The Role of Open Innovation Networks on Entrepreneurial Financial Capital: A South African Perspective

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An Integrative Research Project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements of the degree of Master of Business Administration.

November 7th, 2018

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Abstract

The purpose of this study was to investigate the capacity of open innovation networks to improve access to finance for SMEs and stimulate innovative entrepreneurship in a way that supports profitability and job creation. The study was deductive and qualitative in nature involving a group of entrepreneurs and lending specialists through face-to-face semi-structured interviews to probe four research propositions.

The findings of the study varied across each of the four propositions due to the low maturity level of the local ecosystem and its high reliance on ESD networks. The study found the network to strongly facilitate more equity financing than loan finance, including some grant funding, DFI funding, and repeat funding as well.

However, there was also significant replicative innovation in the network resulting in low profitability for SMEs and poor job creation. This outcome was largely attributable to the high focus on regulatory compliance in the ESD networks and generally low levels of funding activity.

The study faced two salient limitations relating to the underdeveloped nature of networks and venture capital market in South Africa suggesting a strong implication to invest in both in the future. Two original insights emerged, *viz*. (i) the imperative to prioritise investment in the networks ahead of investment in the venture capital market to better support early-stage entrepreneurs, and (ii) the need to leverage the J12 incentives in the tax code into the ESD networks to build a platform for corporate venture capital to support R&D and innovation.

Key words:

Entrepreneurship, Open Innovation Networks, Entrepreneurial Finance, Enterprise Supplier Development, Financial Sustainability

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Declaration

I herewith declare that this Research Project is my own work. It is submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements of the degree of Master of Business Administration.

It has not be submitted before for any degree or examination at any other University.

I further confirm that I have formally received the required and necessary ethical clearance and consent to conduct this Research Project.

_____ _____

Lungelo C. Nomvalo **Date**

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Glossary of Terms

SME:	Small Medium Enterprise
NDP:	National Development Plan
NPC:	National Planning Commission
IIP:	Industrial Innovation Performance
EIP:	Economic Innovation Performance
GEM Report:	Global Entrepreneurship Monitor Report
GCI:	Global Competitiveness Index
OECD:	Organisation for Economic Cooperation and Development
EFC:	Entrepreneurial Framework Conditions
TEA:	Total Entrepreneurship Activity
LERNER INDEX:	Discretionary Mark-up On Price On The Marginal Cost of Products
HERFINDAHL INDEX:	Measure of Structural Industry Concentration

1 Chapter 1: Definition of the Research Problem and Purpose

1.1 Introduction and the Purpose of the Research Study

The purpose of this study is to explore the role of both strategic and embedded open innovation networks on entrepreneurial financial capital for small and medium enterprises (SMEs).

More specifically, the study probes whether open innovation networks influence the nature and quantum of financial capital that is available to SMEs that operate within a network ecosystem, and whether these firms are able to access financial capital early in the venture creation process. In addition, the study examines the role of networks on the financial sustainability and innovation practices of these networked firms.

1.2 Background to the Research Problem

The National Development Plan (NDP) is a collaborative plan developed by the National Planning Commission (NPC) that calibrates the economic vision for 2030 and sets the growth path to transform the domestic economy and build new capabilities for competitiveness. The NDP envisages a reduction in the number of people who live in extreme poverty below the lower-bound poverty line of R419 per person per month from 39% to zero (National Planning Commission, 2010).

The NDP also sets the required economic growth target at 6%, aspires to reduce the formal unemployment rate from its high level of 25% in 2010, and aims to decrease inequality as measured by the Gini co-efficient from 0.66 to 0.6 by 2030. To achieve this, the NDP envisions the SME sector as contributing between 80% and 90% to GDP growth and as generating 90% of the 11 million new jobs (FinFind, 2018; National Planning Commission, 2010; Statistics South Africa, 2017).

