

Innovation in Small and Medium Enterprises in the United Arab Emirates

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Abstract

This article focuses on innovation as the main driver of the competitiveness and market success of small and medium enterprises in the United Arab Emirates. The study overviews the still limited literature dedicated to innovation in SMEs in the UAE. It also analyzes the innovation model of small and medium enterprises in the UAE, and focuses particularly on Dubai's SMEs. The article highlights the need to strengthen the entrepreneurial culture and promote the development of innovative SMEs with high value added in the UAE.

The general purpose of this study is to contribute to the business and innovation literature on SMEs in the context of an emerging economy, namely the United Arab Emirates.

Keywords: innovation, SMEs, firm strategy, business model, UAE's economy

Jel Classification: L10, L53, M21, O310.

1. Introduction

The aim of this article is to focus on innovation as the main driver of the competitiveness and market success of small and medium enterprises in the United Arab Emirates. In particular, the study seeks to analyze the innovation model of small and medium enterprises in the UAE, along with their strengths and weaknesses in terms of innovation capabilities, with a focus on Dubai's SMEs. The general purpose is to contribute to the business and innovation literature on SMEs in the context of an emerging economy, namely the United Arab Emirates.

The United Arab Emirates is the most lucrative business market in the Arabian Gulf region and the most innovative economy among the Arab nations. The UAE is already among the 37 countries recognized by the *Global Competitiveness Report* of World Economic Forum (Schwab, 2013) as an innovation-driven economy. This means that innovation contributes to more than 30 per cent of economic activity, and knowledge has become the driver of growth¹. Although it is a hydrocarbon-rich country, the UAE government, in line with its Vision 2021, has recognized the need to transform the economy into a diversified knowledge-based one to sustain long-term economic growth and generate job opportunities for the country's young and growing population (Grant *et al.*, 2007; Schilirò, 2013). A knowledge-based economy is characterized by fast innovation (David, Foray, 2003; Schilirò, 2012), so it can be an innovation-driven economy, wherein change becomes the only true constant, and the pace of change tends to accelerate year by year. Moreover, an innovation-driven economy is not merely dependent on total expenditure on R&D, but relies also on the efficient allocation of investments and the correct innovation strategy. Strong science and technology skills as well as soft and entrepreneurial skills are essential in an innovation-driven economy for developing and distributing new products and innovative processes.

Innovation, however, comes not only from large corporations, but also from dynamic small and medium enterprises (SMEs) which can make positive and original contributions to the innovation domain. SMEs have become main actors in global markets, pursuing their special innovation strategies and determining a high share of new products (Forsman, Annala, 2011; Schilirò, 2011).

In the UAE, SMEs account for 92 per cent of the total number of companies and contribute around 50 percent of the GDP generated in the economy; in addition, as many as 200,000 UAE-based SMEs are currently providing over 85 percent of

¹El-Sokari *et al.*(2013, chap. III).

private-sector jobs, according to the UAE Ministry of Economy (2013, p.66). These firms enable the creation of skilled manpower and share expertise to reinforce innovation and strengthen the pillars of the knowledge economy. This is why it is important to focus on SMEs, understand their innovation model, and assess their innovation performance and advancements in terms of efficiency.

Therefore, this article aims at analyzing the innovation capabilities and practices of SMEs in the United Arab Emirates, paying special attention to the SMEs in Dubai, through an overview of the limited literature dedicated to the study of SMEs in this country. It also examines the recent innovation strategy decided by the UAE Government to boost innovation and favor growth. The remainder of this work is structured as follows. Section 2 discusses the concept of innovation as the driving force to compete. Section 3 looks at innovation in the small and medium enterprises of the UAE. Section 4 provides a focus on Dubai SMEs. Section 5 examines the recent government policy on innovation in the UAE. Section 6 contains the conclusions of the article.

2. Innovation as the Driving Force to Compete.

Innovation is crucial if an enterprise wants to become successful in today's highly competitive global economy. For most enterprises, innovation is, or at least should be, a priority (Cefis, Marsili, 2005). Innovation involves thinking differently and creatively to find solutions that have an impact in terms of economic and social value. Innovation is critical for creating competitive or collaborative advantage, but also for improving governance. It can redefine products, processes, and services and it involves individuals, organizations and institutions.

Joseph Schumpeter (1934, 1942) stressed that the fundamental impulse that sets and keeps the capitalistic engine in motion comes from the entrepreneur's innovative capacity. He highlighted the important role of radical innovations that transform existing markets or industries and create new ones. He was aware that innovations become effective when they can be implemented in new products, services or processes that have a commercial relevance.

Innovation is, therefore, about economics rather than technology and is a complex activity which may arise from any part of the production process, not only from the R&D labs. There is no one single best way to innovate. Innovation can be induced by users, but also societal developments rather than technological developments can take the lead. Intangible skills such as entrepreneurial ability, communications skills, adaptability, tacit knowledge, etc., contribute strongly to innovation, especially in services and in organizational innovation.

