Shifting Wealth II in Chinese economy. The effect of the horizontal technology spillover for SMEs for international growth

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1. Introduction

1.1. Small and medium-sized enterprises and their challenges in emerging economies

Small and medium-sized enterprises (SMEs) constitute the backbone of local economies and the engine of global economic growth. In emerging economies, where countries experience rapid economic growth with rising income and buying power, SMEs play a vital role in enhancing employment levels, and economic and social development (Brunswicker and Vanhaverbeke, 2015) and in emerging markets (Wu et al., 2016; Yi and Kafouros, 2013; Zhang and Tao, 2012), acting as pioneer in the digital transformational word.

It has been widely recognised that local SMEs can get advantages from multinational enterprises spillover. However, studies on the horizontal technology spillover between SMEs are scarce. In fact, there is a need to explore the effect of horizontal technology spillover on SMEs for international growth. Therefore, the research offers quantitative metrics such as technology upgrading, knowledge spillover, and technology transfer to explore this effect in the Chinese market. Especially, the empirical research is conducted on a sample of 80 SMEs in Beijing from technology intensive industry.

The current socio-economic environment is heavily influenced by the emergence and rapid change of new technologies, from mobile devices to social media to virtual, augmented and mixed reality. These technologies -and the inexpensive access to information that they facilitate, offer a wide range of opportunities for SMEs to innovate (Miles et al., 2000; Redoli et al., 2008). Thus, digitisation, the internet and high-speed data networks become the main driving forces behind knowledge-based strategies for SMEs to address many operational issues (Noori and Lee, 2006). In fact, given the wide range of applications of information technologies in different fields by SMEs, the sector has been considered the most innovative-oriented businesses in both developed countries (Bougrain and Haudeville, 2002; Brunswicker and Vanhaverbeke, 2015) and in emerging markets, acting as pioneer in the digital transformational word.

However, despite the broad range of support programmes and policies available worldwide, SMEs are often unable to realise their development today.
potential to benefit from current developments in the information and communication technologies arena and to adapt to new business environment as they are constantly in need to seek strategies to deal with domestic and global challenges in their efforts to successfully enter and remain in the global economy (Audretsch and Belitski, 2013). This is particularly relevant for emerging economies which, different from developed countries, do not enjoy a stable domestic institutional entrepreneurial environment (Volchek et al., 2014). In emerging economies, organisations of all types often need to cope with challenges such as raising technology costs, shortened product lifecycles and the underlying processes determined by current technological developments. This instability makes it an imperative for SMEs to continuously innovate to have effective marketing responses in place, meet the expected performance criteria and produce goods that meet international standards (Gomez and Simpson, 2007). This relationship works both ways, as an innovative and proactive SME sector can heavily influence emerging markets by helping innovation themes successfully evolve (Kocak et al., 2017; Weber and Schaper-Rinkel, 2017). That is, innovation and competitiveness are not only a requirement but a precondition for SMEs to effectively contribute to growth in emerging economies when dealing with dynamic conditions in the current business environment (Ale Ebrahim et al., 2010).

1.2. The importance of external technology research and development efforts for SMEs in emerging economies

In dealing with the challenges previously outlined, SMEs within emerging economies can potentially benefit from the technology research and development efforts of other firms in the same industry and often located in the same territory, without having to share the cost of such developments. Cultural and geographical proximity often play a significant role in this process - referred to as technology spillover, when firms in emerging economies acquire from developments in leading firms coming from advanced economies. However, there are also cases where SMEs have developed effective and efficient horizontal technology spillovers with SMEs based in a different country (Yifei and Peilel, 2017).

Despite the increasing importance of SMEs in emerging economies, there has been limited attention by research and practice communities to the relationship between SMEs and technology developments in emerging markets (Chatzoglou and Chatzoudes, 2016; Fisher and Pry, 1971; Mbuyisa and Leonard, 2017; Ongori and Migiro, 2010). In particular, the technological benefits for international growth of SMEs that come from the research and development efforts of other small and medium enterprises in the same industry and most often located in the same territory within emerging economies have been overlooked in the recent literature.