However, according to Statistics South Africa (2017), the country is grappling with the triple quagmire of rising poverty levels, increasing unemployment, and deepening inequality, with economic growth averaging only 1.2%. In 2017 more than 50% of the population lived below the upper-bound poverty line of R992 per person per month, while inequality reached its highest level of 0.67 on the Gini scale, with unemployment averaging about 27.1%.

Of particular concern, the 2017 Global Entrepreneurship Monitor Report for South Africa, (GEM Report) also shows a decline in entrepreneurial intention from 15.4% to 10.1% over the last two years, with 67% of small businesses shutting down due to their having problems in

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accessing finance (OECD Economic Surveys, 2017; Statistics South Africa, 2017).

The GEM Report also shows a 25% drop to 6.9% for total entrepreneurial activity (TEA) from 2015 for South Africa – ranked 28th out of 32 efficiency-driven economies - in comparison with the African region, which is at a level 2.5 times higher. Coupled with the high failure rate of SMEs, entrepreneurs in South Africa face pressing challenges of business sustainability (OECD Economic Surveys, 2017). The table below shows a comparison using some selected indicators over time from the GEM Report between South Africa versus the African region and other efficiency-driven economies[1].

Table 1: Entrepreneurial Indicators

Key Indicator from GEM Report	2015	2017	Africa Region	Efficiency-driven Economies
Entrepreneurial Intention	10.9%	10.1%	41.6%	26.0%
Total Early-Stage Entrepreneurial Activity (TEA)	9.2%	6.9%	17.6%	14.0%
Business Discontinuance	4.8%	4.5%	7.3%	
Innovation Levels	51.9%	47.9%	42.6%	

The table above also shows relatively high levels of business discontinuance, largely due to the poor financial sustainability of SMEs. In addition, there is a downward trend from 2015 with respect to the measured innovation levels, although early-stage entrepreneurs in South Africa are still ahead of their counterparts in Africa on this metric. This trend presents a challenge for an efficiency-driven country such as South Africa that aspires to advance to the next stage of economic development.

The innovation challenge extends beyond the entrepreneurial sector. The 2016-17 WEF Global Competitiveness Index (GCI) Report ranks South Africa 61st (previously 47th) out of 137 countries with an overall lower score of 4.32. The country ranks 39th/139 overall for innovation, due to a strong capacity for innovation (ranked 30th) and robust university-industry collaboration (ranked 29th), and company spending on R&D (ranked 32nd). However, the quality of scientific research institutions and government procurement of advanced technology products, ranked 42nd/137 and 57th/137 respectively, are a constraint to the innovation value

[1] The Global Competitiveness Index classifies South Africa as an efficiency-driven economy.

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chain (World Economic Forum, 2015).

Research supports the proposition that both entrepreneurship and innovation are critical to economic growth and job creation (Kasseeah, 2016; Zeng, Xie & Tam, 2010). However, South Africa does not perform as well as other efficiency-driven economies on both counts in spite of its having an abundance of financial resources.

1.3 Research Problem

The emphasis of the NDP on a development trajectory that is conducive to economic growth to alleviate poverty and reduce unemployment magnifies the challenges arising from the present low entrepreneurial activity and innovation activity. South Africa has an elaborate policy and institutional framework to support entrepreneurship and innovation but performs poorly relative to the African region as a whole and other efficiency-driven economies (National Planning Commission, 2010; OECD Economic Surveys, 2017; Statistics South Africa, 2017; World Economic Forum, 2015).

The following table shows the Entrepreneurial Framework Conditions (EFC) to illustrate the degree of support that is available to entrepreneurs in the local ecosystem. The scores show a trend from 2015 and a comparison with efficiency-driven economies:

Table 2: Selected EFC Scores (1 = insufficient)

EFC	RSA - 2015	RSA - 2016	Africa Region (Average)	Efficiency Economies (Average)	GEM Average
Financial Environment & Support	4.0	4.3	3.6	4.0	4.5
Government Policies: Entrepreneurship Priority	4.1	4.8	4.4	3.9	4.5
Government Entrepreneurship Programmes	3.0	3.0	4.0	3.9	4.8
Research and Development Transfer	3.4	3.3	2.9	3.5	4.4
Access to Commercial & Professional Infrastructure	4.9	5.1	4.8	4.6	5.2

Although the local ecosystem appears to function well when measured against the African region and other efficiency-driven economies including the GEM global average, the current

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low levels of entrepreneurial performance do not match the amount of support that is available in the entrepreneurship ecosystem.

