (0.756), academic-industry collaborations (-0.919), and market dynamics (0.076) that were not significant as the skew values did not exceed the absolute value of 2.58 ($p < 0.001$); and seven were not normally distributed and significantly negatively skewed: management orientation (-3.23), organisational culture (-5.70), technology orientation (-4.23), alliance and cooperation (-4.42), market orientation (-2.96), innovation practices (-4.23), and business growth performance (innovation -3.07 and general -3.03). The skew values exceeded the absolute value of 2.58 ($p < 0.001$). At the same time, whereas all of the 11 latent variables investigated regarding the kurtosis phenomenon were not significant as the kurtosis values did not exceed the absolute value of 2.58 ($p < 0.001$). In order to resolve this issue of the normality distributions, there were two methods in dealing with

normality of distributions problem that were either deleting the cases or transforming the scores (Tabachnick & Fidell 2001).

Given the non-normality nature of the data, this study as a result used the Partial Least Squares path modelling technique (Wold 1982; Barclay, Higgins & Thompson 1995; Chin 1998b); similar to other structural equation modelling techniques this allowed simultaneously the assessment of both the measurement model parameters and structural path coefficients. As the covariance-based SEM technique used a maximum likelihood function, the component-based PLS technique used a least-squares estimation procedure to obtain the estimators in the model. PLS technique has a different requirement for data distribution characteristics (e.g. normality, skew, and kurtosis) that avoids a number of the restrictive assumptions underlying the covariance-based SEM technique such as, multivariate normality, which is considered to be relatively robust to deviations from normality and distribution-free technique to regression and path modelling analyses, without distributional assumptions of its non-parametric nature (Fornell & Bookstein 1982; Lohmoller 1989; Chin 1998b; Cassel, Hackl & Westlund 1999; Hulland 1999; Haenlein & Kaplan 2004; Vinzi et al. 2010; Hair, Ringle & Sarsedt 2011). Partial Least Squares technique does not assume normality and hence employs bootstrapping to obtain standard errors for research hypotheses testing. Instead it assumes that the sample distribution is a reasonable representation of the intended population distribution (Hair, Ringle & Sarsedt 2011). Even if transformation of scores improved normality by itself, it might not be helpful for improving the model as a whole (Gao, Mokhtarian & Johnston 2008). The original untransformed scores of latent variables were used in the subsequent Partial Least Squares technique analysis.

5.4 Descriptive Statistical Analysis

The descriptive statistical analyses of the individual's and firm's demographic information and general firm's business and market environments from sections A, B, and C (questions and items 1 to 20) of the survey questionnaire are presented and categorised and appears to be an indicative representation of the business community in Dubai (DCCI 2010; DSC 2010).

5.4.1 General Individual's Demographic Information

The findings of the general individual's demographic information were analysed and divided into five categories: gender, age, education level, role, and employment length as shown in Table 5.3 and in Appendix G.

Table 5.3: Demographic of individual.

Categories	Frequencies	Percentages
Gender		
Male	156	78.0
Female	44	22.0
Role		
Managing Director/General Manager/Owner/CEO	153	76.5
Director/Head/Senior Manager	41	20.5
Supervisor/Manager	6	3.0
Total	200	100.0

The results of the individuals' demographic showed that: the majority were male (78%) and the minority were female (22%); the majority were aged from 35 to 44 years (41%) and 21 to 34 years (40.5%) and the minority were aged from 55 to 64 years (2.5%) and more than 64 years (0.5%); and the majority held masters (37.5%) and the minority held certificate and diploma (3%), professional certificate and training (3%), and secondary and high school (3%). The sub-question of the individual's study or training field was only answered by 77 respondents, the majority were in the fields of business and management and the minority were in the fields of art, humanities, and communication, education and social sciences, and film production. Further, respondents were asked to indicate their role and employment length within the firm. As reported in Chapter 4, more attention was given to the identification and selection of the most appropriate individual in each

firm to be able to guarantee the reliability of information provided that the key informant was at the senior management level who had management responsibilities and control over all activities concerning innovation and knew the overall strategy of the firm to articulate and discuss matters related to innovative practices of SMEs more knowledgeably. The results of the individuals' roles showed that: the majority were managing director, general manager, owner, and chief executive or officer (76.5%) and the minority were supervisor and manager (3%) and the majority were employed less than two years (39.5%) and the minority were employed more than 15 years (4.5%) and between 12 to 15 years (3.5%).

5.4.2 General Firm's Demographic Information

The findings of the general firm's demographic information were analysed and divided into six categories: current business idea, industry-and-sector type, legal status, size, age, and market and customer as shown in Table 5.4 and in Appendix G.

Table 5.4: Demographic of firm.

Categories	Frequencies	Percentages
Current Business Idea		
Original Concept	24	12.0
Originated from Existing Concept in Dubai	45	22.5
Originated from Existing Concept Outside Dubai	131	65.5
Industry and Sector Type		
Agriculture/Forestry/Fishing	1	0.5
Energy/Mining/Chemical/Utilities (EGW)	9	4.5
Manufacturing/Engineering (Mechanical/Plant)	14	7.0
Information/Communication Technology	63	31.5
Legal/Financial Intermediation/Insurance Services	4	2.0
Healthcare/Pharmaceutical/Biotechnology	27	13.5
Education/Training/Consultancy	14	7.0
Travel/Tourism/Hospitality (Hotels/Restaurants)	4	2.0
Automotive/Aerospace Services/Security/Defence	5	2.5
Entertainment/Media	27	13.5
Transport/Logistics/Storage	3	1.5
Retail/Consumer Goods	9	4.5
Trading/Repairing Services	4	2.0
Construction/Architecture/Interior Design	15	7.5
Real Estate/Renting Services	1	0.5

Size		
1 to 9	73	36.5
10 to 49	69	34.5
50 to 99	20	10.0
100 to 149	12	6.0
150 to 199	26	13.0
Market and Customer[*]		
UAE	200	100.0
GCC/Middle East/North Africa	159	79.5
Asia/Australia/New Zealand	41	20.5
Africa	32	16.0
USA/Canada	36	18.0
Europe/Turkey/Russia	45	22.5
Central/South America	18	9.0
Online/Web-Based	20	10.0
Total	200	100.0

Note: Respondents were allowed to make multiple responses.

The results of the firms' current business ideas showed that the majority were from an existing concept from outside the Dubai market (65.5%) and the minority were from an original concept (12%). Further, as reported in Chapter 4, the dataset covered a range of manufacturing and service industries in order to explore the innovative practices of SMEs in the local Dubai market. The results of the firms' industry and sector types showed that the majority were in: information and communication technology (31.5%), healthcare, pharmaceutical, and biotechnology (13.5%), and entertainment and media (13.5%) and the minority were in the real estate and renting services (0.5%), and agriculture, forestry, and fishing (0.5%). This further showed that the information and communication technology industry sector is more dominant while the healthcare, pharmaceutical, biotechnology, and entertainment and media industry sectors are on the rise on the Dubai business and market environments. The majority of the firms' legal statuses were limited liability (57%) and the minority were joint liability (0.5%) and private joint stock (0.5%). The results of the firms' sizes and ages showed that: the majority employed one to nine employees (36.5%) and 10 to 49 employees (34.5%) and the minority employed 100 to 149 employees (6%) and the majority of firms were aged from three to five years (24.5%), from six to eight years (21.5%), and less than two years (21%) and the minority aged from 12 to 15 years (4.5%). The results of the firms' markets and customers served showed that the majority served the UAE (100%) and the GCC,

Middle East, and North Africa (79.5%) and the minority served online and web-based customers (10%) and Central and South America (9%).

5.4.3 General Firm's Business and Market Environments Information

The findings of the general firm's business and market environments information were analysed and divided into nine categories: management strategic archetype, innovation strategy, innovation type, innovation driver, innovation development and modification platform, innovative idea sourcing, new innovation launched, research and development investment, and innovation practice barrier.

5.4.3.1 Firm's Management Strategic Archetype and Innovation Strategy and Practice

Respondents were asked to describe their firm's management strategic archetype and innovation strategy and practice in the last three years as shown in Table 5.5.

Table 5.5: Management strategic archetype and innovation strategy and type of firm.

Categories	Frequencies	Percentages
Management Strategic Archetype		
Prospector	93	46.5
Analyser	81	40.5
Defender	15	7.5
Reactor	11	5.5
Innovation Strategy		
Proactive	181	90.5
Reactive	15	7.5
Passive	4	2.0
Innovation Type		
Incremental Innovation	81	40.5
Radical Innovation	88	44.0
Non-Innovation	31	15.5
Total	200	100.0

The results of the firms' management strategic business archetypes showed that the majority were prospectors (46.5%) and the minority were reactors (5.5%). The majority of the firms' innovation strategies were proactive (90.5%) and the minority were passive (2%). The results of the firms'

innovation types showed that the majority were radical innovation (44%) and the minority were non-innovation (15.5%). Further, the sub-question of the firm's innovation type adopted and/or generated was answered by only 12 respondents, the majority were in technical innovation and the minority were in systemic and administrative innovation.

The following subsections of the firm's innovation practice driver, innovation development and modification platform, innovative idea sourcing, new innovation launched, and research and development investment data analyses were only from 169 (84.5%) out of 200 respondents that possess innovation practices (incremental and/or radical innovation types).

5.4.3.2 Firm's Innovation Driver and Innovation Development and Modification Platform

Respondents were asked to indicate their firm's innovation driver and innovation development and modification platform as shown in Table 5.6.

Table 5.6: Innovation driver and development and modification platform of firm.

Categories	Frequencies* (Out of 169)	Percentages
Innovation Driver		
Management	122	72.2
Customers	98	58.0
Technology	92	54.4
Employees	88	52.1
Competition	79	46.7
Market	76	45.0
Growth	60	35.5
Partners	40	23.7
Internal Culture	34	20.1
Suppliers	28	16.6
Intellectual Property/Patent Award	22	13.0
Finance	16	9.5
Legislation	11	6.5
Government Grants	7	4.1
Innovation Development and Modification Platform		
Customer Added-Value	95	56.2
New Development	94	55.6
Increased Efficiency	90	53.3
Quality Improvement	87	51.5

Strategic Growth	81	47.9
Cost Reduction	65	38.5
Market Competition	63	37.3
Market Growth	54	32.0
New Business Model	51	30.2
Market Shift/Demand	41	24.3
Financial Growth	39	23.1
Incremental Improvement	33	19.5
Legislation/Regulation Adjustment	16	9.5
ISO Certification	15	8.9
Investors	1	0.6

Note: Respondents were allowed to make multiple responses.

The results of the firms' innovation drivers showed that the majority were management (72.2%), customers (58%), technology (54.5%), employees (52.1%), competition (46.7%), and market (45%) and the minority were finance (9.5%), legislation (6.5%), and government grants (4.1%). The results of the firms' innovation development and modification platforms showed that the majority were customer added-value (56.2%), new development (55.6%), increased efficiency (53.3%), quality improvement (51.5%), and strategic growth (47.9%) and the minority were legislation and regulation adjustment (9.5%), ISO certification (8.9%), and investors (0.6%).

5.4.3.3 Firm's Innovation Idea Sourcing

Respondents were asked to indicate their firm's innovation idea sourcing as shown in Table 5.7.

Table 5.7: Innovation idea sourcing of firm.

Categories	Frequencies* (Out of 169)	Percentages
Customers	86	50.9
Management	78	46.2
Employees	77	45.6
Networks/Collaborations	73	43.2
Internet	70	41.4
Conferences/Seminars/Exhibitions	66	39.1
Market	62	36.7
Workshops/Training	51	30.2

Partners	47	27.8
Technology Transfer Centres	47	27.8
Competitors	46	27.2
Suppliers	42	24.9
Business Links/Trade Associations	40	23.7
Academic/Research Institutions	40	23.7
Consultants	25	14.8
Government Agencies	17	10.1
Financial Institutions	6	3.6
Library	6	3.6
Clusters	4	2.4
Investors	1	0.6

Note: Respondents were allowed to make multiple responses.

The results of the firms' innovation ideas sourcing showed that the majority were from customers (50.9%), management (46.2%), employees (45.6%), networks and collaborations (43.2%), and Internet (41.4%) and the minority were from government agencies (10.1%), financial institutions (3.6%), library (3.6%), clusters (2.4%), and investors (0.6%).

5.4.3.4 Firm's New Innovation Launched and Research and Development Investment

Respondents were asked to indicate their firm's new innovation launched (product and/or service) and research and development investment in the last three years as shown in Table 5.8.

Table 5.8: New innovation launched and research and development investment of firm.

Categories	Frequencies	Percentages
New Innovation Launched		
Less than 2	33	19.5
3 to 5	64	37.9
6 to 8	42	24.9
9 to 11	9	5.3
12 to 14	3	1.8
More than 14	18	10.7

Research and Development Investment		
Less than 500,000 AED	92	54.4
500,001 to 1,000,000 AED	20	11.8
1,000,001 to 2,000,000 AED	19	11.2
2,000,001 to 4,000,000 AED	12	7.1
4,000,001 to 8,000,000 AED	7	4.1
More than 8,000,000 AED	19	11.2
Total	169	100.0

The results of the firms' new innovations launched showed that the majority had three to five new products and/or services (37.9%) and the minority had 12 to 14 new products and/or services (1.8%). The results of the firms' research and development investments showed that the majority were less than 500,000 AED (54.4%) and the minority were 4,000,001 to 8,000,000 AED (4.1%). The sub-question of the firm's new product and/or service types was answered by only 33 respondents, the majority were tools and the minority were value-added and curative.

5.4.3.5 Firm's Innovation Barrier

Respondents were asked to indicate their firm's innovation barrier as shown in Table 5.9.

Table 5.9: Innovation barrier of firm.

Categories	Frequencies* (Out of 200)	Percentages
Economic Risks/Inflation	103	51.5
Financial Fund/Capital Resources	83	41.5
Customers (Attitude/Behaviours)	71	35.5
Set-up/Operation Costs	62	31.0
Legislation/Regulation Policies	57	28.5
Market (Information/Competition/Access Locally-globally/Size)	46	23.0
Suppliers (Technical level/Delay/Price Repercussion)	35	17.5
Technology/Knowledge Transfer Mechanisms	29	14.5
Uncertainty of Continued Employment (Work Visa 3years Duration)	29	14.5
Shortage of Talent/Managerial Expertise	26	13.0
Local Sponsorship Law (51% local vs. 49% non-local)	25	12.5

Access to Research/Discovery	23	11.5
Internal Culture/Rigidity	22	11.0
Shortage of Good Ideas	11	5.5
Short-term Pay-off/Inward Focus (Limited to Local Market)	11	5.5
IP Process/Lack of Industry Ecosystem/Lack of Government Support/Cost of Visa and Regulation/Availability of Time/Agency Agreements/Territorial Restrictions/Lack of Long-term Strategic Plan	7	3.5

Note: Respondents were allowed to make multiple responses.

The results of the firms' innovation barriers showed that the majority were economic risks and inflation (51.5%), financial fund and capital resources (41.5%), and customers (35.5%) and the minority were shortage of good ideas (5.5%), short-term pay-off and inward focus on local market (5.5%), and IP process, lack of industry ecosystem, lack of government support, cost of visa and regulation, availability of time, agency agreements, territorial restrictions, and lack of long-term strategic plan (3.5%).

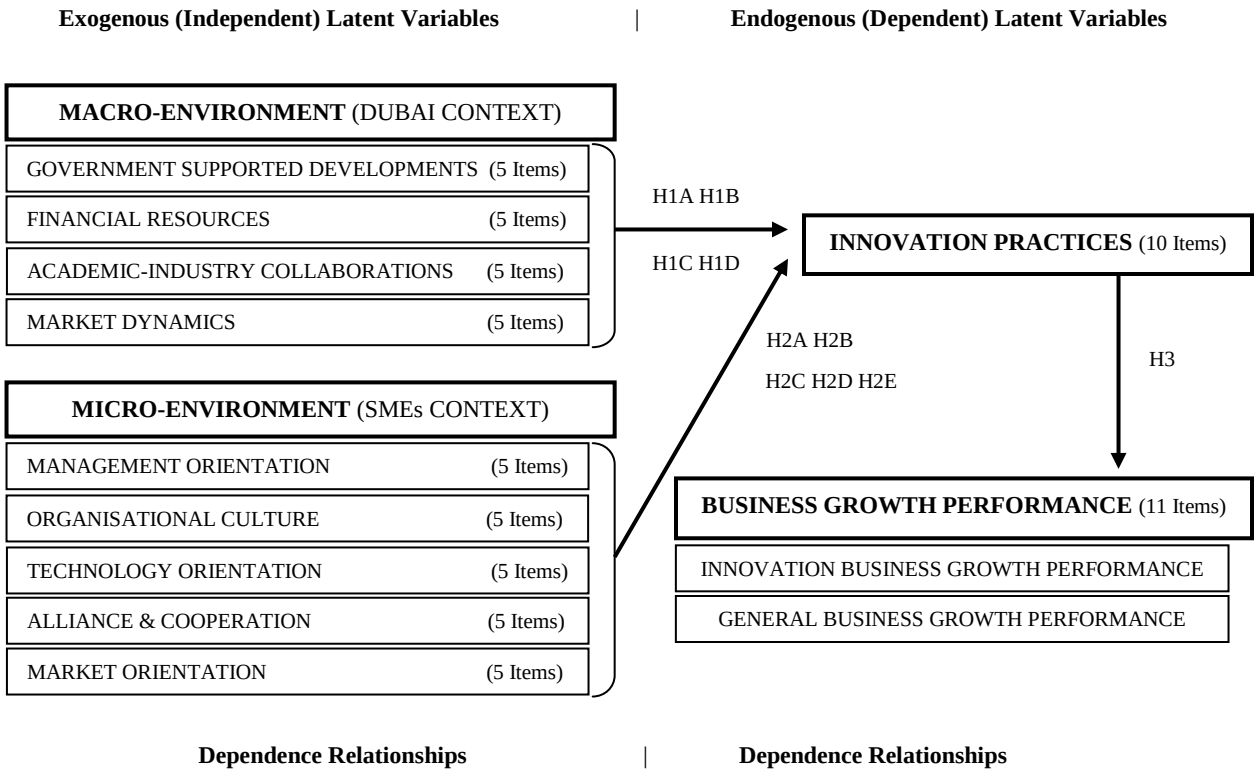
5.5 Inferential Statistical Analysis

The inferential statistical analysis is used to test the research hypotheses about the relationships in the population that are based on measurements made on the sample (Ticehurst & Veal 2000). The study applies the Partial Least Squares technique to be able to evaluate the psychometric property of the interval measurement scales and to test the hypothesised conceptual model. The assessment of the hypothesised conceptual model using the structural equation modelling technique (i.e. PLS) was obtained from sections D, E, and F of the survey questionnaire (questions and items 21 to 86).

5.5.1 Conceptual Model: The Path Overview

The hypothesised conceptual model (latent variables model) is presented in Figure 5.1.

Figure 5.1: Path diagram of a visual representation of the hypothesised conceptual model.



The identified relationships in the hypothesised conceptual model have 11 constructs comprising nine exogenous and two endogenous constructs. The absence of lines connecting each construct implies no hypothesised direct effects. Exogenous constructs are independent latent variables in

all equations in which they appear, for example, government supported developments and market orientation. Endogenous constructs are dependent latent variables, for example, business growth performance, although they might too act as independent latent variables in some equations, for example, innovation practices. The conceptual model path diagram illustrates all the measurement and structural paths between the independent latent variables and the intervening and dependent latent variables. Further, the MIMIC mode (i.e. multiple effect indicators for multiple causes), that is a combination of reflective and formative indicators, can be used in the Partial Least Squares technique (Chin 1998b; Diamantopoulos & Winklhofer 2001; Tenenhaus et al. 2005). However, in this conceptual model, all items are modelled as reflective indicators because they are viewed as effects (not causes) of latent variables (Bollen & Lennox 1991), and are interchangeable that the removal of any item should not cause changes in its latent variable that is compared to formative indicators (Chin 1998b).

5.5.2 Measurement Model: The Evaluation of Latent Variables and Items

The measurement model (outer model) relates the observed and measured items to the unobserved latent variables and describes their measurement properties (Schumacker & Lomax 1996; Bagozzi 1997; Tabachnick & Fidell 2001). The measurement model consists of 66 measured items and 11 latent variables using a multi-item scale. All measured items are allowed to load on only one latent variable each so the error terms are not allowed to relate to any other items in the model. Nine latent variables (macro and micro-environmental determinants) are indicated by five measured items, one latent variable (innovation practices) is indicated by ten measured-items, and one latent variable (business growth performance) is indicated by 11 measured items. Every individual latent variable is identified and all of the measures are reflective items that are the direction of causality from the latent variables to the measured items. The quality of items and latent variables of the measurement model was assessed by Principal Components Analysis, reliability, average variance extracted, validity, and model coefficients.

5.5.2.1 Exploratory Factor Analysis

Exploratory factor analysis, Principal Components Analysis (PCA) method, is applied to simplify patterns within a complex set of latent variables that can be an alternative approach to the Partial Least Squares factor extracting and data reduction steps (Cooper & Schindler 2003; Gefen & Straub 2005; Hair et al. 2006; Manning & Munro 2006). PCA is conducted to examine items of each latent variable and to summarise the important information in a set of observed variables by

expressing what is common among the original latent variables. PCA is used to group a number of possibly correlated items into a smaller number of underlying dimensions (Churchill 1999), which is to reveal if the set of items within each latent variable are homogenous and measure a single underlying dimension (Manning & Munro 2006). A minimum number of three to five items per latent variable are adequate in conducting a Principal Components Analysis (Tabachnick & Fidell 2001; Hair et al. 2006); however, no importance is given in this analysis to how each independent latent variable may be related to the dependent latent variable.

The Principal Components Analysis, followed by a varimax rotation, was conducted to evaluate the underlying dimensions of the 66 items and the 11 latent variables and later to identify the number of components and factors emerging in the survey questionnaire. The KMO measure score was 0.892 and the Barlett's Test of Sphericity was 9402.918 ($p < 0.0001$). Further, the initial data produced an outcome of 13 components and factors with an eigenvalue greater than one criterion that accounted for 70% of the variance. The latent variable with heavily loaded on factor one was business growth performance (i.e. divided into innovation and general), factor two was innovation practices, factor three was technology orientation, factor four was organisational culture, factor five was financial resources, factor six was market orientation, factor seven was academic-industry collaborations, factor eight was management orientation, factor nine was alliance and cooperation, factor ten was government supported developments, factor 11 and 12 were market dynamics, and factor 13 was very weak correlations of mixed items in that order (see Appendix H). Given the outcomes, three (out of 66) items of factors ten and 12 and two (out of 13) latent variables of factors 12 and 13 could be eliminated from the measurement model. However, over 67% of the total variation is attributable to the 11 factors. Thus, no changes are made to the outer measurement model after this initial stage of exploratory factor analysis. What is more, the cross-loading of each item with its relevant latent variable is further assessed using the Partial Least Squares factor extracting and reduction methods for confirmatory factor analysis.

5.5.2.2 Confirmatory Factor Analysis

Confirmatory factor analysis is applied to test the uni-dimensionality of the scale developed by exploratory factor analysis and to measure the relationship between items and their latent variables in the outer measurement model (Schumacker & Lomax 1996; Tabachnick & Fidell 2001). The measurement model is a reflective model and consists of 66 items and 11 latent variables. To estimate the parameters in the measurement model, a centroid weighting scheme (300 maximum

iterations) and an abort criterion for the iterative estimation process were selected as a change of the estimated values of just 0.1-5 % between two iterations.

5.5.2.2.1 Reliability (Individual Item Reliability, Cronbach's Alpha, and Composite Reliability)

Reliability is used to measure the relationships between latent variables and correlating items and indicates how well the correlations between measures of the corresponding theoretical concept (Barclay, Higgins & Thompson 1995). Individual item reliability specifies standardised loadings of individual item reliability to measure the relationship between observed variable and correlating unobserved variable. Cronbach's alpha provides the lowest of a number of possible estimates and is positively linked to the number of items in the scale and to the average correlation among items (Chin 1998b). Composite reliability is an alternative measure because a coefficient alpha may over or under estimate scale reliability. Loading may be lower when the measurement model is tested in a different context and a negative coefficient alpha indicates a violation of reliability (Barclay, Higgins & Thompson 1995; DeVellis 2003). Individual item reliability, Cronbach's alpha, and composite reliability of 0.707 or above are suitable that items are performing well in capturing a particular latent variable; however this threshold can be flexible and 0.60 level is also adequate when additional items are added in the block or other questions measuring the same latent variable have high reliability scores (Barclay, Higgins & Thompson 1995; Chin 1998b; Hair et al. 2006; Johnson, Herrmann & Huber 2006).

Reliability was tested with individual item reliability, Cronbach's alpha, and composite reliability by assessing the outer loadings of items on the latent variable, which intend to measure (Barclay, Higgins & Thompson 1995). Individual item reliability and outer loadings for the 66 items were examined by looking at observed item loadings on their own unobserved latent variables. All loadings were above the recommended 0.707 parameter value, while four items (item 5 (Q35) within academic-industry collaborations, item 4 (Q64) within market orientation, item 3 (Q80) within innovation business growth performance, and item 1 (Q79) within general business growth performance observed variables) remain below the 0.707 acceptable level but still above the threshold of 0.60 level (0.6127, 0.6844, 0.6616, and 0.6905 respectively). However, three items (item 5 (Q25) of government supported developments and items 4 (Q39) and 5 (Q40) of market dynamics) remain below the 0.60 acceptable level, which displayed loadings of 0.5290, 0.4407, and 0.5196 respectively. This indicated a need to re-consider these three items in the next analysis. With these patterns, it was decided that all items display adequate reliability, except for the three

items under consideration. The sixty-three items were retained in the conceptual model for further analyses. Cronbach's alpha for the 63 items and 11 latent variables scales were above the 0.707 criterion ranging from 0.8416 to 0.9216. Composite reliability for the 63 items and 11 latent variables scales were examined by looking at the items and latent variables loadings and internal consistencies. All loadings were above the recommended 0.70 parameter value ranging from 0.8866 to 0.9341 as shown in Table 5.10. That is, the outcomes were rational for newly developed scales to be tested in different contexts like the emerging Dubai business and market environments (Barclay, Higgins & Thompson 1995). With these patterns, it was judged to represent a good level of reliability (see Appendix I).

Table 5.10: Reliability measures.

Latent Variables and Items	**Outer Loadings** (Lowest – Highest)	**Composite Reliability**
Government Supported Developments (4 items)	0.7882-0.8828	0.8943
Financial Resources (5 items)	0.7072-0.8377	0.8866
Academia-Industry Collaborations (5 items)	0.6127-0.8932	0.8928
Market Dynamics (3 items)	0.8353-0.9171	0.9109
Management Orientation (5 items)	0.7175-0.8485	0.8943
Organisational Culture (5 items)	0.7677-0.8477	0.9059
Technology Orientation (5 items)	0.8088-0.8437	0.9162
Alliance and Cooperation (5 items)	0.7374-0.8259	0.8870
Market Orientation (5 items)	0.6844-0.8387	0.8880
Innovation Practices (10 items)	0.7304-0.8016	0.9341
Innovation Business Growth Performance (6 items) General Business Growth Performance (5 items)	0.6616-0.8688 0.6905-0.8880	0.9112 0.9049

5.5.2.2.2 Average Variance Extracted

Average Variance Extracted (AVE) explains the extent of the variance of latent variables and its items as a result of measurement errors (Chin 1998b). It reflects the average communality for each latent variable and is higher than its squared correlation with any other latent variables. AVE of 0.50 or more is suitable in that the latent variables explain at least 50% variance of their respective items (Fornell & Larcker 1981; Chin 1998b; Gefen & Straub 2005; Hock & Ringle 2006; Vinzi et

al. 2010). The average variance extracted for the 11 latent variables was calculated. AVE found to be good ranging from 0.5864 to 0.7732, which were above the threshold of 0.50 and indicated that for every latent variable more than 50% of the variance was explained as shown in Table 5.11. These values demonstrated reliability and discriminant validity indicating that all latent variables in the measurement model were reliable and distinct from each other. That is, these initial results provided evidence of reliability and validity.

Table 5.11: Average variance extracted measures.

Latent Variables	Average Variance Extracted
Government Supported Developments	0.6793
Financial Resources	0.6111
Academia-Industry Collaborations	0.6285
Market Dynamics	0.7732
Management Orientation	0.6294
Organisational Culture	0.6584
Technology Orientation	0.6863
Alliance and Cooperation	0.6114
Market Orientation	0.6142
Innovation Practices	0.5864
Innovation Business Growth Performance	0.6328
General Business Growth Performance	0.6571

5.5.2.2.3 Validity (Convergent and Discriminant Validities)

Validity evaluates the ability of scale and/or instrument to measure what it is required to measure (Davis & Cosenza 1993; Cooper & Schindler 2003), which is examined by convergent validity looking at the measurement of the level of coherency across items within each latent variable and discriminant validity looking at the measurement of each latent variable distinctly different from each other (Fornell & Larcker 1981; Steenkamp & Van Trijp 1991; Barclay, Higgins & Thompson 1995; Farrell 2010). For the latent variable "business growth performance," it should differ from other constructs and its items should only load on to their own constructs. Convergence validity required that the average variance extracted for each latent variable was greater than 0.50 (Fornell & Larcker 1981; Chin 1998b) and all item loadings were statistically significant and loaded on to

their own latent variable in the measurement model, as can be seen in Table 5.12. Discriminant validity required that the square root of the average variance extracted for a given latent variable to be greater than the standardised correlation, in parentheses, of a given latent variable with each of other latent variables, indicating that latent variables were distinctly different from each other (Fornell & Larcker 1981; Vinzi et al. 2010), as reported under the correlations matrix in Table 5.12, with the exception of business growth performance latent variable that was divided earlier. All items loading on their respective latent variables were above the recommended 0.707 value (i.e. with few exceptions that were greater than the recommended 0.50 value by Hulland 1999), indicating that at least 50% of the variance was shared with the latent variable and showing that all reflective items had satisfactory explanatory power to the measurement model of all the identified latent variables (Barclay, Higgins & Thompson 1995; Gefen & Straub 2005; Vinzi et al. 2010).

The discriminant validity was further evaluated at two levels. Firstly, at the item level, the factor analysis of each item's cross-loadings revealed that the items loaded onto their respective latent variable to the highest degree and that no item loaded higher onto other latent variables than on its respective latent variable, which assumes item discriminant validity (Gefen & Straub 2005). For example, the item about "flexible organisational culture" loaded more on to the organisational culture latent variable (0.790) than to the market orientation latent variable (0.439). Secondly, at the latent variable level, the squared root AVE of each latent variable exceeded correlations with any latent variables suggesting that there is satisfactory discriminant validity, what is more, these inter-correlations were low (Cool, Dierickx & Jemison 1989; Chin 1998b; Bove et al. 2009). For example, the squared root AVE of the management orientation latent variable (0.7933) exceeded the correlations (0.1977-0.6734) with other latent variables. Therefore, with these outcomes, there were satisfactory convergent and discriminant validities (see Appendix J).

Table 5.12: Cross-loadings and correlation matrix measures.

Latent Variables and Items	**Cross-Loadings** (Lowest – Highest)	**Correlation Matrix** (Lowest – Highest)
Government Supported Developments (4 items)	0.7882-0.8828	0.8242 (0.1996-0.5222)
Financial Resources (5 items)	0.7072-0.8377	0.7817 (0.0955-0.5222)
Academia-Industry Collaborations (5 items)	0.6127-0.8932	0.7928 (0.1911-0.5053)
Market Dynamics (3 items)	0.8353-0.9171	0.8793 (0.2524-0.4230)

Management Orientation (5 items)	0.7175-0.8485	0.7933 (0.1977-0.6734)
Organisational Culture (5 items)	0.7677-0.8477	0.8114 (0.2392-0.6259)
Technology Orientation (5 items)	0.8088-0.8437	0.8284 (0.1953-0.6339)
Alliance and Cooperation (5 items)	0.7374-0.8259	0.7819 (0.2681-0.5495)
Market Orientation (5 items)	0.6844-0.8387	0.7837 (0.1979-0.6259)
Innovation Practices (10 items)	0.7304-0.8016	0.7658 (0.2452-0.6861)
Innovation Business Growth Performance (6 items) General Business Growth Performance (5 items)	0.6616-0.8688 0.6905-0.8880	0.7955 (0.1321-0.8526) 0.8106 (0.0955-0.8526)

Note: Correlation matrix column includes AVE square root and correlations in parentheses.

5.5.2.2.4 Measurement Model Coefficient

The measurement outer model is estimated for the items with indexes for each latent variable and coefficients between reflective items and their latent variables. Having gained confidence that the measurements work appropriately, the next step is to examine the explanatory power of the entire model on the dependent latent variables on top of the predictive power of the independent latent variables. Since the measures of latent variables had adequate reliability and validity assessments, all items of each latent variable were kept for testing the structural model except for the following three items: item 5 (Q25) in government supported developments and item 4 (Q39) and item 5 (Q40) in market dynamics latent variables (see Appendix J). The results were adequate for newly developed scales to be tested in different contexts like the Dubai situation (Barclay, Higgins & Thompson 1995). With these results, it was concluded that reliability, AVE, and convergent and discriminant validities were acceptable to continue with the structural model analysis.

5.5.3 Structural Model: The Testing of Hypotheses

The structural model (inner model) relates to the path model with its hypothesised relationships between latent variables, which describe the nature and magnitude of the relationships between them. The model further describes the amount of explained and unexplained variance (Barclay, Higgins & Thompson 1995; Schumacker & Lomax 1996; Tabachnick & Fidell 2001; Hair et al. 2006) that includes hypotheses about relationships between latent variables but not about their means (Tabachnick & Fidell 2001). The structural inner model specifies the mediated prediction of independent latent variables by another intervening/dependent latent variable, which in turn predicts another dependent latent variable. The inner portion of the structural model involves the

dependence relationships between latent variables that represent the structural part of the model whereas the outer portion displays the specified measurements of items and their latent variables that have already been tested under the measurement model in Section 5.5.2 (Chin 1998b). The quality of the model links among the latent variables was assessed by R-square, Goodness-of-Fit, Q-square, and path coefficients of its structural model.