1.3. The purpose and scope of this research

This research has been set out to better understand how technology knowledge and related developments generated or acquired by SMEs in emerging economies can help other SMEs within the same context define the strategies that would enable them to deal with domestic and global challenges and thus successfully enter and remain in the global economy. Our efforts are driven by theoretical developments in areas such as technology upgrading, knowledge spillover, technology transfer, and international growth. These quantitative metrics related to such concepts have been explored in the context of Beijing, capital of the People’s Republic of China, where the digital evolution has dramatically changed the way to do business.

To achieve our aim, a sample of 80 SMEs from technology-intensive industry in Beijing were investigated to critically interrogate how digital, social and transformational technologies impact SMEs’ competitiveness and ability to produce points of digital convergence that connect, co-create and drive local SMEs to international growth. Via structural equation modelling (SEM), the research studies the extent to which the horizontal technology spillover is currently having a positive impact on the international growth of local SMEs in Beijing, driven by technology upgrading, knowledge spillover, and technology transfer. The analysis results in a multilinear factor relationship model, which becomes a key contribution to the existing body of knowledge on this subject. The second major contribution made by this research to the understanding of the impact of technology spillover on SMEs’ international growth.

The quantitative metrics related to technology upgrading, knowledge spillover, and technology transfer become our major contribution to the understanding of the impact of technology spillover on SMEs’ international growth. Such metrics enable the evaluation of this phenomenon and the creation of new national and international collaborations. Additionally, a multilinear factor relationship model that emerged as a result of our analysis becomes an additional contribution to the existing body of knowledge on this subject.

The remainder of this paper is organised as follows: in Section 2 current developments in the areas of international growth and technology spillover effect are explored in the context of SMEs in emerging economies, as the key theories that drive our research. The hypotheses of our research are also developed in Section 2 as part of the analysis of theoretical developments. The methods used for data collection and analysis, along with the research design are described in Section 3, with focus on the key concepts of horizontal technology spillover between SMEs, knowledge spillover, technology upgrading, technology transfer, and international growth. The results of the data analysis are presented in Section 4, followed by Section 5 where the key contributions of the research are discussed along with the final remarks.

2. Literature review and development of hypotheses

2.1. SMEs and international growth

Entrepreneurs and their decisions are influenced by the information they receive from their external environment. Volchek et al. (2014) argue that such information along with the knowledge existing within the SMEs shape entrepreneurial schemas which lead to strategic decisions to pursue a certain firm-level action such as innovation- or internationalisation-based growth (Hekkert et al., 2007; Kiss et al., 2012).

In the digital era, enterprises tend to internationalise to exploit new markets and increase their revenue streams by collaborating with local enterprise (Scuotto et al., 2017b, 2017c). SMEs operating in an unfavourable home-country institutional environment such as those of emerging economies could be especially prone to venturing abroad to look for better conditions for doing business (Boisot and Meyer, 2008).

As noted by Volchek et al. (2014), internationalisation- or international growth, as a strategy of a firm has its theoretical underpinnings in the growth theories of the firm developed by Penrose (1959) and Ansoff (1965). Penrose (1959) emphasised that unused knowledge and other resources in the firm create the potential to achieve economies-of-scale, in contrast with economies-of-scale, by means of diversification. Ansoff (1957), in turn, suggested that diversification is highly affected by the external aspects of the business environment, such as long-term economic and political trends, and various types of contingencies, such as technological breakthroughs, economic recession, industry competition, changes of political regime and institutional framework, most of which resonate with the dynamics of the global business context and the characteristics of emerging economies.

Although SMEs’ internationalisation theory still lacks the research related to growth theory, the literature shows that a combination of the firm’s excess resources and capabilities and favourable conditions in the external environment make diversification a desirable growth strategy. This, in turn, relates new product development to foreign market expansion under the contemporary conditions of economic globalisation (Volchek et al., 2014). Despite the current active interest in
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