Simultaneously, the GCI also shows that the local economy does well in the efficiency of the goods market, ranking favourably at 57th/137. However, the country registers mediocre performance in the sub-categories that support entrepreneurship such as the "number of procedures to start a business" (ranked 70th/137) and "time to start a business" (ranked 125th/137) (OECD Economic Surveys, 2017; World Economic Forum, 2015). We have also observed the mediocre quality of scientific research institutions and government procurement of advanced technology products, ranked 42nd/137 and 57th/137 respectively. The table below shows the domestic ecosystem for entrepreneurship and innovation when measured against some selected efficiency-driven economies:

Table 3: Global Competitiveness Index (Rank is out of 137 countries)

Goods Market Efficiency & Innovation	South Africa	Malaysia	Hungary	Chile
Number of Procedures to Start a Business	70	104	53	70
Time to Start a Business	125	94	40	25
Quality of Scientific Research Institutions	42	24	23	43
Government Procurement of Advanced Technology Products	57	4	43	110

Research suggests a positive relationship between the open innovation practice and innovation outcomes (Carvalho & Sugano, 2016; Huggins & Thompson, 2017; Inauen & Schenker-Wicki, 2012). However, there is inconclusive evidence of a definitive relationship between open innovation and firm performance (Choi, 2014; Tomlinson & Fai, 2013).

Elfring, Tom & Hulsink (2003) show that open networks ties have the capacity to improve success in the three stages of venture creation of opportunity identification, securing resources, and obtaining legitimacy in the market. The findings of Elfring *et al* (2003) also comport with the conclusions of other scholars who have shown that network ties are also conducive to network benefits of either radical or incremental innovation, subject to the network structure (Huggins & Thompson, 2017). It is therefore logical that the research problem should examine the role of open innovation networks in financial capital to gain better

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insights into the observed poor outcomes in spite of the abundant support available in the local ecosystem.

The low TEA and high failure rate of SMEs in South Africa contrast with the country's possession of an abundance of the necessary material conditions and DFIs for entrepreneurs to succeed. GEM estimates that, given the current GDP per capita of US$5 260, TEA for South Africa should be in excess of 20% instead of the current pedestrian 6.9% (OECD Economic Surveys, 2017; Statistics South Africa, 2017). Of particular concern is the finding that 67% of early-stage businesses that fail cite financial distress as the main reason for shutting down (FinFind, 2018; OECD Economic Surveys, 2017).

Research in both developing and developed economies regarding access to finance for small firms confirms that this is a problem facing all entrepreneurs. Despite the existence of a well-developed financial sector, access to finance remains a constraint for entrepreneurs in South Africa. It is the result of the imposition of prohibitive criteria such as the requirement of collateral and financial track record from financial institutions to access funding. The table below shows the global competitiveness indicators for South Africa's financial markets:

Table 4: Global Competitiveness Index: Financial Markets (Ranked 44th/137 countries)

Financial Markets Development	Ranking	Commentary
Availability of Financial Services	70	In general, entrepreneurs operate in a liquid market that can theoretically meet their needs …
Affordability of Financial Services	125	… however, accessibility for early-stage entrepreneurs is restricted due to the high costs of bank financing, which work best for bigger firms.
Ease of Access to Loans	57	Similarly, there is also good access to loan finance, which is a cheaper form of financing, albeit structured better for bigger corporates, and …
Financing through Local Equity Market	42	… a significant market for the more expensive equity financing which is also more suited to established players in the market than small firms.
Venture Capital Availability	66	South Africa has a developing venture capital market that is not yet sufficiently mature to meet the needs of the SME sector.