Since innovation is pursued in an uncertain environment and it is essentially an activity with uncertain outcomes, it can result from focus on systematic processes as well as serendipitous moments. Innovation requires, apart from R&D, the right leadership, culture, organizational structure and allocation of resources. Teece (1986), Chesbrough (2006) and other scholars highlight that the success of enterprises depends on their effort to optimize economic organization, business strategy, technology and innovation. However, to implement a successful innovation it is necessary to enable a wide range of complementary actions in the firm, including organizational changes and training of the workforce, marketing and design and specific business services. According to Teece (1986, 2006), innovations will only pay off if the firm owns the best complementary assets. These complementary assets shape the forward enterprise strategy². Therefore, Teece's theoretical analysis explicitly takes into account the business environment. But the business environment is constantly changing also because the evolution of technology is carrying with it the reconfiguration of many industries. Today, competitive threats often come from outside the traditional industry boundaries. In various industries – for instance, in health care or energy – technologies and distinct knowledge bases are changing and converging (Hacklin, Battistini, Von Krogh, 2013). The most dramatic example of such convergence is taking place in telecommunications, information technologies, media and entertainment ('TIME' industries). Another, more disrupting type of convergence, determined by the exponential change in technological innovation, is between the physical world and the virtual world that are merging as never before in the 'Internet of Things'. Enterprises must take this change in the environment into account and understand the factors driving convergence, since this will affect innovation strategy. At the same time, entrepreneurs must be aware that the business world is also driven by contention between the incumbents in every industry and the ascendancy of the challengers; therefore their business model becomes a strategic choice to get ahead. The right choice of the business model is crucial for firms to compete and to take advantage of innovations even if this is very difficult to achieve. Thus, an important aspect of innovation for the firm is the outline of the business model. Researchers have produced a rich and growing body of theory and empirical studies on this topic. Chesbrough and Rosenbloom (2002) clarify that a business model is a plan for the organizational and financial architecture of a business, which makes valid assumptions about the behavior of revenues and costs, potential customers and competitor behavior. David Teece (2010) explains that business models have become popular only recently. "Driving factors include the emerging knowledge economy, the growth of the Internet and e-commerce, the outsourcing

²Teece (2006, p. 1135).

and off-shoring of many business activities, and the restructuring of the financial service around the world[...]The existence of electronic computers that allow cost financial statement modeling has facilitated the exploration of alternative assumptions about revenues and costs” (Teece, 2010, p.174). A good business model allows a firm’s innovations to be transformed into commercial success (Chesbrough, 2010). Innovation in business models means that the firm must innovate in areas where the competitors do not act. Business model innovation usually consists of adding new activities, linking current activities in novel ways, and changing the party performing the activity (Amit, Zott, 2012).

As explained above, firms have become aware of the importance of being able to adapt and keep innovating to overcome intense competition and to match changing market demands. Consequently they make efforts to build up appropriate capabilities to innovate (Lawson, Samson, 2001; Brem, 2011; Ellonen, Jantunen, Kuivalainen, 2011). Innovation is the outcome of deliberate investments and strategic efforts at firm level, and firm-level heterogeneity plays a key role in explaining innovation. Not only large companies, but also small and medium firms need to seek new strategies and business models, introduce new and better products and services, consider new knowledge and technologies and build up networks to extend their technological competences (Rothwell, Zegveld, 1982; Rothwell, 1991; Terziovski, 2010; Lee *et al.*, 2010). SMEs must incorporate innovation into their activities in order to achieve long-term success. The literature on SMEs has recognized the ability of these firms to adapt their business model; moreover, it has identified numerous factors contributing to innovation such as management strategic orientation, networking, customer demand, and the internal culture. Also important is their flexibility to adjust inputs, improve technological methods and products continuously, and modify prices rather quickly according to changes in the external environment (Reid, 2007; Laforet, Tan, 2006; Whyman, Petrescu, 2013).

3. Innovation in the small and medium enterprises of the UAE.

This section seeks to focus on the features of the innovation model in the SMEs of the UAE by drawing on the data and information contained in two recent reports on innovation there.

The first report is the *GE Global Innovation Barometer* (Edelman, 2014), an important global survey on innovation involving more than 3,200 executives in 26 countries³. The UAE is one of the countries involved in this global survey. However, in particular the survey describes the multinational and global companies operating in the country, and the large State companies in sectors like energy and the environment, aerospace, transport and logistics, while it does not fully represent the attitude to innovation in small and medium enterprises. In any case, according to this report (Edelman, 2014), UAE emerges as a country with a strong awareness of and a positive attitude towards innovation. The *GE Global Innovation* report highlights that innovation is increasingly becoming a global game; thus merging and combining talents, ideas, insights and resources across the world is the only way to be successfully innovative. However, more than ever before, innovation needs to be localized to serve specific market needs (Edelman, 2014, p.23). The survey reveals that a very high percentage of executives regard innovation as a strategic priority to help drive business growth, with more than half the respondents stating that developing new business models is a promising way to boost future performance. This result, therefore, confirms the crucial role of business model innovation as the best pathway for firms to pursue innovation and create a lead in the market (Amit, Zott, 2012; Casadesus-Masanell, Ricart, 2011; Chesbrough, 2010; Teece, 2010).

The executives surveyed identify the following key drivers to innovation: collaboration, Big Data, industrial internet or ‘internet of things’⁴. Actually, innovation rarely occurs in isolation; it is a highly interactive and multidisciplinary process and increasingly involves collaboration between a growing and diverse network of stakeholders, institutions and users (OECD, 2010)⁵. Collaboration and networking are now mainstream; in particular 85% of the respondents say that collaboration with start-ups and other entrepreneurs will drive innovation success (Edelman, 2014, p.51). UAE, for instance, is one of the countries where the revenue and profit generated by collaborative innovation activities has been growing over the last year. Another key to successful innovating is to adopt emerging technologies quickly; the time factor is decisive in innovation, since it is best to get to market as quickly as possible to keep an edge on competition. Furthermore, the majority of respondents believe that innovation can originate from companies of any size and that SMEs and individuals are seen as the innovation champions and the most promising collaboration partners (Edelman, 2014, p.51). However, smaller and younger businesses suffer the most from innovating challenges such as an incapacity to scale up successful innovations to a wider international market, insufficient investment and financial support, a lack of talent/skill, difficulty in coming up with radical and stimulating ideas, difficulty in defining an effective business model to support new business ideas and make them profitable, the incapacity of the business to take risks, etc.

³The senior business executives interviewed manage large companies. The average size of the company investigated has 650 employees.