5.5.3.1 Structural Model Path Coefficient and Regression

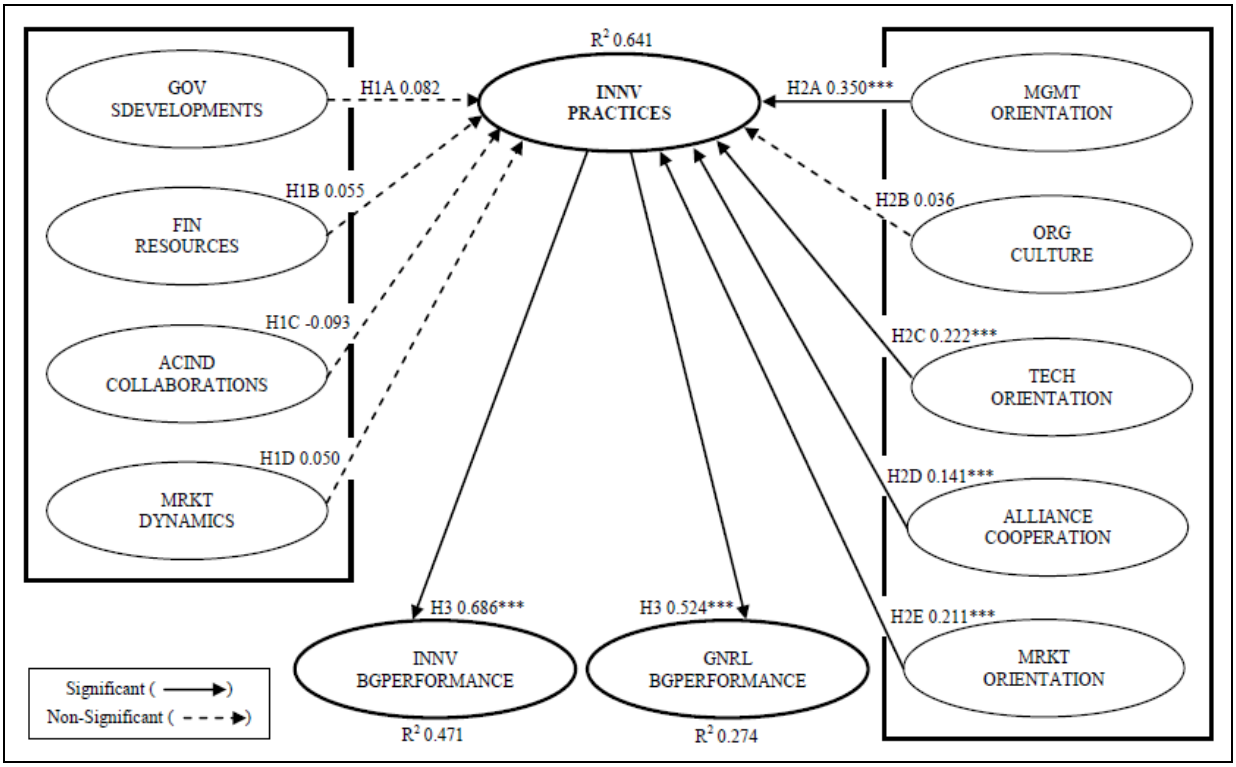
The structural model is estimated using the second-generation techniques to analyse more than one layer of linkages and relationships between independent and dependent latent variables and to apply prediction-oriented measures (distribution-free and non-parametric). The inner structure model consists of six latent variables. To estimate the parameters in the inner structural model, a bootstrapping procedure with 200 and 500 re-samples consisting of the same number of cases as in the original sample (that is 200) was applied to assess the quality of the estimated structural model parameters significance and the effect of each causal path (Barclay, Higgins & Thompson 1995; Yung & Bentler 1996; Tenenhaus et al. 2005; Vinzi et al. 2010). Potential sign changes during the course of re-sampling were treated by means of the option of individual sign changes. The Goodness-of-Fit of the model was established through the strength of each structural path and the combined productiveness of its exogenous latent variables (Vinzi et al. 2010). Blindfolding (communality and redundancy) on the endogenous latent variable innovation practices with seven and 21 omission distances was applied.

5.5.3.1.1 R-Square

The variance explained by the structural model in terms of the Squared Multiple Correlations (R^2) was examined. It accounts for the proportion of the total variance in the dependent latent variables by the independent latent variables (Chin 1998b; Tenenhaus et al. 2005). The R^2 with its similar function to a multiple regression model shows the prediction of the structure model together with the impact of the independent latent variables on the dependent latent variables. The explanatory power is examined by looking at the R^2 of the dependent latent variable (i.e. innovation practices). The R^2 value should be between 1 and 0 where 1 means a perfect prediction and the outcome should be greater than 0.1 for the endogenous latent variables (Vandenbosch 1996; Vinzi et al. 2010). The R^2 values higher than the cut-offs of 0.67, 0.33, or 0.19 levels indicate substantial, moderate, and weak correlations and effect sizes in that order (Chin 1998b; Hock & Ringle 2006). The R^2 values for the intervening and dependent latent variables (i.e. endogenous latent variables)

were calculated. The R^2 for innovation practises, innovation business growth performance, and general business growth performance were 0.641, 0.471, and 0.274 in that order. The R^2 was satisfactory and indicated that 64.1% of the variation in the degree of the innovation practices latent variable was explained and influenced by four independent latent variables of management orientation, technology orientation, alliance and cooperation, and market orientation, while 47.1% of innovation growth performance and 27.4% general growth performance were accounted for by innovation practices. With these results, it was concluded that R^2 can be of a moderate to high strength. The structural model path coefficients and R^2 correlations are presented in Figure 5.2.

Figure 5.2: Structural model path coefficients and R^2.



Note: Values are at $p < 0.05$*, 0.01**, and 0.001***, Financial Resources latent variable path coefficients is 0.054 at $p < 0.001$, and Innovation Business Growth Performance latent variable R^2 is 0.470 at $p < 0.001$.

5.5.3.1.2 Goodness-of-Fit and Q-Square

The Goodness-of-Fit (GoF) for evaluating the overall model fit is calculated by the geometric mean that is the square root of the average cross-validated communality multiplied by the average R^2 for the endogenous latent variables (Tenenhaus et al. 2005). The GoF values higher than the cut-offs of 0.36, 0.25, or 0.10 levels indicate large, medium, and small model fit in that order (Wetzels, Odekerken-Schroder & Van Oppen 2009). The GoF of the model was calculated to be

0.538 that exceeded the cut-off value of 0.36 for a good model fit. Further, the Stone-Geisser test (Q^2) is used to assess the predictive relevance and stability of the model that "represents a measure of how well observed values are reconstructed by the model and its parameters estimates" (Chin 1998a; Vinzi et al. 2010, p.471). This is to determine the ability of the model and its parameters to reconstruct the observed values (Bagozzi 1997). The Q^2 measures are classified into communality and redundancy. Communality is constructed by the scores of the latent variables and their items that measures the average percentage of variance in the items for the latent variable explained by the latent variable, while redundancy is constructed by the latent variables and predictors of blindfolding latent variables that measures the percent of variance in the items for the dependent latent variable explained by the independent latent variables (Bagozzi 1997; Chin 1998b). The Q^2 value differs from zero means a good predictive relevance and a higher positive value reflects more predictive relevance (Chin 1998b). The Q^2 was determined by the underlying dependent latent variables score from cross-validated communality and redundancy and was calculated by the blindfolding procedure of seven and 21 omission distances to further test the stability of the results (Vinzi et al. 2010). Since the Q^2 values associated with the Stone-Geisser-Criterion were reliably higher than zero, the prerequisites of predictive relevance for the model were fulfilled (Chin 1998b). The results of communality and redundancy are presented in Table 5.13.

Table 5.13: Communality and redundancy blindfolding results.

Latent Variables	Omission Distance = 7		Omission Distance = 21	
	Communality	Redundancy	Communality	Redundancy
Innovation Practices	0.5891	0.3719	0.5883	0.3752
Innovation Business Growth Performance	0.6331	0.2825	0.6328	0.2787
General Business Growth Performance	0.6573	0.1668	0.6571	0.1716

5.5.3.1.3 Structural Model Path Coefficient

The inner structural model is estimated for the dependent latent variable (i.e. innovation practices) with indexes for each latent variable and path coefficient between latent variables. The structural model estimations of R^2, path coefficients, and *t*-values ($p < 0.05$) were calculated. The hypotheses were tested by examining the magnitude of the standardised parameter estimates between latent variables together with the corresponding *t*-values (> 1.96, $p < 0.05$). Results indicated support for the four relationships seemed to be significantly correlated with innovation practices, indicating

that the path coefficients from management orientation (H2A: 0.3499, 5.1617), technology orientation (H2C: 0.2217, 3.4375), market orientation (H2E: 0.2108, 3.2338), and alliance and cooperation (H2D: 0.1414, 2.3724) had significant correlations with innovation practices; however, the path coefficients from academia-industry collaborations (H1C: -0.0929, 1.7374), government supported developments (H1A: 0.0822, 1.5071), financial resources (H1B: 0.0549, 1.0137), market dynamics (H1D: 0.0502, 1.1594), and organisational culture (H2B: 0.0356, 0.7916) to innovation practices had non-significant correlations. Innovation practices further had a significant positive correlation with business growth performance (H3: 0.6861, 15.3977 and H3: 0.5239, 9.5322). Table 5.14 displays the structural model path coefficients.

Table 5.14: Structural model R^2, path coefficients, and *t*-value measures.

Latent Variables	R^2	Path Coefficients	*t*-Values*
Government Supported Developments → Innovation Practices (H1A)	0.641	0.0822	1.5071
Financial Resources → Innovation Practices (H1B)	0.641	0.0549	1.0137
Academia-Industry Collaborations → Innovation Practices (H1C)	0.641	-0.0929	1.7374
Market Dynamics → Innovation Practices (H1D)	0.641	0.0502	1.1594
Management Orientation → Innovation Practices (H2A)	0.641	0.3499	5.1617***
Organisational Culture → Innovation Practices (H2B)	0.641	0.0356	0.7916
Technology Orientation → Innovation Practices (H2C)	0.641	0.2217	3.4375***
Alliance and Cooperation → Innovation Practices (H2D)	0.641	0.1414	2.3724*
Market Orientation → Innovation Practices (H2E)	0.641	0.2108	3.2338**
Innovation Practices → Innovation Business Growth Performance (H3)	0.471	0.6861	15.3977***
Innovation Practices → General Business Growth Performance (H3)	0.274	0.5239	9.5322***

Note: The *t*-values were significant at $p < 0.05$*, 0.01**, and 0.001***.

The significance of the path coefficients and the *t*-ratios estimates were also obtained through the bootstrap routine of 200 and 500 re-samples on innovation practices. In the bootstrap analyses, the statistical significance of the path coefficients and the *t*-ratios tended to be reduced and became more conservative as tests of the parameter significance (Fornell & Barclay 1983; Chin 1998b; Ringle, Wende & Will 2005; Vinzi et al. 2010). From the initial set of path coefficients, five were significant. With these results, the path coefficients were very stable with respect to the original sample estimates, yielding identical results to those reported for the original sample above. The

path coefficients can be applied to measure the effects of each relationship of the structural model covering total effects (direct and indirect effects). Of the nine initial latent variables, only four seemed to have direct and statistical significant effects and impacts on innovation practices indicating that the path coefficients from management orientation (0.3462, 0.3475), technology orientation (0.2244, 0.2260), market orientation (0.2235, 0.2184), and alliance and cooperation (0.1378, 0.1389) had significant positive effects on innovation practices but the path coefficients from academia-industry collaborations (-0.0830, -0.0833), government supported developments (0.0803, 0.0806), financial resources (0.0550, 0.0563), market dynamics (0.0481, 0.0478), and organisational culture (0.0284, 0.0275) to innovation practices had non-significant effects, which only supported hypotheses H2A, H2C, H2D, and H2E. Innovation practices intervening variable also had a significant positive effect on business growth performance (0.683, 0.6845 and 0.5261, 0.5257), which supported hypothesis H3. The bootstrapping results are shown in Table 5.15.

Table 5.15: Path coefficients and 200 and 500 bootstrapping procedures measures.

Latent Variables	Original Sample	Mean of Resample	*t*-Ratios*
Total Effects on Innovation Practices (R^2 = 0.641)			
Government Supported Developments (+ Sign Expected)	0.0822	0.0803 (0.0806)	1.2781 (1.2503)
Financial Resources (+ Sign Expected)	0.0549	0.0550 (0.0563)	0.7596 (0.8062)
Academia-Industry Collaborations (+ Sign Expected)	-0.0929	-0.0830 (-0.0833)	1.6010 (1.7247)
Market Dynamics (+ Sign Expected)	0.0502	0.0481 (0.0478)	0.9449 (0.9407)
Management Orientation (+ Sign Expected)	0.3499	0.3462 (0.3475)	5.1617*** (5.4131***)
Organisational Culture (+ Sign Expected)	0.0356	0.0284 (0.0275)	0.4902 (0.4782)
Technology Orientation (+ Sign Expected)	0.2217	0.2244 (0.2260)	3.4375*** (3.5327***)
Alliance and Cooperation (+ Sign Expected)	0.1414	0.1378 (0.1389)	2.3341* (2.3175*)
Market Orientation (+ Sign Expected)	0.2108	0.2235 (0.2184)	3.2338** (3.4312**)
Total Effects on Innovation and General Business Growth Performance (R^2 = 0.471, 0.274)			
Innovation Practices (+ Sign Expected)	0.6861 0.5239	0.683 (0.6845) 0.5261 (0.5257)	15.3977*** (17.4378***) 9.5322*** (10.1760***)

Note: Bootstrap in parentheses. The *t*-ratios were significant at $p < 0.05$*, 0.01**, and 0.001***.

The relative path coefficient strengths at the structural level are also evaluated by the size effects. This was done using Cohen's (1988) recommended gauges of > 0.02 for weak, > 0.15 for medium,

and > 0.35 for strong effects. Table 5.15 illustrates that: (1) management orientation was found to have a strong effect (just ≥ 0.35); (2) technology orientation and market orientation were found to have medium effects (> 0.15 and < 0.02); and (3) alliance and cooperation, academia-industry collaborations, government supported developments, financial resources, market dynamics, and organisational culture were found to have weak effects (> 0.02) on innovation practices. Further, innovation practices were found to have strong effects on innovation and general business growth performance (> 0.35). It meant that while management orientation, technology orientation, market orientation, and alliance and cooperation primarily influenced innovation practices, the impact of innovation practices could filter through business growth performance. In other words, the most significant paths in the structural model were that management orientation, technology orientation, market orientation, and alliance and cooperation enabled and promoted innovation practices and then required innovation practices to have a positive impact on business growth performance.

At this moment of the study, the researcher has tested the original structural model using the Partial Least Squares technique. The results showed a reasonably good overall conceptual model fit and generally supported hypothesised relationships. The ten research hypotheses were tested in the examination processes. Among these ten, only five presented statistical significances as shown in Table 5.16. The innovation practices intervening latent variable is influenced by management orientation (H2A), technology orientation (H2C), market orientation (H2D), and alliance and cooperation (H2E) independent latent variables and the business growth performance dependent latent variable is influenced by innovation practices (H3) intervening latent variable.

Table 5.16: Summary of research hypotheses outcomes.

Research Hypotheses	Outcomes
H1A: Government supported developments will have a significant positive effect on a firm's innovation practices.	Not Supported
H1B: Financial resources will have a significant positive effect on a firm's innovation practices.	Not Supported
H1C: Academia-industry collaborations will have a significant positive effect on a firm's innovation practices.	Not Supported
H1D: Market dynamics will have a significant positive effect on a firm's innovation practices.	Not Supported
H2A: Management orientation will have a significant positive effect on a firm's innovation practices.	Supported
H2B: Organisational culture will have a significant positive effect on a firm's innovation practices.	Not Supported
H2C: Technology orientation will have a significant positive effect on a firm's innovation practices.	Supported

H2D: Alliance and cooperation will have a significant positive effect on a firm's innovation practices.	Supported
H2E: Market orientation will have a significant positive effect on a firm's innovation practices.	Supported
H3: Innovation practices will have a significant positive effect on a firm's business growth performance.	Supported

Source: Developed for this research.

5.5.3.2 Alternative Structural Model Path Coefficient and Regression

A partially mediated model using the Partial Least Squares structural model path coefficients were also conducted between nine independent latent variables and the business growth performance latent variable, and the results of the structural model estimations of R^2, path coefficients, and *t*-values ($p < 0.05$) are presented in Table 5.17. Of the nine independent latent variables, only one latent variable had a significant correlation with business growth performance that indicated the path coefficient from market orientation to general business growth performance (0.0987, 2.1160) had a significant correlation. The results also suggest that innovation business growth performance had a significant correlation with general business growth performance (0.9489, 21.1357). Hence, the results suggest that innovation practices played a mediating role between externally driven and internally driven determinants (except for market orientation as mentioned above) and contributed to business growth performance.

Further, additional analyses using the Stepwise Multiple Linear Regression between independent latent variables and innovation practices and Analysis of Variance (ANOVA) among management strategic orientations and independent latent variables were performed to provide more insights into the study findings (see Appendix K).

Table 5.17: Alternative structural model R^2, path coefficients, and *t*-value measures.

Latent Variables	R^2	Path Coefficients	*t*-Values
Government Supported Developments → Innovation Business Growth Performance	0.4947	0.0420	0.9668
Government Supported Developments → General Business Growth Performance	0.7653	0.0140	0.4723
Financial Resources → Innovation Business Growth Performance	0.4947	-0.0702	1.1974
Financial Resources → General Business Growth Performance	0.7653	-0.0229	0.7376
Academia-Industry Collaborations → Innovation Business Growth Performance	0.4947	0.0075	0.1862
Academia-Industry Collaborations → General Business Growth Performance	0.7653	0.0419	1.4162
Market Dynamics → Innovation Business Growth Performance	0.4947	0.0389	0.9203

Market Dynamics → General Business Growth Performance	0.7653	0.0266	0.9808
Management Orientation → Innovation Business Growth Performance	0.4947	0.0639	1.1607
Management Orientation → General Business Growth Performance	0.7653	-0.0329	0.8164
Organisational Culture → Innovation Business Growth Performance	0.4947	-0.1003	1.4808
Organisational Culture → General Business Growth Performance	0.7653	0.0019	0.0569
Technology Orientation → Innovation Business Growth Performance	0.4947	0.0862	1.3887
Technology Orientation → General Business Growth Performance	0.7653	-0.0490	1.2476
Alliance and Cooperation → Innovation Business Growth Performance	0.4947	0.1346	1.8823
Alliance and Cooperation → General Business Growth Performance	0.7653	-0.0780	1.8775
Market Orientation → Innovation Business Growth Performance	0.4947	0.1018	1.4752
Market Orientation → General Business Growth Performance	0.7653	0.0987	2.1160*
Innovation Business Growth Performance → General Business Growth Performance	0.7653	0.9489	21.1357***

Note: The *t*-ratios were significant at $p < 0.05$*, 0.01**, and 0.001***.

5.6 Open-Ended Question Analysis

Towards the end of the survey questionnaire, the respondents were encouraged to make additional comments regarding innovation practices of small and medium firms in the Dubai market. This is to provide a view into the respondent's own thinking and to provide an insight where quantitative data are ambiguous (RePass 1971; Iyengar 1996). That is, 55 (27.5%) out of the 200 usable survey questionnaires enclosed additional comments. The section presents a summary of the participants' comments that were obtained from section H of the survey questionnaire. All comments were collected and grouped for additional interpretations (see Appendix L).

The first group of comments includes statements related to government supported developments. These comments denoted 29.1% and discussed issues related to government policies and industry regulations effectiveness for SMEs, quality infrastructure and facilities availability, government development agencies availability, and business and market environments cost-effectiveness.

The second group of comments includes statements related to financial resources. These comments denoted 16.4% and discussed issues related to government grants and payable loans accessibility, customised financial supports availability, angels and venture capital availability, and financial transparency and accountability standards effectiveness.

The third group of comments includes statements related to academic-industry collaborations. These comments denoted 18.2% and discussed issues related to qualified graduates availability, collaborative research participations, research institutions accessibility, and specialised trainings and seminars availability.

The fourth group of comments includes statements related to market dynamics. These comments denoted 12.7% and discussed issues related to healthy market competition and the business culture of risk-taking environments, market data availability, transparency, and market demand conditions stability.

The fifth group of comments includes statements related to organisational culture. These comments denoted 7.3% and discussed issues related to staff flexibility and freedom to encourage

creativity, less micro-management and formal procedures and processes approaches, open-culture to different ideas and perspectives, internal risk-taking culture, and reward system and workshop for new initiatives and innovations.

The sixth group of comments includes statements related to alliance and cooperation. These comments denoted 3.6% and discussed issues related to proactive relations and networks with suppliers and firms.

The seventh group of comments includes statements related to market orientation. These comments denoted 7.3% and discussed issues related to globalisation, customer satisfaction and needs, and competition advantages.

The final group of comments includes statements related to innovation practices and business growth performance. These comments denoted 5.5% and discussed issues related to resources and innovation investments for long-term progression and survival.

5.7 Summary

The chapter provided a summary of Sections 5.2 to 5.6 by noting the descriptions and discussions established in each section. The data preparation and assumption testings in Sections 5.2 to 5.3 provided the background for the analyses in Section 5.4 (descriptive statistical analysis) and 5.5 (inferential statistical analysis) that were discussed in detail to investigate and analyse the research hypotheses and conceptual model, followed by the open-ended questions analyses of Section 5.6 for this study. Overall, five hypotheses were positively significant (H2A, H2C, H2D, H2E, and H3), four hypotheses were positively non-significant (H1A, H1B, H1D, and H2B), and one hypothesis was negatively non-significant (H1C) that are to be discussed in the next chapter.

The next chapter, Chapter 6, discusses the results of the hypothesised conceptual model testing and other data analysis undertaken for this study.

CHAPTER 6 RESULTS AND DISCUSSION

6.1 Introduction

This chapter provides a discussion of the results to address the research problem and objectives and discloses the enabling factors that influence the innovation practices of SMEs to support higher business growth performance in the context of the emerging Dubai market, which offers a better understanding of the interactions between factors in the conceptual innovation-based model. The findings are compared to previous research studies in the business and innovation management literature. An overview of the research questions, hypotheses, and conceptual model is presented and the findings are discussed in terms of: general firm's business and market environments and macro and micro environmental determinants (H1A-H2E) and business growth performance (H3) in view of innovation practices. These findings are in particular looked at from SMEs perspectives and an innovation perspective in the emerging Dubai market context in the United Arab Emirates.

It presents the building blocks overview of the study. The study findings are discoursed. Finally, the chapter is summarised.

6.2 The Study Building Blocks Overview

This study, and its research problem, is to identify and examine the enabling factors that influence the innovation practices of small and medium firms to support continuous higher business growth performance in the emerging Dubai market in the United Arab Emirates. As discovered from the pertinent literature (the parent and immediate disciplines), the proposed research objectives to be achieved from this study: (1) to provide new insights into the innovation development activities of an emerging market (the macro-environmental perspective); (2) to gain a better understanding of SMEs' innovation capabilities and practices (the micro-environmental perspective); and (3) to determine the impact of innovation practices on the business growth performance of SMEs.

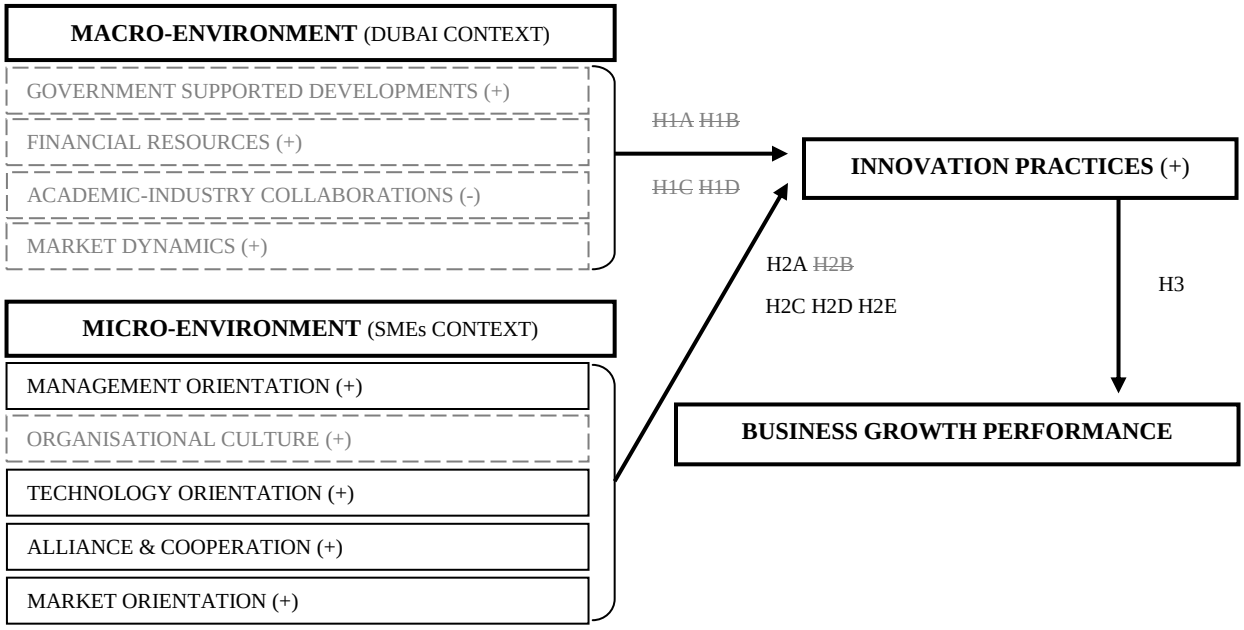
This study demonstrates the importance of adopting a holistic approach to the management of innovation, incorporating both the macro-(external) and micro-(internal) environmental contexts. The business and innovation management literature are reviewed to ascertain and develop the study shortcomings. Based on a review of relevant literature, it is clear that the innovation theory and the theory of the firm perspectives are useful theoretical domains to understand innovation practices, particularly of small resource constrained firms. This study is conducted to determine: (1) the effect of nine key macro and micro-environmental determinants posited from the literature on innovation management; (2) the hypothesised effect of innovation practices on business growth performance; and (3) the context of the emerging Dubai market in exploring the relations among the macro-(external) and micro-(internal) environmental determinants, innovation practices, and business growth performance within SMEs.

The significance of the study findings are presented and discussed to demonstrate how they fit into the literature and the current business practices by examining each of the research hypotheses and conceptual model.

6.3 The Study Findings

The study findings are presented to discuss the outcomes of the statistical data analyses using the Partial Least Squares path modelling technique. The research hypotheses and conceptual model are assessed using data collected from SMEs to answer the research questions. Altogether, five out of ten hypothesised relationships are found to be statistically significant and supported by the data. Hypotheses H2A, H2C, H2D, H2E, and H3 are supported and hypotheses H1A, H1B, H1C, H1D, and H2B are not supported, as shown in Figure 6.1.

Figure 6.1: Overview of hypothesised conceptual model findings.



Note: Latent variables with connected-line squares indicate significant hypothesised relationships and dash-line squares indicate non-significant hypothesised relationships.

The detailed analyses of the results in relation to the literature review and research questions and hypotheses are presented to elaborate on the general firm's business and market environments and the influence of enabling factors on SMEs innovation practices to support higher business growth performance in the emerging Dubai market. It also integrates other results that are not directly related to the research hypotheses to inform broader research questions.

6.3.1 General Firm's Business and Market Environments

The descriptive results of the general firm's business and market environments showed that SMEs in the Dubai market undertake various forms and functions and have different outlooks evident on

issues relating to current business idea, strategic archetype of management, presence of innovation strategy, type of innovation practices, driver of innovation practices, platform of innovation developments and modifications, source of innovative ideas, number of new innovations launched, amount of research and development investments, and barrier of innovation practices. Thus, the following discussion elaborates on each of these areas.

6.3.1.1 Current Business Idea

In describing the firms' current business ideas, 65.5% were from an existing concept from outside Dubai, 22.5% were from an existing concept from inside Dubai, and 12% were from an original concept. This is consistent with the notions that the firms are introducing new business ideas that are new to the Dubai market but are not certainly new to the global markets and the Dubai market exhibits early-stage entrepreneurial development and coming up with original innovative business ideas at rates that are low among the innovation-driven economies (Monger 2007; GEM 2011).

6.3.1.2 Firm and Management Strategic Archetype/Orientation

In describing the firm's management strategic archetypes in the last three years, 46.5% were prospectors, 40.5% were analysers, 7.5% were defenders, and 5.5% were reactors. Smaller firms are more likely to be analysers than are SMEs employing over 100 staff. The results revealed that SMEs with prospector orientations have the most effective organisational culture, technology orientation, alliance and cooperation, and market orientation, followed, in order, by analysers, defenders, and reactors, as shown in Appendix K, Table K.1. Blumentritt and Danis (2006) found that prospectors pay more attention to innovation practices than analysers, defenders, and reactors do. Further, Aragon-Sanchez and Sanchez-Marin (2005) discovered that SMEs using innovation-oriented strategies (similar to prospectors) have superior technological resources and capacities, followed by SMEs using customer-oriented strategies (comparable to analysers) and firms using modernisation-oriented strategies (analogous to defenders). It should be noted that the majority of SMEs in the Dubai market are managed by foreigners operating on a three-year visa cycle and offer moderately stable products and services.

6.3.1.3 Innovation Strategy and Innovation Type

In describing the firms' innovation strategies in the last three years, 90.5% were proactive, 7.5% were reactive, and 2% were passive. This finding is consistent with Kenny and Reedy (2006) who describe proactive as being the most common strategy in SMEs, followed by reactive and passive

strategies. This can offer SMEs in the Dubai market a short-term route to survival and efficiency improvement and a longer-term chance to secure competitive advantage. Further, in describing the firms' innovation types in the last three years, 44% had radical innovation, 40.5% had incremental innovation, and 15.5% had non-innovation. This shift in practice is inconsistent with Storey (1994) who recognises that SMEs are more able to make incremental innovation compared to larger firms due to their niche role in the marketplace but that some SMEs have no ambitions to grow and take risks in developing new products and services and are often content with their existing products and services regardless of changes to the external environment. This can offer SMEs in the Dubai market the advantage of capturing more opportunities and customising their products and services (O'Regan, Ghobadian & Sims 2006).

6.3.1.4 Innovation Driver

In describing the firms' innovation drivers, the most important drivers were management (72.2%), customers (58%), technology (54.5%), employees (52.1%), competition (46.7%), and market (45%) and the least important drivers were finance (9.5%), legislation (6.5%), and government grants (4.1%). This finding is in line with Read (2000) who discovered that management support, customers, employees, and markets are the main foundations of innovation; however Kenny and Reedy (2006) noted that a firm's (i.e. SMEs) internal culture and technical development have less influence in driving innovation than market and customers. Other research studies reveal that innovation is driven externally by public policy, social changes, economic development, climate change, tradition and beliefs, merging technologies, customer feedback, the action of strategic partners and competitors, and changing market dynamics, while innovation is driven internally by managerial attitude, internal culture, knowledge transfers (i.e. tacit and implicit) and employees (Elkins & Keller 2003; Peebles 2003; Aghion et al. 2005; BAH 2006; Kenny & Reedy 2006; Helgesen 2008; O'Sullivan & Dooley 2009; Brockman, Jones & Becherer 2012).

6.3.1.5 Innovation Development and Modification Platform

In describing the firms' innovation development and modification platforms, the most important development and modification platforms were customer added-value (56.2%), new development (55.6%), increased efficiency (53.3%), quality improvement (51.5%), strategic growth (47.9%), and cost reduction (38.5%), and the least important development and modification platforms were legislation and regulation adjustment (9.5%), ISO certification (8.9%), and investors (0.6%). It is also similar to the remark regarding product property, quality improvement, and cost reduction as

platforms of innovation (Scozzi, Garavelli & Crowston 2005) and is at the same time in agreement with the outcome of this study that small firms (less than 100 staff) in the Dubai market are more likely to be analysers in their management orientations depending on their market situations.

6.3.1.6 Innovation Idea Sourcing

In describing the firms' innovation ideas sourcing, the most important sources of ideas were customers (50.9%), management (46.2%), employees (45.6%), networks and collaborations (43.2%), and Internet (41.4%), and the least important ideas sourcing were government agencies (10.1%), financial institutions (3.6%), library (3.6%), clusters (2.4%), and investors (0.6%). Research studies in the past have recognised that new knowledge and technology, demographics, changed perceptions, management, employees, needed processes and techniques, academic and research institutions, fairs and exhibitions, customers' feedback and observations, networking, competitions, and industry and market restructures are good sources of innovative ideas (Drucker 1993; Etzkowitz & Leydesdorff 1995; Appiah-Adu & Singh 1998; Mahemba & De Bruijn 2003; Haour 2004; Scozzi, Garavelli & Crowston 2005; BAH 2006; Kenny & Reedy 2006; Laforet & Tann 2006; Dorf & Byers 2008; Adams & Comber 2013; Kamalian, Rashki & Arbabi 2013).

6.3.1.7 New Innovation Launched

In describing the firms' new innovations launched in the last three years, the highest new products and/or services launched were three to five new products and/or services (37.9%) and the lowest new products and/or services launched were 12 to 14 new products and/or services (1.8%). It is recognised that successful new products and services launched are influenced externally by market dynamic and industry type and internally by culture and behaviour (Kenny & Reedy 2006).