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Due to the above constraints, a 2016 study of start-ups reports the following funding mix, with 87% self-funded, 8% family, 2% angel funding, 2% bank loans, and 1% development finance institutions. This presents a significant challenge, given that studies show that SMEs that receive funding contribute to economic growth and create jobs (FinFind, 2018; OECD Economic Surveys, 2017).

It is therefore imperative for this study to determine whether open innovation networks are conducive to early-stage entrepreneurs gaining greater access to funding from the financial services sector.

1.4 Significance of the Study – Theoretical and Business Rationale

A comprehensive review of the academic literature on the open innovation domain shows a preponderance of research output at the level of the firm that investigates the impact of openness on innovation performance and profitability. However, there is a paucity of research output on open innovation to deepen our understanding of the impact of open innovation networks beyond the firm-centric level (Chesbrough H, 2017; Huggins & Thompson, 2017; Randhawa, Wilden & Hohberger, 2016). This study has the potential to add to this growing body of knowledge at a higher level of analysis of open innovation and deepen our understanding of the impact of the networks on entrepreneurial financial capital.

In addition, this research study links open innovation thinking with a different discipline, *viz.* that of entrepreneurship, to bring a rich theory base into this new but rapidly advancing domain of innovation. The linking of open innovation to other management disciplines such as leadership, strategy, and economics with entrepreneurship is also a gap in the established research agenda (Randhawa *et al.*, 2016).

Third, a literature review on open innovation conducted by West and Bogers (2014) reveals a strong extant focus on leveraging the R&D aspects of open innovation with minimal research output on the commercialisation part of the value chain. The dearth of understanding of what commercialisation capabilities organisations should have is a gap in academic research and a challenge for the business case for open innovation (Chesbrough H, 2017; Gay, 2014; Huggins & Thompson, 2017).

We argue that a focus on innovative entrepreneurship, in comparison with replicative innovation, requires different commercialisation capabilities to generate a return on investment. This study is therefore instrumental to contributing to our understanding of which forms of entrepreneurial innovation outputs are more congruent with open innovation networks, and therefore how best to commercialise these outputs.

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Lastly, the limited literature on open innovation networks examines its relationship with macro constructs such as innovation and profitability (Huggins & Thompson, 2017; Randhawa *et al.,* 2016; Zeng *et al.*, 2010). However, there is a gap in the literature pertaining to the impact of these networks on micro-constructs such as entrepreneurial financial capital. In the context of a resource-rich efficiency-driven country such as South Africa, an understanding of the theoretical nexus between network benefits and entrepreneurial finance can support a business case to invest and develop these networks further in the future. This is the primary focus of this study.

The business rationale for this study stems from the 2030 vision articulated in the NDP, which is the stimulation of economic growth to address the seemingly intractable triple challenge of poverty, unemployment, and inequality. The SME has the capacity to play a vital role by tapping into the network benefits that may exist to deepen access to finance from formal institutions, which in turn has been shown to contribute to economic growth and job creation (FinFind, 2018; Hartini, 2017; Kasseeah, 2016).

The low levels of entrepreneurial activity in South Africa, 6.9% compared with 17.6% for the Africa region as a whole (OECD Economic Surveys, 2017) constrain the job-creation potential of the economy. Concurrently, the relatively low ranking for certain innovation sub-categories (World Economic Forum, 2015) puts a premium on open innovation networks to bolster innovation outcomes and create jobs (Huggins & Thompson, 2017; Inauen & Schenker-Wicki, 2012; Lee, Park, Yoon & Park, 2010).

This study can also contribute to defining the appropriate open innovation network architecture that not only optimises the inherent value in the current ecosystem, but also serves to mitigate the risk associated with the entrepreneurial effort for both aspiring entrants and lenders. A diminished risk profile for entrepreneurship is important to reducing the cost of finance for startups, and increasing and diversifying the available funding to improve the financial sustainability of SMEs.