⁴Although Big Data has become a critical tool and is no longer a buzzword, in the UAE the large majority of respondents are unfamiliar with this tool.

⁵Hagedoorn (2002) has already pointed out the relevance of networks in innovation, see also Rothwell (1991) on networking and innovation in the SMEs.

(Edelman, 2014, p.43). Lastly, as regards the role of government, the executives interviewed expect governments to provide a framework to support top drivers of innovation. The top business expectations for government support are: fighting bureaucracy and cutting red tape (87%); ensuring business confidentiality and trade secrets are adequately protected (86%); aligning student curricula in the education system with the needs of business (85%) (Edelman, 2014).

The picture of the innovative behavior of firms in the UAE according to this *GE Global Innovation Barometer* (Edelman, 2014) looks fairly good but, as explained above, it is a picture that describes especially the large private companies and State companies operating in the country, rather than small and medium enterprises.

Another major report is *Entrepreneurship. An Emirati Perspective* by El-Sokari *et al.* (2013), which pays attention to the relationship between entrepreneurship and firm performance in the UAE, and specifically concerns small and medium enterprises. This report focuses on the Emirati population and builds on GEM Adult Population Survey (APS) data⁶. The survey provides a problematic picture of innovation in the Emirati owned and managed SMEs. This in-depth study of the UAE business environment analyzes the attitude to innovation among Emirati entrepreneurs. El-Sokari *et al.* (2013, p.27) explain that, given increased international competition, a key to competitive advantage for SMEs is to offer goods and services which are unique to the customers or deemed innovative. To this purpose, the survey presents the opinions of Emirati entrepreneurs on their customers' perceptions of their products and services. In 2011 more than two out of three Emiratis who own businesses over 42 months old consider that none of their customers views their products and/or services as innovative⁷. This is a high percentage and it is higher than the UAE average referring to the total population of established entrepreneurs in the UAE. Thus this result seems to show that, once a business venture is started, "Emirati entrepreneurs expend less effort on continuous improvement of products and services and maintaining a competitive advantage" (El-Sokari *et al.*, 2013, p.27).

Since high-innovative firms have the potential to become high-growth firms, the survey investigates the expectations of Emirati entrepreneurs regarding the introduction of new technologies as part of their growth strategy. The results of the survey reveal that only a small minority of Emirati entrepreneurs (12.2%) expect to use or to introduce new technologies as part of their growth strategy (El-Sokari *et al.*, 2013, p.76). The UAE GEM data also indicate low rates of innovation and a desire to copy rather than invent among the Emirati owned and managed companies; actually most offer products and services that many of their competitors also sell (El-Sokari *et al.*, 2013, p.78). Indeed, it is extremely difficult to measure innovation, due to its constantly changing nature and to the continuously changing environment. GEM, in general, associates innovation with corporate renewal and new venture creation. More specifically, in the GEM survey there are two different ways to assess innovation: product originality and the degree of business competitiveness. A consideration derived from the data shown in the survey is that Emirati entrepreneurs have minimal involvement in the high-tech sector and this may be due to a number of reasons such as the higher degree of risk and the higher level of expenses related to technological innovation (El-Sokari *et al.*, 2013, p.79).⁸

Table 1 illustrates the level of technology of products in start-ups in the UAE for the years 2006, 2007, 2009, 2011. The table distinguishes two groups of start-ups on the basis of the level of technology of their products: No/Low-Tech and Med-Tech/High Tech.

Table 1. Level of Technology of Products in Start-Ups in the UAE

| Year | No/Low-Tech | Med-Tech or High-Tech | Total |
|------|-------------|-----------------------|--------|
| 2006 | 97.0% | 3.0% | 100.0% |
| 2007 | 99.4% | 0.6% | 100.0% |
| 2009 | 99.0% | 1.0% | 100.0% |
| 2011 | 97.7% | 2.3% | 100.0% |

Source: UAE GEM data (El-Sokari *et al.*, 2013)

Table 1 shows, for the year 2011, that almost all new businesses started in the UAE had no or low technological levels, with only 2.3% being medium-tech or high-tech new ventures. This result is the second lowest rate among the innovation driven economies, and far removed from the best performing country like Norway at 14.3% (El-Sokari *et al.*, 2013, p.81).

⁶The Global Entrepreneurship Monitor (GEM) research consortium measures and compares entrepreneurial activities of working-age adults around the globe. In 2011, the GEM study conducted surveys in 54 economies in which the UAE was a country participant and benchmarked internationally as an innovative driven economy. The GEM Adult Population Survey (APS) is normally conducted among a random representative country sample of at least 2000 adults. However, in the UAE, the norm has been to incorporate an oversampling of an additional 1000 Emirati nationals to allow for a deeper analysis of the entrepreneurial landscape specifically amongst the Emirati population (El-Sokari *et al.*, 2013, pp. 9-10).

⁷In this survey, according to the GEM methodology, the rate of established entrepreneurs refers to those who have owned and managed an enterprise for more than 42 months and who have paid wages and salaries for over 42 months as well.

⁸The low involvement in high tech sectors contrasts with an IT industry (especially in Dubai) that is the most developed in the MENA region. However, many IT companies are regional sales offices of international firms, not Emirati owned SMEs.

According to the findings of this survey, the features of the innovation model of the SMEs owned and managed by Emirati entrepreneurs can be summarized in the following way: firstly, in most cases Emirati SMEs are characterized by a low level of innovation, since their products are generally not original and innovative. Secondly, since they tend to copy products and processes rather than invent or create something new, there is little effort made to continuously improve products. Lastly, Emirati SMEs specialize mainly in products with low technological levels instead of the high-tech sector. However, SMEs in the UAE often show a low level of productivity: this is mainly due to the absence of any spur to do more. What is probably lacking in these enterprises is enough exposure to competition.