6.3.1.8 Research and Development Investment

In describing the firms' research and development investments in the last three years, the highest research and development investments were less than 500,000 AED (54.4%) and the lowest research and development investments were from 4,000,001 to 8,000,000 AED (4.1%). This is not a surprising outcome given that SMEs have limited resources and capabilities and difficulty in obtaining funds in the Dubai market. However, previous research studies have found a positive relationship between a firm's financial commitment to research and development and its number of new products and services launched (Tidd, Bessant & Pavitt 2005). Martinez-Roman, Gamero, and Tamayo (2011) argue that the research and development activities of a firm play important

roles in explaining its innovative outcomes. The success of innovation activities of SMEs depends on continuous research and development activities and external links to knowledge sources such as networks (Rammer, Czarnitzky & Spielkamp 2009). The global financial and economic crisis have impacted business innovation capacities operating in the Dubai market, whereas firms with access to public funding are less likely to abandon innovation investment; however, smaller firms supplying large firms or suffering export shocks are more likely to do so (Paunov 2012).

6.3.1.9 Innovation Barrier

In describing the firms' innovation barriers, the most important barriers were economic risks and inflation (51.5%), financial fund and capital resources (41.5%), customers (35.5%), and set-up and operation costs (31%), and the least important barriers were shortage of good ideas (5.5%), short-term pay-off and inward focus on local market (5.5%), and IP process, lack of technology and industry ecosystem, lack of government support, visa cost and regulation, time available, agency agreements, territorial restrictions, and lack of a long-term strategic plan (3.5%). It can be difficult for SMEs to dealing with financial and economic crisis, accessing financial resources, government regulations, and attaining specialist management skills/expertise (Connaughton & Madsen 2009). Financial constraint, market size, and customers related issues are considered the biggest obstacles to innovation, followed by technical and legislative issues (Zhu, Wittmann & Peng 2011; Gill & Biger 2012). Others barriers are lack of strategic and long-term goals, lack of skilled individuals and work flexibility, negligent marketing method and market research, lack of time and structured reward system, unwillingness to change culture, less recognition of external information and linkage, limited capability of exploiting new products and services, lack of systematic innovation processes, and difficulty in accessing new markets (Freel 2000; Scozzi, Garavelli & Crowston 2005; Loewe & Dominiquini 2006; Williams & Cowling 2009; Zhu, Wittmann & Peng 2011), and authoritative management style, centralised structure, top-down and formal communication, high administrative intensity, anonymity, and clean environment and risk-averse culture (Quinn 1985; Iseri & Demirbag 1999; Kotey & Slade 2005; Laforet & Tann 2006; O'Sullivan & Dooley 2009).

The general firm's business and market environments information indicated that the majority of small and medium-sized enterprises had prospector management strategic archetypes, proactive innovation strategies, radical innovation types mainly in types related to technical innovations, management as innovation drivers, customer added-value as innovation development and modification platforms, customers as sources of innovation ideas, three to five new innovations

launched mainly in types related to tools, less than 500,000 AED research and development investments, and economic risks and inflation as innovation barriers. Having provided an overview of the business and market environments of the SMEs operating in the context of Dubai attention is now drawn to the research questions and hypotheses driving the current study.

6.3.2 RQ1: Macro-Environmental Determinants and Innovation Practices

In the context of the Dubai environment, there are four research hypotheses to be examined to identify the relevant enabling external-driven factors influencing innovation practices in small and medium firms that are government supported developments (H1A), financial resources (H1B), academia-industry collaborations (H1C), and market dynamics (H1D).

6.3.2.1 Government Supported Developments and Innovation Practices (H1A)

Under the H1A hypothesis, a non-significant positive relationship was found between government supported developments and innovation practices, meaning an inconsistent finding with previous research studies (Smith 1997; Cooke, Uranga, & Etxebarria 1997; Cooke 2001; Mole & Worrall 2001; Aubert 2005; Rahl 2008; Zhu, Wittmann & Peng 2011). The rationale for the weak effect is that there are agreements with the policies, infrastructure, and institutional support systems of the Government of Dubai to promote innovation but these are not directed toward SMEs to engage in more innovative activities. This can be due to the limited effectiveness of the institutional support programs and transparent services by the local agencies to connect these policies, infrastructure, and support systems (national innovation system and free zones) and the needy SMEs to innovate.

Small and medium firms are heterogeneous and their needs differ in the market (Mason & Brown 2011). The Dubai SMEs are run according to management practices imported from Western and Eastern countries creating a hybrid situation and a unique mix of challenges and opportunities that necessitate tailor-made policies, infrastructure, and support systems similar to the current support program of the Mohammed bin Rashid Establishment for Young Business Leaders and SME Developments (DCCI 2010; Hertog 2010). Szirmai, Naude, and Goedhuys (2011) argue that when inappropriate property rights law and contract enforcement make returns on innovative activities risky, there are little incentives for firms to innovative. Some regulations for Dubai SMEs come from different ministries and local authorities and are not at all times coordinated and not without any conflicts to facilitate innovation (Hertog 2010; Zhu, Wittmann & Peng 2011). The promotion of innovation by the local (Dubai) government, until now, has been concentrated on mass projects

and technological advancements with few regulations that cover non-technological innovation (i.e. business models and service innovations), whereas most of the SMEs are operating in the service industries. Further, it seems that there are limited supports for foreign-owned firms from the local government and its public agencies (Mahemba & De Bruijn 2003; Hertog 2010), less coherence and collaboration among public agencies, academic and research institutions, and industry groups (Teece 1986; Kuhlmann 2003), underdeveloped legal and regulatory frameworks (Rahl 2008), and less clear commercialisation mechanisms. Policymakers need to properly reflect upon their local entrepreneurial environment when developing appropriate policy interventions (Mason & Brown 2011). The future developed policies and supportive and institutional environments should focus on removing obstacles to creativity and on fostering innovation (Carlsson 2006).

The analysis of the open-ended question added more insight to the argument and revealed that 16 of 55 respondents requested government supported developments such as "laws and policies need to be improved and tailored in order to support SMEs to start and innovate," "Dubai needs to set-up a special development program and agency to cater for the need of SMEs … government should have support program structure for SMEs … SMEs play important roles in the growth of any country and should not be ignored", "minimise costs and expenses upon SMEs to encourage them to present all creative ideas and to help them to implement these innovative ideas", and "active support from the government would help and encourage SMEs moving forward and taking more risks" (see Appendix L).

6.3.2.2 Financial Resources and Innovation Practices (H1B)

Under the H1B hypothesis, a non-significant positive relationship was found between financial resources and innovation practices, meaning an inconsistent finding with previous research studies (Teece 1986; Mishkin 2001; SMEs Conference 2006; Czarnitzki & Bento 2011; Zhu, Wittmann & Peng 2011; Francis et al. 2012; Jaruzelski et al. 2012). The rationale for the weak effect is that there are more difficulties for SMEs in the Dubai market to obtain access to grants, credit, and customised capital from government agencies and financial institutions, and to venture capital finance and risk equity capital, to list and trade in the local financial market to acquire capital, and to have efficient financial transparencies and accountability standards.

Small and medium firms face difficulties in obtaining finance due to their insufficient security, credit history, risky business sector, and poor business performance (William & Cowling 2009).

Commercial banks in Dubai are reluctant to lend to SMEs due to their high-risk positions and their enforcement and collateral issues such as their assets are often not valuable enough for large loans (Hertog 2010). Beyond banks and a few dedicated SMEs programs in Dubai (mainly for locally-owned firms), there are very limited formal sources of finance, the private equity industry neglects smaller players (i.e. capital investment of less than USD$ 10n), and nearly no venture capital is available. Lack of access to finance has been identified as a significant difficulty for SMEs to commercialise good ideas and to grow (Acs, Carlsson & Karlsson 1999; WEF 2010-2011; Zhu, Wittmann & Peng 2011). Most Dubai SMEs rely on self-financing (i.e. owner's capital, private investors, and business revenues), which are short-term profit orientated and are reluctant to invest in research and development activities and engage in long-term innovations (Zhu, Wittmann & Peng 2011). The existence of venture capital groups should be encouraged due to the positive link between equity venture capital investments and innovations that are required to stimulate new technologies and innovations (Kortum & Lerner 2000; Hirukawa & Ueda 2011) and to create product market value (early-stage investment, nurture innovation, and post-initial public offering) and financial market value (i.e. successful exits and sell out, low initial public offering, and high market valuation) for their portfolio firms (Tian 2012). Thus, financial and investment policies are key operational priorities in emerging markets to be able to support investment and innovation by local firms (Wonglimpiyarat 2011). Firms with higher innovation capabilities can have access to lower bank-loan spreads and better non-price-related loan terms (Francis et al. 2012).

The analysis of the open-ended question added more insight to the argument and revealed that nine of 55 respondents requested financial resources such as "lack of sound financial resources with minimum requirements sometimes is a hindrance to SMEs to venture into new practices in the Dubai market" and "there should be ease of credit facilities to SMEs to reduce set-up operation costs, establish associations that assist new start-ups to encourage innovation, and incentives by government to entrepreneurs who come-up with innovative ideas" (see Appendix L).

6.3.2.3 Academia-Industry Collaborations and Innovation Practices (H1C)

Under the H1C hypothesis, a non-significant negative relationship was found between academic-industry collaborations and innovation practices, meaning an inconsistent finding with previous research studies (Parker 1992; D'Este & Patel 2007; Perkmann & Walsh 2007; Segarra-Blasco & Arauzo-Carod 2008; Wright 2008; Haour & Mieville 2010; Nelson 2011). The negative relation between these constructs can have adverse implications for firms with the role of the government

policy initiatives to establish eminent academic/research institutions, technology transfer centres, and specialised clusters and to promote collaboration between academia and industry and the role of academic institutions in supporting the development of SMEs and their industries through partnerships and innovation. The rationale for the weak effect is that there are difficulties for SMEs in the Dubai market to access qualified graduates because of the gaps between graduate capabilities (skilled and knowledgeable workers) at the local academic and research institutions and the competency requirements of various firms and industries in the market, the mismatches between academic institutions outcomes and industrial needs, a lack of access to academic and research institutions, low participation in collaborative research and technology transfer activities between academia and industry, and absence of entrepreneurial attitudes and skill developments.

Investments in knowledge, technological advancement, and human capital are needed in fostering entrepreneurial innovation, whereas innovation requires highly knowledgeable, experienced, and skilled labour (Szirmai, Naude & Goedhuys 2011). Academic and research-based institutions in Dubai are immature in generating innovations where they should be considered indispensable for their innovations and for their later commercial exploitations (Lewin 2009; Hjalager 2010; Knight 2011). Inter-firm collaboration is motivated by cutting-edge technologies and fast-moving markets that require knowledge and capabilities to extend beyond single firms (Nelson 2011). Dubai SMEs are not aware of the services offered through academic institutions and lack strong ties to and engagement with academic institutions physically and intellectually to maintain ongoing relations and to gain benefits of talented recruitment, technology transfer, research and development, and innovation exploration, which might have negative consequences similar to this study (Johnson & Tilley 1999; Mahemba & De Bruijn 2003; Perkmann & Walsh 2007; Kamalian, Rashki & Arbabi 2013). Temel and Glassman (2013) further argue that to form university-industry collaborations in emerging markets, a number of challenges, including trust and awareness need to be overcome. Access to skilled manpower remains very limited due to the lack of career plans and long-term prospects for individuals working for SMEs (Hertog 2010). SMEs should use supply chains to facilitate their innovation activities (Keizer, Johannes & Halman 2002; Lasagni 2012; Sharifi et al. 2013) that they are able to coordinate and integrate tasks (i.e. clients, suppliers, and the focal firm) and facilitate the design, development, and delivery of solutions (Didonet & Diaz 2012).

The analysis of the open-ended question added more insight to the argument and revealed that ten of 55 respondents requested academic-industry collaborations such as “there is no access to

talented individuals and local universities do not focus on SMEs' needs, collaborate with SMEs, and promote entrepreneurship", "more firms need to participate with educational institutions for research and development", and "lack of qualified knowledge workers makes outsourcing our innovation to off-shore sites" (see Appendix L).

6.3.2.4 Market Dynamics and Innovation Practices (H1D)

Under the H1D hypothesis, a non-significant positive relationship was found between market dynamics and innovation practices, meaning an inconsistent finding with previous research studies (Kraft 1989; Porter 1990; Raider 1998; Mahemba & De Bruijn 2003; Salavou, Baltas & Lioukas 2004; Bao, Chen & Zhou 2011; Inui, Kawakami & Miyagawa 2012). The rationale for the effect is that there are difficulties for SMEs in the Dubai market to cope with the economic transition to a free market system, accessing quality materials and components by interacting with suppliers and other services, understanding of market demands and consumer orientations, effectiveness of anti-monopoly policy and healthy competition, and readiness market data and transparency.

A small market is often an insufficient incentive for firms to innovate and grow (Szirmai, Naude & Goedhuys 2011). Innovation might require a larger market so that innovators can look beyond the Dubai market (i.e. the Middle East and North Africa markets). Szirmai, Naude, and Goedhuys (2011) argue that when a market is restricted by inappropriate regulations and monopolies, there are little incentives for firms to introduce new products and services. Market competition and innovation has a non-linear relationship and depends importantly on the efficient use of inputs to production (Peroni & Ferreira 2012). Healthy market competition is important for both market efficiency and business productivity by ensuring that the most efficient firms, producing goods and services demanded by the market, can survive (Raider 1998). Market competition can widen the technological gap across firms and innovative activities in firms facing intensive competition at the technology frontier are more sensitive to market competition than firms in other industries (Aghion & Griffith 2005; Inui, Kawakami & Miyagawa 2012). However, different firms operating in intense competition might be more reluctant to experiment with new technologies and only focus on leveraging existing technologies to achieve competitive advantage (Christensen 2003; Gilbert 2005). Intense market competition has no place for SMEs to be innovative when large firms have more control in the market. Large firms tend to monopolise the Dubai market due to preferential treatment and more access to resources (Hertog 2010; Zhu, Wittmann & Peng 2011). SMEs can overcome market competition by seeking types of innovation large firms are unable to

offer (Fritz 1989). Innovation can assist SMEs to outrun rivals in a competitive move (Bao, Chen & Zhou 2011). It also offers novel functionalities and distinct customer benefits that are difficult to imitate and provides more effective approaches to sustainable competitive advantage (Jaworski & Kohli 1993; Zhou, Yim & Tse 2005). However, the specialisation of SMEs in the Dubai market suffers from a lack of managerial, technological, and market information (Hertog 2010).

The analysis of the open-ended question added more insight to the argument and revealed that seven of 55 respondents requested market environment such as "this is not a market that currently supports and reinforces innovation and that innovation practices are liabilities", "there are issues in the market such as large firms harvesting and not investing, risk adverse culture, and no patience in technology", and "there is no access to accurate marketing data and the Middle Eastern way of conducting business is through personal networks and connections" (see Appendix L).

For the most part, the answer to the first research question was provided following the analyses and interpretations of the results (H1A-H1D) that government supported developments, financial resources, academia-industry collaborations, and market dynamics are statistically non-significant in relation to innovation practices in the context of Dubai for SMEs. Consequently, by improving these external-driven factors, innovation practices within SMEs can thrive and flourish.

6.3.3 RQ2: Micro-Environmental Determinants and Innovation Practices

In the context of the firm environment, there are five research hypotheses to be examined to identify the relevant enabling internal-driven factors influencing innovation practices in small and medium firms that are management orientation (H2A), organisational culture (H2B), technology orientation (H2C), alliance and cooperation (H2D), and market orientation (H2E).

6.3.3.1 Management Orientation and Innovation Practices (H2A)

Under the H2A hypothesis, a significant positive relationship was found between management orientation and innovation practices, meaning a consistent finding with previous research studies (McGinnis & Ackelsberg 1983; Heunks 1998; Hoffman et al. 1998; Storey 2000; Lyon & Ferrier 2002; Salavou, Baltas & Lioukas 2004; Aragon-Sanchez & Sanchez-Marin 2005; Blumentritt & Danis 2006; Talke, Salomo & Kock 2011; Isaksson, Vanyushyn & Hulten 2013). The rationale for the strong effect is that owners/managers of SMEs prioritisation and strategic direction towards adopting and/or generating innovation play important roles, which are centred on incorporating

innovations as strategic goals and future ambitions for their firms in the market, focusing on long-term objectives, exploring new opportunities, participating proactively in new initiatives, and allocating resources for research and development activities.

Managers can be more responsive to allocate resources to pursue appropriate strategies to fit their environmental contexts (i.e. the Dubai market) that aim at identifying new trends and integrating new knowledge along with their firm's existing capabilities; these are shown to be crucial for the innovation and business performance of their firms (Talke, Salomo & Kock 2011; Yang et al. 2012; Kor & Mesko 2013). Management characteristics and practices in the Dubai market are imported management styles, creating a hybrid situation and a challenge in facilitating innovation (Iseri & Demirbag 1999; Kabasakal & Bodur 2002; Hertog 2010). However, depending on the commitments and strategic directions of owners and/or managers, SMEs in the Dubai market place different levels of importance on knowledge acquisition, technological changes, talent recruitment, and exploiting opportunities that can determine business efficiencies, innovation adoption and generation decisions, and business growth performances (Heunks 1998; Motwani et al. 1999; Talke, Salomo & Kock 2011; Isaksson, Vanyushyn & Hulten 2013). Further, inspiration, motivation, and entrepreneurial orientation of owners and/or managers play vital roles in driving and stimulating innovation (Pavitt 1991; Vossen 1998; Hult, Hurley & Knight 2004) and managerial capacities and involvements in exploring new ideas and initiatives are needed for the Dubai SMEs to support innovation (Hjalager 2010). Their background diversities (educational, functional, and industry) have a significant positive effect on the innovation orientation of their firm (Talke, Salomo & Kock 2011). The decision of SMEs to adopt and/or generate innovation depend on management characteristics and strategic orientations, skill forming routines, and internal resources and capabilities that is similar to the resource-based and innovative capability perspectives of the firm (Hall 1993; Hadjimanolis 2000; Guan & Ma 2003; Aragon-Sanchez & Sanchez-Marin 2005; Martinez-Roman, Gamero & Tamayo 2011).

6.3.3.2 Organisational Culture and Innovation Practices (H2B)

Under the H2B hypothesis, a non-significant positive relationship was found between organisational culture and innovation practices, meaning an inconsistent finding with previous research studies (Feigenbaum & Karnani 1991; Nooteboom 1994; Bessant & Caffyn 1997; Hurley & Hult 1998; Calantone, Cavusgil & Zhao 2002; Martins & Terblanhe 2003; Kenny & Reedy 2006; Keskin 2006; Naranjo-Valencia, Jimenez-Jimenez & Sanz-Valle 2011; Harris et al. 2013).

The rationale for the weak effect is that there is a lack of supportive internal culture in SMEs to encourage and carry out innovative approaches (i.e. think freely, generate and follow-up ideas, learn from experience, and take risks), learning processes (i.e. accept and adopt new and external ideas and share and exchange new knowledge and skills) and flexible internal structures despite their strong significant management orientation towards innovation practices.

Small and medium firms in the Dubai market are evident to have a centralised internal structure, formal procedure and instruction, and high administrative intensity (Iseri & Demirbag 1999; Wasti 1999; Kabasakal & Bodur 2002; Hertog 2010). A view which is similar to Kotey and Slade (2005) who suggest that SMEs are moving towards division of labour, hierarchical structures, increased documentation, and administrative processes as their size increase. Cokpekin and Knudsen (2012) also argue that while organisation creativity and innovation remains indeterminate administrative activities increase and learning orientation decrease with the size of the firm (Allocca & Kessler 2006). Other explanations include internal culture, including efficiency of learning and training environments, focus on operations, and lack of work flexibilities and internal communications (Smith et al. 2002; Scozzi, Garavelli & Crowston 2005; Nasution et al. 2011; Sanz-Valle et al. 2011). Scott et al. (1996) find manufacturing SMEs have difficulties with knowledge absorption, learning attitude, training and development and individuals' contributions to new initiatives. The internal culture of the firm plays an important role to stir innovation and to give individuals plenty of space to make mistakes and create opportunities for valuable learning (Peebles 2003; Sanz-Valle et al. 2011), which can help SMEs to combine both the roles of knowledge creator and applicant in the knowledge-based economy era (Salavou, Baltas & Lioukas 2004). Deshpande, Farley, and Webster (1993) and Sanz-Valle and Jimenez-Jimenez (2011) also link internal culture types and learning orientations to innovativeness and stress on strong innovation-oriented and shared culture. To promote organisational renewal and take more risk to facilitate innovation, the Dubai SMEs should look to implement ways to nurture knowledge, maintain a supportive culture and flexibility, build teamwork, encourage internal collaboration and communication, empower staff, and improve workplace satisfaction (Bessant & Caffyn 1997; Calantone, Cavusgil & Zhao 2002; Blumentritt 2004; Hjalager 2010; Harris et al. 2013). However, previous research studies still debate the role of organisational culture within the firm (Kenny & Reedy 2006) that can either foster an innovation or act as a barrier (Sanz-Valle et al. 2011). SMEs require a well-established culture (norms, practices, and beliefs) to create effective innovation situations (Gunasekaran et al. 1996; Calantone, Cavusgil & Zhao 2002) that requires a climate inspiring creativity (Ahmed 1998;

Moghimi & Subramaniam 2013). Promoting an innovative culture again requires flexibility, short communication line, management and personnel motivation, less bureaucracy, relationship with customers, less proposals filtering, and strong interest in product development and technological adjustment (Pavitt 1991; Birchall, Chanaron & Soderquist 1996; Chandler, Keller & Lyon 2000; Beaver & Prince 2002; Aragon-Sanchez & Sanchez-Marin 2005; Wang et al. 2013).

The analysis of the open-ended question added more insight to the argument and revealed that four of 55 respondents requested an open and flexible organisational culture such as "there needs to be more flexibility and freedom to allow innovators within SMEs to express their innovative ideas within a protected and conditional framework and this framework or incubator should expect at least a 75% chance of risk associated with the business" and "a shift in the internal culture is required because innovation needs open communication, creativity, and less micro-management" (see Appendix L).

6.3.3.3 Technology Orientation and Innovation Practices (H2C)

Under the H2C hypothesis, a significant positive relationship was found between technology orientation and innovation practices, meaning a consistent finding with previous research studies (Ettlie & Bridges 1982; Hitt, Hoskinsson & Ireland 1990; Cooper 1994; Wilson, Ramamurthy & Nystrom 1999; Aragon-Sanchez & Sanchez-Marin 2005; Humphreys, McAdam & Leckey 2005; Tidd, Bessant & Pavitt 2005; Jeong, Pae & Zhou 2006; Yang et al. 2012). The rationale for the medium effect is that SMEs in the Dubai market are likely to adopt and/or generate technology to support innovative activities and have realised that their technology policies and adaptation of new and emerging technology play important roles in improving internal processes and methods and in allocating resources for investments in latest technologies to support innovation.

Small and medium firms with technology orientation have a competitive advantage in terms of technology leadership and new and differentiated product and service offering (Hamel & Prahalad 1994; Gatignon & Xuereb 1997). However, SMEs are sometimes unable to respond effectively to the emergence of new technologies (Tripsas & Gavetti 2000), they are unwilling to change and might stick to dominant organisational routines that increase the dependence on existing resources and capabilities but preclude the development of new competences (Gilbert 2005). This type of organisational inertia and rigidity is observed when a firm is faced with threats (i.e. industrial competition) from the external environment to its business performance and eventual survival

(Staw, Sandelands & Dutton 1981; Bao, Chen & Zhou 2011). To counteract these environmental threats, firms may have a high incentive to search for new and useful technologies to innovate (Song & Parry 2009). When a firm implements a new technology, it first can lead to quality and productivity improvements and then slowly to internal changes; however only when a firm has accommodated, explored, and generated this new technology (Hjalager 2010). The impacts can be enhanced if technology applications are combined with strategic and managerial measures such as competence building. For example, social media, as a technology-push, starts to have an impact on management practices, business operations, marketing methods and later innovations. However, the Dubai SMEs are challenged in the ability to afford the heavy investments and expertise needed for new technologies that may force them to either generate incremental technologies or adapt new and advanced technologies through licensing, outsourcing, and joint venture with other firms who enter the local market with more advanced technologies to facilitate their innovation activities (Mahemba & De Bruijn 2003; Salavou, Baltas & Lioukas 2004).

6.3.3.4 Alliance and Cooperation and Innovation Practices (H2D)

Under the H2D hypothesis, a significant positive relationship was found between alliance and cooperation and innovation practices, meaning a consistent finding with previous research studies (Eisenhardt & Schoonhoven 1996; Woolgar et al. 1998; Diez 2000; Stuart 2000; Hoffmann & Schlosser 2001; Narula 2004; Aragon-Sanchez & Sanchez-Marin 2005; Allocca & Kessler 2006; Soda 2011; Ebersberger & Herstad 2013). The rationale for the weak effect is that there are more requirements to use networks and business linkages to collaborate more effectively with suppliers, sub-contractors, and others services, and to identify strategic partners and supporting industries to explore new knowledge and competency, improve internal resources, collaborate on research and development, and share innovation benefit and risk, despite there a number of SMEs still depend on individualistic business behaviours (i.e. personal connections and social networks) and have limited alliances.

Small and medium firms operating in the Dubai market participate in collaborative agreements and networks to be able to share costs and risks, enhance learning, develop market focus, facilitate innovation, and build collaborative platforms for public and private sectors (i.e. academia and industry collaborations), which can be captured, integrated, and disseminated with a dedicated unit in a firm (Kale, Dyer & Singh 2002). Innovation opportunities are higher and entry barriers are lower when firms and suppliers from particular industry sectors are interconnected (WEF 2010-

2011; Lasagni 2012). Snow et al. (2011) also notice that there are shifts in stand-alone firms to multiform-network firms to achieve more success. SMEs engage in different strategic alliances to fulfil different organisational goals and overcome limited resources and capabilities (O'Dwyer, Gilmore & Carson 2011; Park & Kang 2013). Soda (2011) argues that innovation is generated not only from internal resources and capabilities that a firm possess but from accessing resources and capabilities possessed by other firms in the collaborative agreements. However, some innovative firms do not consider local networks to be essential and have many concerns for commercial confidentiality that prevent them from partnering with each other and instead use professional magazines and local chambers and associations (Romijn & Albaladejo 2002; Asheim et al. 2003; Laforet & Tann 2006). The ability of a firm to deal with behavioural uncertainty in the agreement, to resourcefully continue checking the risk of opportunistic behaviour of the partner firm, and to risk leak core knowledge influences the usefulness of this collaborative relation (Jarillo 1988; Spithoven, Vanhaverbeke & Roijakkers 2013). Gomez Arias (1995) argues that networks promote and/or block innovation in partner firms and is reinforced by Bougrain and Haudeville (2002) who discovered that technological collaborations do not increase innovation success. The diversity of resources and capabilities in any alliance and cooperation portfolios can only benefit innovation when these resources and capabilities are successfully shared across partners (Cui & O'Conner 2012). This puts forward that the role of collaboration in encouraging innovation is still debatable.

The analysis of the open-ended question added more insight to the argument and revealed that two of 55 respondents requested more alliance and cooperation such as "most industries are dependent on suppliers if there is delay or failure at one end, there will be a chain of effect in the operation flow" and "SMEs are innovative but they try best to guard their know-how and technological developments as they have to ensure their survival viability" (see Appendix L).

6.3.3.5 Market Orientation and Innovation Practices (H2E)

Under the H2E hypothesis, a significant positive relationship was found between market orientation and innovation practices, meaning a consistent finding with previous research studies (Narver & Slater 1990; Deshpande, Farely & Webster 1993; Jaworski & Kohli 1993; Slater & Narver 1994; Hult, Hurley & Knight 2004; Keskin 2006; Tajeddini, Trueman & Larsen 2006; Lukas & Ferrell 2008; Dibrell, Craig & Hansen 2011). Further, the result of the alternative data analysis indicates that only market orientation had a significant positive relationship with general business growth performance that was a consistent finding with previous research studies (Hart &

Diamantopoulos 1993; Greenley 1995; Pelham & Wilson 1996; Dawes 2000; Deshpande & Farley 2004; Kirca, Jayachandra & Bearden 2005; Coltman 2007; Brockman, Jones & Becherer 2012). The rationale for the medium effect is that SMEs in the Dubai market realise the importance of customer needs and demands (i.e. quality customer-value-and-service culture), their competitive situations, and their internal sharing of market information within the firm despite the limited market research and information and the high market competition.

Small and medium firms in the Dubai market can achieve competitive advantage by having a full understanding of their customer needs and competitor actions that over time can lead to better innovation and performance outcomes (Tajeddini, Trueman & Larsen 2006; Reijonen et al. 2012). Customers who know their specific needs can influence and sometimes exert pressure on firms to innovate, which can encourage SMEs in the local market to focus and specialise on products and services according to their customers' needs in order to gain market acceptance and establish their own brands, allowing them to move up the value-chains of their specialised industries (Von Hippel 1988; Kamalian, Rashki & Arbabi 2013). Further, it is important for SMEs to consider the importance of "lead users" and first movers among the customers who can express ways for new products and services (Hjalager 2010). The marketing capabilities of SMEs reflect their ability to differentiate their products and services from their competitors (Kotabe, Srinivasan & Aulakh 2002). The lack of market information in the Dubai market; however, can be a limiting factor to their diversification (Hertog 2010) and can also indicate the need to lead their customers in this situation (Gao, Zhou & Yim 2007). As SMEs are known to be small in size, they are advantaged to have environments where most individuals can have direct access to customers and provide feedback on their demands and possibly offer customised solutions to their problems (Herb, Leslie & Price 2001; Salavou, Baltas & Lioukas 2004). However, despite previous research studies noticing that market orientation (i.e. customer and competitor orientations) improves new product development performance (Gatignon & Xuereb 1997), other research studies reveal that customer orientation is not very effective in fast changing and dynamic external environments, due to changing customer needs when compared to competitor orientation and inter-functional market information sharing (Kim, Han & Srivastva 1998; Gao, Zhou & Yim 2007; Grinstein 2008).

The analysis of the open-ended question added more insight to the argument and revealed that four of 55 respondents requested more market orientation such as "being pro-active and adhering to markets and customers' needs consistently helps businesses; SMEs innovate and grow" and "in

order to have a successful business, SMEs must be aggressive and innovative and should be able to take advantage over their competitors" (see Appendix L).

For the most part, the answer to the second research question was provided following the analyses and interpretations of the results (H2A-H2E) that management orientation, technology orientation, alliance and cooperation, and market orientation are statistically significant and organisational culture is statistically non-significant in relation to innovation practices in the context of SMEs in Dubai. Consequently, by incorporating these internal-driven factors, innovation practices within SMEs can thrive and flourish.

6.3.4 RQ3: Innovation Practices and Business Growth Performance

The ability of the firm to better perform and obtain growth within a determined time period can be established by its innovative capabilities (Mone, McKinley & Barker 1998; Hurley & Hult 1998; Cooper 2000). However, there is a caution that the relationship is interdependent and mutually reinforced (North & Smallbone 2000). Normann and Ramirez (1993) also recognise that adopting innovation as a strategy is a key to create value and to improve business growth performance that allows firms to identify opportunities for bringing values (better products or services) to customers and to deliver these values at a profit in the marketplace. There is one research hypothesis (H3) to be examined to identify the relationship between SMEs innovation practices and business growth performance. Under the H3 hypothesis, a significant positive relationship was found between innovation practices and business growth performance, meaning a consistent finding with previous research studies (Mone, McKinley & Barker 1998; Roberts 1999; Gunasekaran, Forker & Kobu 2000; North & Smallbone 2000; Calantone, Cavusgil & Zhao 2002; Hult, Hurley & Knight 2004; Carol & Mavis 2007; Otero-Neira, Lindman & Fernandez 2009; Pett & Wolf 2011; Talke, Salomo & Kock 2011). The rationale for the strong effect is that there is supportive evidence among SMEs in the Dubai market that innovation practices have an impact on business growth performance.

Innovation and its importance are recognised to have a positive impact on economic development, competitive advantage, and business growth performance (Heunks 1998; Parrilli & Elola 2011; Francis et al. 2012). Miller and Floricel (2004) argue that a firm is able to achieve a high level of business performance by adapting capabilities and practices to the different requirements of value creation and innovation (i.e. competitive and technological contexts) in which it has selected to compete. Small and medium firms in the Dubai market are aware of the benefits of innovation for

improving their productivity and profitability and for surviving in the competitive marketplace (Geroski & Machin 1992; Tidd 2001; O'Regan, Ghobadian & Sims 2006). A firm innovates to differentiate itself and to maximise its profits and market share (Garcia, Bardhi & Friedrich 2007), whilst the most important innovation allows a firm to achieve a better competitive advantage and contribute to its business growth performance (Hult, Hurley & Knight 2004; Talke, Salomo & Kock 2011). This condition leads into an understanding of customer need and competitor action and a development of technology occupying a new market space and anticipating a competitive advantage that ensures higher profits over time (Tushman & Anderson 1997). Keskin (2006) argues that SMEs innovation practices positively affects their business growth performance, irrespective of the market turbulences in which they operate (Sirelli 2000; Hult, Hurley & Knight 2004). However, success and/or failure in innovation should be viewed as a necessary but not sufficient condition for business performance and growth in firms. Previous studies comparing innovative and non-innovative firms have provided mixed results, and some have found no difference between innovating and non-innovating firms (Geroski & Machin 1992, 2013; Roper 1997). Forsman and Temel (2011) argue that non-innovating firms, when they are compared with innovating firms, can perform well in terms of operating earnings and return on investments. The size of the firm is proposed as an important indicator to increase the impact of business growth performance on innovation practices but it is considered as a proxy for resources and capabilities where larger firms yield more products and services among internal resources and capabilities than smaller firms (Schumpeter 1934; Penrose 1955; Koh & Venkataraman 1991). SMEs can achieve a higher business growth performance by carefully selecting their operating markets, focusing on particular product groups and innovation types, avoiding spread of marketing activities, trying to avoid markets dominated by large firms, and considering economic situations in introducing innovations (Adams & Hall 1993; Madrid-Guijarro, Garcia-Perez-de-Lema & Van Auken 2013).