1.5 Scope of the Study

This study focuses only on small and medium firms that operate in an open innovation network, in order to understand the ability of these firms to better and more quickly access different forms of funding from the formal financial sector. The immediate objective of the research is therefore to determine the role played by these networks to improve the firms' access to finance. This is an important research aim, as firms that have financing have been shown to possess the capacity to innovate, create jobs and remain sustainable over the long

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term (Chemmanur, Krishnan & Nandy, 2011; de Paulo, De Oliveira & Porto, 2017; Elfring, Tom & Hulsink, 2003; Herciu, 2017a; Huggins & Thompson, 2017).

The ultimate intention of this study is to build a case for the country to invest in stronger networks that bolster collaboration and improve innovation outcomes, and consequently the sustainability of firms.

1.6 Conclusion

This chapter has introduced this dissertation, which explores the role that open innovation networks play in improving access to entrepreneurial finance for SMEs, and ultimately financial sustainability. The premise of the research stems from the vision articulated in the NDP to leverage entrepreneurship and innovation to drive economic growth in a way that addresses the triple challenges of poverty, unemployment and inequality.

We have also introduced some literature that shows that open innovation networks promote better innovation outcomes for small firms (de Paulo *et al.,* 2017; Greco, Grimaldi & Cricelli, 2016; Huggins & Thompson, 2017; West & Bogers, 2014; Zeng *et al.*, 2010). However, our analysis has also showed that there is little entrepreneurial activity and a high failure rate of small firms in South Africa in spite of the existence of a supportive entrepreneurial ecosystem (Herrinngton, 2017; OECD Economic Surveys, 2017; Report, Schwab & Forum, 2018). In addition, the sharp contrast in terms of entrepreneurial outcomes between the local ecosystem and the African region as a whole and other efficiency-driven economies was described as being of particular concern.

This chapter has also covered the importance of funding for SMEs in their quest to be innovative and create jobs sustainably. However, our review of the local financial market has showed a market that is more attuned to the needs of bigger, more established players, thereby resulting in limited access to funding for start-ups and a disproportionate share of entrepreneurs choosing to bootstrap their own businesses (FinFind, 2018).

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2 Chapter 2: Literature Review

2.1 Introduction

This chapter examines the body of scholarly work and theory based on open innovation (OI) networks to gain deeper insights into the role these networks play in the ability of SMEs to access entrepreneurial finance based on the four research propositions under investigation. The review leverages the theoretical frameworks that underpin the domains of entrepreneurship and innovation to properly contextualise the open innovation literature for the environment of SMEs.

Entrepreneurship is widely recognised as a critical mechanism for social inclusion, economic empowerment and global competitiveness, due to the high degree of innovation and strong positive correlation that exists between entrepreneurship and job creation (Accenture, 2015; Verreynne & Kastelle, 2012; Zeng *et al.,* 2010). In developing economies, entrepreneurship works to facilitate the inclusion of marginalised groups such as youth and women in the formal economy, whereas in developed economies entrepreneurship has the effect of expanding the innovation frontier (Afzal, Sulong, Dutta & Mansur, 2018; Jones *et al.,* 2018; Kasseeah, 2016; Ukanwa, Xiong & Anderson, 2017).

Innovation is found in the literature to be a key mediating variable for SME performance (de Paulo, De Oliveira & Porto, 2017; Greco, Grimaldi & Cricelli, 2016; Ramirez-Portilla, Cagno & Brown, 2017; Verbano, Crema & Venturini, 2015). Consequently, innovation provides the theoretical paradigm for the discussion on the literature on open innovation networks. The discussion on entrepreneurial finance focusses on the scholarly work in this field pertinent to the research propositions, to build the foundation for this research study.

The chapter concludes with some broad observations that set the academic parameters for the rest of the research project.

2.2 Entrepreneurship

Over the last century, the theory and practice of entrepreneurship has advanced significantly from Schumpeter's Theory of Economic Development (Kasseeah, 2016) that argues that the entrepreneur is the creative impetus for economic growth ("the hero") to a plethora of theories, from Ajzen's Theory of Planned Behaviour (Jones *et al.*, 2018) to Human Capital Theory (Ayer, 2010; Jainarain, 2013; Mamabolo, 2016). There is now a greater emphasis than ever before on policy and institutions and their role in fostering entrepreneurial intention and success (Afzal *et al.*, 2018).