A policy implication that the authors of the survey derive from their analysis is that fostering an entrepreneurial culture is a priority for the UAE, since Emiratis are less risk-oriented than citizens in other innovation-driven economies⁹. However, it is even more important to generate high-value entrepreneurs who can enhance economic growth (El-Sokari *et al.* (2013, p.81). The survey by El-Sokari *et al.* (2013, pp.47-48) also shows that the relevant obstacles to entrepreneurship in the UAE seem to be: access to finance, lack of entrepreneurial skills and complex administrative procedures. As far as access to finance is concerned, it is known that SMEs have difficulty in securing finance, especially from the banking sector. Moreover, financial markets are far from perfect and there has been a lack of SME equity financing in UAE. Thus, SMEs mainly find the capital they need through the savings and income of their entrepreneurs or their family network. To partly overcome this problem, the UAE government has provided financial resources to be allocated through organizations such as the Khalifa Fund and Dubai SME to support Emirati owned SMEs in the form of loan programs and government-backed loan guarantees. But it is also necessary to favor the development of a more efficient venture capital market, especially for innovative start-ups. However, a major factor that hinders the development of innovative entrepreneurial activities is the bankruptcy laws in force in the United Arab Emirates. These laws are still highly punitive for entrepreneurs that fail, thus discouraging riskier but often promising activities.

In conclusion, El-Sokari *et al.* (2013, p.105) suggest focusing on integrating entrepreneurship and innovation policies. Both are viewed as relevant catalysts to unlocking higher levels of economic growth, since UAE is a country in transition towards a knowledge-based economy¹⁰.

Another aspect which is very important for innovative behavior is human capital development, since today the economic and production environment is changing fast. In the UAE, nine out of ten jobs come from small and medium enterprises (SMEs); however, the potential of the SME sector is limited by the relatively large size of the government sector, and the bureaucracy that comes with it. The UAE is characterized by a public sector share of the economy that crowds out entrepreneurialism and a thriving private sector¹¹. In addition, the UAE, like other countries in the region, has high levels of youth unemployment (about 24%), since about half the population is under the age of 25. Lastly, the most highly educated members of the population, specifically women, are not making it into the workforce. The majority of university graduates in the UAE are women, which represent 70% of university graduates, yet they are not proportionately represented in employment figures (women represent only 25% of the workforce). Thus, boosting entrepreneurship and the private sector becomes a strategic move for the economy of the UAE. In this regard, El-Sokari *et al.* (2013) stress the important role of entrepreneurship education¹². They suggest that much more needs to be done to integrate entrepreneurial skills into the UAE education system, especially at University level (El-Sokari *et al.*, 2013, p.94). These authors point out that the building blocks of entrepreneurship are: creativity, innovation and problem solving (El-Sokari *et al.*, 2013, p.92). Yet, unfortunately, in the UAE there is no specific national strategy for entrepreneurship education in general¹³, despite some good initiatives at all levels (El-Sokari *et al.*, 2013, p.97).

The argument concerning the importance of human capital development for innovative behavior is also confirmed in Edelman (2014). He emphasizes that in the global market, leadership must be based on a multifaceted skill set with, in addition, an intuitive understanding of the changing economic environment, technology and talent. At present, young Emiratis must compete for jobs with people around the world, be able to master a changing set of skills and adapt to the demands of an ever-changing economy. In the current world, the growing role of ICT technologies is changing

⁹Among the Emirati population in general there is a relatively low labor force participation rate in the private sector.

¹⁰A similar conclusion is reached in the article by Al Allami, Van Horne, Huang (2013) "Technological innovation in the United Arab Emirates: process and challenges" wherein the analysis, based on a survey, shows that in the UAE what differs the innovation process is the lack of access to public industrial research centers or universities research groups who could assist local companies with applied research projects. The authors suggest to increase support and government backed initiatives for large-scale R&D processes by creating government funded applied research centers, funding opportunities for collaborative research with universities and researchers and increase support for graduate engineering and technical education for the local Emirati population.

¹¹As Pissarides (2001) has argued, in the long run the most detrimental impact of extensive government hiring is that it traps human capital in unproductive public sector jobs, thus limiting its contribution to economic growth.

¹²The report dedicates chapter V to this topic.

¹³However, the recent National Innovation Strategy in the UAE seems to partly encompass this important issue. For an analysis of the National Innovation Strategy see section 5.

production at a global level and the skills of human capital, since these technologies are key enablers of innovation. In addition, social, mobile, analytics and cloud technologies (i.e. ‘SMAC’ technologies) are reshaping business models and rendering many traditional skills obsolete. Many skills and capabilities that are relevant today will not be relevant by 2020. Job creation in the next years will be concentrated mainly in four major fields collectively known as STEM, or Science, Technology, Engineering and Mathematics¹⁴. The ‘digital natives’ are joining a multi-generational and cultural workplace at a time when many companies are realizing that their contribution and their diversity can become a strategic asset. The digitalization of commerce, for instance, could offer real opportunities to young Emirati, especially since connectivity in the UAE is very good¹⁵. This is an opportunity for young people who grow up as ‘digital natives’ and for women who are looking for more flexibility in where and how they work.

Since Information Technology today touches every facet of business in ways that traditional enterprise technology never did, the success of firms, in particular of SMEs, is achieved through the leveraging of the ICTs¹⁶. But the adoption of ICTs is strictly related to the innovative capabilities of the firms. However, as already explained, the innovative capability of the SMEs depends on the entrepreneurial culture and the overall environment, including market conditions and the regulatory framework.

4. A focus on Dubai’s SMEs

The previous section focused on innovation in the SMEs of the UAE, particularly those owned and managed by Emirati entrepreneurs. In short, it can be argued that Emirati SMEs are characterized by a low level of innovation and that Emirati SMEs specialize in products with low technological levels instead of high-tech products.