The analysis of the open-ended question adds more insight to the argument and revealed that three of 55 respondents requested more innovation practices such as "like any other society, innovation and sustainability will be the key driver for Dubai and its future growth" and "there is a lot of room for innovation and especially SMEs have to muster-up their resources to direct ideas and fund ways for developing strategies into action plan and realise these goals" (see Appendix L).

For the most part, the answer to the third research question was provided following the analyses and interpretations of the results (H3) that innovation practices are statistically significant in

relation to business growth performance in the context of SMEs in Dubai. Consequently, by incorporating innovation practices, business growth performance within SMEs can be increased and sustained over time.

6.3.5 SMEs Perspective on the Study Findings

As the small and medium firms are the focus of this study, it is worth considering what evidence exists in the innovation management literature in relation to the size and innovation of a firm. The size implications of the firm can affect its ability to respond to its external environmental forces by shaping its perception of the existing external pressures (environmental threats and opportunities), the business strategies adopted, and the business performance levels achieved (Curran 1996). The limited resource base of small firms compared to larger firms, such as management, funding, and technology, can affect their ability to scan, analyse, and respond to major environmental challenges (Smallbone, North & Kalantaridis 1999; Gill & Biger 2012). Yet, SMEs have the advantage of tapping into their innovative potential (and open innovation) that are entrepreneurial dynamisms, management commitment, flexible structures, closeness to customers, and awareness to changing circumstances in the marketplace (Salavou, Baltas & Lioukas 2004; Zhu, Wittmann & Peng 2011; Spithoven, Vanhaverbeke & Roijakkers 2013). Although small firms can be more innovative and responsive to changing external and internal environments (Chen & Hambrick 1995); however, it is argued that larger firms have more prerequisites for different behaviours and actions compared to their smaller counterparts. The literature has many arguments about the contribution of firms of different sizes to innovative activities and business performance (Asheim et al. 2003; Forsman & Temel 2011; O'Dwyer, Gilmore & Carson 2011). There is no optimal size of a firm, across all industry sectors from the perspective of innovation and dynamic complementarity that can exist among small and large firms (Pavitt, Robson & Townsend 1989; Tether, Smith & Thwaites 1997). It supports the notion that small firms are important sources of innovation that are commercialised by large firms (Asheim et al. 2003; OECD 2010; Gilmore, Galbraith & Mulvenna 2013).

Small and medium firms have traditionally relied on local markets but more recently have become increasingly involved in global competitive markets (Cagliano, Blackmon & Voss 2000). SMEs might be more vulnerable to market shifts (i.e. lack resources and high competition) and typically operate with a narrow range of products and services which means that these firms are at greater risk from industry-related and economic and financial downturns (Shama 1993; Bishop 2009). In the local market, it is argued that in shaping the local innovation system, the public policies and

regulations of the Government of Dubai should focus on removing obstacles to SMEs innovation, on facilitating the development of SMEs, and on encouraging linkages and interactions between public and private institutions (Cooke, Uranga & Etxebarria 1997; DCCI 2010; OECD 2010). In this study, the results reveal the innovative characteristics of SMEs operating in the local Dubai market and that management orientation, technology orientation, market orientation, and alliance and cooperation are important internal factors of SMEs but their organisational culture did not emerge as an internal important factor. Further, government supported developments, financial resources, academic-industry collaborations, and market dynamics of the operating environment have not emerged as important external factors. For example, this study indicates that SMEs in the Dubai market face many challenges that are policy and legal issues, lack of financing, high set-up and operating costs, high inflation rate, high competition, lack of qualified staff, inflexible internal structure and learning culture, lack of academic institution collaborations, and the impact of the global financial and economic declines (Julien 1993; Cagliano, Blackmon & Voss 2000; Aragon-Sanchez & Sanchez-Marin 2005; Gill & Biger 2012; Kamalian, Rashki & Arbabi 2013). However, Gilmore, Galbraith, and Mulvenna (2013) encourage SMEs to consider innovation as a constant driver. SMEs operating in the local Dubai market should be aware of offered opportunities in the external environment such as government supported programs and alliances and collaborations with other institutions and agencies as suggested through this study (i.e. academic institutions and technology centres). The current reality for local small firms is changing as many foreign firms have entered the local Dubai market with different resources and capabilities that include diverse management characteristics and organisational behaviours, new knowledge and expertise, new technologies, and new marketing methods (Hertog 2010; Brik, Rettab & Mellahi 2011). This new situation necessitates small local firms to learn different managerial and organisational contexts; develop incremental technologies or adapt new technologies through licensing or joint venture; set up collaborative agreements and networks; and absorb marketing expertise from foreign firms.

6.3.6 Innovation Perspective on the Study Findings

Innovation is often highlighted as an important success factor in providing competitive advantage and has a positive impact on sustainable economic development and business growth performance (Schumpeter 1934; Drucker 2003; Harrigan, Ramsey & Ibbotson 2011; Parrilli & Elola 2011; Francis et al. 2012). This study adopts the endorsement of a number of research studies in that innovation can produce new opportunities and accounts for more productivity (Schumpeter 1934; Penrose 1955; Abramovitz 1956; Solow 1957). However, a successful innovation in firms requires

having both the external and internal environmental determinants and driving forces (Hjalager 2010). At the country level, the micro-and-macroeconomic governmental policies and regulations (i.e. the national innovation system) are intended at strengthening the innovative capabilities of firms and the nation for sustaining competitive advantages and creating economic developments (Bullinger, Auernhammer & Gomeringer 2004; Deschamps 2005; Newkirk 2007; Wonglimpiyarat 2011). At the firm-level, the firm can channel its different internal resources and capabilities (i.e. the resource-based view) into the development of new products and services to both improve its business growth performance and derive its competitive advantage (Hult, Hurley & Knight 2004). For example, Dubai has created a significant innovation mass through many large initiatives and projects (i.e. technology and media clusters). However, the existence of the right environment for innovation at the level of the individual firm is still debatable according to this study. In this study, the results reveal that the leading determinants mostly used to reflect the success of small and medium firms' innovation practices in the local Dubai market are considered to be internal factors such as management, technology, and market orientations (Keskin 2006; Lasagni 2012; Reijonen et al. 2012; Isaksson, Vanyushyn & Hulten 2013; Park & Kang 2013; Temel, Mention & Torkkeli 2013). These results are somewhat unexpected given the Government of Dubai is encouraging innovation and small firms are assumed to dominate the local market (OECD 2010; UAE MFT 2012). These internal factors are primarily reflecting the internal characteristics of SMEs towards innovation practices. It indicates that innovating behaviours of SMEs in the Dubai market come from its internal characteristics, encouraging the government and financial institutions to support the segment of small businesses for future expansion and growth due to their important roles in innovation and economic developments.

Small and medium firms need to evaluate their competitive strategies and incorporate innovation at both their organisational levels and in their activities (Ghobadian & Gallear 1996; Vossen 1998; Madrid-Guijarro, Garcia-Perez-de-Lema & Van Auken 2013). These firms are renowned for their creative ideas and new product and service developments (Kenny & Reedy 2006; OECD 2010; Gilmore, Galbraith & Mulvenna 2013). In this study, 84.5% of SMEs have indicated that they are engaged in various types of innovation activities. This requires SMEs to be a strong competitor and a smart evolver being innovative ahead of the market and/or adopt innovation into its strategy (Beinhocker 1997; Madrid-Guijarro, Garcia-Perez-de-Lema & Van Auken 2013); however, SMEs with their limitations require the support of the external environment such as the role of the local government and its agencies. SMEs in the Dubai market must not only compete head-to-head but

come-up with new products and services and create new industry sectors and market segments, encouraging investors to be more opportunity-focused and not risk-focused (Drucker 1993; Kim & Mauborgne 2001; Hertog 2010). Further, this might require a firm to have a different competitive mindset and a systematic way of looking for new opportunities, instead of looking only within conventional boundaries. However, the innovation literature related to the successful determinants of innovation in firms are mostly focused on large firms in developed markets (Kim & Lim 1988; Salavou, Baltas & Lioukas 2004; Hossain 2013) and have produced mixed results (Hult, Hurley & Knight 2004) while SMEs play important roles (Allocca & Kessler 2006; OECD 2010) and have behavioural advantages in innovation practices (Salavou, Baltas & Lioukas 2004), particularly in those emerging markets (similar to the emerging Dubai market) where liberalisation, privatisation, and globalisation of the market and economy is currently happening (Mytelka 2000; Grant, Golawala & McKechnie 2007; Rettab, Brik & Mellahi 2009; WEF 2010; Kamalian, Rashkai & Arbabi 2013). There are a number of increasing research studies focusing on links among different determinants and innovation practices in SMEs in emerging markets similar to the Dubai market, which are experiencing changes and providing firms of all sizes with great market opportunities (Mahemba & De Bruijn 2003; Salavou, Baltas & Lioukas 2004; Aragon-Sanchez & Sanchez-Marin 2005; Scozzi, Garavelli & Crowston 2005; Kenny & Reedy 2006; Otero-Neira, Lindman & Fernandez 2009; Al-Mahrouq 2010; Knight 2011; Hossain 2013).

6.4 Summary

This chapter provided a summary of Sections 6.2 to 6.3 by noting the discussions and arguments established in each section. The building blocks overview of the study in Section 6.2 provided the background for the findings of the research study in Section 6.3 that were discussed in detail to investigate and analyse the conceptual model and the research questions and hypotheses of this study, followed by the perspective of SMEs and innovation on the findings. The overall results of the study are attributed to the changing nature of emerging markets as these results are discussed in the context of the Dubai market in the UAE and its SMEs. New insights and implications for both scholars and practitioners and limitations for the study and suggestions for future research are offered in the next chapter.

The next chapter, Chapter 7, offers the implications and conclusions of the findings for this study.

CHAPTER 7 IMPLICATIONS AND CONCLUSIONS

7.1 Introduction

This chapter provides implications and conclusions of the results and discussions of the study of SMEs in the emerging Dubai market in the United Arab Emirates.

It presents a summary of previous chapters and the main findings of the study. The contributions and implications of the study are discussed. The limitations of the study and the recommendations for future research extensions and directions are outlined. It also presents personal reflections and the overall remarks of the study. Finally, the chapter is summarised.

7.2 Summary of Previous Chapters

The present study highlights the investigation of innovation practices for small and medium firms in the emerging Dubai market and their enabling external-driven and internal-driven determinants and impact on business growth performance, which is believed to be the first study to be conducted in this context using an empirically verified model. The justification for this study is based on the argument that more is to be understood regarding the innovation practices and the SMEs in the local Dubai market context. With many of the SMEs of today operating in a highly competitive environment, innovation may be the key to achieving successful business growth performance (Forsman & Temel 2011; O'Dwyer, Gilmore & Carson 2011). It further examines how SMEs with different resources and capabilities view the environmental (external) and the organisational (internal) determinants that influence their innovation practices as being sources of business growth performance (Blumentritt & Danis 2006), producing a powerful endogenous incentive to economic development in the Dubai market according to the endogenous growth theory (Schumpeter 1934; Aghion & Howitt 1997). The study and its hypothesised conceptual model draw on a combination of areas of recent research, namely the innovation theory and the theory of the firm (the national innovation system and resource-based view) are further adjusted to suit the context (the emerging Dubai market) of this investigation.

Innovation can be an integral activity that involves the entire firm and conditions its behaviour (Martinez-Roman, Gamero & Tamayo 2011; Yam et al. 2011), which is more related to the firm's ability to seek new and better ways to identify, acquire, and implement ideas and tasks (North & Smallbone 2000; Calantone, Cavusgil & Zhao 2002; Blumentritt & Danis 2006; Brem & Voigt 2009; Hjalager 2010). For innovation to exist within a firm, it is necessary to cultivate the external and internal environments and determinants and the driving forces to provide more understanding of its innovative potentials and continuing innovative activities (Hjalager 2010; Martinez-Roman, Gamero & Tamayo 2011). In an effort to understand innovation in this context, the business and innovation management literature related to the macro and the micro determinants (external and internal-driven factors) that are relevant to innovation deals mostly with large firms in developed markets and economies (Kim & Lim 1988; Salavou, Baltas & Lioukas 2004; Hossain 2013) and have produced mixed results (Hult, Hurley & Knight 2004), whereas small and medium firms can play important roles (Allocca & Kessler 2006; Forsman & Temel 2011) and have behavioural

advantages in innovation (Salavou, Baltas & Lioukas 2004; Szirmai, Naude & Goedhuys 2011) in socio-economic development, diversification, and innovation, particularly, in an emerging market similar to the Dubai market (Mytelka 2000; Grant, Golawala & McKechnie 2007; Rettab, Brik & Mellahi 2009; WEF 2010). The emerging United Arab Emirates market and Dubai in particular is the most innovative-driven economy in the Arab world and is moving from an oil-based economy to a knowledge-based economy, is changing to a free market system, and is integrating into the world market economy (DCCI 2010; WEF 2010; Knight 2011; UAE MFT 2012), having more potential for being the innovation hub for the entire region (Dutta 2006).

The recent innovation management literature has a number of empirical studies focusing on the links between external-driven and internal-driven determinants, innovation practices, and business growth performance in SMEs in different emerging markets and economies that are experiencing dramatic growth and providing firms with opportunities (Kim & Lim 1988; Arnold & Quelch 1998; Zahra, Nielsen & Bognar 1999; Mahemba & De Bruijn 2003; Salavou, Baltas & Lioukas 2004; Scozzi, Garavelli & Crowston 2005; Kenny & Reedy 2006; Martinez-Roman, Gamero & Tamayo 2011; Wonglimpiyarat 2011; Temel, Mention & Torkkeli 2013). This study focuses on the emerging Dubai market and proposes an interactive conceptual model that is based on the innovative capability of the firm, such as SMEs, in a number of industry sectors. The proposed hypothesised conceptual model is original in the following aspects, first, it explains the innovative outcomes of SMEs in a local market context whereas previously used indicators to measure technological innovation do not offer sufficient data for making decisions relevant to innovation and, second, it incorporates a broad base of external and internal determinants (financial resources, academic-industry collaborations, management orientation, organisational culture, and market orientation) relevant to innovation practices and business growth performance that have not been sufficiently studied in an empirical manner and as a set in this context. This study indicates the significance of adopting a holistic approach to innovation management by incorporating the macro and the micro-environmental contexts and the impact on business growth performance for SMEs in the Dubai market (Lawson & Samson 2001; Martinez-Roman, Gamero & Tamayo 2011).

The conceptual model in this study was linked to the research methodology and instrument design. It measured the direct effects of various determinants of innovation practices and business growth performance to avoid the chance of positive effects blocking negative effects by using intervening and mediating variables. After the process of the conceptualisation and operationalisation of the

constructs (i.e. latent variables), the research strategy of survey questionnaire was selected and an initial pool of items was generated from extensive literature reviews, two-pilot group discussions, and attendance of key seminars and conferences at national and international levels to further collect qualitative information. The final draft of the survey questionnaire resulted in the assembly of 11 constructs and a pool of 66 questions and items (of that 54 were from the literature reviews and 12 were from the pilot group discussions) and the selection and formatting of scales (seven-point Likert scale). During the validation process, questions and items were judged and pre-tested with 30 individuals: owners/managers of SMEs (*n*=14), academic researchers (*n*=10), and industry and market experts (*n*=6) for refinement, deletion, addition, and adjustment to formatting. The final version of the survey questionnaire was further sent to another sample of SMEs (*n*=24) to be pilot tested. To conduct the actual research study, the survey questionnaire was sent to a study sample of 600 of the SMEs population using stratified sampling type (by using employment size). The method of successive waves was applied so that three weeks after the first delivery of the survey questionnaires and introductory letters, reminder letters were sent to non-respondent firms. It was answered by 208 returned survey questionnaire samples and 203 samples were selected excluding five incompleted ones.

The proposed reflective hypothesised conceptual model was empirically tested using component-based methodological approaches. In the survey questionnaire, the items succeeded in capturing the underlying dimensions of innovation practices and business growth performance and the scale was able to differentiate between firms with different levels of innovation practices and business growth performance. Under the simple statistical measures, the survey questionnaire data collected was tested for outlier, normality, and exploratory factor analysis. Results indicated that there were 200 (33.33%) usable survey questionnaires (of which three outliers) and 11 constructs (of which two very weak correlations). Under the advanced statistical measures, the survey questionnaire data collected was tested for the measurement (inner model) and the structural (outer model) models using the Partial Least Squares technique (Smart-PLS 2.0 M3). Results indicated that there were 11 constructs and 63 questions and items (of which three < 0.60), R^2 of 0.641, 0.471, and 0.274, GoF of 0.538, blindfolding Q^2 of higher than zero, and stable bootstrap routine. Outcomes showed a reasonably good model fit and five significant supported hypothesised relationships (out of ten hypotheses). Innovation practices were influenced by management orientation, technology orientation, market orientation, and alliance and cooperation and at the same time business growth performance was influenced by innovation practices. The results were discussed in relation to the

literature review and the research questions and hypotheses to elaborate on the firm's business and market environments and the influence of the enabling factors on innovation practices and of the innovation practices on business growth performance for SMEs in the emerging Dubai market. It also integrated other results that are not directly related to the research hypotheses and conceptual model to inform broader research questions.

The important conclusions of this study together with the academic contributions and managerial implications to the existing knowledge and practice are to be presented.

7.3 Contributions and Implications

The contributions and implications of this study serve a variety of purposes for theory, policy, and practice. The conceptual model and its macro and micro-environmental constructs have academic contributions for the concept of a national innovation system and the theory of a firm and expand the current knowledge through configuring a range of concepts from multidisciplinary views to address the research problem and questions identified. Further, the research design employed has contributed to empirical understandings in the context of quantitative research method and survey questionnaire design. It has additional implications for policymakers and practitioners regarding the role of external-driven and internal-driven factors and innovation practices and their impact on business growth performance. It provides more insights into innovation resource-based factors that are connected to business growth performance for small and medium firms in an emerging market. The next academic contributions and managerial implications are created from this study.

7.3.1 Academic Contributions

This study presents new insights for building on the existing knowledge of innovation practices and business growth performance in SMEs in the emerging Dubai market context that include different levels of contributions: theory, empirical, and a recommended innovation-based model. Table 7.1 provides a summary of the main academic contributions.

Table 7.1: Summary of academic contributions.

The Theory Level:
▪ This study tests a combination of recent research areas, namely the innovation theory and the theory of the firm (i.e. national innovation system and resource-based view) in an emerging market through a comprehensive conceptual model. ▪ It differentiates between components of the external-driven and internal-driven environments and contributes a more comprehensive and de-compositional view of constructs with the emphasis on SMEs innovation capabilities. ▪ It separates the external-driven and the internal-driven constructs to capture an in-depth knowledge and data in understanding their effects and SMEs innovation behaviours. It looks at both the external and internal sources of capabilities that SMEs draw upon in varying degrees to acquire innovative capabilities. ▪ It suggests that government supported developments, financial resources, academic-industry collaborations, market dynamics, and organisational culture have non-significant effects on innovation practices. It suggests that by attending to management orientation, technology orientation, alliance and cooperation, and market orientation, SMEs can enhance innovation practices and in turn business growth performance. ▪ It shows that SMEs are the primary driving force of their own innovative behaviours by utilising their resources and capabilities. It corresponds to the idea of innovation as a potential capability of SMEs that impact on their resource base. It takes into account the development of new capabilities (dynamic capabilities) such as technology and network to be acquired and integrated into their resource base. ▪ It elaborates upon how SMEs' innovative capabilities in terms of characteristics, operations, and resources impact their business growth performance by providing evidence of an innovation business performance relationship. It conceptualises

and empirically analyses the innovation learning processes (i.e. knowledge-based view and other determinism views) that impact business growth performance.
The Empirical Level:
▪ This study is conducted under a positivism paradigm and quantitative research and draws generalisable conclusions based on statistical analysis and a hypothesised conceptual model in the emerging Dubai market that is one of few to do so. ▪ It focuses on the antecedents of innovation capabilities and their impacts on business growth performance. ▪ It proves empirically the existence of distinctive innovation capabilities in SMEs. ▪ It proves empirically that internal-driven factors are more beneficial than external-driven factors in terms of innovation. ▪ It provides empirical evidence of a link between management orientation, technology orientation, alliance and cooperation, and market orientation, innovation practices, and business growth performance. There is a lack of empirical support for the relationships between government supported developments, financial resources, academic-industry collaborations, market dynamics, organisational culture, and innovation practices. ▪ It proves the multidimensionality of the external-driven and internal-driven construct by showing differing effects of their constituents on innovation.
The Proposed Innovation-Based Model Level:
▪ This suggested model proposes a number of external-driven and internal-driven factors to innovation through three phases (i.e. basic, competitive, and resource and capability conditions). ▪ It has similarity and differences with previous models and accounts for the limited resources in an emerging market. ▪ It illustrates the importance and interdependency of variance in research designs in understanding the links between antecedents, processes, and outcomes that need to be validated.

7.3.1.1 The Theory Level

This study has expanded the existing literature on innovation through developing a hypothesised conceptual model from a variety of disciplines that include, for example, the concept of national innovation system and the theory of the firm perspective, and is adjusted to suit the context of this research study (i.e. the emerging Dubai market). It yielded useful insights for theory building from previous interpretations and discussions of the findings and it has examined a number of external-driven and internal-driven factors of innovation practices in SMEs and the impact on business growth performance, sought opinions from approximately 200 firms. It addresses the concern of Martinez-Roman, Gamero, and Tamayo (2011) who are in favour of adopting of holistic approach to innovation by incorporating the macro-(external)-and-micro-(internal)-environmental contexts, similar to this study. It can be considered as the first comprehensive conceptual model, which has investigated SMEs and their innovation practices and business growth performance in a market similar to the emerging Dubai market and has utilised and embedded newly developed measures and items. Further, this study has argued that the innovation management literature from larger firms and developed countries are the result of investigations into innovations in those countries that may produce different results when conducted in smaller firms and developing countries

(Welsh & White 1981; Mahemba & De Bruijn 2003; Hult, Hurley & Knight 2004; Salavou, Baltas & Lioukas 2004), thus there is a discontinuity gap, where earlier research has ignored the role of SMEs and emerging markets and economies on innovation, especially the Middle East and North Africa regions (Hossain 2013). However, this proposed hypothesised conceptual model is based on extensive literature reviews mainly from developed countries that might not be applicable in the case of the developing country but it might be useful to gain further understanding of other countries' past experiences in the field of innovation (Hofstede 1991; Cano, Carrillat & Jaramillo 2004). This study further contributes to the international marketing and innovation management literature by analysing data from the Middle East region. Most of the studied measurements are examined, even though some items have no significance reflecting their constructs. The outcomes of this study reveal some discrepancies with the innovation literature that confirms the importance of investigating innovation in different contexts.

This study examines the external-driven factors through testing the national innovation system in an emerging market. Previous research studies provide support regarding the moderating effect of establishing a national innovation system on the innovation and firm relationship (Hjalager 2010; Wonglimpiyarat 2011). The findings of the first research question illustrate weak evidence of the effect of the Dubai national innovation system (if it existed) on the innovation capability of the firm and the results are attributed to the developing nature of emerging markets and economies. The macro-environmental determinants point out that government supported developments, financial resources, academic-industry collaborations, and market dynamics have non-significant influences on the innovation practices of SMEs. The role of a national innovation system and their external-driven factors may be robust when research contexts are conducted in advanced markets and economies. The finding encourages the local government and the operating firms in the Dubai market environment to understand this interactive system in both historical and political settings that can offer an additional rise to rapid improvement and growth in technological and economic developments when the local market economy is liberated to create new market opportunities, government supported programs and public-private sector partnerships are increased, the funding bodies are available, the academic institutions and skilled labours are accessible, and the market is better structured as implied in the findings (Cooke, Uranga & Etxebarria 1997; Szirmai, Naude & Goedhuys 2011; Al-Abd, Mezher & Saleh 2012; Jaruzelski et al. 2012). This aims at production, diffusion, and exploitation of knowledge, technology, and innovation within a national border that the linkages and interactions between these elements are the key in shaping the future national

innovation system of Dubai and its major players in the local market (Cooke, Uranga & Etxebarria 1997; Wonglimpiyarat 2011).

The examination of the internal-driven factors in this study is through the theory of the firm (i.e. resource-based view) in an emerging market. Previous research studies provide support regarding the moderating effect of resources-based (i.e. competencies and capabilities) on the innovation-firm-behaviour (Wernerfelt 1984; Barney 1991; Xu et al. 2007; Teece 2010; Kor & Mesko 2013). The findings of the second research question provide strong evidence of the effect of the resource-based value on innovation capability of the firm. The micro-environmental determinants show that management orientation, technology orientation, alliance and cooperation, and market orientation have significant influences on innovation practices of SMEs (except for organisational culture that has a non-significant influence). It addresses the concern of Adams and Comber (2013) who argue that the support to identify opportunities and pursue sustainability through resource efficiency has focused on large firms but there is a need to address the characteristics of SMEs. This finding can contribute to the dynamic capabilities research by conceptualising and validating the relevance of a potential dynamic capability in a context of innovation capabilities and practices. It can help a firm to extend, modify, and improve its strategic orientation and operational capability, which is relevant to managing a number of tasks (i.e. innovation practices). Capabilities permit a firm not only to adapt to changing business and market environments but as well to create technological and market changes that favour its competitive advantage. Although the innovation management literature assigns a prominent role to innovation in SMEs, it should conceptualise innovation as dynamic capability (Martinez-Roman, Gamero & Tamayo 2011). Previous research studies on the different capabilities of the firm have focused mainly on the relation between capabilities and performance-based outcomes (Lieberman, Lau & Williams 1990; Henderson & Cockburn 1994), with less attention given to the sources of these capabilities (Penrose 1959; McEvily & Zaheer 1999; Leiblein 2011), which is viewed in this study through government supported developments, financial resources, academic-industry collaborations, organisational culture, market orientation, and alliance and cooperation as aspects of innovation resources and capabilities.

The influence of innovation practices on business growth performance within SMEs operating in the emerging Dubai market is tested in this study. Previous studies have produced mixed results with some scholars indicating a positive relation between innovation and business performance while others have found a negative or no relation (Geroski & Machin 1992; Heunks 1998; Zahra,

Nielson & Bognar 1999; Talke, Salomo & Kock 2011). The findings of the third research question provide strong evidence of the effect of innovation practices on the business growth performance of the firm. It shows that innovation practices have a significant influence on business growth performance. Further, this study addresses the concerns of Forsman and Temel (2011) who feel that additional evidence is needed to understand how innovation affects performance in SMEs and of O'Regan, Ghobadian, and Sims (2006) who argue that SMEs sometimes fail to recognise the opportunities (i.e. flexibility of customising products and services) that are available in the market. Innovation is increasingly realised as a contributory factor to higher business growth performance in various industries and strengthening the competitive advantage of the firm to survive in the market, similar to SMEs in the Dubai market (Gunasekaran, Forker & Kobu 2000; Sanz-Valle & Jimenez-Jimenez 2011). It supports the relationship between innovation practices and business growth performance (similar to the theory of the growth of the firm), whereas the relationship between the external and the internal determinants and business growth performance may not be linear and is mediated by innovation practices (except for market orientation).

The innovation efforts of SMEs should be considered on a number of perspectives to be able to achieve a higher business growth performance in the emerging Dubai market as suggested by this study. These efforts include: (1) the resource-based view and the evolutionary theory (for example by looking at internal resources and competencies, strategic orientations, and market conditions to adapt to environmental changes) in which a dynamic environment (similar to the Dubai market) is given importance in explaining the innovative capability of a firm (Guan & Ma 2003; Martinez-Roman, Gamero & Tamayo 2011; Fernandez-Mesa et al. 2013) and can provide an answer to a recent call to differentiate among components of strategic orientations (i.e. technology and market orientations) and their relations with innovations (Spanjol, Muhlmeier & Tomczak 2012); (2) the knowledge-based view in which factors (for example academic collaboration, internal learning, market, technological resources, and networking) are given more importance in explaining the knowledge absorption of a firm (Mitra 2000; Massa & Testa 2004; Raymond & St-Pierre 2004; Salavou, Baltas & Lioukas 2004; Blumentritt & Danis 2006; Laforet & Tann 2006; Martinez-Roman, Gamero & Tamayo 2011); and (3) the studied determinants can be linked to alternative theoretical perspectives of resource-based, environmental determinism, management strategic orientation, learning orientation, technology-push, alliance and business networks, and market-pull (Porter 1980; Miller 1988; Bourgeois 1986; Chidamber & Kon 1994; Shepherd & Ahmed 2000; Salavou, Baltas & Lioukas 2004; Nemet 2009) in which the results illustrate that the macro-

environmental determinism in examining the influence of the external environmental factors on innovation practices appears to be dependent upon other determinants (than government supported developments, financial resources, academic-industry collaborations, and market dynamics). The insights of innovation practices within firms indicate that management and strategic orientation, technology orientation, market orientation, and alliance and cooperation outweigh organisational culture in explaining SMEs behaviours and tendencies towards innovation. SMEs in the local Dubai market are placing equal emphasis on "technology-push" and "market-pull" due to the increase in advanced technological development, customer sophistication, complexity demand, and market competition. This can lead a firm to focus on product (internal execution efficiency) and service innovations (identification, validation, communication, and delivery to customers).

7.3.1.2 The Empirical Level

This study institutes, empirically, the nature, direction, and relationship of a number of factors that enable innovation practices in SMEs and their impact on business growth performance in the emerging Dubai market context. The literature has neglected the role of SMEs in innovation in places like the Dubai market and at the same time having no comprehensive study that proposed a hypothesised conceptual model for predicting innovation practices within SMEs. Further, this study adopted a positivist paradigm and tested a hypothesised conceptual model empirically using cross-sectional data and survey questionnaire approaches from SMEs in the Dubai market. During the application of the survey questionnaire a usable response rate of 33.33% (200) was obtained. Thus, ten hypotheses were analysed using a structural equation modelling technique (Partial Least Squares technique). Five hypotheses were significant and five hypotheses were non-significant. Nine hypotheses were positive and one hypothesis was negative. The overall fit of the conceptual model was considered to be large (GoF = 0.538), offering a number of interesting insights into the relationships between the external and internal determinants, innovation practices, and business growth performance, which empirically offers evidence in differentiating between innovation capability and business growth performance in SMEs. This study serves the research community as a meaningful starting point for future investigation and provides valuable insights for firms in other countries in the Middle East and North Africa that face similar market situations.

This study investigated a range of SMEs sample, and is one of the first rigorous academic research studies that has examined the innovation practices and business growth performance of SMEs in the emerging Dubai market from both theoretical foundations and empirical perspectives. Previous

research studies conducted in the emerging Dubai market were basic investigations and offered general information on the market trend and the importance of innovation to mainly large firms. In comparison to this study, the outcomes highlight the importance of integrated and compositional approaches to the investigated topic of innovation. The approach of this study can be beneficial and realistic than earlier approaches of examining relationships between each construct separately by using a bivariate regression analysis statistical technique. It further examined these constructs simultaneously and not partially providing, more detailed outcomes. The gap concerning a lack of knowledge and empirical information about innovation and business performance within SMEs in the emerging Dubai market is enriched by the outcomes of this study. It has empirically proved the multidimensionality of the external-driven and internal-driven constructs by showing differing effects of their constituents on innovation practices in different environmental contexts (i.e. the Dubai environment). Previous research studies have traditionally been inclined to investigate SMEs as homogenous entities that have traditionally operated with narrower product portfolios and have relied on local markets; however, recently SMEs have been involved in the globalised competitive markets (Miesenbock 1988; Shama 1993; Cagliano, Blackmon & Voss 2000; Aragon-Sanchez & Sanchez-Marin 2005), particularly in those emerging markets and economies where reforms and changes are taking place (Mytelka 2000; Grant, Golawala & McKechnie 2007; WEF 2010; Jaruzelski et al. 2012).

This study empirically addresses the notion that innovation is a fundamental activity that involves the entire firm and conditions its behaviour (Martinez-Roman, Gamero & Tamayo 2011; Yam et al. 2011). According to the outcomes and to enable and adopt innovation practices in the emerging Dubai market, SMEs should consider their internal determinants to facilitate and enhance their innovation practices, which include: management orientation, technology orientation, alliance and cooperation, and market orientation to further support their business growth performance. It can imply that Dubai SMEs need to understand that, first, their owners and/or managers characteristics and strategic directions towards innovation play important roles in shaping and supporting their decisions to adopt and/or generate innovation; second, their technology policies and adaptation of emerging and new technology are important in improving internal processes and methods and allocating resources for investments in latest technologies to support innovation; third, their networks and business linkages to collaborate effectively with suppliers and sub-contractors and to identify strategic partners and supporting services and industries play significant roles in exploring new knowledge and competency, improving internal resources and capabilities, collaborating on

research and development, and sharing innovation benefit and risk, despite some of them still following individualistic business behaviours and limited alliances; and finally, their customer needs, competitive situations, and internal sharing of market information within the firm, despite the limited market research and information and the fierce market competition that are important to encourage them to focus and specialise on products and services according to their customers' needs in order to gain market acceptance and establish their own brands. By focusing primarily on implementing these internal determinants, these firms may increase their opportunities for novel innovations to achieve higher business growth performances.