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Entrepreneurship draws from a diversity of academic disciplines such as economics, psychology, business strategy, corporate finance, and organisation design and transformation, and is an important business domain to advance the understanding of open innovation networks. While scholars may differ on the precise definition of entrepreneurship, there is consensus that entrepreneurial activity involves a number of themes such as self-efficacy, risk taking, innovation, venture creation and owner-management, amongst others (Gartner, 1990). Other scholars have also emphasised the role of entrepreneurship in bridging theory (ideas) and practice (value creation) in an economy through innovation that disrupts the market with new products and services or incremental process innovation (Christensen, 2015).

2.3 Innovation

Kasseeah (2016) and Wonglimpiyarat (2016) identify the role of innovation as fundamental to economic growth and development. Additionally, in his seminal work, The Structure of Scientific Revolutions, Thomas Kuhn demonstrates the role of ideas in ushering in new theoretical paradigms that question old dogmas and change the rules of the game. These innovations in science have the capacity to launch technological revolutions and new Kondratiev cycles of accelerated economic growth and development.

Chesbrough HW and Appleyard (2007) define innovation as an invention that has been commercialised successfully. Incremental innovation typically refers to minor improvements to a product or process, whereas radical innovation often involves new products and processes that appeal to new customer segments, and may even redefine the rules of engagement in a target market (Christensen, 2015). Baregheh, Rowley and Sambrook (2009, p.13) provide an “integrative definition of innovation as a multi-stage process whereby organisations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace.”

While the literature on innovation has focused on large firms, a growing body of scholarly work that focusses on SMEs shows a positive relationship between innovation and SME performance (Barnard & Chaminade, 2017; Greco *et al.*, 2016; Verreynne & Kastelle, 2012). Research shows that firms that innovate achieve greater profitability than those firms that do not have an innovation mindset. However, the dynamics of the relationship between innovation and profitability remain the subject of debate and scrutiny (Tomlinson & Fai, 2013; Verbano *et al*., 2015; Verreynne & Kastelle, 2012).

Many scholars have argued that the innovation process in SMEs takes the form of a project

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life cycle with a finite value chain (Marcelino Sádaba, Pérez-Ezcurdia, Echeverría-Lazcano & Benito Amurrio, 2016) that may include different archetypes of innovation ranging from disruptive innovation to blowback innovation and reverse innovation (Von Zedtwitz, Corsi, Søberg & Frega, 2015). This finding of project-based innovation is consistent with the relatively high propensity for out-bound innovation amongst SMEs to leverage commercialisation opportunities.

Other studies have shown that greater innovation breadth contributes to increased revenue. That is, firms that have a broader range of innovation objectives report even higher revenue growth, whereas deepening ties with fewer collaborators also results in increased profitability (Greco et al., 2016). However, SMEs have limited resources, which lack restricts the development of a wide range of innovations. This suggests that SMEs stand to benefit from innovation and should develop network relationships along the value chain to address this constraint in order to gain the innovation dividend.

2.3.1 Open Innovation

There is pressure on companies to improve their innovation performance to achieve differentiation in a competitive market and deliver shareholder value, with strong evidence that innovators consistently outperform non-innovators. However, sustainable economic performance that yields positive financial returns also demands the efficient commercialisation of opportunities (de Paulo *et al.*, 2017; Greco *et al.*, 2016; Inauen & Schenker-Wicki, 2012).

Recent literature also suggests that SMEs are not exempt from these pressures, and do indeed achieve financial and non-financial performance benefits when they engage in innovation activities (Lee *et al.*, 2010; Ramirez-Portilla *et al.*, 2017; Verreynne & Kastelle, 2012). Due to the resource constraints that face SMEs, the theoretical domain of open innovation is gaining momentum as SMEs collaborate across the value chain to create and capture value, and ultimately overcome the “liability of smallness” (Gay, 2014; Marcolin, Vezzetti & Montagna, 2017; Tucci, Chesbrough, Piller & West, 2016).