This section focuses on Dubai’s SMEs. The management literature on SMEs in Dubai is limited but growing. Al-Ansari, Pervan, Xu (2013), in particular, seek to delineate the innovative characteristics of SMEs in Dubai through a survey of 200 SMEs. Firstly, they observe that the UAE (including Dubai) has a lower share of early-stage entrepreneurial activity among innovation-driven economies, an observation in line with what emerges in El-Sokari *et al.* (2013). The business model of the SMEs in Dubai, according to Al-Ansari, Pervan, Xu (2013), is characterized by centralized organizational structures, a short-term focus, high administrative intensity and top-down and formal communication. However, the findings of the survey by Al-Ansari, Pervan, Xu (2013, pp.171-174) are very interesting, despite various limitations regarding the number of the respondents, the conceptualization of innovation and so forth¹⁷. The authors find a significant positive link between innovation and business performance. Their survey reveals that the drivers of innovations in Dubai’s SMEs are management, customers, technology and employees; moreover, quality improvement, customer value added, strategic growth, and also new business models constitute the main platforms of innovation. A surprising result is that, in the period considered in the survey (the last three years), SMEs in Dubai have made a greater number of radical innovations and fewer incremental innovations. Another finding is that innovation in new products and services is influenced externally by the nature of industry and internally by organizational culture. Economic risks, capital resources, the market, lack of skilled labor, and the nature of legislation and regulation policies are among the most relevant barriers to innovation.

Unlike the research work of Al-Ansari, Pervan, Xu (2013), the present study did not involve any specific survey on SMEs in Dubai; however, it analyzes two recent and influential reports made by the government agency Dubai SME. One is *The State of Small and Medium Enterprises in Dubai* (Dubai SME, 2014), which is the first comprehensive report on the SME sector in Dubai¹⁸. This report consists of a survey of 500 SMEs in Dubai in order to assess them by investigating various themes: degree of international orientation; prevalence of innovation; level of IT adoption; human capital development; degree of corporate governance; level of access to finance and scalability potential (Dubai SME, 2014, p.19)¹⁹. The report shows that the current state of innovation amongst Dubai SMEs is low. This result is coherent with the findings by El-Sokari *et al.* (2013) for the UAE, and is not in contradiction with the more limited survey of Al-Ansari, Pervan, Xu, (2013). The Dubai SME report distinguishes between SMEs in trade, services and

¹⁴Computer science is the most highly desired skill for data experts; recently, demand for Big Data professionals has increased more than IT roles.

¹⁵The level of ICT skills amongst the population of UAE is high compared to most Middle East countries. For instance, 99 per cent of educational establishments have computer labs. Also, the UAE has the highest mobile penetration rate in the Middle East.

¹⁶The United Arab Emirates continues to move up in the rankings of ITC at a global level, as suggested by *The Global Information Technology Report 2014* (Bilbao-Osorio *et al.*, 2014). In fact the country has reached 24th place. In particular, improvements in its ICT infrastructure and ICT uptake by individuals have led to greater economic impact and thus a rise in the rankings.

¹⁷For a detailed analysis of the limitations in the survey see Al-Ansari, Pervan, Xu (2013, p.174).

¹⁸The Dubai SME report (2014) offers a statistical snapshot of the structure of Dubai’s SME sector, followed by a detailed analysis of the economic and business performance of the SMEs operating in the Emirate of Dubai. The state and characteristics of SMEs in Dubai have been assessed on the basis of a survey conducted on a sample of 500 SMEs across the Manufacturing, Trading and Services sectors. The government agency Dubai SME, which developed this report, operates to enhance the overall business environment in order to make it more conducive for SMEs in Dubai to thrive and grow.

¹⁹The scale of the survey ranges from Low to High. Low refers to orientation on the specific theme indicated by up to 20% of the surveyed respondents. High refers to orientation on the specific theme indicated by more than 40% of the respondents (Dubai SME, 2014, p.30).

manufacturing and reveals that SMEs in the services sector tend to innovate less, whilst SMEs in the manufacturing sector have the highest orientation to innovation. In addition, micro and small firms tend to be less innovative compared to medium firms, which is a result in line with other international economies.

SMEs are the backbone of Dubai's economy, representing 95% of all establishments in the Emirate; they are primarily responsible for driving job creation, innovation, exports and new business models. SME businesses, in fact, account for 42% of the workforce and contribute around 40% to the total value added generated in Dubai's economy (Dubai SME, 2014, p.4). Among SMEs, micro-firms account for 72% of the overall businesses in Dubai, followed by small firms that account for 18% of the business count, and by medium-sized firms which represent 5% of the business count. Trade and service sectors are the key pillars of Dubai's economy. Dubai has the vocation to be an international service economy and a trade hub. Foreign trade is a key driver for Dubai's economic growth. At present, the trading sector accounts for the majority of SMEs in Dubai (57%), followed by the services sector (35%) and subsequently followed by the manufacturing sector (8%) (Dubai SME, 2014, p.23). The Emirate has become a global village with 90% of the population coming from all countries in the world. Dubai is less oriented towards R&D activities, due partly to the shortage of Emirati researchers and partly to the fact that skilled expatriates do not stay for a long time in the country, as R&D activities require stability and a long-term perspective. Dubai is increasingly focused on finance, tourism, shopping, real estate development, exports and re-exports (Schilirò, 2013).