Other empirical contributions contradicted expectations. Even though the study findings turned out to support the null research hypotheses, which can make empirical contributions to SMEs in the context of the emerging Dubai market that government supported developments, financial resources, market dynamics, and organisational culture were non-significant positively linked to innovation practices, and academia and enterprise collaborations were non-significant negatively linked to innovation practices. These findings may be partly explained by a possible lack of proper resources and development programs in a market environment that is still being developed. Even if these outcomes do not reflect the predictions of the theories of the firm (i.e. growth theory and resource-based view) and innovation enabling assumption, they indeed reflect reality and imply that the effects of innovation are contingent and can present strengths and constraints to Dubai SMEs. Taken together, this study can ascertain that government supported developments, financial resources, academia-enterprise collaborations, market dynamics, and organisational culture factors must be well-thought out together with economic, social, and behavioural patterns to improve our understanding of their impacts on innovation practices and business growth performance. These findings further challenge the current literature highlighting their importance in facilitating and enhancing innovation. These empirical results have additional implications for policymakers and managers to support SMEs innovation practices and business growth performance in an emerging market and economy.

7.3.1.3 The Emerging Market Innovation-Based Model Level

The ability of firms to develop processes, products, and services that address real market demands and improve business performance depends increasingly on innovation as supported by this study. The conceptual model suggested by this study has been developed as a response to the limitation of the understanding of innovation in emerging markets (i.e. similar to the Dubai market), which

adds a theoretical contribution to the international business and innovation management literature. It answers the call for a broader perspective of seeing innovations to encompass both economic and social imperatives for both policymakers and practitioners. It re-emphasised the argument of Szirmai, Naude, and Goedhuys (2011) who feel that the "one-size-fits-all" model is inadequate to capture and explain innovation and its antecedents and impacts on business growth performance in all markets. To be exact, it suggests that developing markets compared to developed markets need a customised innovation-based model that fits their resources and capabilities for improving the innovation practices of their firms. By re-conceptualising the original model tested in this study, innovation can be perceived in a different way in different markets, so that what products and services may seem new to customers in one market may already be familiar in another one (GEM 2011), so it can be context-dependent (Szirmai, Naude & Goedhuys 2011). This re-conceptualised model further incorporates both the external and internal environmental conditions that provide an understanding of innovation and its impact on business performance. Building on recent proposed models and the results of this study, a supporting framework should be developed that accounts for challenges facing innovative SMEs in the emerging Dubai market.

To gain the optimum benefits from innovation for different firms and the country, there should be a conceptual model that interplays between different levels. For example, policymakers should consider the basic and competitive conditions and managers and practitioners should consider the resources and capability conditions. According to this study, the message is clear that firms should continue to improve the soft aspects of innovation (i.e. similar to organisational culture) and put in place the necessary resources and capabilities before implementing the hard aspects of innovation (i.e. similar to technology or market development) and government and its local agencies should establish the foundations of innovation (i.e. similar to policies, infrastructure, and academic and research institutions). Therefore, this proposed innovation-based model comprises of three inter-related components (that are resource and capability conditions, basic conditions, and competitive conditions) influencing innovation practices and business growth performance of SMEs in the emerging Dubai market:

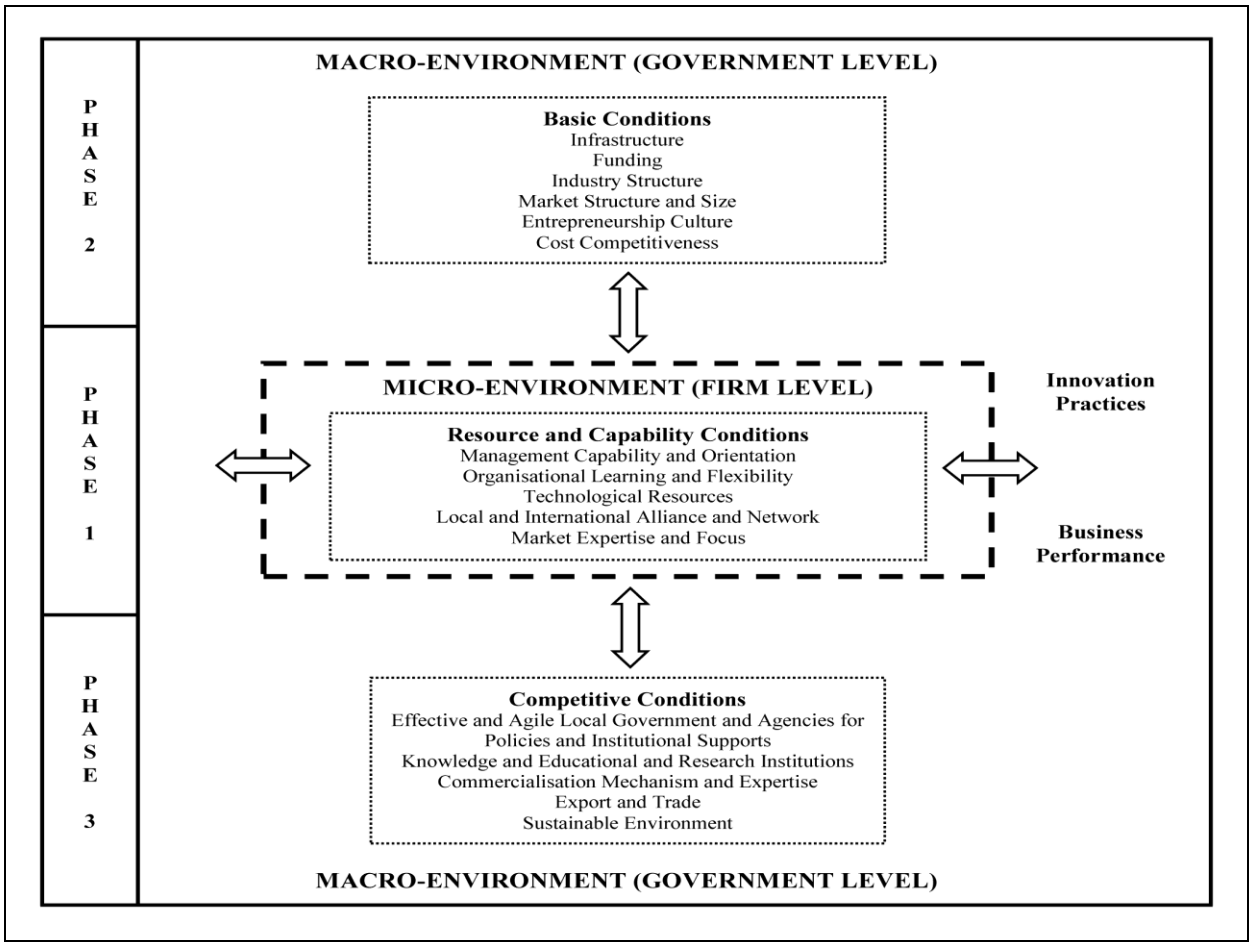
- Phase 1: Resource and Capability Conditions (Internal Environment - Firm Level): Five internal parts are needed; management capability and orientation; organisational learning and flexibility (i.e. knowledge and structure); technological resources (i.e. acquisition and process development); local and international alliance and network; and market expertise and focus (i.e. customers and competitors).

- Phase 2: Basic Conditions (External Environment - Government Level): Six external parts are needed; infrastructure (i.e. physical, communications, and energy/water management); funding (i.e. banks, venture capital, SMEs funds, and financial markets); industry structure (i.e. firms, suppliers, distributors, consumers, and competitors); market structure and size (i.e. competition, interaction, and regional market); entrepreneurship culture (i.e. SMEs council and start-ups platform); and cost competitiveness (i.e. set-up and operation costs).
- Phase 3: Competitive Conditions (External Environment - Government Level): Five external parts are needed; effective and agile local government and agencies (i.e. national policies and legislations, legal-and-regulatory frameworks, industry sector specific policies and regulations, taxation system, procurements, institutional and operational supports, science, technology, and innovation policies, innovation promotion agency, and quality standard improvement); knowledge and educational and research institutions (i.e. human capital and talents, training and skills, research and development funds, and business parks and science and technology centres); commercialisation mechanism and expertise (i.e. idea to market); export and trade (i.e. ports and airports); and sustainable political, social, business, and market environments (i.e. inflation rates, natural disasters, and wars).

This re-conceptualised model as shown in Figure 7.1 holds similarities and differences to earlier conceptual models (Mahemba & De Bruijn 2003; Hult, Hurley & Knight 2004; Martinez-Roman, Gamero & Tamayo 2011; Jaruzelski et al. 2012). The similarity is in that it integrates both the external and internal environments; is positioned as a formal structure linking both the antecedent and post processes of innovation intended for a firm to better perform; and includes antecedents such as government supported developments, financial resources, organisational culture, and market orientation. However, this model differs in that it has academic-industry collaborations, market dynamics, management orientation, technology orientation, and alliance and cooperation as antecedents. The three phases of the proposed model entail inter-related interactions between all relevant elements. For example, access to funds can provide a firm with financial resources to acquire new technologies or link to educational and research institutions can supply a firm with new knowledge and talent. The outcomes from these interactions are innovation practices and business growth performance. Therefore, innovation (i.e. incremental or radical) can be depicted as entrepreneurial and a dynamic process of behaviour and adjustment to the external and internal environmental conditions, which can create values and business growth performance for a firm (Schumpeter 1934) in an emerging market and economy similar the Dubai market. However, this

conceptual innovation-based model for an emerging market needs to be further validated on a new sample of firms and over a period of time.

Figure 7.1: Suggested model of innovation practices for SMEs in emerging markets.



7.3.2 Managerial Implications

This study presents new insights for policymakers and managers in relation to innovation practices and business growth performance in SMEs in the emerging Dubai market context that include different levels of implications: policymakers and managements. Table 7.2 gives a summary of the main managerial contributions.

Table 7.2: Summary of managerial contributions.

The Policymakers Level:
▪ The government should establish a national innovation plan, policy, council and support program with more attention given to SMEs activities.

▪ It should develop a common definition and establish flexible laws and incentives for SMEs. ▪ It should provide specific reforms to improve its national competitiveness through innovation in different areas related to infrastructure, institutional support, legal and regulatory frameworks, set-up and operation costs, funding, education and capacity building, and market structure.
The SMEs Level:
▪ Managers should manage resources and capabilities and implement innovations with an in-depth understanding of their firms' innovation challenges. ▪ They need to have a balanced view of innovation in a competitive market environment. ▪ They need to support learning orientation (i.e. access to knowledge and technology) and staff creativity and development. ▪ They need to shift away from head-to-head market competition and should have a sense of balance between technology-push and market-pull and establish strategic alliances and linkages (i.e. academic institutions, local and foreign firms, and other support industries). ▪ They need to consider the proposed conceptual model to coordinate their innovation activities by focusing on management orientation, technology orientation, alliance and cooperation, and market orientation.

7.3.2.1 The Policymakers Level

This study points to the need for government involvement to improve support and to coordinate innovation activities for small and medium firms in the emerging Dubai market. The Government of Dubai and its agencies are required to have an integrated national innovation plan, for example similar to the Singaporean SME 21 national plan, which form the foundation for decision-making and for focusing resources and funding on a number of areas and projects (Forfas 2004). Since almost 85% of SMEs participate in innovation activities in this study, it inspires the government to encourage and to enhance a greater entrepreneurship, a spontaneous industrial restructuring, an enterprise development, a link between industry sectors (business and science vs. manufacturing and service), and balance efforts among imported science and technology and indigenous research and development (Peilei 2011). Thus, building a strong domestic innovation base to tackle new technological changes and competitive challenges can enable the Dubai economy to depend on the performance of its national innovation system and firms and its innovation diffusion, for example regionalised innovation policy, in its next phase of economic development (Camagni 1991, 1995; Ruttan 1997; Silveira 2001).

This study proposes that a national innovation policy and a national innovation council are to be established in Dubai to further promote innovation activities in firms (i.e. SMEs). The condition for a national innovation policy is to support and facilitate innovation capabilities and to extend technological capacity building and for a national innovation council to oversee and coordinate all related innovation activities (Mytelka 2000; Hadjimanolis & Dickson 2001). The development of

an innovation policy should receive complete government support, for example similar to Ireland, which stimulates changes through innovation centres and laboratories where new ideas are tested (Gibbs 2000) and provides government assistance through offering organisational, financial, and market support to firms and academic institutions to invest in technology transfer and new product developments. The government should review the existing macro-and-micro-policies to create synergy among firms of different sizes and to address specific challenges faced by SMEs (Mole & Worrall 2001). The development of a national innovation council should include both public and private agencies, which can provide the formation of innovation national strategies (i.e. innovation platforms), communications (i.e. promote Dubai as an innovation centre), ecosystems (i.e. key players in innovation), and tools (i.e. support firms with innovation drivers and build education around innovation). Establishing a national SME development council, for example similar to Malaysia, is an important step for making policies and programs to strengthen the local national innovation system and for promoting SMEs development to strengthen the innovation capabilities and activities (Wonglimpiyarat 2011). The coordination of activities in the local market can be done by a steering agency such as the Dubai Chamber of Commerce and Industry that can provide support and follow-up to firms to appraise development efforts (Mahemba & De Bruijn 2003).

This study further suggests that the UAE Ministry of Economy and Planning and the Government of Dubai should develop a common definition and establish flexible laws for SMEs to participate and compete successfully in the local and regional markets according to international standards (Mahemba & De Bruijn 2003; Arabic Gulf News 2010; DCCI 2010). It can energise SMEs to develop new and improved products and services and to increase quality in the form of controlling economic risks, reducing start-up and operation costs, and improving legal and regulation policies as requested in this study. It can provide assistance in terms of education, funding, consulting, networking, and workshop to build strategic resources and capabilities and to understand how to innovate and how to manage their innovation activities in a changing environment. Further, the development of free trade zones and business parks by the government, with shared infrastructure and services, can provide more opportunities for the development of specialised product niches, sharing of information, and collective efficiency through specialisation, thereby offering SMEs an ideal environment to overcome costs and risks and to access new knowledge, technologies, and segment markets (Porter 1990; Hertog 2010; Szirmai, Naude & Goedhuys 2011). This study also encourages the government to take a leading role in providing supportive institutional and legal arrangements and financing programs for SMEs to support the commercialisation of research and

development (Wonglimpiyarat 2011). The government allocates fewer resources and incentives to commercial academic research and development when compared to its GDP (DCCI 2010). It can implement a number of funds such as seed, science and technology, and community innovation; create an 'R&D Dirham' by collecting AED1 with each administration transaction; and support academic research and development funded by industry and vice versa. For example, after the collection of data and before the final submission of this study, the government has launched the Majid bin Mohammed Innovation Centre (in5) in the Dubai Internet City to be able to encourage entrepreneurship and technical innovation and drive SMEs in the technology sector.

This study encourages the Government of Dubai and its agencies to develop and improve reforms on government supported developments and initiatives, legal and regulatory frameworks, set-up and operation supports, financial capital, capacity building, and market developments according to the outcomes of the weak influence of the external-driven factors on innovation practices, where SMEs can be provided with opportunities to innovate and in turn perform as recommended by this study. This would involve: first, the development and designation of a special agency, "Enterprise Dubai," that is similar to Ireland and Finland in order to invest in domestic firms by leveraging imported knowledge and skills to build a strong domestic base, providing government grants and equity positions, offering supports at all developmental stages, setting-up public agencies in free zones/clusters, and providing facilities for a research incubator and shared services; second, the reinforcement of the patent and intellectual property rights law to favour the commercialisation and transfer of knowledge and technology from academic institutions to firms and vice versa, the protection of small firms from fraud and unfair takeover by establishing protective measures such as a disclosure of information on transactions, an active bankruptcy law, a liability to firms for causing damages, and harmonising a regulatory framework with industry guidelines that is similar to Norway; third, the availability of incentives and supports such as networking, funding, and advisory and logistical supports rather than overburden SMEs with extra costs of sponsorship requirements and restrictive practices by creating supportive and financial incentives and widening investment opportunities for small firms through providing capital investment grants and rent subsidies, lowering trade tariffs and subsidies on raw materials, and allowing privatisation; fourth, the participation of banks and financial institutions by providing capital and loans for private sector investments from sound banking sectors, well-regulated securities exchanges, and venture capital, and the support of communication with the public and stronger financial transparency and accountability by firms; fifth, the improvement to generate creative talents to undertake innovation

activities and to strengthen the collaboration between academic institutions and industries by establishing educational policies and capability-building because success depends on the capacity to transfer domestic knowledge into products and services; and finally, the development and restructuring of the local market of weak regulations, contract enforcements, and monopolies by making any returns on innovative activity and investment less risky, by balancing competition policy with governance controls and performance demands, by catalysing system-level thinking via trade associations and industry forums, by bringing individuals working alone together, and by creating structures to ensure coordination and coherent execution across all agencies.

7.3.2.2 The SMEs Level

This study demonstrates that the links with suitable factors of the internal environment observed are contributory for developing innovative capabilities in SMEs. For Dubai SMEs to thrive with innovation capabilities and more success emanating from their innovation practices necessitates dedicated management orientation, technology orientation, alliance and cooperation, and market orientation towards their innovation endeavours. It can be realised by enhancing their innovative capabilities and competencies through: first, their owners/managers characteristics and strategic directions towards innovation play important roles in shaping and supporting their decisions to adopt and/or generate innovation that are centred on incorporating innovation as strategic goals and future ambitions, focusing on long-term objectives, exploring new opportunities, proactively involving in new initiatives, and allocating resources for research and development activities; second, their technology policies and positions in adapting emerging and new technology play important roles in improving internal processes and allocating resources for investments in the latest technologies to support innovation; third, their networks and business linkages to collaborate effectively with suppliers and sub-contractors and to identify strategic partners and supporting industries for exploring new knowledge, improving resources and capabilities, collaborating on research and development, and sharing innovation benefit and risk; and finally, their customer needs, their competitive situations, and their internal sharing of market information within the firm by encourage SMEs to focus and specialise on products and services according to their customers' needs to gain market acceptance and establish their own brands.

The resource-based view can provide owners and/or managers of SMEs with an understanding of how to view their internal and external environments that these firms need to channel resources into innovation capabilities to gain better business growth performance. Owners and/or managers

of Dubai SMEs are invigorated to apply the resource-based view as a first step before making any decisions to involve in innovation practices by looking at:

(1) Under the resource-based view, it is important for SMEs to develop distinctive capabilities and competencies using their internal resources in the context of the external dynamic environment (Wernerfelt 1984; Porter 1985; Barney 1991). The innovation efforts of SMEs should focus on nurturing and enhancing their innovation capabilities and competences where owners/managers of SMEs in this study have known intuitively that innovation is somewhat important to business growth performance. Taking the study findings into consideration at the firm-level, they have implications for resource allocations. The identification of innovation-driven and performance-driven relational factors allows for the development of control tools as a way of structuring regular reviews in the firm. Further, as competition becomes more knowledge-based, SMEs operating in the Dubai market must have a better understanding of their own knowledge, the way by which they convert knowledge into competences to meet market demands (Lane & Lubatkin 1998).

(2) Under the core competence-based view, the collective learning of the firm can be a source of competitive advantage (Quinn 1992; Heene & Sanchez 1997) that distinguishes the firm in the marketplace (Schilling 2006) and are difficult for others to duplicate (Snow & Hrebiniak 1980; Vanhaverbeke & Peeters 2005). For example, the form of internal culture and learning orientation can be a way to generate knowledge and achieve innovation capabilities. This study shows that SMEs in the Dubai market are not fulfilling this function. SMEs can apply the concept of market dynamics, under the dynamic capability view, to change a resource configuration and to obtain a strategic fit with the environment (Teece, Pisano & Shuen 1997; Eisenhardt & Martin 2000). It emphasises the role of orientation factors that is to the degree innovation practices are enhanced through the presence of orientation factors. Firms are able to create better products and services results, an outcome likely to increase business growth performance and sustainable competitive advantage, particularly when compared to firms with less developed innovative capabilities and market competitors (Hult, Hurley & Knight 2004; Martinez-Roman, Gamero & Tamayo 2011).

Before innovation can be adopted in a firm, a supportive culture should be put in place (Kenny & Reedy 2006). According to this study, SMEs in the Dubai market are known to lack a supportive internal culture to encourage innovative methods and approaches (i.e. think freely, generate and follow-up ideas, learn from experience, and take risks), learning processes (i.e. accept and adopt

new and external ideas and share and exchange new knowledge and skills), and flexible internal structures despite their supportive management orientation towards innovation. The outcome of this study underscores the importance of managerial emphasis on building, leading, and leveraging of an internal cultural environment conducive to innovative practices that is in disagreement with Allocca and Kessler (2006, p.292) who also describe SMEs as having "an environment of little bureaucracy, rapid and effective communication, fast reaction time, risk-taking, rapid decision-making, and motivated labour that enables them to deal with uncertainty". Owners/managers of Dubai SMEs need to change from traditional management approaches of cost savings and stand-alone improvements to knowledge value and innovation approaches (Terziovski & Morgan 2006). SMEs need to encourage innovative behaviour and lay down the passage in terms of leading by example, allowing the participation of individuals in the innovation process, and creating reward systems to recognise innovation in different steps (Brown & Anthony 2011). Further, through their continuous improvement, they should inspire individuals to be creative by looking for new knowledge and skills outside their scope and cross-functional integration, and challenge the well-established climates of their firms to develop new ideas and initiatives (Calantone, Cavusgil & Zhao 2002; Huston & Sakkab 2006; Moghimi & Subramaniam 2013). Therefore, the efforts of SMEs to develop an organisational culture that fosters learning orientation and innovation activity can assure an adhocracy culture exists rather than a hierarchy culture (Sanz-Valle et al. 2011).

While government will always have a role in the development of firms, it is the firms themselves, together with academic and research institutions, that must work together and collaborate to drive the development of an industry and sector, inform the research agenda, and drive the provision of sector-specific infrastructure, capital, and talent. Academia-industry collaborations can enable firms to access talent, technical know-how, and contract research leading to innovative initiatives (Keizer, Johannes & Halman 2002; Haour & Mieville 2010). SMEs should use cluster value-chains and networks and link with academic and research institutions to develop and spread their innovation practices to overcome their limited resources and capabilities (McAdam, Reid & Gibson 2004). Further, the mobility of researchers between industry and academia via sabbaticals and secondments need to be promoted to benefit both industry and academia (Forfas 2004). For example, industries can be exposed to current research and development trends while at the same time academics can be exposed to current challenges and market-related issues facing a number of industries by having the opportunity to commercialise their research outcomes. Another way to promote innovation within SMEs is to assign an innovation champion to manage the resources and

capabilities of firms, to direct these critical resources and capabilities, and to support innovative ideas and projects (Allocca & Kessler 2006). Annual spending on research and development activities should be increased with the support of the public and the private sectors, where the majority of SMEs (54%) in this study spending less than 500,000 AED in the past three years.

Innovation is shown to reduce the negative effect of the global financial and economic downturns (Martinez-Roman, Gamero & Tamayo 2011). This study provides an alternative view of the effect of innovation on business growth performance. Owners and/or managers of SMEs should conduct more analyses of the contingent effect of innovation on business growth performance to identify situations where innovations may have limited effects on business growth performance. This can inspire these firms to stay away from a sales and marketing approach and head-to-head market competition and come-up with new ideas for new products and services as they recognise the importance of innovation in this study for achieving successful business growth performance. This study exposes that owners/managers of Dubai SMEs who focus their attention on innovation have more orientation towards technology, alliance and cooperation, and market. It involves being able to create management commitment, to take calculated risk, and to initiate change. SMEs should place equal weight on 'technology-push' and 'market-pull' due to technological advancement, customer sophistication and complexity demands, and competition (Clausen, Korneliussen & Madsen 2013). It implies the need for technological readiness, cultivating networks and linking to external sources (i.e. suppliers and business groups), and being closer to customers, which can fulfil business function and resource demand and build an in-depth understanding of technological and market resources to pursue innovation by developing and delivering more customised and innovative products and services (Rothaermal & Deeds 2004; Temel, Mention & Torkkeli 2013). In the emerging Dubai market, management and practitioners are mainly interested in practical explanations that are offered by the proposed conceptual model. The conceptual model views the external and internal environments and is based on primary data that provides a comprehensive representation of the current situation. The equation of prediction of the conceptual model is to be:

Innovation Practices = 0.356 x Management Orientation + 0.232 x Market Orientation + 0.202 x Technology Orientation + 0.122 x Alliance and Cooperation + 0.019

Beside the opportunity to calculate innovation practices in SMEs, the proposed conceptual model generally underlines the importance of management orientation, market orientation, technology

orientation, and alliance and cooperation in the emerging Dubai market context, thereby provides guidance to questions about the best predictors of innovation practices in Dubai SMEs to support business growth performance. These outcomes of the significance of the internal determinants (i.e. management orientation, technology orientation, alliance and cooperation, and market orientation) in the prediction of innovation practices adoption can be translated into an innovation strategy for SMEs. It may provide more insight in understanding how managerial capabilities can produce changes in the resources and competencies configurations of the firms (Sirmon & Hitt 2009; Kor & Mesko 2013). The current Dubai business and market environments are evolving, which require management, practitioners, and industry participants to modify and challenge this proposed conceptual model that lays the foundation for application and future research study. This study provides management and practitioners valuable insights into the current innovation practices of SMEs operating in the Dubai business and market environments. It offers a basis from which owners/managers of Dubai SMEs are able to compare innovation practices and business growth performance against other firms and to gain a general overview on the current situations. Most of the surveyed owners/managers of SMEs (90%) have requested a summary of the findings, which allows them to rethink their strategic choices and directions because they have been operating in isolation and are not aware of the current trends of innovation in their current marketplace.

7.4 Limitations

As with all research, there are some limitations that need to be considered in the interpretations of the study findings. These limitations can affect the overall reliability and validity of the study and together can offer more opportunities for future research. These limitations are related to:

First, the positivism paradigm and the quantitative research methodology simplify and compress the complex reality and are applicable for measurable phenomena, presume relatively extensive knowledge on the subject matter. The difficulties are the ability to ask correct questions, have a response bias not reflecting actual behaviours and attitudes, study process or dynamic phenomena over a longer time, capture the full range of views, attitudes, and experiences of participants, and have descriptive perspectives, intentions, and meanings of respondents. The study used a survey questionnaire method to collect data, whereas alternative approaches such as case study and action research may allow the researcher to broaden and gain in-depth knowledge in the area of SMEs and innovation practices from both managerial and employee perspectives.

Second, the study response rate was 33.83% of SMEs. This might produce a non-response bias that may render the generalisability of the findings of the study for the entire population of SMEs. On the subject of the sampling frame, while data were collected from various industries, thereby reaching a greater source of variance, the generalisability of the findings again is still limited, as other types of organisations such as non-profit are not included. Because firms from different industries were included, possible industry differences in constructs could confound the findings.

Third, the study can be considered an exploratory research study as it developed and empirically tested new measures of construct and items and used both exploratory and confirmatory factor analyses and a structural equation modelling technique (Partial Least Squares Path Modelling) to assess complex models and provide some explanation of the relationships between selected factors and innovation practices. It does not constitute an indisputable proof of causality because causality can be inferred only to the degree the research study design leads to the data collected. The tested conceptual model needs to be examined with improved and objective items for some constructs to solve the methodological problems associated with the statistical significance of these measures. New measures used in this new proposed conceptual model for the first time should be replicated

and tested with more research studies, it cannot be claimed a definite non-ambiguous or unbiased relation among constructs. As a universal fit measure, PLS lacks an index that allows for a global validation of the model; however, recently a global Goodness-of-Fit criterion has been proposed as a diagnostic tool.

Fourth, the study had only a selected number of factors. The tested conceptual model may not include all the important relevant factors and dimensions of innovation practices in SMEs that were not captured by the survey questionnaire approach. The tested research hypotheses should be considered as tentative with the goal of presenting a conceptual model for the determinants of innovation practices. The possible inclusion of more external and internal factors to further extent the proposed model should be actively pursued through future research studies. Although the conceptualisation of determinants covers the most frequently mentioned dimensions, it cannot be claimed to cover all the relevant dimensions. Further studies should explore cognitive orientations that are the ability to deal with structured versus unstructured problems, emotional orientation, positive versus negative outlook, quantitative versus qualitative orientation, analytical versus intuitive orientation, and expressive versus non-expressive attitudes.

Fifth, the study used a cross-sectional, so inferences about causality should not be made without care, and whilst a longitudinal approach would appear more desirable to take account of patterns over a longer period of time. In particular, in assessing innovation practices and business growth performance, the impact might take years to materialise and accomplish. It was also not possible to directly determine the perceptions of owners/managers of SMEs at the time of the adoption of innovation but it might be possible that the surveyed participants of SMEs were influenced by the experiences they had with innovation practices after they were adopted.

Sixth, the findings of the study were limited to some extent in relation to the subjective measures used. The analysis is done at the level of the firm and data is collected from a single informant (i.e. self-reporting by owners/managers). Respondents provided their own assessment of behaviours and performance of their firms. This raises the issue of whether a single person can represent the whole firm. However, most of the respondents were owners/managers of their firms and should be directly involved with the innovation activities of their firms and be able to express concerns knowledgeably. Although the tests herein do not indicate any problems, it cannot be definitely excluded as a possible common method bias and a possible loss of information. In acknowledging

the limitation of data collection procedures from a single-source, future studies may consider data collection procedures from a multiple-source that helps reduce the risk of same-source biases.

Seventh, the study was conducted in the Dubai market and its results may not be applicable to other cultures and countries, as managerial and organisational practices may vary from one socio-economic culture to another. The cultural and contextual differences may cause differences in the interpretation of the results. There is a need to conduct future research and replicate this study in other national contexts and norms (i.e. countries in the Middle East, Africa, Asia, Latin America, and the Caribbean encounter similar situations) that may contribute to innovation practices.

Eighth, the lack of accurate, updated, and specific market data and databases in the Dubai market is crucial to the sample selection and size and the overall discussion. The data and census are two to three years old and the list of firms is missing physical addresses and locations and specific industry and sector type. It was challenging to obtain a complete list of firms and their number of employees and to provide a better argument regarding the business and market activities of firms. Further, the definition of SMEs follows the official one in the Dubai context that is somewhat different from that of other regions. This can create potential challenges in the comparison of the results of this research study with those studies within the European Union and other regions.

Ninth, the timeframe of the study was a drawback because it was conducted after the 2008/09 global financial and economic crisis. To overcome this limitation, another study could be repeated in a few years. The study was also challenged with the sponsor, *kafeel*, phenomenon by sometimes creating a problem when the researcher tried to target the local owners to fill out the survey questionnaire. The researcher was always referred to the foreign managers because the role of the local owner is usually limited to legal supervision and collecting a monthly fee.

Tenth, the study surveyed the innovation practices only in SMEs and did not capture the role of large firms who are usually the main customers and players in the emerging Dubai market. The vital roles of government regulators and agencies that control infrastructure, awarding licences and contracts, educational and financial institutions, and market structure were also not captured.

Eleventh, the adoption of a mainstream view of firms concerned with financial results and the use of subjective performance measures instead of the actual performance measures might result in

false positive associations. Dubai SMEs were not used to a market study. Their fears were that the survey questionnaire might include financial information disclosure and the results might be used for public and consulting reports. It was very challenging to obtain actual accounting/financial data from these firms even with confidentiality assurance at all stages of the study. Although the construct performance was defined using several accounting and non-accounting based measures, it is widely recognised that firms pursue multi-dimensional goals and they should not be viewed as simply profit-making entities.

Finally, the cost of conducting this research study was estimated to be approximately USD$ 4000 comprising USD$ 1000 for airline ticket, USD$ 500 for printing, and USD$ 2500 for distributing and mailing the survey questionnaire in the Dubai market.

7.5 Future Research Recommendations

The study recommendations that are derived from the results encourage and open more avenues for future research. These suggested topics are discussed as follows:

First, the application of a positivism paradigm, deductive and quantitative research methodologies, and survey research strategy approaches to other neighbouring states and countries, which have a large number of SMEs and are committed to promoting innovation activities in order to validate and generalise these results to wider audiences and situations.

Second, the comparison of the innovation practices and growth performance of locally operated SMEs and foreign operated SMEs can further broaden our understanding of the SMEs' innovation practices. It will provide different practices and recommendations on how locally operated firms can improve their innovation practices and business growth performance. It is also important to distinguish between innovation that is new to a firm, a market, or a country and innovation that is new to the world market and economy.

Third, SMEs resource-based research on innovation needs further investigation in these emerging market economies where critical capabilities and competencies affecting sustainable competitive advantage are limited. There is an incomplete understanding of how innovation processes can take place that include what types of capacities and incentives they draw on. Further, constraints and barriers to SMEs innovation in an emerging market can be studied in more details to be able to have a better understanding of their limited resources and capabilities.

Fourth, the investigation of differences among low and high innovating and performing firms is a subject for future research. For example, a study of policy evaluation is a first step to information about the effect and efficiency of different type of interventions. There is a need to look at the design of specific innovation policies that appeals to firms, including SMEs policymakers would like to target, and at the same time how these policies can successfully affect the dynamics of free zones, industry clusters, and innovation systems. There is also a necessity to re-examine the role of education as a means to transfer knowledge and the production and diffusion of knowledge into the business community and industry. Further, the lack of and weak links between government

supported developments, financial resources, academic-industry collaborations, market dynamics, organisational culture, and innovation practices are other avenues for future research. It is worth noting that the contribution from another direction that is from academic institutions to industries and the influence of moderating variables into the role of organisational culture in supporting innovation should also be considered.

Fifth, the exploration of how organisational and individual behaviours can influence SMEs in facilitating innovation practices and obtaining better business growth performance, which can provide different elements and perspectives on cultural orientation. The unit of analysis is at the level of the firm (i.e. owners and managers), whereas a significant amount of the entrepreneurship literature deals with the role of the individual/entrepreneur in the strategic actions of the firm. There is a challenge in adopting the traditional approach to innovation looking at the role of the entrepreneur only, bearing in mind that SMEs are widespread and that firms entry and closure are very rapid (Hjalager 2010). Further, there is a need to investigate how management practices can affect innovation performance (Laursen & Foss 2003) by a way of using multiple respondents (i.e. different function units or management levels) in each firm, which can provide a better picture from inside the firm.