Chesbrough HW and Crowther (2006) and Chesbrough HW and Appleyard (2007) define open innovation as a practice that perceives value from the use of both external and internal ideas and routes to market to improve innovation (Marcolin *et al.*, 2017; Tucci *et al.*, 2016). Others have defined open innovation as “the use of purposive inflows and outflows of knowledge to accelerate internal innovation and expand the markets for the external use of innovation, respectively” (Verbano *et al.*, 2015, p.1053).

The open innovation paradigm fundamentally requires that firms move beyond traditional

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closed business models and render firm boundaries permeable to take advantage of both outside-in and inside-out open innovation (Abramo *et al*., 2013; Chesbrough, 2012, 2014; Inauen & Schenker-Wicki, 2012). The literature distinguishes between outside-in innovation – also known as in-bound innovation, and inside-out innovation – or simply, out-bound innovation.

Outside-in open innovation refers to the search for and adoption of ideas and technologies outside the boundaries of the firm (de Paulo *et al.*, 2017; Tucci *et al.*, 2016). Outside-in innovation is more suited to large organisations, as they have the capacity to buy innovation and rapidly commercialise it. As demonstrated earlier, the genesis of open innovation amongst large firms has traditionally favoured in-bound innovation (Cheng & Shiu, 2015; Hochleitner, Arbussà & Coenders, 2017).

In contrast, inside-out innovation is concerned with commercialisation and marketing strategies for new innovations, and is more suited to smaller entrepreneurial firms (Chesbrough, 2014; Chesbrough HW & Appleyard, 2007; Gay, 2014). The review work done by West and Bogers (2014) shows that inside-out innovation is less understood than outside-in innovation due to the predominance of the literature focusing on the latter. This arguably suggests a limited understanding of how SMEs can benefit from inside-out innovation.

A significant development in the open innovation literature relates to the observed overall curvilinear relationship between OI strategies and innovation performance, where certain increased OI activities may lead to diminishing returns with respect to innovation outcomes (de Paulo *et al.*, 2017; Greco *et al.*, 2016; West & Bogers, 2014). Accordingly, the OI research literature has produced reliable evidence on the effect of both external search breadth (SB)[2] and external search depth (SD)[3] on both types of innovation performance, namely, industrial innovation performance (IIP)[4] and economic-financial innovation performance (EIP)[5] (Abramo *et al.,* 2013; Greco *et al*., 2016; West & Bogers, 2014).

IIP includes novel radical product innovations or incremental innovations that improve the process efficiency of the firm. Some scholars also use patent counts in their research as a proxy for IIP (Greco *et al.*, 2016; Inauen & Schenker-Wicki, 2012). Similarly, measures such

[2] External search breadth (SB) is defined in the literature as the number and variety of partners used by a firm to leverage external knowledge to drive its innovation agenda.

[3] External search depth (SD) is defined as the extent to which a firm draws deeply from its partners to leverage external knowledge to drive its innovation agenda.

[4] IIP alludes to new products and/or services without regard to their market success.

[5] EIP refers to the financial impact of new innovations.

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as the share of revenue from innovations are used to determine the extent of EIP. To this end, Greco *et al.* (2016) successfully show that more external search breadth (SB) has a curvilinear relationship with both IIP and EIP archetypes of innovations, while more external search depth does not exhibit declining marginal returns with respect to both innovation archetypes.

These findings in the literature have significant implications for the OI strategies adopted by SMEs, given their significant resource constraints, in order to minimise effort and costs. It is evident from the literature that SMEs are best served by limiting their innovation objectives and utilising fewer search channels for external knowledge. However, SMEs can deepen the extent to which they draw knowledge from their partners without the drawback of diminishing marginal returns to both IIP and EIP outcomes (Greco *et al.*, 2016). In both scenarios, SMEs can benefit from adopting "network-based" strategies while being cognisant of the diminishing marginal returns of these efforts.