To assess whether Dubai's SMEs have a focus on innovation and R&D in their business, the respondents of the survey were asked about: the allocation of an annual budget for R&D; the implementation of innovation in the business at a product and/or process level; key objective/ motivation for implementing innovation. The key findings are the following: a small percentage (8%) of the survey respondents indicated that they maintain an annual budget for R&D and product development; only 13% of the survey respondents indicated that they have implemented some level of innovation either in terms of product innovation or process enhancement/improvement; the major prevalence of innovation amongst Dubai SMEs is at the product/service level (42% of the total prevalence of innovation), as compared to innovation within internal processes (30%) and distribution and delivery formats (28%); the key/objective of investing/implementing innovation in business, as elicited by the majority of respondents, is to create competitive advantage through product/service differentiation (38% of the SMEs indicated product/service differentiation as the key objective for implementing innovation in business)²⁰. In Dubai, like other countries (e.g. New Zealand, UK, Malaysia), a higher proportion of manufacturing SMEs (at 29%) have implemented some level of innovation within their business, as compared to services (at 16%) and trading (at 4%). Lastly, the survey shows that innovative SMEs are more internationally oriented as compared to non-innovative SMEs; a higher prevalence of innovation is observed amongst exporting businesses (75%), vis-à-vis non-exporting SMEs (48%) (Dubai SME report, 2014, p.35). Actually, in a small market knowledge economy, like the UAE, innovation and technology can be key to increasing exports and the sale of intellectual property. The survey also investigated the level of IT adoption amongst the Dubai SMEs, since it is related to innovation. The overall result is that the degree of orientation regarding IT adoption is moderate²¹. Instead, there is a high degree of international orientation of SMEs in the Dubai survey and the enterprises show a strong focus towards exports. In addition, the report highlights that SMEs in Dubai which are more internationalized tend to be more innovative and have a higher rate of IT adoption. The relationship between internationalization and innovation has often been demonstrated in the empirical literature of SMEs (Kafouros, Buckley, Sharp, et al., 2008; Bratti, Felice, 2012; Altomonte *et al.*, 2013; Halilem, Amara, Landry, 2014)²². SMEs in Dubai, according to the report, seem to confirm this important relationship.

Table 2. Summarizes the State and Characteristics of Dubai's SMEs, by adopting the scale: Low-Moderate-High.

| International Orientation of SMEs | High |
|--|-----------------|
| Orientation towards Innovation among SMEs | Low |
| IT Adoption among SMEs | Moderate |
| Focus on Human Capital Development by SMEs | Moderate |
| Access to Finance for SMEs | Moderate |
| Scalability Potential of SMEs | Low |
| Orientation towards Corporate Governance among SMEs | Low |

Source: Dubai SME (2014).

²⁰The percentage of 13% referring to product development is much lower than other international economies (such as New Zealand, Malaysia, the UK and the UE).

²¹Approximately 21% of the total survey respondents indicated use of advanced IT systems within their business operations. For more figures and details, Dubai SME report (2014, p.37).

²²Italian medium-sized multinational enterprises show the same relation (Schilirò, 2011; Musca, Schilirò, 2013).

Table 3. Summarizes the Sector-Wise Orientation of Dubai's SMEs towards Specific Themes.

| Themes | Sectors | | |
|---|-----------------|-----------------|-----------------|
| | Manufacturing | Services | Trading |
| Degree of International Orientation of SMEs | <i>Moderate</i> | <i>Low</i> | <i>High</i> |
| Prevalence of Innovation amongst SMEs | <i>High</i> | <i>Moderate</i> | <i>Low</i> |
| Level of IT Adoption amongst SMEs | <i>Moderate</i> | <i>High</i> | <i>Low</i> |
| Extent of Human Capital | <i>Moderate</i> | <i>High</i> | <i>Low</i> |
| Development amongst SMEs | | | |
| Degree of Corporate Governance | <i>High</i> | <i>Moderate</i> | <i>Moderate</i> |
| Orientation of SMEs | | | |
| Access to Finance | <i>Moderate</i> | <i>Low</i> | <i>High</i> |
| Scalability Potential of SMEs | <i>Moderate</i> | <i>Moderate</i> | <i>Moderate</i> |

Source: Dubai SME (2014).

In Table 3 the sector in which the proportion of SMEs indicating a positive response is observed to be the highest has been marked as 'High' and conversely the sector with the lowest proportion of SMEs indicating a positive response has been marked 'Low'.

The second report by the government agency Dubai SME, complementary to that just examined, is *The State of Small and Medium Enterprises in Dubai. Case Studies* (Dubai SME, 2013), which concerns ten actual case studies relating to the following themes: international orientation, innovation, IT adoption, human capital development, corporate governance. These case studies focused on companies that ranked top in the Dubai SME 100 ranking²³. As far as international orientation is concerned, the focus is on two enterprises (Dubai SME, 2013, pp. 3-12). The first is *Intercoil*, a medium-sized company with 350 employees and three main manufacturing divisions – polyurethane foam, furniture and mattresses – located in Dubai. In the last ten years, the company has evolved from being a domestic market oriented company by changing its strategy and aiming at the international markets. At present, *Intercoil* has eight distribution centers across seven countries. During its transformation, the share of exports in its total revenues has grown from less than 10% in 2000 to 40-45% in 2012. In order to become more competitive, the company has constantly striven to upgrade its products through incorporation of customer feedback and introduction of technological advancements. In addition, the company has also focused extensively on continuous R&D to launch innovative products, because of the strong link between innovation and international competitiveness. However, the company aims to augment its manufacturing capability through capacity expansion, improvement in production technologies and further automation of its manufacturing processes.

The second enterprise is *EnerPlastics*, a leading exporter of color and additive master batches in the UAE. Currently, the company's products are exported to 32 countries across the MENA, European, and other regions. The company has adopted a distributor-centric model outside the UAE rather than focusing on setting up its own offices. One feature of the *EnerPlastics* business model is that the company is able to provide high quality technical support to its customers in the GCC region, something that is not offered by international manufacturers. In about ten years, the share of international markets in its total revenues has increased from 20% to 70%. The company managed to maintain an annual growth rate of 10% of its revenue after the global financial crisis. Lastly, *EnerPlastics* has pursued important product innovation through R&D in collaboration with a French university.