Sixth, the study mainly focused on SMEs that it could be interesting to investigate large firms and determine if they have similar findings to SMEs. The study examined different industries in the Dubai market. It could be interesting to find out if there are industry-specific factors affecting innovation and if there are differences existing between adopters and non-adopters of innovation.

Seventh, the study emphasised the importance of a number of internal-driven factors and linked them to innovation practices to support higher business growth performance, but did not address the issue of how these significant internal-driven factors can best be carried out to encourage more innovation practices. Future research could identify the antecedents of innovation practices with a complete model of both antecedents and consequences.

Eighth, the use of a longitudinal study is to overcome the shortcoming of the cross-sectional study. The role of time in measuring team and group temporality, such as design, coding, and analysis, constitutes more than a methodological issue; it is as well as a theoretical issue (Ballard, Tschan & Waller 2008). The geographical representation of the study can also cover a wider area locally and

regionally. Future research could also replicate the study using other locations and cultures. Cross-national studies should be conducted to compare the strength and applicability of the conceptual model and assess its generalisability across different organisational forms, business systems, and industries. The scales could be validated in other languages (i.e. Arabic, Italian, Spanish, Greek, or Persian) and cultural (i.e. Middle East, Africa, Asia, Latin America, or Caribbean) contexts. This step could illustrate if there are any national, cultural, or industry differences and can deal with replications to add new insights to the international literature.

Ninth, the use of an alternative measurement approach of formative indicators (cause indicators) has recently gained more attention. Under this approach, changes in the measures and items are assumed to cause a variation in the studied constructs (Haenlein & Kaplan 2004). The items form or determine the construct and the latter is modelled as a linear combination of its items and a disturbance term (Bollen 1989). Other structural equation modelling techniques such as LISREL, AMOS, and EQS can be applied in this study, but, these techniques require a larger sample size to avoid some of the limitations of sample size and assumptions of normality (Hulland 1999). The study results provide the basis for various types of further refinement of the scales that include a research study to validate and extend the scale in different corporate and industrial contexts.

Tenth, the conditions under which the emerging markets and economies embark upon catch-up model follows a pattern of different stages over time similar to the concept of stage theory and these stages are described based on their distinctive characteristics, which are worth investigating to understand the cultures' and countries' specific different stages of integration and development in supporting innovation. Further, the findings lead to a review of the current thinking on industry convergence calling for the integration of the traditional and the new industries, thus scholars, policymakers, and practitioners are able to match the right process with the right concept. The convergence of industries and the optimisation of policy, regulation, technology, market, network platform, and information can lead to more innovation breakthrough in the future, which is worth investigating to understand its benefits compared to the traditional concept of national innovation system.

Eleventh, subject areas of public sector support for innovation, adoption policies for knowledge, technology, and innovation, and innovation support for SMEs are appropriate for future research to gain additional insight into the functioning mechanisms to design mechanisms for stimulating

better innovation processes in the future. Major obstacles like climate change and economic crisis can be common external developmental trends to continuous growth in industries, which may contain the impulses for innovation and institutional changes for a regained competitive advantage in a new economic prosperity cycle and be a suitable place for the study of new innovations.

Twelfth, a number of methods (in-depth interviews, qualitative content analysis, or focus group) could be used in the future for validation purposes. The opportunity to conduct a case study or an action study of few SMEs adopting innovation practices can further provide more insights into the various challenges facing these firms. Further, the conceptual model was developed by a thorough literature review and discussion with industry experts but there is a need to seek more parsimony in future models. The survey questionnaire was pre-discussed with 20 individuals and contained a comments section, which allowed for respondents' qualitative aspects. Of the 200 usable survey questionnaires, 55 had comments on innovation practices. Future qualitative research studies may have the potential to enhance the findings and provide additional findings that could concentrate on specific external or internal factors.

Finally, future research on SMEs should consider high level trends. These trends can be related to risk-averse climate, lower cost climate, social media, social commerce, aging population, and clean energy. In the current economic conditions, SMEs will face difficulty in securing financial investment and resources and will rein in spending and borrowing levels. Individuals of small entrepreneurial firms may prefer to go back to more stable incomes. Firms will further find new and better ways of lowering costs and attracting customers through innovative products and services, which will encourage individuals and firms to use limited office space, work from home, and apply technology tools (i.e. pop-up shops, mobile phone apps, and cloud computing). Further, social media will play an important part of a competitive strategy that SMEs can utilise in order to provide more opportunities for economical ways of interacting with customers and suppliers and conducting business transactions. Whilst social commerce will be used by small and medium-sized enterprises in promoting networks for consumers to download apps, check out deals, and pay with mobile phone. Populations around the world are growing older that requiring different needs providing the opportunity for SMEs to tap into this segment. SMEs will have the opportunity to explore new clean technologies to promote a green environment and sustainable energy sources.

7.6 Personal Reflections

The thought of pursuing a doctoral study is frightening but it has been a dream of mine since a young age. The journey has required physical, mental, and social health and at the same times the intellectual and financial capabilities to succeed at the end. The study of Doctor of Philosophy (PhD) in Business Management has been an eye opener and an enriched experience by gaining many benefits, such as: to learn how to review an enormous amount of literature; understand various research designs and methodologies; conduct rigorous academic field research; analyse data using advanced statistical programs; discuss and suggest outcomes to scholars, policymakers, and practitioners; offer research limitations and future research recommendations; submit papers for academic publications; and accept constructive criticism. The journey has given me a chance to meet scholars and practitioners from different backgrounds and countries to understand current issues in the world market economy.

The journey allows you to grow wiser and humbler, and to see things from different individual and cultural perspectives. Overall, the learning experience includes:

- Appreciate families, supervisors, and friends' unlimited support and encouragement.
- Respect others peoples' opinions and perspectives and use them as a learning experience.
- Mentor fellow students and give them true advice and support.
- Read about and meet exceptional scholars and practitioners with great contributions.
- Have a greater understanding of current issues related to SMEs.
- Building local expertise and innovation is better for the long-term survival of the country.
- Duplicating certain markets and economies does not work in other cultures and countries.
- Learn new techniques and not be afraid to try new or emerging methods.
- Persist more than ever to bring positive changes to this evolving world economy.

The anticipation in the future is to obtain the chance to share this rich experience and encourage others by working in academia or industry. The feeling is that it is just the beginning of learning even with a higher research degree like a Doctor of Philosophy. At the end of this long journey, the important message to one and all is that ***without a clear business strategy promoting creativity and obliteration through innovation, no nation and firm will succeed with longevity***.

7.7 Overall Conclusions of the Study

The study sets out to investigate innovation and business performance perspectives on small and medium firms in the emerging Dubai market in the United Arab Emirates. The extant business and innovation management literature were reviewed to provide a theoretical basis for the present study. Coming out of the reviewed literature, a hypothesised conceptual model of innovation capability and business growth performance was conceptualised. The model has its origins in the concepts of national innovation system and theory of the firm as it was developed around the notion of environmental features of policies and support systems and organisational configurations of resources, capabilities, competencies, routines, and performance outcomes.

The innovative behaviours and capabilities in different contexts were examined by looking at the relationships between the macro and micro-environmental determinants, innovation practices, and business growth performance within SMEs (which comprise the majority of firms) in the Dubai market. This market was chosen as the setting for the business and market environments because it is the fastest growing market in the Middle East and North Africa region. It is ranked as the most innovation-driven economy in the Arab world and has been moving from an oil-based economy to a knowledge-based economy, and changing to a market economy that is integrating into the world economy. The rapid change of this market has created more complex and heterogeneous industrial dynamics, which challenges business operations and changes competitive landscapes. However, firms in the Dubai market mainly focus on sales and marketing activities, which are head-to-head competitive-based approaches, raising long-term concerns about the dynamic evolution of the business and market environments. These activities could decrease the stickiness of firms in the local market and limit their contributions to the local market and economy. In contrast, the traditional characteristics and styles of SMEs are challenged as they are confronted by the need for strategic reorientation and to achieve business growth performance through innovation.

This study made a significant contribution to the business and innovation management literature through providing evidence of the relationship between innovation practices and business growth performance in the firm. The results resonate with calls for research studies on the links between innovation and business growth performance within SMEs. Previous research studies have some limitations in examining innovation activity in a unifying framework incorporating antecedent

external and internal factors and business performance outcomes. Although much is known about the role of innovation as a response to perceived uncertainty and its impact on a firm's business performance in general and on SMEs business performance in domestic settings, the links between innovation practices and business growth performance is under-researched. Further, consistent with some of the previous research studies on a similar topic in emerging markets; there was a limited evidence of the direct relationships between the four external-driven factors and the one internal-driven factor and innovation practices in this study as well.

This study has important implications for both policymakers and managers. The special effects of the micro-environmental determinants on innovation and in turn on business growth performance should be analysed in terms of whether the potential strength of innovation practices matches the requirements for business and innovation developments of high potential SMEs. Innovation has a resource and a capability implication for firms. It is necessary to identify and review the resources and capabilities, which are critical to the innovation practices and in turn the business growth performance of SMEs, and develop and implement business strategies building on those resources to enhance the likelihood of local and international success. Against the background of this study, caution is given against taking one-size-fits all view of innovation that allows for the possibility that firms may need support with innovation before an innovation may earn the desired outcomes.

In conclusion, despite the limitations outlined, it is believed that this study has extended prior knowledge through providing some new and valuable insights into the business and innovation management literature. It further provided empirical support for some theoretical propositions advanced in the international literature. It is hoped that the proposed and validated conceptual model in this study forms the basis for future research of a scholarly nature.

7.8 Summary

This chapter provided a summary of Sections 7.2 to 7.7 by noticing the discussions and arguments established in each section. The summaries of the previous chapters in Section 7.2 provided the background to propose the contributions and implications of the study in Section 7.3, which were discussed in detail to analyse the conceptual model and the research questions and hypotheses. The limitations of the study in Section 7.4 and the future research recommendations in Section 7.5 were outlined. Section 7.6 summarised the researcher's personal reflections on this study journey and Section 7.7 provided the overall concluding remarks of this study. Although these results may not reflect the predictions of innovation practices within SMEs similar to previous theories and models, they may indeed reflect reality and implies that the effects of innovation practices are contingent, which presents strengths and constraints to SMEs and their operating environments.

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SECTION 2 APPENDICES

Appendix A - Economic Assessments and National Innovation Data

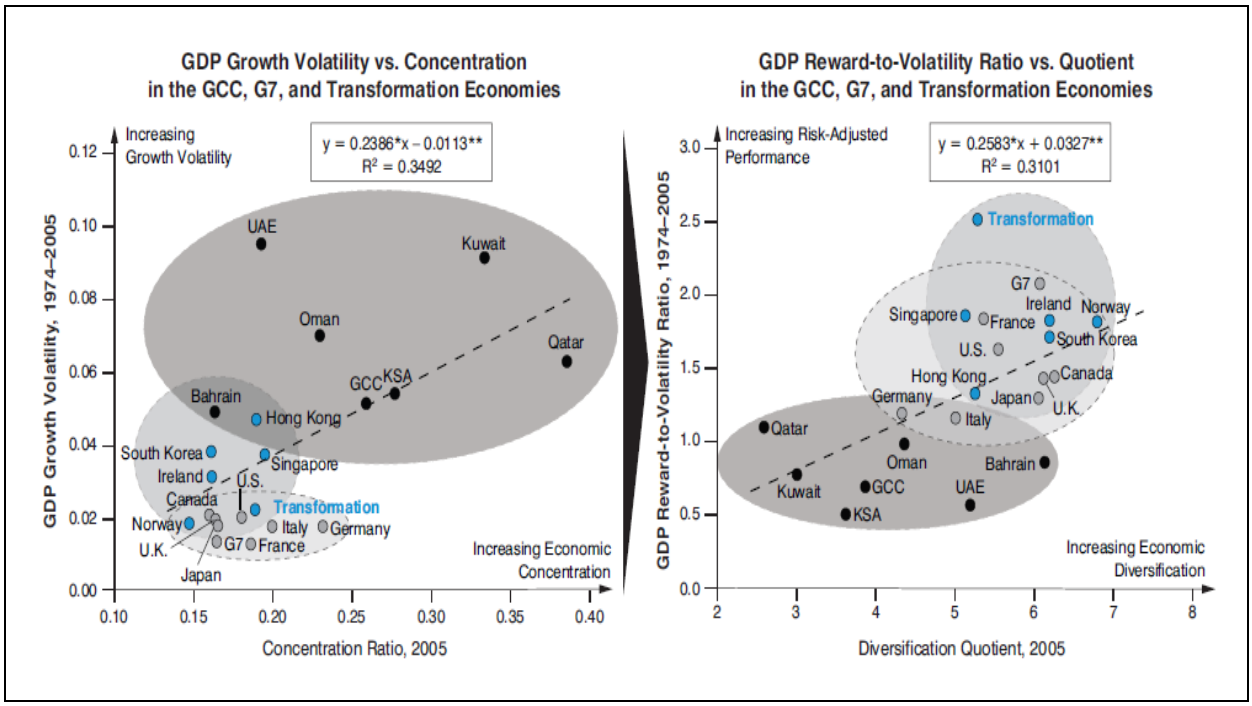
A.1: Assessments of National, Regional, and Transformational Economies

In order to develop appropriate goals to start or move the firm forward, one must consider various market and economic environments analysis and key dimensions and determine where to start or re-locate the firm in the future (Daly 2004; Shediac et al. 2008; O'Sullivan & Dooley 2009; WEF 2010). The Gulf economies, including Dubai, have differing levels of diversification from other economies (i.e. transformation and G7 countries). The GCC countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE) have the highest concentration of sector contribution to their gross domestic products and hence the lowest diversification quotient that for the G7 countries is 16%; for the transformation countries is 19%; and for the GCC countries is 26% (Shediac et al. 2008). The diversification quotient for the G7 countries is 6.07; for the transformation countries is 5.29; and for the GCC countries is 3.87, this is not surprising. Historically, the economies of the GCC countries have been dominated by the oil and gas sectors; these sectors have consistently represented the largest share in the nations' GDPs (Fasano & Iqbal 2003; Shediac et al. 2008).

The registered growth in non-oil sectors, such as manufacturing and hospitality, generally has not indicated organic growth, but rather, spill-over effects from increased oil revenues and subsequent high capital inflows (Fasano & Iqbal 2003; Shediac et al. 2008). The non-oil sectors in the GCC countries have not fully matured and still there are structural gaps, such as inefficiencies in labour, capital, knowledge, and technology, suggesting that the revenues from oil and gas sectors are not being reinvested effectively. That is to say, the excess liquidity of these countries is used to fund their internal economies and not their external economies, such in those sectors that contribute significantly to the nation's net export of goods and services. It seems that this pervasive volatility (and its continuing spill-over effects) can be lessened and improved with the development and diversification of the high-value-added export of goods and services (Shediac et al. 2008). In the G7, transformation, and GCC economies, a diagraming of non-oil exports against real activity volatility reveals an inverse relation between both external trade diversification and economic uncertainty. In short, the higher and more diverse a country's non-oil exports are (G7 21.1%, transformation 42.4%, and GCC 4.6%), the lower the volatility becomes (G7 1.3%, transformation 2.2%, and GCC 5.1%), (Hammoudeh & Li 2008; Shediac et al. 2008). The earlier analysis has identified a clear link between economic diversification and sustainable development as shown in Figure A.1. The left-hand side of the figure shows that nations, such as the GCC countries, with a high concentration ratio suffer from significantly higher growth volatility than do the G7 or the transformation nations (Shediac et al. 2008). The right-hand side of the figure shows a similar case from the opposite perspective. Nations with a high

diversification quotient (i.e. Ireland, Norway, and Singapore) have a higher ratio, meaning a higher economic return per unit of volatility.

Figure A.1: Relationship between economic diversification and economic sustainability.



Source: Adopted from Shediac et al. (2008).

A2: Table A.1: The UAE innovation environment indices from 2008 to 2012.

Innovation Related Indices Ranking	2008-2009	2009-2010	2010-2011	2011-2012
Innovation (out of x countires)	Out of 134	Out of 133	Out of 139	Out of 142
Capacity for innovation	74	39	35	32
Quality of scientific research institutes	74	53	45	40
Firm spending on R&D	50	30	28	24
University-industry research collaborations	58	39	43	37
Government procurement of advanced technology products	11	2	3	5
Availability of scientists and engineers	75	28	20	18
Number of patents granted	88	38	42	50
Intellectual property protection	24	15	19	27
Total Innovation	46	27	30	28

Source: Adopted from WEF (2008-2009, 2009-2010, 2010-2011, 2011-2012).

Appendix B - SWOT Analysis of Dubai

Table B.1: SWOT analysis of Dubai.

Strengths:
▪ Strong leadership: economically progressive; courage and speed in project execution; and efficient decision-making. ▪ Focused sector development: first-mover regional advantage and expertise in key sectors (i.e. tourism, transportation, and real estate), sustained high-level of investments, strong regional/global sector champions. ▪ Privileged trade location: transportation and logistics hub status (two airports and three ports). ▪ Strong image and brand equity: pro-business environment, manages reputation behaviour, and record of achievements. ▪ High quality of life: destination of choice for regional talent pool and social freedom. ▪ Safety: one of the safest cities in the world to live in. ▪ World-class infrastructure (including ICT and media). ▪ Good relationship between government and private sector. ▪ Low taxes and supportive municipal government of business. ▪ Stable political environment run by the royal families.
Weaknesses:
▪ Limited natural resources. ▪ Limited participation of nationals in the economy: especially in private sectors and workforce. ▪ Government-reliant growth and expansion: several sectors depend on government investment, room for more private sector initiative and SME segment. ▪ Emerging regulatory-and-legal frameworks, and lengthy judicial procedures. ▪ Weak commercial law and short-term visa cycle. ▪ Relatively inadequate physical infrastructure: not coping with growth. ▪ Healthcare system shortfalls: access, quality, and insurance. ▪ Education sector shortfalls: not keeping up with market requirements. ▪ Weak education-industry relationships. ▪ Weak research and development expenditures. ▪ High investment opportunity costs with short-term investment horizon mentality. ▪ Infant venture capital sectors. ▪ Lack of commercialisation mechanisms. ▪ Isolated networking and small businesses have not been engaged in business activities. ▪ Shortage of capital to move firms beyond start-up phase to have international reach. ▪ Weak support for start-up firms that spin-off large firms and universities. ▪ Larger firms mainly concentrating on scale of economy. ▪ Weak in availability of senior executives with global experience, who can lead young entrepreneurial firms. ▪ Lack of market data and statistics. ▪ Lack of depth and breadth of cultural and social amenities found in big international cities.
Opportunities:
▪ Grow existing economic free zones and clusters developing a strong regional competitive advantage.

▪ Develop new but proven sectors with strong growth potential. ▪ Location of choices for head offices of large multinational firms. ▪ Export national champions into captive markets, i.e. KSA and Qatar. ▪ Can capture a larger share of increasing trade flows, i.e. from China and India. ▪ Poised to tap increasing regional liquidity into productive sectors (smart capital). ▪ Attract emerging Arab and top regional talent (regional brain drain). ▪ Improve closer ties between academic institutions and commercial firms. ▪ Restructure social welfare to cover non self-sufficient nationals.
Threats:
▪ Regional competition is catching up, especially oil rich states with deep pockets. ▪ Growing fiscal pressures with dwindling oil exports, coupled with infrastructure development requirements. ▪ Run-away inflation and rising costs of doing business. ▪ Congested urban transport system and strain on utilities infrastructure. ▪ Production is shifting to cheap labour areas (Asia). ▪ Growing social dilemmas (inequality of income distribution and nationals' unemployment) that could undermine social and political stability. ▪ Overwhelmingly large dependency on foreign workforce. ▪ Marginalisation of nationals and loss of national identity. ▪ Increasing security concerns due to proximity to war torn zones.

Appendix C - Comparison of Probability and Non-Probability Sampling Types

Table C.1: Comparison of probability and non-probability sampling types and techniques.

Sampling Types	Descriptions	Advantages	Disadvantages	Costs/Usages
Probability Sampling:				
1. Simple Random	Assign a number to each member of the population; select sample units by random method; each element of population equally selected	Require minimal advance knowledge of the population; easy to analyse data and compute error; free of classification error; good generalisation of findings	Does not use knowledge of the population; larger errors for sample size than in stratified sampling; hard to sufficiently represent minority subgroups	High cost; used in random-digit dialling/Internet sampling
2. Systematic	Use natural ordering or order population; select an arbitrary starting point in the population; select elements at preselected intervals through that ordered list	Simple in drawing sample; easy to use and check when population frame available; sample spread over entire reference population	Increase variability where sampling interval linked to periodic ordering of population; possible error and bias estimates where effected by stratification	Moderate cost; used moderately
3. Multistage	Use random sampling in each sampling stage where there are at least two stages; embed two or more levels of units; complex form of cluster sampling	Sampling identification, list, and numbering only for members of sampling units; cut-down field costs; reduce variability	Errors increase as number of sampling units selected decrease; lack of knowledge size of each sampling unit before selection increases variability	High cost; used frequently
4. Stratified	Split population into subgroups or strata and randomly select subsamples from each stratum; variations include proportional, disproportional, and optimal allocation of subsample sizes	Assure all groups present in sample; classify features of each stratum; make possible comparisons among all groups; reduce variability for same sample size	More time consuming than simple random and systematic samplings; requires accurate information on proportion in each stratum; if stratified list is not available	High cost; used moderately
5. Cluster	Select area and sampling units at random at two stages; divide population into clusters of homogeneous units; take observations of all units in group covering wide geographic areas	Low field cost when clusters are geographically defined; require listing only individuals in selected clusters; estimate clusters and population characteristics	Larger errors for comparable size than other probability samplings; require ability to assign population members uniquely to cluster or duplication or omission of individual results	Low cost; used frequently
Non-Probability Sampling:				
1. Judgment	Select subgroups to satisfy purpose based on expertise in subject under investigation	Use in certain types of forecasting; sample under selection assured to meet specific objective	Cannot measure and control variability and bias of estimates	Moderate cost; used average
2. Quota	Classify population by relevant properties; determine desired proportion of sample from each segment; fix numbers or quotas for each subject of unit	Present some stratification effect; useful where minority participation is critical	Bias of observer's classification of subjects and non-random selection within classes; not easily generalisable	Moderate cost; used extensively
3. Convenience	Select units in convenient and accessible manner; select units economical sample	No need for population list; quick	Unknown amounts of both systematic and variable errors; cannot measure and	Low cost; used extensively

			control variability and bias; no generalisation	
4. Snowball	Select units with rare characteristics; additional preferred units by initial respondents	High specific application only; locate members of rare populations	High bias; no appearance of representation of rare characteristics in sample selected	High cost; used in special situations

Source: Adopted from Cooper & Schindler (2003); Sekaran (2003, p.280); Zikmund (2003, p.392-393); Davis (2005, p.239-240); Burns & Bush (2006); Neuman (2006).

Appendix D - Introductory Cover Letter and Pilot Group Discussions Questions

INNOVATION PRACTICES
Small and Medium Businesses in Dubai
Survey Questionnaire Information Sheet

Subject: **Small and Medium-Sized Enterprises Innovation Practices in Dubai**

Dear Participant,

Thank you for taking the time to participate in this research study that examines a significant topic related to the field of business management and is part of the requirements of the doctorate degree from Southern Cross Business School, Southern Cross University, Australia.

PURPOSE OF RESEARCH STUDY. Given the increasing importance of small and medium-sized enterprises in the development of any economy such as Dubai in the United Arab Emirates, this research study is timely. In this research study, approximately 600 of the owners/managers of small and medium-sized enterprises will be invited to complete a survey questionnaire. The research study endeavours to *identify the enabling factors of innovation practices by small and medium-sized enterprises and their impact on business growth performance in Dubai, the United Arab Emirates*. The outcomes will benefit governments, policy makers, practitioners, and academics nationally and internationally. The key findings will be made available to you upon request by providing your mail or email address on the last page of the survey questionnaire.

INSTRUCTIONS. The research study involves the completion of an anonymous survey questionnaire about various aspects of innovation practices as they apply to your firm and your experiences with small and medium-sized enterprises. You are kindly requested to consider all questions and provide examples where appropriate. The questions are preceded with instructions on how to answer them. Please read the instructions and make your selections as requested. The survey questionnaire should take approximately 15-20 minutes to complete. The completed survey questionnaire can be returned in the self-addressed envelope provided or the researcher will collect the completed survey questionnaire in person after one week.

DEFINITION OF TERMS. The term *small and medium-sized enterprises (SMEs)* refers to all independent firms with less than 250 employees, less than USD$ 190mn capital investment, and less than USD$ 70mn annual turnover. The term *innovation* refers to the modification of existing products, services, processes, or organisation/management systems (incremental innovation) and the introduction of new products, services, processes, or organisation/management systems (radical innovation).

POSSIBLE DISCOMFORTS & RISKS. The participation in the survey questionnaire is voluntarily and can be withdrawn at anytime. You may choose not to answer any particular question. There are no expenses

nor are there any costs associated with your participation apart from your time. There are no foreseeable risks or discomforts above those associated with general completion of a survey questionnaire.

RESPONSIBILITIES OF RESEARCHER. The information gathered will be treated with strict confidentiality and may include anonymous quotes in reporting if applicable. The data will be aggregated and analysed by computer software and hence your specific responses will not be distinguishable. All completed questionnaires will be held in safe storage at the university for a period of seven years before being destroyed. The research study outcomes may be published in a journal and presented at a conference, but only group data will be reported.

FREEDOM OF CONSENT & INQUIRES. You understand that by returning the survey questionnaire, you have explicitly given us your informed consent. If you have any further inquires, you may contact the candidate or supervisor through the details provided below.

ETHICAL CONCERNS. The ethical aspects of this research study have been approved by the Southern Cross University Human Research Ethics Committee (HREC). The approval number is ECN-10-094. If you have any concerns about any of the ethical conduct of this research study, you may contact the Committee through the Ethics Complaint Officer, Southern Cross University, PO Box 157, Lismore, NSW 2480, Australia (T +61 2 6620 9139, F +61 2 6626 9145, Email ethics.lismore@scu.edu.au). Any complaint you make will be treated in confidence and investigated, and you will be informed of the outcome as soon as possible.

I appreciate your participation and cooperation in this research study.

Thank you again in advance.

Kind regards,

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INNOVATION PRACTICES
Small and Medium Businesses in Dubai
Group Discussions & Focus Groups Information Sheet
Survey Questionnaire Design

Part A. INTRODUCTION

[NOTE: No assumption that the PARTICIPANT is familiar with the study. The investigator will take time to briefly introduce the study and explain the purpose for conducting this group discussion].

Part B. QUESTIONS

[Please answer all questions in detail with examples where appropriate].

Q1: What are the 3 external factors to the firm that could inspire/promote SMEs' innovation practices in Dubai? And how do these factors influence SMEs innovation practices?

Q2: What are the 3 internal factors internal to the firm that could inspire/promote SMEs' innovation practices in Dubai? And how do these factors influence SMEs innovation practices?

Q3: Please name 3 challenges/barriers that you believe are likely to discourage SMEs to innovate in Dubai? What action must be taken to resolve these issues to help SMEs innovation practices?

Q4: What is the platform that the firm uses to drive its innovation practices? (*Please select only 1 statement with x*).

A. Cost reduction and increased development efficiency.	[ ]
B. Added value for the customer.	[ ]
C. Quality improvement.	[ ]
D. Incremental improvement.	[ ]
E. New development.	[ ]
F. New business model.	[ ]
G. Strategic growth.	[ ]
H. Market shift or demand	[ ]
I. Market competition	[ ]
J. Legislation or regulation adjustment	[ ]
K. ISO certification	[ ]
L. Other (please specify) [.....]	

Q5: Dubai, as a hub and a market to support SMEs' innovation practices, provides; (Please mark each statement with 1 lowest and 7 highest).

A. Early access to ideas and novelties.	[ ]
B. Early access to technology and IP.	[ ]
C. Access to talents and competencies.	[ ]
D. Access to research and discovery.	[ ]
E. Access to funds and investments.	[ ]
F. Partnership between academia, financial service, firm, and industry.	[ ]
G. Fast and flexible product development and commercialisation.	[ ]
H. Development of product tailored to local market.	[ ]
I. Strong compliance with global standards and regulations.	[ ]
J. Access to local and global customers and markets.	[ ]
K. Provide support for IPO.	[ ]

Q6: What are the 2 key drivers for SMEs' business growth performance operating in Dubai?

Q7: What are the 2 key challenges faced by SMEs operating in Dubai?

Q8: From your perspective, what are the primary strengths and weaknesses of the Dubai market?

Q9: How can you describe the nature of the competition in the Dubai market?

Part C. CLOSING

That is all the questions.

Q10: Is there anything else you would like to add in relation to the topic?

Q10: The respondent's name, position, and organisational information (optional).

Name	
Position	
Organisation	
Industry	

Thank you again in advance for the information. I appreciate you taking the time from your schedule to speak with me.

Table D.1: Summary of pilot group discussions.

Construct	Sample Participant Comments
External-Driven Determinants	
Government Policy and Incentives	▪ The development of a strong innovation policy should receive the full support of the government as in other parts of the world. ▪ The setup of a public framework providing organisational and financial support to local SMEs, universities and research centres to invest in technology transfer and new product development. ▪ Providing incentives is a direct way to energise SMEs to develop incentives. The incentive can be in the form of import tax benefits, lower pricing for using information technology and telecommunications infrastructure, among others. ▪ Government policies in my opinion are one of the most important factors that can inspire innovation in Dubai, and are a support for businesses particularly private enterprise. Government initiatives such as: efficient administrative systems, registrations (admin), IP protection, legal systems, labour policy etc. will provide the necessary ingredients for business to succeed thereby providing room for innovation/new ideas. If one looks around the Middle East region; the Government of Dubai has set an example of initiative by running the country (emirate) as a corporation. Each one of its independent departments is a profit centre and is accountable for their performance. ▪ Foreigners, especially Asian, are the ones who own most SMEs in Dubai and operate on a three-year cycle. They just want to make money and return to their country. The innovation they have is confined within them and never transferred to Emirati. ▪ SMEs need business acceleration support in order to focus on the main products and services. For example, presence of commercialisation mechanisms. ▪ Relentless pursuit of decreasing cost forces the firm to invent new ways to produce the same product with less cost to the firm.
Infrastructure	▪ Infrastructure, in particular financial, transport system, communications, legal and man power, are keys to provide businesses. If we look at Dubai in this respect; one witnesses the clarity of the Rulers in terms of setting up an efficient business infrastructure in terms of ports, airport, road network, communication systems, financial systems, legal systems etc. Here again they have gone ahead and set a very good example in the region encouraging business to set up in Dubai and experience growth and success. And growth in business can only be sustained by continuous innovation. For SMEs in particular setting up of free zones in Dubai (first in the region) probably provided the much needed impetus to the growth.
Legal and Regulatory Frameworks	▪ How to protect the innovative idea, what are the legalities involved. A clear guidance on protection of intellectual property is required. ▪ Need is the mother of invention - regulatory framework is important to set the playing field for businesses on the same level allowing the enterprises to compete on level ground. A lot is being done in Dubai continuously in this area. Protection of intellectual property is one of the main areas of regulatory systems to be put in place and enforced. If one looks at industries like information technology, fashion etc. as examples, the need for innovation comes from the possibility for such industries to secure their innovation and their IP rights. ▪ Need to have a solid legal system that can deal with some complex cases and protect SMEs from fraud and unfair takeover. ▪ A guideline on certain specifications that needs to be available in the product (regardless of the nature of the product whether it is market research or a physical product such as a toy or a drug) results in having an innovative product that meets these specifications.
Financial Capital and Market	▪ Creation of an innovation fund for projects and grants defined above. ▪ It is not easy for small businesses to enter the financial market. Guidance is needed to support SMEs presentation to potential investors. I do believe that government support is needed to promote this process since investors may find it difficult to put their money in "seemingly unrealistic ideas". Further, investment firms usually give a higher priority to opportunities work

	over $10m. Many innovations require smaller capital to start with. ▪ Provides an incentive for innovation. For example, firms should be able to list in the stock market. ▪ Developing and introducing a new business idea is a long process and this costs money and most SMEs do not have money to put into research and development. ▪ SMEs require financial support in order to cover capital, payroll and end production costs. ▪ Firms should have more financial transparency and accountability standards. ▪ SMEs should be able to exit the local market more easily through clear mechanisms.
Capital for Research and Development Activities	▪ Creation of a structure defining academia-SME partnership (projects and grants). ▪ It ensures a dedicated fund for research and development activities. It is a well-established fact that research and development can make a difference in developing product features, services, distribution among others. ▪ In my view, Dubai currently lacks a research driven economy. Fostering a research environment will help firms collaborate with these organisations and in turn help firms innovate. This will help SMEs in Dubai tap into resources that will help them foster innovative product development.
Proximity to Academic Institutions and Collaborative Research to be Conducted in the UAE	▪ Research collaboration with international bodies leading to research being conducted in the UAE on pressing issues will help foster a collaborative environment with SMEs. Examples could be drug discovery with scripts institute. ▪ Enables better academia-industry relations to meet future industrial needs and challenges. ▪ UAE education system trains students to be job seekers rather than job creators. This limits their innovation. ▪ Not enough collaboration between academia and the industry to create and develop local talents.
Human Resource Development	▪ Human assets are keys to innovation. The better the assets, the better the innovation levels. Example: Tanmia - a government agency for developing human resources is a great example for government intervention for qualified/training human resources. ▪ Provides a pool of talent. ▪ Hiring talented people with the right expertise can be a major factor in innovating new ways to produce the product more efficiently.
Locating SMEs in a Cluster	▪ A cluster benefit is a known phenomenon. One firm can feed off the other and benefit. If they are all in one location, this will help. Dubai's Centre for SMEs is a good example.
Networking, Conferences, and Seminars	▪ Being in touch with people who are in the field: exchange of ideas, identification of challenges in current best practices, identification of needs, etc. i.e. attending conferences, seminars, etc.
Market Competition and Demand	▪ Market is competitive for SME's because they have to compete with large international players' i.e. in the case of consulting business - every international consulting firm is present in the UAE (Booz, McKinney, BCG, PwC etc.). These players have a large market share and brand recognition which makes it difficult for start-up firms to compete. This is true for all other businesses. ▪ The concept of risk-taking business cultures should be encouraged by SMEs in the local market. ▪ Emirati might be inspired by competition. ▪ Dubai or the UAE is a small market and for innovation to be successful it needs a big market size. Look for international markets. ▪ Increased competition necessitates innovation within the firm. ▪ Creates no room for SMEs to be innovative as large firms have more influence. ▪ SMEs need to understand needs and demands of the market and customers.
Internal-Driven Determinants	

Management Orientation and Support	▪ Top management involvement, orientation to research and development for innovation are huge catalysts for new ideas, innovation and growth. ▪ The local business in Dubai is generally focused on opportunities that reap immediate profits. Investment and strategic planning on long term initiatives will foster innovative practises within SMEs. ▪ Attracting entrepreneurs to run firms helps propagate an entrepreneurial culture and would change the mindset and working culture of the people. ▪ Higher management philosophy and vision to motivate innovations and encourage spontaneous generation of ideas. Moral appreciation of ideas is the ignition to generate more ideas until an innovation is formulated. ▪ This is one of the most important factors in my opinion. The management needs to set the scene in terms of leading by example, allowing employee participation in the innovation process and creating systems to reward and recognise innovation every step of the way. ▪ Flexible, mentoring relationships rather than authoritative styles helps to create a positive climate that enables innovation. ▪ Owners of SMEs tend to look at the UAE market only and do not stretch their imagination. ▪ Most Emirati prefer to take up a well-paid job rather than venture in unknown waters. This limits their innovativeness.
Internal Culture	▪ Direct impact on quality management of projects (cost reduction and income increase) and official innovation flow and committees. ▪ Continuous training and exposure to innovation is a key to stimulate the mind. ▪ Nothing is more stimulating than recognition and a pat on the back! A monthly, quarterly system of recognising performers is a sure way of developing and growing innovation in an organisation. ▪ Access to information and research. Thereby enhancing exposure to other innovative practices, in turn help innovation within the organisation. ▪ Ideas will only turn into innovation if supported by "technical know-how'.' If higher management truly support innovation then they will nurture ideas by spending more on training and continuous education. ▪ An extremely important factor is to provide an innovation culture within the firm. ▪ Risk taking and the ability to think unconventionally encourages innovation.
Customer Orientation	▪ Organisation of forum for customers: improve product development (production and sales). ▪ For an innovation to find its way into the market; a clear understanding of customer's needs and identification of gaps in current practices is a key to innovation success. ▪ Connectedness and awareness of customer needs leads to innovative ideas and practices designed to meet those needs. ▪ A customer who knows his/her specific needs can influence and sometimes exert pressure on the supplier to innovate.
Alliances	▪ Improve innovation processes, increase sales, and corporate visibility.
Technological Resources	▪ Innovation/implementation of innovative ideas is linked to the ability to execute them often through the use of technology. Each firm should have minimum technological resources and/or access to a pooled technological resource such as laboratories and testing facilities.
Allocation of Research and Development Budget	▪ Firms in Dubai need to invest in research and development to develop their own products.