These two cases regarding enterprises with a strong international orientation confirm the view in the literature (e.g. Schilirò, 2011; Altomonte *et al.*, 2013; Halilem, Amara, Landry, 2014) that internationalization and innovation are two strictly related business strategies. In fact, access to the international market is important because best practice requires a scale of production larger than the domestic market can provide for national producers. Competing as part of the world economy is thus an important way of gaining access to scale and also of being pushed to innovate. Finally, the two cases show that a more close and efficient relationship with customers is important for being successful in foreign markets²⁴.

The theme of innovation is analyzed through other two case studies (Dubai SME, 2013, pp.13-24). The first company is

²³Dubai SME 100 identifies the top-performing SMEs in Dubai to support them in their growth into larger and internationally oriented companies. The objective of Dubai SME 100 is to inspire willing and able SMEs that have the potential to be world-class enterprises, to invest in innovation and people, and to sustain growth.

²⁴See Musca, Schilirò(2013).

MicroAutomation, pioneers in the field of R&D and the manufacturing of power protection and power management in the UAE with about 100 employees. The company has constantly evolved and innovated its products based on market feedback. Also, the company continues to focus on R&D to constantly improve the quality and functionality of its products (around 30% of the company's annual profits are allocated to R&D). Its knowledge center is in Belgium (since 2010) in order to leverage the research being conducted within leading universities in the country. *MicroAutomation* has invested not only in R&D for its products, but also in the development of its brand image. Pursuing its innovation strategy, the company has also focused strongly on internationalization. In fact, more than 80% of the company's sales are from exports. A continuous interest in developing innovative and intelligent power-related systems continues to be a key strategic focus area for the company.

The second company is *E-Home Automation*, a major firm in the field of automation solutions for residential and commercial properties in the UAE. The true innovation of this company was to create its own range of hardware and software that provided a single interface for the end user. Currently, the company derives the majority of its revenues from outside the UAE. *E-Home Automation* aims to focus its efforts and investments on technology enhancement and product development, rather than distribution of its products.

Both these companies have a business model based on technology improvement, product development, business growth, focus on international markets and a close relationship with clients²⁵.

The two case studies concerning IT adoption (namely, *Propertyfinder.ae* and *SamTech Middle East*) (Dubai SME, 2013, pp. 25-32), confirm that innovative technologies and the adoption of IT solutions are able to open up new markets, boost company growth, and increase efficiency and productivity in various sectors of the economy.

The crucial role of human capital development is proven by the other two case studies (*OnTime* and *Ethos Consultancy*) (Dubai SME, 2013, pp. 33-44). In particular, *OnTime* has changed its business model, thanks to its well-trained and well-motivated staff who are able to provide a high level of customer service.

Although the cases cited above show SMEs that have capacity for innovation, internationalization and that are successful in the markets, yet all these companies face several difficulties and challenges. Among these are the access to bank finance, the availability of manpower (in particular, qualified workers and professionals), and the inadequacy of technological infrastructures.

5. Government Policy on Innovation in the UAE

Since innovation is the key to success for any company (Porter, Stern, 2001), this analysis highlights the need to strengthen the entrepreneurial culture, and promote the development of innovative SMEs with high value added in the UAE²⁶. Following the seminal book by Peter Drucker (1985), *Innovation and Entrepreneurship*, the recent literature has deepened the relationship between innovation and entrepreneurship (Brazeal, Herbert, 1999; Bessant, Tidd, 2007; Brem, 2011; Zhao, 2005), since an entrepreneur is essentially one that tries to beat his or her competitors with new ideas that are implemented in new businesses (Schumpeter, 1934). Hence, the modern entrepreneur is a multifunctional individual able to adapt to and develop new technologies, innovations, and businesses amid a wider environment of change and uncertainty.

This study shows that UAE businesses, especially small and medium enterprises, need innovation. Despite many cases of Emirati SMEs successfully innovating and competing in the global markets, most firms have a low level of innovation while they operate in traditional sectors and still have a moderate level of internationalization, despite the fact that competing in the world economy is an important way of being pushed to innovate. However, to innovate SMEs need to reconsider their business model. In addition, the overall environment and the regulatory framework are essential to making innovation possible. Thus, SMEs need Government support.

The UAE Government has demonstrated a will and has the funds to invest in infrastructure, human capital and job creation, and to foster innovation and growth. Significant investments have already been made in key industries, such as oil/gas services, semiconductor, aerospace, clean tech, and ICT in line with its vision to be a leading knowledge-based economy (El-Sokari et al., 2013). The Government has also been committed to favoring innovation determining the main goals of its innovation policy²⁷. The recent National Innovation Strategy launched in October 2014 by Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE, with a focus on seven sectors – renewable energy, transport, education, health, technology, water and space – is a further important step aimed at the

²⁵This business model is in many aspects similar to the business model of Italian medium-sized enterprises (Schilirò, 2011).

²⁶The conclusions of the report of El Sokari et al. (2013) are in this direction.