Barriers to Innovation	
▪ Set up and operation costs.	▪ Lack of government specifications.

▪ Lack of tax system. ▪ Immature legal and regulatory systems. ▪ Small local market. ▪ Ownership/sponsorship policy. ▪ Absence of innovation funds or venture capital. ▪ Access to research staff.	▪ High employee turnover. ▪ Not enough local talent pool. ▪ Visa policy. ▪ Size and access of the market. ▪ Short life of firms. ▪ Incentives for innovation.
Nature of Dubai Market	
▪ High competition. ▪ Dominated by few players. ▪ Less transparency.	▪ Monopoly from local and foreign large firms. ▪ Open market. ▪ Lack of market research.

Appendix E - Changes to Draft Survey Questionnaire Questions and Items

Table E.1: Changes to draft survey questionnaire questions and items for final survey.

Questions/Items	Changes Made	Example
11	Deleted question	Item related to firm's capital investment.
12	Deleted question	Item related to firm's annual turnover/revenue.
14 to be 12	Reworded sub-item	From: Often make moderate changes and improvements in products and services for the market, try to be the first to develop new products or services, even with the risk that such innovation will not be successful. To: Often make changes and improvements in products and services for the market, try to be the first to develop new products or services, even with the risk that such innovation will not be successful.
16 to be 14	Deleted sub-item	Item related to diffusion innovation.
22 to be 20	Reworded sub-item	From: Foreign ownership (49%) and visa duration (3years) laws. To: Local sponsorship law (51% local vs. 49% non-local) and uncertainty of continued employment (work visa 3years duration).
26 to be 24	Reworded item	From: Institutional and industrial supports facilitate our firm's innovation speed. To: Availability of government support and development agencies helps our firm to be innovative.
30 to be 28	Reworded item	From: Tailed small and medium firms financial and technical supports stimulate R&D investments and technological interactions. To: Availability of customised financial supports to small and medium firms encourages our firm's investment in research and development.
32 to be 30	Reworded item	From: Strength of financial transparency and accountability standards protects investments. To: Effectiveness of financial transparency and accountability standards protects investors and innovative firms.
33 to be 31	Reworded item	From: Academic and industry relationships provide access to talent and competency. To: Access to qualified graduates supports our firm's innovation capability.
39 to be 37	Reworded item	From: Demand conditions and consumer orientations enhance local market to be efficient. To: Understanding of market demand conditions and consumer orientations increases our firm's innovation focus.
43 to be 41	Reworded item	From: Our management supports and recognises the importance of innovation to achieve strategic goals and ambitions. To: Our management considers innovation to be part of our firm's goals and future ambitions.
56 to be 54	Reworded item	From: Our firm frequently improves process, speed and reliability, and information management. To: Our firm frequently improves internal processes such as speed, reliability, and information management.
61 to be 59	Reworded item	From: Well-developed collaborations and networks with other firms to share various benefits and risks. To: Our firm has collaborative agreements with other firms to in/outsource research and development activities.

67 to be 65	Reworded item	From: Our firm encourages internal coordination and market information sharing between individual staff to understand consumers' needs and competitors' behaviours. To: Our firm encourages internal sharing of market information to understand consumer/competitor behaviours.
71 to be 69	Reworded item	From: Our management ongoing searches for new structures, systems, or ways of working. To: Our management seeks out new ways to do things.
73 to be 71	Reworded item	From: Our firm uses advanced technologies and up-to-date equipment. To: Our firm uses up-to-date technologies.
78 to be 76	Reworded item	From: Our firm's ability to develop and launch new products, services, or processes. To: Our firm's capacity to develop new products, services, or processes.

Appendix F - Survey Questionnaire Instrument

Dear Participant,

Thank you for taking the time to participate in this research study that examines a significant topic related to the field of business management and is part of the requirements of the doctorate degree from Southern Cross Business School, Southern Cross University, Australia.

PURPOSE OF RESEARCH STUDY. Given the increasing importance of small and medium-sized enterprises in the development of any economy such as Dubai in the United Arab Emirates, this research study is timely. In this research study, approximately 600 of the owners/managers of small and medium-sized enterprises will be invited to complete a survey questionnaire. The research study endeavours to *identify the enabling factors of innovation practices by small and medium-sized enterprises and their impact on business growth performance in Dubai, the United Arab Emirates*. The outcomes will benefit governments, policy makers, practitioners, and academics nationally and internationally.

INSTRUCTIONS. This research study involves the completion of an anonymous survey questionnaire about various aspects of innovation practices as they apply to your firm and your experiences with small and medium-sized enterprises. You are kindly requested to consider all questions and provide examples where appropriate. The questions are preceded with instructions on how to answer them. Please read the instructions and make your selections as requested. The survey questionnaire should take approximately 15-20 minutes to complete. The completed survey questionnaire can be returned in the self-addressed envelope provided or the researcher will collect the completed survey questionnaire in person after one week.

DEFINITION OF TERMS. The term *small and medium-sized enterprises (SMEs)* refers to all independent firms with less than 250 employees, less than USD$ 190mn capital investment, and less than USD$ 70mn annual turnover. The term *innovation* refers to the modification of existing products, services, processes, or organisation/management systems (incremental innovation) and the introduction of new products, services, processes, or organisation/management systems (radical innovation).

ETHICAL CONCERNS. This research study involves the completion of an anonymous survey questionnaire. The Southern Cross University Human Research Ethics Committee approval number is ECN-10-094.

SUMMARY OF RESULTS. If you would like to receive a summary of the results, please include your information below:

Address:.....

Email: .....

I appreciate your participation and cooperation in this research study. Please remember that this research study is for an academic purpose only. The information and results will be handled anonymously and will not be provided to a 3rd party.

Thank you again in advance.

Kind regards,

Yahya Al Ansari
Doctoral Researcher

SECTION A: GENERAL INDIVIDUAL'S DEMOGRAPHIC INFORMATION

The next questions are for analytical purposes only and will not be used for the individual's identification.

1) What is your gender? ☐ Male ☐ Female

2) What is your age?

☐ Under 21 years ☐ 35 to 44 years ☐ 55 to 64 years
☐ 21 to 34 years ☐ 45 to 54 years ☐ More than 64 years

3) What is your highest education level?

☐ No formal education ☐ Professional Certificate/Training ☐ Graduate Certificate/Diploma
☐ Primary/Elementary school ☐ Certificate/Diploma ☐ Masters
☐ Secondary/High school ☐ Higher Diploma/Bachelor ☐ Doctorate
(Main field of study or training, if applicable.....)

4) What is your role in the firm?

☐ Managing Director/General Manager/Owner ☐ Supervisor/Manager
☐ Chief Officer (Executive/Strategy/Technology/Science/Finance/Sales/Marketing) ☐ Officer/Assistant
☐ Director/Head/Senior Manager ☐ Other (please specify).....

5) How long have you been with your firm?

☐ Less than 2 years ☐ 6 to 8 years ☐ 12 to 15 years
☐ 3 to 5 years ☐ 9 to 11 years ☐ More than 15 years

SECTION B: GENERAL FIRM'S DEMOGRAPHIC INFORMATION

The next questions are for analytical purposes only and will not be used for the firm's identification.

6) How would you describe your current business?

☐ Original concept (never existed in/outside Dubai) ☐ Originated from an existing concept from outside Dubai
☐ Originated from an existing concept in Dubai ☐ Other (please specify).....

7) In which industry sector is your firm? (*Select only 1 answer*)

☐ Agriculture, Forestry, and Fishing ☐ Entertainment and Media
☐ Energy, Mining, Chemical, and Utilities (EGW) ☐ Transport, Logistics, and Storage
☐ Manufacturing and Engineering (Mechanical and Plant) ☐ Retail and Consumer Goods
☐ Information and Communication Technologies ☐ Trading and Repairing Services
☐ Legal, Financial Intermediation, and Insurance Services ☐ Construction, Architecture, and Interior Design
☐ Healthcare, Pharmaceutical, and Biotechnology ☐ Real Estate and Renting Services
☐ Education, Training, and Consultancy ☐ Social Work
☐ Travel, Tourism, and Hospitality (Hotels and Restaurants) ☐ Other (please specify).....
☐ Automotive and Aerospace Services .....

8) What is your firm's legal status?

☐ Sole Proprietorship ☐ Public Joint Stock ☐ Professional
☐ Joint Liability ☐ Private Joint Stock ☐ Branch/Representative Office
☐ Limited Liability ☐ Private Shareholding ☐ Franchise
☐ Partnership ☐ Joint Venture ☐ Other (please specify).....

9) How many employees are currently working in your firm?

☐ 1 to 9 ☐ 100 to 149 ☐ 250 to 299
☐ 10 to 49 ☐ 150 to 199 ☐ 300 to 349
☐ 50 to 99 ☐ 200 to 249 ☐ More than 349

10) When was your firm established?

☐ Less than 2 years ☐ 6 to 8 years ☐ 12 to 15 years
☐ 3 to 5 years ☐ 9 to 11 years ☐ More than 15 years

11) What markets does your firm currently serve? (*Select all applicable answers*)

☐ UAE ☐ Africa ☐ Central/South America
☐ GCC/Middle East/North Africa ☐ USA/Canada ☐ Online/Web-Based
☐ Asia/Australia/New Zealand ☐ Europe/Turkey/Russia ☐ Other (please specify).....

SECTION C: GENERAL FIRM'S BUSINESS MANAGEMENT & MARKET ENVIRONMENTS

The next questions are related to the firm's business management and market environments in Dubai.

12) Which statement best describes your firm's strategic orientation in the last 3 years? (*Select only 1 answer*)

☐ Often make changes and improvements in products or services for the market, try to be the first to develop new products or services, even with the risk that such innovation will not be successful
☐ Maintain moderately stable products or services for the market, while selectively develop new products or services, based on already developed and successful models
☐ Provide moderately stable products or services for the market, not interested in changes but concentrate on continuous improvement of working within its field of action
☐ Provide stable products or services for the market, action is normally enforced by environmental pressures and competitions

13) What do you consider the ideal innovation strategy for your firm to be?

☐ Proactive (active) ☐ Reactive (respond to others' actions) ☐ Passive (not active)

14) Which statement best describes your firm's innovation type in the last 3 years? (*Select only 1 answer*)

☐ Improve and modify existing products, services, processes, or organisational/management systems
☐ Introduce new products, services, processes, or organisation/management systems
☐ Provide stable products, services, processes, or organisation/management systems
(Type of innovations adopted/developed, if applicable.....)

..... (**Note:** If you marked **OPTION** 3, please go to Q 20, or otherwise, please continue to Q 15) .....

15) What are the drivers of innovation practices in your firm? (*Select all applicable answers*)

☐ Management ☐ Partners ☐ Growth
☐ Employees ☐ Customers ☐ Competition
☐ Internal culture ☐ Suppliers ☐ Legislation
☐ Government grants ☐ Market ☐ Intellectual property and patent award
☐ Technology ☐ Finance ☐ Other (please specify).....

16) What are the platforms of innovation practices in your firm? (*Select all applicable answers*)

☐ New development ☐ Cost reduction ☐ Market competition
☐ Incremental improvement ☐ Customer added-value ☐ Market shift/demand
☐ Quality improvement ☐ Strategic growth ☐ ISO certification
☐ Increased efficiency ☐ Financial growth ☐ Legislation/Regulation adjustment
☐ New business model ☐ Market growth ☐ Other (please specify).....

17) Which groups are important sources of innovative ideas for your firm? (*Select all applicable answers*)

☐ Academic and research institutions ☐ Workshops and training ☐ Suppliers
☐ Technology transfer centres ☐ Internet ☐ Consultants
☐ Conferences, seminars, and exhibitions ☐ Library ☐ Market
☐ Networks and collaborations ☐ Management ☐ Financial institutions
☐ Business links and trade associations ☐ Employees ☐ Competitors
☐ Government agencies ☐ Customers ☐ Other (please specify).....
☐ Clusters ☐ Partners .....

18) How many new products or services has your firm launched in the last 3 years?

☐ Less than 2 ☐ 6 to 8 ☐ 12 to 14

☐ 3 to 5 ☐ 9 to 11 ☐ More than 14

(Type of new products or services produced, if applicable.....)

19) What have been your firm's approximate research and development investments in the last 3 years?

☐ Less than 500,000 AED ☐ 1,000,001 to 2,000,000 AED ☐ 4,000,001 to 8,000,000 AED

☐ 500,001 to 1,000,000 AED ☐ 2,000,001 to 4,000,000 AED ☐ More than 8,000,000 AED

20) Which elements reflect significant barriers to your firm's innovation capability? (*Select all applicable answers*)

☐ Economic risks and inflation

☐ Legislation and regulation policies

☐ Financial fund and capital resources

☐ Customers (attitude and behaviour)

☐ Internal culture and rigidity

☐ Shortage of good ideas

☐ Shortage of talent and managerial expertise

☐ Access to research and discovery

☐ Local sponsorship law (51% local vs. 49% non-local)

☐ Uncertainty of continued employment (work visa 3 years duration)

☐ Market (information, competition, access locally/globally, and size)

☐ Set-up and operation costs

☐ Technology and knowledge transfer mechanisms

☐ Suppliers (technical level, delay, and price repercussion)

☐ Short-term pay-off and inward focus (limited to local market)

☐ Other (please specify).....

SECTION D: MACRO-ENVIROMENTAL FACTORS (EXTERNAL FACTORS)

The next subsections are related to the **external-driven factors** that might influence the ability of small and medium firms to innovate in Dubai. Even if your firm has not yet engaged in innovation practices, please rate all the statements from your firm's perspective.

21-25) Indicate your level of agreement with the following statements related to **government supported developments** by using the scale below and circling the appropriate number.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

Effectiveness of government macro-policies enhances our firm's innovation capability (Examples are taxation, trade, investment, deficit control, monetary policy, and exchange rate)	1	2	3	4	5	6	7
Effectiveness of government micro-policies enhances our firm's innovation capability (Examples are property, labour, and commercial laws enforcement, private rights and intellectual properties protection, sector-specific regulations and independent regulatory agencies, and national innovation system)	1	2	3	4	5	6	7
Quality of overall infrastructures provides support to our firm's innovation capability (Examples are land, telecommunication, transportation, logistic, distribution network, energy, raw material, education, management training, industrial association, development agency, capital market, and multicultural environment)	1	2	3	4	5	6	7
Availability of government support and development agencies helps our firm to be innovative (Examples are agencies that consider small and medium firms different needs and helps in improving absorbance and exchange of new knowledge and technological information via local and regional networks)	1	2	3	4	5	6	7
Lack of mechanisms in turning good ideas into commercially viable products or services discourages our firm to be innovative	1	2	3	4	5	6	7

26-30) Indicate your level of agreement with the following statements related to **financial resources** by using the scale below and circling the appropriate number.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

Access to government grants and payable-loans encourages our firm to be innovative	1	2	3	4	5	6	7
Absence of venture capital investors discourages our firm to raise funds to be innovative	1	2	3	4	5	6	7
Availability of customised financial supports to small and medium firms encourages our firm's investment in research and development	1	2	3	4	5	6	7
Ability to list small and medium firms in stock market makes capitals available for our firm to be innovative	1	2	3	4	5	6	7
Effectiveness of financial transparency and accountability standards protects investors and innovative firms	1	2	3	4	5	6	7

31-35) Indicate your level of agreement with the following statements related to **academic-industry collaborations** by using the scale below and circling the appropriate number.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

Access to qualified graduates supports our firm's innovation capability	1	2	3	4	5	6	7
Academic institutions' outcomes have to become solutions-oriented to match industrial needs and challenges	1	2	3	4	5	6	7
Access to research institutions provides our firm with scientific and technological knowledge and expertise	1	2	3	4	5	6	7
Participation in collaborative-research and technology-transfer platforms provides our firm with new ideas	1	2	3	4	5	6	7
Absence of entrepreneurial attitude and skill developments discourages new initiatives and start-up firms	1	2	3	4	5	6	7

36-40) Indicate your level of agreement with the following statements related to **market dynamics** by using the scale below and circling the appropriate number.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

Access to quality materials/components via active relationships with suppliers and related industries supports our firm's innovation capability	1	2	3	4	5	6	7
Understanding of market demand conditions and consumer orientations increases our firm's innovation focus	1	2	3	4	5	6	7
Effectiveness of anti-monopoly market policy, healthy competition, enables our firm to be productive	1	2	3	4	5	6	7
Absence of business cultures of risk-taking discourages our firm to be creative and innovate	1	2	3	4	5	6	7
Presence of exit mechanisms to sell successful firms in market promotes our firm to start new businesses	1	2	3	4	5	6	7

SECTION E: MICRO-ENVIROMENTAL FACTORS (INTERNAL FACTORS)

The next subsections are related to the **internal-driven factors** that might influence the ability of small and medium firms to innovate in Dubai. Even if your firm has not yet engaged in innovation practices, please rate all the statements from your firm's perspective.

41-45) Indicate your level of agreement with the following statements related to **management orientation** by using the scale below and circling the appropriate number.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

Our management considers innovation to be part of our firm's strategic goals and future ambitions	1	2	3	4	5	6	7
Our management focuses on long-term objectives with interests in adopting innovations	1	2	3	4	5	6	7
Our management favours high-risk projects with attitudes in exploring new opportunities	1	2	3	4	5	6	7
Our management is involved in new initiatives and innovative programmes	1	2	3	4	5	6	7
Our management allocates resources to support research and development into innovative products or services	1	2	3	4	5	6	7

46-50) Indicate your level of agreement with the following statements related to **organisational culture** by using the scale below and circling the appropriate number.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

Our firm is open to different perspectives that accepts and adopts new and external ideas (Examples are often introduce new planning processes and proactively anticipate changes)	1	2	3	4	5	6	7
Staff within our firm obtain and exchange new knowledge and skills in fair and collegial ways	1	2	3	4	5	6	7
Our firm accurately shares important information such as success and failure and customer feedback with all relevant staff as part of our internal learning processes	1	2	3	4	5	6	7
Our firm has a flexible organisational structure (Examples are decentralisation, shared decision making, and low to moderate use of formal rules)	1	2	3	4	5	6	7

Our firm encourages staff to think freely, generate ideas, follow-up on ideas, learn by experience, and take risks (Examples are intellectual challenges with promotion and reward to staff contributions via incentive system)	1	2	3	4	5	6	7

51-55) Indicate your level of agreement with the following statements related to **technology orientation** by using the scale below and circling the appropriate number.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

Our firm's policy is to adopt up-to-date technologies	1	2	3	4	5	6	7
Our firm purchases and uses technologies to position itself ahead of competitors	1	2	3	4	5	6	7
Our firm is often to be first to try out new methods and technologies	1	2	3	4	5	6	7
Our firm frequently improves internal processes such as speed, reliability, and information management	1	2	3	4	5	6	7
Our firm allocates resources for investments in latest technologies and future forecasted technological changes	1	2	3	4	5	6	7

56-60) Indicate your level of agreement with the following statements related to **alliance and cooperation** by using the scale below and circling the appropriate number.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

Our firm has proactive relationships with partners, suppliers, and sub-contractors	1	2	3	4	5	6	7
Our firm has memberships in local and/or international business and industry associations	1	2	3	4	5	6	7
Our firm systematically identifies possible strategic partners to explore new knowledge and technology in order to improve resources and capabilities	1	2	3	4	5	6	7
Our firm has collaborative agreements with other firms to in/outsource research and development activities	1	2	3	4	5	6	7
Our firm has proactive networks with other firms to share innovation benefits and risks (Examples are exploring new ideas, knowledge, technologies, market information, customer needs, and regulations)	1	2	3	4	5	6	7

61-65) Indicate your level of agreement with the following statements related to **market orientation** by using the scale below and circling the appropriate number.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

Our firm has proactive dialogues and mutual relationships with customers (Examples are actively building and maintaining direct contacts and collecting information and feedback for improvements)	1	2	3	4	5	6	7
Our firm is geared toward quality customer service culture	1	2	3	4	5	6	7
Our firm implements immediate responses when our customers are targeted by other firms	1	2	3	4	5	6	7
Our firm frequently takes advantage of targeted opportunities to benefit from competitors' weaknesses	1	2	3	4	5	6	7
Our firm encourages internal sharing of market information to understand consumer/competitor behaviours	1	2	3	4	5	6	7

SECTION F: INNOVATION PRACTICES

The next statements are related to the firm's innovation practices in Dubai. Please rate all statements from your firm's perspective.

66-75) Indicate how your firm has performed with respect to **innovation practices** relative to most other firms in the industry sector in the last 3 years by using the scale below and circling the appropriate number.

Much Below	Moderately Below	Slightly Below	No Difference	Slightly Above	Moderately Above	Much Above
1	2	3	4	5	6	7

Our firm frequently tries out new ideas	1	2	3	4	5	6	7
Our firm introduces number of new products, services, processes, or organisation/management systems	1	2	3	4	5	6	7
Our firm is first to market with new products or services	1	2	3	4	5	6	7

Our management seeks out new ways to do things	1	2	3	4	5	6	7
Our firm is creative in its methods of operation	1	2	3	4	5	6	7
Our firm uses up-to-date technologies	1	2	3	4	5	6	7
Our firm develops new market segments	1	2	3	4	5	6	7
Our firm uses new marketing methods (Examples are internet marketing, social networking marketing, brand communities, and promotions)	1	2	3	4	5	6	7
Our firm develops new ways of establishing relationships with customers	1	2	3	4	5	6	7
Our firm spends resources on research and development for new products, services, or processes	1	2	3	4	5	6	7

SECTION G: BUSINESS GROWTH PERFORMANCE

The next statements are related to the firm's growth performance in Dubai. Please rate all statements from your firm's perspective.

76-86) Indicate how your firm has performed with respect to **business growth performance indicators** relative to most other firms in the last 3 years by using the scale below and circling the appropriate number.

Much Worse	Moderately Worse	Slightly Worse	No Difference	Slightly Better	Moderately Better	Much Better
1	2	3	4	5	6	7

Our firm's capacity to develop new products, services, or processes	1	2	3	4	5	6	7
Our firm's ability to adapt to market needs	1	2	3	4	5	6	7
Our firm's customer satisfaction	1	2	3	4	5	6	7
Our firm's innovation patent award	1	2	3	4	5	6	7
Our firm's sales growth	1	2	3	4	5	6	7
Our firm's sales growth of innovative products or services	1	2	3	4	5	6	7
Our firm's profit growth	1	2	3	4	5	6	7
Our firm's profit growth of innovative products or services	1	2	3	4	5	6	7
Our firm's return on investment (ROI)	1	2	3	4	5	6	7
Our firm's return on investment (ROI) of innovative products or services	1	2	3	4	5	6	7
Our firm's market share	1	2	3	4	5	6	7

SECTION H: GENERAL COMMENTS & SUGGESTIONS

Please provide any further comments and suggestions you may have regarding the small and medium firms (SMEs) innovation practices in Dubai.

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THANK YOU AGAIN AND REMEMBER THAT THIS RESEARCH STUDY IS FOR AN ACADEMIC PURPOSE ONLY.

Appendix G - SPSS Programme Output 1 of Individual and Firm Information

Table G.1: Demographic of individual.

Categories	Frequencies	Percentages
Age		
Under 21 years	0	0.0
21 to 34 years	81	40.5
35 to 44 years	82	41.0
45 to 54 years	31	15.5
55 to 64 years	5	2.5
More than 64 years	1	0.5
Education Level		
Secondary/High School	6	3.0
Professional Certificate/Training	6	3.0
Certificate/Diploma	6	3.0
Higher Diploma/Bachelor	50	25.0
Graduate Certificate/Diploma	44	22.0
Masters	75	37.5
Doctorate	13	6.5
Employment Length		
Less than 2 years	79	39.5
3 to 5 years	64	32.0
6 to 8 years	28	14.0
9 to 11 years	13	6.5
12 to 15 years	7	3.5
More than 15 years	9	4.5
Total	200	100.0

Table G.2: Demographic of firm.

Categories	Frequencies	Percentages
Legal Status		
Sole Proprietorship	26	13.0
Joint Liability	1	0.5
Limited Liability	114	57.0
Partnership	12	6.0
Public Joint Stock	7	3.5
Private Joint Stock	1	0.5
Private Shareholding	23	11.5
Joint Venture	4	2.0
Professional	12	6.0
Branch/Representative Office	0	0.0
Franchise	0	0.0
Age		
Less than 2 years	42	21.0
3 to 5 years	49	24.5
6 to 8 years	43	21.5
9 to 11 years	24	12.0
12 to 15 years	9	4.5
More than 15 years	33	16.5
Total	200	100.0

Appendix H - SPSS Programme Output 2 of Principal Components Analysis

Table H.1: Measurement model total variance explained.

Components	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	19.212	29.108	29.108	19.212	29.108	29.108	6.836	10.357	10.357
2	6.091	9.228	38.336	6.091	9.228	38.336	6.055	9.175	19.532
3	4.070	6.166	44.503	4.070	6.166	44.503	4.082	6.184	25.716
4	2.646	4.009	48.512	2.646	4.009	48.512	3.766	5.706	31.422
5	2.155	3.265	51.777	2.155	3.265	51.777	3.724	5.643	37.065
6	1.928	2.921	54.697	1.928	2.921	54.697	3.437	5.208	42.273
7	1.814	2.748	57.445	1.814	2.748	57.445	3.334	5.052	47.325
8	1.712	2.593	60.039	1.712	2.593	60.039	3.327	5.040	52.365
9	1.629	2.468	62.507	1.629	2.468	62.507	3.044	4.612	56.977
10	1.393	2.110	64.617	1.393	2.110	64.617	2.996	4.540	61.517
11	1.303	1.974	66.591	1.303	1.974	66.591	2.654	4.021	65.538
12	1.185	1.795	68.386	1.185	1.795	68.386	1.579	2.393	67.931
13	1.064	1.612	69.998	1.064	1.612	69.998	1.364	2.067	69.998
14	0.943	1.429	71.426						
15	0.902	1.367	72.793						
16	0.861	1.304	74.098						
17	0.807	1.223	75.321						
18	0.768	1.164	76.485						
19	0.714	1.081	77.566						
20	0.698	1.058	78.624						
21	0.680	1.030	79.653						
22	0.664	1.005	80.659						
23	0.647	0.980	81.639						
24	0.623	0.944	82.583						
25	0.591	0.896	83.478						
26	0.525	0.796	84.274						
27	0.512	0.775	85.049						
28	0.504	0.763	85.813						
29	0.490	0.742	86.555						
30	0.475	0.720	87.275						
31	0.458	0.694	87.969						
32	0.444	0.672	88.641						
33	0.414	0.627	89.268						

34	0.409	0.620	89.889						
35	0.391	0.592	90.481						
36	0.368	0.558	91.039						
37	0.352	0.534	91.573						
38	0.344	0.521	92.094						
39	0.338	0.512	92.605						
40	0.328	0.497	93.103						
41	0.305	0.462	93.565						
42	0.288	0.437	94.001						
43	0.281	0.425	94.426						
44	0.265	0.401	94.827						
45	0.248	0.375	95.203						
46	0.237	0.358	95.561						
47	0.229	0.348	95.909						
48	0.224	0.340	96.248						
49	0.217	0.329	96.577						
50	0.198	0.300	96.877						
51	0.192	0.292	97.169						
52	0.183	0.277	97.446						
53	0.170	0.257	97.703						
54	0.166	0.251	97.954						
55	0.157	0.237	98.191						
56	0.150	0.228	98.419						
57	0.135	0.204	98.623						
58	0.132	0.200	98.823						
59	0.125	0.189	99.011						
60	0.123	0.186	99.197						
61	0.119	0.180	99.377						
62	0.102	0.154	99.531						
63	0.095	0.144	99.675						
64	0.083	0.126	99.801						
65	0.076	0.115	99.916						
66	0.055	0.084	100.000						

Table H.2: Measurement model rotated component matrix.

Items	Components												
	1	2	3	4	5	6	7	8	9	10	11	12	13
gnrl_bgrwthprfm3	0.887												
innv_bgrwthprfm5	0.870												
innv_bgrwthprfm6	0.857												
gnrl_bgrwthprfm2	0.843												
gnrl_bgrwthprfm4	0.818												
innv_bgrwthprfm4	0.801	0.310											
gnrl_bgrwthprfm5	0.714												
innv_bgrwthprfm2	0.498	0.328				0.371							
innv_bgrwthprfm1	0.472	0.444											
gnrl_bgrwthprfm1	0.460					0.443							
innv_prcts3		0.739						0.310					
innv_prcts5		0.674											
innv_prcts7		0.666											
innv_prcts10		0.629	0.341										
innv_prcts2		0.628											
innv_prcts1		0.596											
innv_prcts4		0.593				0.341		0.302					
innv_prcts9	0.302	0.590											
innv_prcts8	0.375	0.578											
tech_orint2			0.788										
tech_orint1			0.738										
tech_orint3		0.383	0.705										
tech_orint5			0.701										
tech_orint4			0.623										
innv_prcts6		0.526	0.563										
org_cltr4				0.783									
org_cltr3				0.749									
org_cltr5				0.720									
org_cltr2				0.648									
org_cltr1		0.300		0.562				0.397					
fin_resrcs4					0.783								
fin_resrcs5					0.753								
fin_resrcs3					0.693								
fin_resrcs1					0.676					0.337			

fin_resrcs2					0.644								0.481
gov_sdev5					0.458								0.333
mrkt_orint3						0.744							
mrkt_orint2						0.664							
mrkt_orint1						0.654							
mrkt_orint5						0.546							
mrkt_orint4						0.484							
acdindstr_collbs3							0.789						
acdindstr_collbs4							0.760						
acdindstr_collbs2							0.736						
acdindstr_collbs1							0.636				0.317		
acdindstr_collbs5							0.632						0.357
mgmt_orint4								0.741					
mgmt_orint3								0.666					
mgmt_orint5								0.659					
mgmt_orint1		0.348						0.638					
mgmt_orint2		0.305						0.603					
allnc_coorp4									0.800				
allnc_coorp2									0.679				
allnc_coorp5									0.674				
allnc_coorp3									0.649				
allnc_coorp1				0.453					0.513				
gov_sdev1										0.794			
gov_sdev2										0.785			
gov_sdev3										0.732			
gov_sdev4					0.342					0.632			
mrkt_dynmcs1											0.810		
mrkt_dynmcs2											0.785		
mrkt_dynmcs3											0.749	0.313	
mrkt_dynmcs4												0.747	
mrkt_dynmcs5					0.317							0.412	
innv_bgrwthprfm3	0.390	0.393											-0.428

Note: Extraction method: Principal Components Analysis, rotation method: varimax with Kaiser normalisation, and rotation converged in 9 iterations.

Appendix I - PLS Programme Output 1 of Reliability

Table I.1: Reliability measures.

Latent Variables and Items (Out of 66 Items)	Outer Loadings	Composite Reliability	Cronbach's Alphas
Government Supported Developments (iv1)		0.875	0.821
gov_sdev1 (q21)	0.796		
gov_sdev2 (q22)	0.876		
gov_sdev3 (q23)	0.776		
gov_sdev4 (q24)	0.814		
gov_sdev5 (q25)	0.529		
Financial Resources (iv2)		0.887	0.842
fin_resrcs1 (q26)	0.838		
fin_resrcs2 (q27)	0.736		
fin_resrcs3 (q28)	0.838		
fin_resrcs4 (q29)	0.707		
fin_resrcs5 (q30)	0.781		
Academia-Industry Collaborations (iv3)		0.893	0.853
acdindstr_collbs1 (q31)	0.754		
acdindstr_collbs2 (q32)	0.804		
acdindstr_collbs3 (q33)	0.893		
acdindstr_collbs4 (q34)	0.869		
acdindstr_collbs5 (q35)	0.613		
Market Dynamics (iv4)		0.835	0.761
mrkt_dynmcs1 (q36)	0.836		
mrkt_dynmcs2 (q37)	0.877		
mrkt_dynmcs3 (q38)	0.817		
mrkt_dynmcs4 (q39)	0.441		
mrkt_dynmcs5 (q40)	0.520		
Management Orientation (iv5)		0.894	0.852
mgmt_orint1 (q41)	0.848		
mgmt_orint2 (q42)	0.786		
mgmt_orint3 (q43)	0.718		
mgmt_orint4 (q44)	0.845		
mgmt_orint5 (q45)	0.762		
Organisational Culture (iv6)		0.906	0.870
org_cltr1 (q46)	0.768		
org_cltr2 (q47)	0.805		
org_cltr3 (q48)	0.843		
org_cltr4 (q49)	0.790		
org_cltr5 (q50)	0.848		
Technology Orientation (iv7)		0.916	0.886
tech_orint1 (q51)	0.809		
tech_orint2 (q52)	0.837		
tech_orint3 (q53)	0.844		
tech_orint4 (q54)	0.817		
tech_orint5 (q55)	0.834		

Alliance and Cooperation (iv8)		0.887	0.842
allnc_coorp1 (q56)	0.740		
allnc_coorp2 (q57)	0.790		
allnc_coorp3 (q58)	0.826		
allnc_coorp4 (q59)	0.737		
allnc_coorp5 (q60)	0.812		
Market Orientation (iv9)		0.888	0.842
mrkt_orint1 (q61)	0.805		
mrkt_orint2 (q62)	0.839		
mrkt_orint3 (q63)	0.782		
mrkt_orint4 (q64)	0.684		
mrkt_orint5 (q65)	0.799		
Innovation Practices (itv)		0.934	0.923
innv_prcts1 (q66)	0.730		
innv_prcts2 (q67)	0.736		
innv_prcts3 (q68)	0.792		
innv_prcts4 (q69)	0.779		
innv_prcts5 (q70)	0.802		
innv_prcts6 (q71)	0.754		
innv_prcts7 (q72)	0.784		
innv_prcts8 (q73)	0.783		
innv_prcts9 (q74)	0.757		
innv_prcts10 (75)	0.737		
Innovation Business Growth Performance (dv1)		0.911	0.883
innv_bgrwthprfm1 (q76)	0.824		
innv_bgrwthprfm2 (q77)	0.767		
innv_bgrwthprfm3 (q79)	0.662		
innv_bgrwthprfm4 (q81)	0.869		
innv_bgrwthprfm5 (q83)	0.848		
innv_bgrwthprfm6 (q85)	0.787		
General Business Growth Performance (dv2)		0.905	0.867
gnrl_bgrwthprfm1 (q78)	0.690		
gnrl_bgrwthprfm2 (q80)	0.873		
gnrl_bgrwthprfm3 (q82)	0.888		
gnrl_bgrwthprfm4 (q84)	0.792		
gnrl_bgrwthprfm5 (q86)	0.793		

Table I.2: Reliability measures.

Latent Variables and Items (Out of 63 Items)	Outer Loadings	Composite Reliability	Cronbach's Alphas
Government Supported Developments (iv1)		0.894	0.844
gov_sdev1 (q21)	0.803		
gov_sdev2 (q22)	0.883		
gov_sdev3 (q23)	0.788		
gov_sdev4 (q24)	0.820		
gov_sdev5 (q25)	deleted		
Financial Resources (iv2)		0.887	0.842
fin_resrcs1 (q26)	0.838		
fin_resrcs2 (q27)	0.736		
fin_resrcs3 (q28)	0.838		
fin_resrcs4 (q29)	0.707		
fin_resrcs5 (q30)	0.781		
Academia-Industry Collaborations (iv3)		0.893	0.853
acdindstr_collbs1 (q31)	0.754		
acdindstr_collbs2 (q32)	0.804		
acdindstr_collbs3 (q33)	0.893		
acdindstr_collbs4 (q34)	0.869		
acdindstr_collbs5 (q35)	0.613		
Market Dynamics (iv4)		0.911	0.856
mrkt_dynmcs1 (q36)	0.884		
mrkt_dynmcs2 (q37)	0.917		
mrkt_dynmcs3 (q38)	0.835		
mrkt_dynmcs4 (q39)	deleted		
mrkt_dynmcs5 (q40)	deleted		
Management Orientation (iv5)		0.894	0.852
mgmt_orint1 (q41)	0.848		
mgmt_orint2 (q42)	0.786		
mgmt_orint3 (q43)	0.718		
mgmt_orint4 (q44)	0.845		
mgmt_orint5 (q45)	0.762		
Organisational Culture (iv6)		0.906	0.870
org_cltr1 (q46)	0.768		
org_cltr2 (q47)	0.805		
org_cltr3 (q48)	0.843		
org_cltr4 (q49)	0.790		
org_cltr5 (q50)	0.848		
Technology Orientation (iv7)		0.916	0.886
tech_orint1 (q51)	0.809		
tech_orint2 (q52)	0.837		
tech_orint3 (q53)	0.844		
tech_orint4 (q54)	0.817		
tech_orint5 (q55)	0.834		
Alliance and Cooperation (iv8)		0.887	0.842
allnc_coorp1 (q56)	0.740		

allnc_coorp2 (q57)	0.790		
allnc_coorp3 (q58)	0.826		
allnc_coorp4 (q59)	0.737		
allnc_coorp5 (q60)	0.812		
Market Orientation (iv9)		0.888	0.842
mrkt_orint1 (q61)	0.805		
mrkt_orint2 (q62)	0.839		
mrkt_orint3 (q63)	0.782		
mrkt_orint4 (q64)	0.684		
mrkt_orint5 (q65)	0.799		
Innovation Practices (itv)		0.934	0.922
innv_prcts1 (q66)	0.730		
innv_prcts2 (q67)	0.736		
innv_prcts3 (q68)	0.792		
innv_prcts4 (q69)	0.779		
innv_prcts5 (q70)	0.802		
innv_prcts6 (q71)	0.754		
innv_prcts7 (q72)	0.784		
innv_prcts8 (q73)	0.783		
innv_prcts9 (q74)	0.757		
innv_prcts10 (75)	0.737		
Innovation Business Growth Performance (dv1)		0.911	0.883
innv_bgrwthprfm1 (q76)	0.824		
innv_bgrwthprfm2 (q77)	0.767		
innv_bgrwthprfm3 (q79)	0.662		
innv_bgrwthprfm4 (q81)	0.869		
innv_bgrwthprfm5 (q83)	0.848		
innv_bgrwthprfm6 (q85)	0.787		
General Business Growth Performance (dv2)		0.905	0.867
gnrl_bgrwthprfm1 (q78)	0.690		
gnrl_bgrwthprfm2 (q80)	0.873		
gnrl_bgrwthprfm3 (q82)	0.888		
gnrl_bgrwthprfm4 (q84)	0.792		
gnrl_bgrwthprfm5 (q86)	0.793		

Appendix J - PLS Programme Output 2 of Cross-Loading and Correlation Matrix

Table J.1: Cross-loading between measures.

Latent Variables and Items	iv1	iv2	iv3	iv4	iv5	iv6	iv7	iv8	iv9	itv	dv1	dv2
Government Supported Developments (iv1)												
gov_sdev1 (q21)	**0.803**	0.366	0.338	0.163	0.191	0.146	0.125	0.233	0.149	0.236	0.155	0.123
gov_sdev2 (q22)	**0.883**	0.455	0.414	0.273	0.175	0.216	0.143	0.301	0.247	0.302	0.209	0.190
gov_sdev3 (q23)	**0.788**	0.372	0.403	0.399	0.154	0.170	0.210	0.244	0.178	0.193	0.232	0.190
gov_sdev4 (q24)	**0.820**	0.512	0.440	0.3533	0.181	0.246	0.195	0.303	0.213	0.268	0.219	0.202
gov_sdev5 (q25)	**deleted**	deleted	deleted	deleted	deleted	deleted	deleted	deleted	deleted	deleted	deleted	deleted
Financial Resources (iv2)												
fin_resrcs1 (q26)	0.542	**0.838**	0.477	0.280	0.174	0.191	0.201	0.230	0.186	0.258	0.141	0.109
fin_resrcs2 (q27)	0.280	**0.736**	0.285	0.131	0.119	0.175	0.134	0.166	0.131	0.228	-0.013	-0.044
fin_resrcs3 (q28)	0.506	**0.838**	0.406	0.308	0.201	0.240	0.209	0.217	0.214	0.222	0.117	0.095
fin_resrcs4 (q29)	0.271	**0.707**	0.347	0.254	0.111	0.171	0.087	0.223	0.019	0.145	0.110	0.103
fin_resrcs5 (q30)	0.385	**0.781**	0.460	0.372	0.155	0.202	0.165	0.224	0.181	0.179	0.182	0.134
Academia-Industry Collaborations (iv3)												
acdindstr_collbs1 (q31)	0.429	0.454	**0.754**	0.453	0.140	0.201	0.030	0.310	0.208	0.120	0.138	0.148
acdindstr_collbs2 (q32)	0.377	0.355	**0.804**	0.299	0.236	0.312	0.170	0.350	0.270	0.213	0.187	0.164
acdindstr_collbs3 (q33)	0.425	0.429	**0.893**	0.340	0.255	0.293	0.242	0.323	0.218	0.248	0.205	0.197
acdindstr_collbs4 (q34)	0.426	0.460	**0.869**	0.365	0.225	0.228	0.185	0.324	0.138	0.223	0.169	0.146
acdindstr_collbs5 (q35)	0.247	0.342	**0.613**	0.287	0.076	0.129	0.025	0.137	0.158	0.094	0.018	0.065
Market Dynamics (iv4)												
mrkt_dynmcs1 (q36)	0.290	0.293	0.329	**0.884**	0.254	0.281	0.198	0.309	0.321	0.308	0.284	0.261
mrkt_dynmcs2 (q37)	0.337	0.322	0.390	**0.917**	0.269	0.351	0.277	0.359	0.355	0.369	0.311	0.259
mrkt_dynmcs3 (q38)	0.302	0.265	0.411	**0.835**	0.178	0.262	0.170	0.323	0.277	0.223	0.153	0.176
mrkt_dynmcs4 (q39)	deleted	deleted	deleted	**deleted**	deleted	deleted	deleted	deleted	deleted	deleted	deleted	deleted
mrkt_dynmcs5 (q40)	deleted	deleted	deleted	**deleted**	deleted	deleted	deleted	deleted	deleted	deleted	deleted	deleted
Management Orientation (iv5)												
mgmt_orint1 (q41)	0.198	0.172	0.286	0.298	**0.848**	0.531	0.469	0.346	0.482	0.600	0.410	0.306
mgmt_orint2 (q42)	0.152	0.105	0.160	0.270	**0.786**	0.431	0.402	0.281	0.435	0.522	0.410	0.344
mgmt_orint3 (q43)	0.233	0.308	0.196	0.193	**0.718**	0.355	0.355	0.357	0.294	0.474	0.385	0.281
mgmt_orint4 (q44)	0.154	0.122	0.151	0.187	**0.845**	0.446	0.427	0.297	0.461	0.565	0.404	0.288
mgmt_orint5 (q45)	0.111	0.093	0.216	0.122	**0.762**	0.383	0.475	0.366	0.340	0.499	0.403	0.290
Organisational Culture (iv6)												
org_cltr1 (q46)	0.114	0.143	0.238	0.196	0.578	**0.768**	0.499	0.338	0.457	0.533	0.363	0.259
org_cltr2 (q47)	0.164	0.196	0.258	0.265	0.439	**0.805**	0.432	0.351	0.494	0.409	0.271	0.151
org_cltr3 (q48)	0.274	0.258	0.267	0.318	0.341	**0.843**	0.500	0.442	0.558	0.450	0.328	0.274
org_cltr4 (q49)	0.232	0.240	0.215	0.274	0.349	**0.790**	0.346	0.386	0.439	0.392	0.286	0.259
org_cltr5 (q50)	0.203	0.194	0.267	0.349	0.462	**0.848**	0.466	0.408	0.581	0.502	0.365	0.324
Technology Orientation (iv7)												
tech_orint1 (q51)	0.121	0.167	0.163	0.196	0.436	0.529	**0.809**	0.411	0.420	0.471	0.367	0.218
tech_orint2 (q52)	0.099	0.100	0.147	0.213	0.415	0.460	**0.837**	0.400	0.434	0.464	0.436	0.343
tech_orint3 (q53)	0.143	0.162	0.153	0.104	0.453	0.416	**0.844**	0.403	0.381	0.588	0.435	0.293
tech_orint4 (q54)	0.244	0.194	0.207	0.264	0.422	0.507	**0.817**	0.494	0.497	0.540	0.399	0.270
tech_orint5 (q55)	0.208	0.239	0.138	0.278	0.496	0.420	**0.834**	0.434	0.406	0.543	0.458	0.377

Alliance and Cooperation (iv8)												
allnc_coorp1 (q56)	0.281	0.136	0.297	0.364	0.405	0.572	0.409	**0.740**	0.545	0.398	0.367	0.290
allnc_coorp2 (q57)	0.252	0.205	0.279	0.314	0.317	0.273	0.360	**0.790**	0.387	0.427	0.394	0.279
allnc_coorp3 (q58)	0.229	0.293	0.303	0.278	0.360	0.421	0.487	**0.826**	0.428	0.507	0.492	0.336
allnc_coorp4 (q59)	0.194	0.152	0.215	0.154	0.202	0.189	0.311	**0.737**	0.282	0.308	0.267	0.204
allnc_coorp5 (q60)	0.328	0.229	0.359	0.335	0.307	0.364	0.424	**0.812**	0.321	0.467	0.365	0.289
Market Orientation (iv9)												
mrkt_orint1 (q61)	0.233	0.151	0.249	0.279	0.428	0.551	0.433	0.377	**0.805**	0.504	0.400	0.374
mrkt_orint2 (q62)	0.223	0.179	0.231	0.357	0.499	0.569	0.435	0.431	**0.839**	0.524	0.394	0.338
mrkt_orint3 (q63)	0.216	0.215	0.224	0.279	0.318	0.420	0.324	0.387	**0.782**	0.447	0.385	0.319
mrkt_orint4 (q64)	0.084	0.132	0.093	0.232	0.378	0.374	0.342	0.334	**0.684**	0.423	0.403	0.386
mrkt_orint5 (q65)	0.184	0.106	0.166	0.280	0.377	0.514	0.463	0.438	**0.799**	0.535	0.396	0.346
Innovation Practices (itv)												
innv_prcts1 (q66)	0.137	0.117	0.110	0.191	0.538	0.541	0.413	0.360	0.568	**0.730**	0.494	0.329
innv_prcts2 (q67)	0.236	0.145	0.241	0.314	0.494	0.403	0.420	0.337	0.514	**0.736**	0.527	0.424
innv_prcts3 (q68)	0.188	0.164	0.143	0.154	0.593	0.375	0.472	0.368	0.385	**0.792**	0.521	0.373
innv_prcts4 (q69)	0.229	0.236	0.168	0.249	0.581	0.461	0.446	0.477	0.553	**0.779**	0.480	0.381
innv_prcts5 (q70)	0.309	0.260	0.212	0.291	0.477	0.500	0.424	0.502	0.496	**0.802**	0.511	0.415
innv_prcts6 (q71)	0.278	0.234	0.175	0.268	0.507	0.458	0.703	0.417	0.466	**0.754**	0.466	0.329
innv_prcts7 (q72)	0.170	0.218	0.202	0.345	0.533	0.442	0.497	0.423	0.471	**0.785**	0.558	0.401
innv_prcts8 (q73)	0.307	0.280	0.216	0.338	0.488	0.427	0.461	0.462	0.475	**0.782**	0.644	0.506
innv_prcts9 (q74)	0.284	0.242	0.229	0.335	0.469	0.431	0.481	0.414	0.468	**0.757**	0.553	0.483
innv_prcts10 (75)	0.194	0.153	0.164	0.172	0.494	0.330	0.537	0.430	0.372	**0.737**	0.483	0.342
Innovation Business Growth Performance (dv1)												
innv_bgrwthprfm1 (q76)	0.228	0.102	0.138	0.260	0.521	0.434	0.515	0.456	0.501	0.679	**0.824**	0.613
innv_bgrwthprfm2 (q77)	0.166	0.111	0.072	0.201	0.395	0.365	0.417	0.414	0.507	0.567	**0.767**	0.599
innv_bgrwthprfm3 (q79)	0.192	0.083	0.164	0.220	0.361	0.222	0.391	0.331	0.212	0.483	**0.662**	0.443
innv_bgrwthprfm4 (q81)	0.218	0.120	0.207	0.271	0.416	0.349	0.374	0.407	0.432	0.581	**0.869**	0.816
innv_bgrwthprfm5 (q83)	0.196	0.105	0.172	0.239	0.336	0.221	0.342	0.361	0.325	0.453	**0.848**	0.830
innv_bgrwthprfm6 (q85)	0.152	0.108	0.221	0.212	0.326	0.261	0.325	0.343	0.349	0.431	**0.787**	0.807
General Business Growth Performance (dv2)												
gnrl_bgrwthprfm1 (q78)	0.147	0.050	0.111	0.173	0.291	0.357	0.371	0.349	0.498	0.465	0.595	**0.690**
gnrl_bgrwthprfm2 (q80)	0.205	0.083	0.132	0.247	0.338	0.245	0.255	0.276	0.349	0.453	0.766	**0.873**
gnrl_bgrwthprfm3 (q82)	0.156	0.046	0.172	0.246	0.301	0.228	0.302	0.342	0.325	0.386	0.774	**0.888**
gnrl_bgrwthprfm4 (q84)	0.142	0.040	0.188	0.181	0.256	0.201	0.233	0.261	0.290	0.341	0.660	**0.792**
gnrl_bgrwthprfm5 (q86)	0.203	0.154	0.179	0.239	0.330	0.225	0.285	0.233	0.314	0.438	0.645	**0.793**

Table J.2: Correlation matrix of measures.

Latent Variables and Items	iv1	iv2	iv3	iv4	iv5	iv6	iv7	iv8	iv9	itv	dv1	dv2
Government Supported Developments (iv1)	**0.824**											
Financial Resources (iv2)	0.522	**0.782**										
Academia-Industry Collaborations (iv3)	0.483	0.505	**0.793**									
Market Dynamics (iv4)	0.353	0.337	0.423	**0.879**								
Management Orientation (iv5)	0.243	0.198	0.256	0.273	**0.793**							
Organisational Culture (iv6)	0.239	0.250	0.308	0.345	0.546	**0.811**						
Technology Orientation (iv7)	0.200	0.210	0.195	0.252	0.538	0.560	**0.828**					
Alliance and Cooperation (iv8)	0.331	0.268	0.377	0.376	0.413	0.474	0.517	**0.782**				
Market Orientation (iv9)	0.243	0.198	0.248	0.366	0.513	0.626	0.514	0.504	**0.784**			
Innovation Practices (itv)	0.309	0.272	0.245	0.352	0.673	0.572	0.634	0.549	0.624	**0.766**		
Innovation Business Growth Performance (dv1)	0.245	0.132	0.199	0.297	0.506	0.403	0.507	0.493	0.503	0.686	**0.796**	
General Business Growth Performance (dv2)	0.214	0.095	0.191	0.270	0.379	0.317	0.363	0.364	0.448	0.524	0.853	**0.811**

Note: Square root of the AVE on the diagonal.

Table J.3: Outer model loadings measures.

Latent Variables and Items	Outer Loadings (Lowest – Highest)
Government Supported Developments (4 items)	0.7882-0.8828
Financial Resources (5 items)	0.7072-0.8377
Academia-Industry Collaborations (5 items)	0.6127-0.8932
Market Dynamics (3 items)	0.8353-0.9171
Management Orientation (5 items)	0.7175-0.8485
Organisational Culture (5 items)	0.7677-0.8477
Technology Orientation (5 items)	0.8088-0.8437
Alliance and Cooperation (5 items)	0.7374-0.8259
Market Orientation (5 items)	0.6844-0.8387
Innovation Practices (10 items)	0.7304-0.8016
Innovation Business Growth Performance (6 items) General Business Growth Performance (5 items)	0.6616-0.8688 0.6905-0.8880

Appendix K - Alternative Statistical Analysis

The alternative analyses of the Stepwise Multiple Linear Regression and Analysis of Variance are discussed. The Stepwise Multiple Linear Regression is another type of Multiple Linear Regression that the independent latent variables are entered at large identifying a subset of predictor variables that are best predicting the values of the independent variable and explain the most variance in the dependent variable as long as individual *F*-Change statistics > 1.0 at $p < 0.05$ (Davis 2005; Burns & Bush 2006; Manning & Munro 2006). This technique is described by Burns and Bush (2006) as a "trimming operation" to narrow down the independent latent variables combining forward and backward sequential approaches and is best used in conducting exploratory research study (Cooper & Schindler 2003; Manning & Munro 2006). The regression analysis with transformed scores to satisfy normality was conducted between nine independent latent variables and one latent variable (innovation practices). This regression analysis was to identify the most parsimonious set of predictors of innovation practices, using a set of nine potential predictors. The potential predictors, independent latent variables, comprised of government supported developments, financial resources, academic-industry collaborations, market dynamics, management orientation, organisational culture, technology orientation, alliance and cooperation, and market orientation. Under the Stepwise Multiple Linear Regression, the analysis terminated after one step with four predictors extracted, management orientation, $sr_i^2 = 0.0847$, $t = 6.522$, $p < 0.05$, market orientation, $sr_i^2 = 0.0262$, $t = 3.627$, $p < 0.05$, technology orientation, $sr_i^2 = 0.0282$, $t = 3.759$, $p < 0.05$, and alliance and cooperation, $sr_i^2 = 0.0094$, $t = 2.174$, $p < 0.05$ as shown in Table K.1. The multiple correlation coefficient ($R = 0.789$) was significantly different from zero, F (9,190) = 34.800, $p < 0.05$, and 60.5% of the variation in the dependent variable was explained by the set of independent variables ($R^2 = 0.622$, adjusted $R^2 = 0.605$). The equation of prediction produced by this analysis described the relationships between the latent variables to be:

Innovation Practices = 0.356 x Management Orientation + 0.232 x Market Orientation + 0.202 x Technology Orientation + 0.122 x Alliance and Cooperation + 0.019

Table K.1: Stepwise regression coefficients (transformation data).

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-Order	Partial	Part
1	(Constant)	0.019	0.097		0.196	0.845			
	gov_sdev n (iv1)	0.017	0.013	0.070	1.275	0.204	0.278	0.092	0.057
	fin_resrcs n (iv2)	0.013	0.014	0.050	0.882	0.379	0.256	0.064	0.039

	acdindstr_collbs n (iv3)	-0.022	0.015	-0.084	-1.448	0.149	0.209	-0.104	-0.065
	mrkt_dynmcs n (iv4)	0.008	0.014	0.030	0.565	0.573	0.313	0.041	0.025
	mgmt_orint sq (iv5)	0.356	0.055	0.373	6.522	0.000	0.674	0.428	0.291
	org_cltr sq (iv6)	0.008	0.044	0.011	0.183	0.855	0.519	0.013	0.008
	tech_orint sq (iv7)	0.202	0.054	0.225	3.759	0.000	0.626	0.263	0.168
	allnc_coorp sq (iv8)	0.122	0.056	0.125	2.174	0.031	0.520	0.156	0.097
	mrkt_orint sq (iv9)	0.232	0.064	0.223	3.627	0.000	0.607	0.254	0.162

Note: Dependent variable: innvprcts_sq.

Further, the Analysis of Variance is used to compare the mean of independent latent variables between three or more groups (Cooper & Schindler 2003; Manning & Munro 2007). The analysis describes the mean of independent latent variables for each group and tests for differences between groups (Ticehurst & Veal 2000; Tabachnick & Fidell 2001; Burns & Bush 2006). The ANOVA is conducted by calculating the *F* statistic to compute the ratio of magnitude of differences between and within groups and the degree of freedom (df) is associated with the sample size. A one-way ANOVA having transformed scores to satisfy normality was conducted between management strategic orientations (prospector, analyser, and defender) as the independent latent variable and the macro and micro-environmental determinants (government supported developments, financial resources, academic-industry collaborations, market dynamics, organisational culture, technology orientation, alliance and cooperation, and market orientation) as the dependent latent variables. Under ANOVA, the results for Levene's tests were not significant; F (2, 186) with $p < 0.05$, and thus the assumptions of homogeneity of variances were judged not to have been violated. The outcomes were found to demonstrate significant mean-rating differences between management strategic orientations. Post-hoc comparisons (Tukey HSD means comparison) found defenders to display significantly lower means ratings of micro-environmental determinants (organisational culture, technology orientation, alliance and cooperation, and market orientation) than both analysers and prospectors with significant differences from one another. The standard elements of Analysis of Variance output are represented in Table K.2.

Table K.2: Analysis of variance measures.

Macro and Micro-Environmental Variables	**Strategic Orientation (Mean & S.D.)**			*F*	**Tukey HSD Means Comparison**		
	Prospector (P)	Analyser (A)	Defender (D)		P & A	P & D	A & D
Government Supported Developments	4.73 (1.17)	4.86 (1.18)	4.60 (1.06)	0.44	n.s.	n.s.	n.s.

Financial Resources	4.38 (1.18)	4.34 (1.00)	4.36 (1.01)	0.04	n.s.	n.s.	n.s.
Academic-Industry Collaborations	5.14 (1.10)	4.97 (1.01)	4.72 (1.26)	1.19	n.s.	n.s.	n.s.
Market Dynamics	5.44 (1.05)	5.23 (1.01)	4.98 (1.28)	1.73	n.s.	n.s.	n.s.
Management Orientation	1.54 (0.26)	1.42 (0.28)	1.34 (0.37)	5.85***	**	**	n.s.
Organisational Culture	1.32 (0.36)	1.20 (0.36)	1.08 (0.44)	4.46**	*	**	n.s.
Technology Orientation	1.56 (0.31)	1.42 (0.27)	1.36 (0.26)	6.07***	***	**	n.s.
Alliance and Cooperation	1.45 (0.28)	1.45 (0.26)	1.26 (0.34)	3.35**	n.s.	**	**
Market Orientation	1.60 (0.26)	1.57 (0.25)	1.36 (0.30)	5.40***	n.s.	***	**
Total	93	81	15				

Note: * $p < 0.1$*, 0.05**, and < 0.01***, and not significant (n.s.).

Appendix L - Comments of Firms of Survey Questionnaire Open-Ended Question

Table L.1: Participant comments.

Participant Comments	Frequencies	Percentages
Government Supported Developments ▪ In this economic climate, more should be done to assist SMEs to survive and thrive. Firms are struggling or falling by the wayside. Help is needed. ▪ Government institutions lack the understanding of the life sciences industry and continue to impose irrelevant legislations that make it very difficult for us to grow. This needs to be considered within the context of the lack of understanding of research culture as a whole in the Middle East and North Africa region. ▪ All industries require good infrastructure facilities for progress. ▪ Laws and policies need to be improved and tailored in order to support SMEs to start and innovate. ▪ Visa procedures should be eased for SMEs. And visa costs are too expensive and procedures are complicated and too long, if done via government. ▪ We need more support and less expensive rentals and strange changes to laws whenever the government decides. ▪ Minimise costs and expenses upon small and medium firms to encourage them to present all creative ideas and to help them to implement these innovative ideas. ▪ Dubai is too expensive to sustain small ventures such as set-up costs, and formalities are much higher than other mature markets. We have no options and no genuine two-way partnership with the local licensing authority. ▪ Regulations for the health/biotech industry keep changing and SMEs are stuck in the middle. ▪ Dubai needs to set-up a special development program and agency to cater for the need of SMEs. Government should have a support program structure for SMEs. Small and medium-sized enterprises play important roles in the growth of any country and should not be ignored. ▪ The ecosystem for developing technology industry is lacking. ▪ IP laws must be strong and robust to protect intellectual properties. ▪ We see a lack of initiative on the part of government/agencies to support SMEs. ▪ Active support from the government would help and encourage SMEs moving forward and taking more risks. ▪ For SMEs, there are separate rules and regulations. They lack in-house and external training opportunities and offer only a limited range of products. Their cost-benefit analysis shows difficulty in following these regulations, which is implemented by large firms. Recently, IFAC issued a draft prepared by IASSB to minimise problems in following existing innovation policies. ▪ Much better if the policies are further open.	16	29.1
Financial Resources ▪ SMEs innovation can be stimulated by an urgent need to make capital accessible to businesses that can add-value and create employment in a sustainable way. ▪ Due to the last two years economic downward trend, SMEs that have capital constraints are not able to expose themselves to risk and therefore this impact its ability to invest in innovation practices. ▪ Money lending from banks to firm owners should be also open, at this time loans only for employees. ▪ All industries require good financial support from the bank to grow in the market and sales. ▪ Currently, growth is usually hampered by lack of trading due to too many requirements and restrictions from the banking communities. ▪ Lack of sound financial resources with minimum requirements is sometimes a hindrance to	9	16.4

SMEs to venture into new practices in the Dubai market. ▪ Absence of correct and audited information on market and industries is a big hindrance to research and hence to development. ▪ Support for SMEs financially is limited to the UAE nationals. I suggest supporting other firms that are owned by other nationalities in order to see growth in ICT segments. ▪ There should be easier access to credit facilities for SMEs reducing set-up operation costs, establish associations that assist new start-ups (i.e. Biz Angels) to encourage innovation, and incentives by government to entrepreneurs who come-up with innovative ideas.		
Academic-Industry Collaborations ▪ Training and education that are based and focused on research will empower to lead the region. ▪ There is no access to talented individuals and local universities do not focus on SMEs' needs, collaborate with SMEs, and promote entrepreneurship. ▪ More firms need to participate with educational institutions for research and development. There should be more focus on science from the foundation. ▪ SMEs' innovation can be stimulated by greater academic-industry interaction and technology growth to attract highly skilled professionals to the country. ▪ Innovation should be first lead by UAE nationals. They know well the market needs but need more formal knowledge on how to answer these needs for innovation. The education of the local population is the key to successful innovation. ▪ I wish we could have good access to some local research that can help in the need of the local market and to enable us to work better. ▪ Dubai seeks high-tech firms, but most research and development will be done outside the UAE. ▪ Lack of qualified knowledge workers makes outsourcing our innovation to off-shore sites. ▪ Conduct more seminars for SMEs to exchange ideas and innovation. ▪ Innovation is an integral part of development. But it needs proper research and development programs to come out with innovative products.	10	18.2
Market Dynamics ▪ There are issues in the market such as large firms harvesting and not investing, risk adverse culture, and no patience in technology. ▪ Currently, costs are high and there is not much transparency when operating in the UAE. Starting a new business or idea has become very difficult in Dubai as the market lacks transparency. ▪ This is not a market that currently supports and reinforces innovation and its innovation practices are liabilities. ▪ There is no access to accurate marketing data and the Middle Eastern way of conducting business is through personal networks and connections. ▪ No relevant data is available for the security industry in the UAE. ▪ The major constraints, which have prevented innovation growth of our business in Dubai, have been due to unsustainable market conditions. ▪ To facilitate more information access about the local market, firms, events, and research and development.	7	12.7
Organisational Culture ▪ There should be institutional innovation awards and workshops with renowned institutions. ▪ There needs to be more flexibility and freedom to allow innovators within SMEs to express their ideas and innovation within a protected and conditional framework and this framework or incubator should expect at least a 75% chance of risk associated with the business. ▪ A shift in the internal culture is required becuase innovation needs open communication, creativity, and less micro-management. ▪ SMEs need to change their attitudes and cultures towards innovation and be a bold example of	4	7.3

risks in a market changing environment and competitive ambience.		
Alliance and Cooperation ▪ Most industries are dependent on suppliers if there is delay or failure at one end, there will be a chain of effect in the operation flow. ▪ SMEs are innovative but they try best to guard their know-how and technological developments as they have to ensure their survival viability.	2	3.6
Market Orientation ▪ SMEs should consider the term globalisation. ▪ Being proactive and adhering to markets and customers' needs consistently helps businesses; SMEs innovate and grow. ▪ The most important thing for us is to keep our customers happy. Service levels in Dubai are very high. ▪ In order to have a successful business, SMEs must be aggressive and innovative and should be able to take advantage over their competitors.	4	7.3
Innovation Practices and Business Growth Performance ▪ Like any other society, innovation and sustainability will be the key driver for Dubai and its future growth. ▪ There is a lot of room for innovation and SMEs especially have to muster-up their resources to direct ideas and fund ways for developing strategies into an action plan and realise these goals. ▪ Very few firms actually invest in research. Research is a driver for innovation.	3	5.5
Total	55	100.0