²⁷The Department of Economic Development has recently established a Council of Competitiveness (COAD) in Abu Dhabi. COAD contributes to creating a sustainable business environment conducive to innovation and productivity, which encourages investment and the success of business projects in the emirate.

innovation policy. According to this strategy, innovation today is driven by effective institutions, strong policies, specialized skills and an economy where all sectors work together to discover new ways to conduct business. Indeed, the strategy goes in the right direction of strengthening the innovation capability of the UAE economy and of its companies, including SMEs. It is a primary tool to achieve Vision 2021 and an engine for the growth of distinctive skills and capabilities across the nation²⁸. Already the most innovative Arab nation, the UAE aims to be among the most innovative nations in the world. The first phase of the Innovation Strategy encompasses 30 national initiatives to be completed within three years including new legislation, innovation incubators, investment in specialized skills, private-sector incentives, international research partnerships, and an innovation drive within government. The strategy works along four parallel tracks. The first track will anchor a stimulating environment for innovation in the form of supportive institutions and laws. The second track will develop government innovation by institutionalizing innovative practices with the support of an integrated system of modern tools. The third track will encourage private sector innovation by stimulating companies to establish innovation and scientific research centers, to adopt new technologies, and to develop innovative products and services. The fourth track will qualify individuals with highly innovative skills by concentrating on science, technology, engineering and mathematics, including the creation of educational material for schools and universities. Regarding particularly this last track, there is a strong need to improve the investment in education in the UAE, especially in technical subjects and vocational training. It is not a question of money, since spending on education in the country is among the highest in the developing world per capita. Rather it's a question of measurable outcomes. The private sector can also have a role by helping the government to identify what practical skills are needed on-the-job, and by offering strong and structured apprenticeship or internship programs²⁹. Later in November 2014, the UAE Federal Cabinet of Ministers met to approve the designation of 2015 as the Year of Innovation in a plan to make the UAE a world innovative leader. At the same time, the Prime Minister directed the formation the National Innovation Committee (NIC) which will oversee the UAE's efforts to become one of the world's most innovative countries within seven years. The committee includes a number of federal government entities to monitor the implementation of the national innovation strategy.

More recently, in February 2015, a seven-point scheme was launched by the Government to make innovation the driving force in schools and universities, taking inspiration from the experience of South Korea, a successful innovation-driven economy. According to this scheme robot laboratories will be set up in schools. As second step, the study curriculum will be overhauled to place innovation at its core. The third step will make innovation a basic criterion in assessing schools. The fourth initiative will be an annual exhibition for innovation, with the participation of university students and school pupils, in cooperation with the private sector. The fifth initiative will establish innovation incubators for university students and other young people, initially supported by the Government until the ideas are concrete and compete on the market. The sixth step will encourage teachers to discover new talent and the possible innovators of the future. The final initiative will establish training camps for innovators featuring intensive training programs under experts and specialists. All these initiatives will have UAE Government funding of about 1.2 billion USD.

Undoubtedly, this innovation scheme concerning schools and universities and the National Innovation Strategy are crucial to boost innovation among people and enterprises in the UAE, but like any innovation strategy it must be assessed in the long run. In fact innovation is a strategic long-term process of which short-term results might not be visible, making it difficult to show results. However, what is important is to implement effectively the innovation strategy.

In conclusion, as Sheikh Mohammed bin Rashid Al Maktoum stated in presenting the National Innovation Strategy, "A flexible and creative economy based on a national culture of innovation is the fastest and most sustainable way to reinforce the UAE's competitiveness on a global level."

6. Conclusions

The UAE is a country with high potential, wherein SMEs can play a primary role. Porter and Stern (2001, p.28) point out that a company's competitiveness depends on its innovativeness at the global frontier. The present contribution has focused on innovation as the main driver of market success of small and medium enterprises in the United Arab

²⁸Announced in 2005 by President Sheikh Khalifa bin Zayed Al Nahyan, the UAE Vision 2021 is aimed at improving the competitiveness of the national economy, led by Emiratis. The strategy seeks to make the UAE one of the world's best countries by 2020.

²⁹As a concrete step towards the transformation towards an innovation and knowledge based ecosystem, Sheikh Al Maktoum issued Law No. 15 for the Year 2014 entitled the "Creative Community Law in the Emirate of Dubai" setting the legal basis for the establishment of two new projects, an "Innovation Hub" and a "Creative Community", in the Dubai Technology and Media Free Zone (known as TECOM Free Zone). The new law opens the door for innovation-based companies operating in certain activities defined under the law to benefit from the 100% ownership, tax free and other benefits regulated by the TECOM Free Zone.

Emirates. The main purpose of this study has been to contribute to the business and innovation literature on SMEs in the UAE. Part of the limited literature concerning SME innovation in the UAE has been examined. Some relevant observations and propositions concerning innovation have been drawn from the data and information available on SMEs in the UAE.

In the last decade the evolution of technology has changed the innovation landscape. The world is becoming more competitive every single day, leaving behind anyone who is not able to keep up with the pace. Since the arrival of the internet, the power of innovation has been partly transferred from production to demand, i.e. to customers. Also the convergence of different technologies and distinct knowledge-bases is disrupting many industries (Hacklin, Battistini, Von Krogh, 2013). SMEs in the UAE must become aware of this changing scenario and act accordingly.

A first important proposition that can be derived from the analysis conducted in this study is that innovation and entrepreneurship must be put at center stage. A second proposition is that innovation is first and foremost about culture and mindset. Entrepreneurs who are involved in innovation must understand their role as enablers of innovative ideas and behaviors. Thus, an effort must be made in the UAE to enhance and spread the culture of innovation among companies and SMEs in particular; however the recent National Innovation Strategy is a major step in this direction. Thirdly, innovation is not a question of company dimensions. The discriminating factor for innovation is not whether the company is small or large, but whether it is open or closed to innovation and innovative practices, and, through innovation, to being connected to the world. There are good examples of SMEs which are successfully innovating in the UAE and becoming global players in their markets, although many SMEs in the UAE still have a low propensity to innovate. Thus, SMEs in the UAE have a great potential for exploiting innovation and the UAE Government will support them also through the National Innovation Strategy.

To sum up, SMEs must prioritize innovation, change their business models, and adapt to a changing environment, but to favor this process they must become more internationalized, upgrade the quality of their human capital, adopt more IT solutions, and improve their corporate governance (Dubai SME, 2013).

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