The open innovation method fundamentally reshapes the relationship between the firm and its ecosystem as it renders the borders of its business model porous and susceptible to external influences. However, Linus' Law suggests that the benefits of this method far outweigh this significant risk (de Paulo *et al.,* 2017; Tucci *et al.,* 2016). The principle of openness stresses the premium of collaboration and pooling knowledge to augment innovation performance based on the basic assumption that the innovation and commercialisation functions can be effectively domiciled in different firms or regions (Marcolin *et al*., 2017; Ramirez-Portilla *et al*., 2017).

2.3.2 Open Innovation Networks

There is considerable literature on the role played by network ties in augmenting overall firm performance, and specifically innovation performance amongst SMEs. These network ties reduce the "liability of smallness" and confer the benefits associated with large firms on resource-constrained smaller firms (Chesbrough H, 2017; Chesbrough HW & Appleyard, 2007; Tomlinson & Fai, 2013; Tucci *et al.*, 2016). The literature on open innovation defines these relationships as collaborative network ties in an innovation eco-system that allows firms to benefit from openness (Elfring, Tom & Hulsink, 2003; Lee *et al.*, 2010; Zeng *et al.*, 2010).

With regard to these network ties, scholars distinguish between strategic (vertical) ties that connect small firms and large firms on the one hand, and embedded (horizontal) ties between small firms on the other hand (Huggins & Thompson, 2017). Elfring, Tom & Hulsink (2003), Gay (2014) and Zeng, Xie & Tam (2010) demonstrate in various studies that open networks improve the innovation performance of firms with strategic ties predominantly enabling radical innovation while embedded ties encourage incremental innovation (Huggins & Thompson,

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2017).

This panoply of research evidence postulates a triple-helix ecosystem comprising a collaboration network of innovation spirals that link research institutions, government, and business in reciprocal and symbiotic relationships (Afzal *et al*., 2018; Marcolin *et al.*, 2017). The findings of Laursen and Salter (2006) of a substitution effect whereby the dyadic relationship between large firms and small firms results in each focusing on a different part of the innovation value chain also strengthens the case for collaborative networks to minimise duplication.

However, there is also evidence that the network effect may lead to a high degree of the success of open innovation only amongst large firms with a corresponding high failure rate amongst small firms (von Briel & Recker, 2017). This effect derives mainly from the network dynamic, where strategic ties contribute to radical innovation (Huggins & Thompson, 2017) in contrast to embedded ties between SMEs having no significant impact on innovation outcomes due to fears of technology leakage (Tomlinson & Fai, 2013).

Gay (2014) argues that a firm's relative position within a network structure influences its resource flows and ultimately its performance. This is an important observation that has implications for small firms in the network and requires deliberate care to ensure the existence of reciprocal linkages between large and small firms, and the appropriate external search breadth (SB) to guard against diminishing marginal returns. It is preferred that small firms collaborate with fewer knowledge-intensive partners with more frequent interactions as part of their network strategy (Greco *et al.*, 2016)

Several studies conducted to assess the preferred model of cooperation for SMEs corroborate the propensity of SMEs to engage in vertical ties with suppliers and customers to achieve product innovation (Abramo *et al.,* 2013; Tomlinson & Fai, 2013; Verbano *et al*., 2015). Horizontal ties with government agencies, research institutions or universities do not improve innovation outcomes (Greco *et al.*, 2016; Ramirez-Portilla *et al*., 2017; Zeng *et al.,* 2010).

During the exploration phase of the innovation process, SMEs prefer to purchase technology from research institutions and universities to guard against undue adverse exposure to larger firms. However, these SMEs also tend to partner with larger firms during the exploitation phase through supplier-customer contracts to access a wider commercialisation network, strategic alliances with other SMEs, or outsourcing agreements (Greco *et al.,* 2016; Verbano *et al.*, 2015).

Much of our research confirms that there are greater benefits for SMEs to deepen vertical

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partnerships with customers and suppliers along the supply chain (Tomlinson & Fai, 2013; Verbano *et al.*, 2015; Zeng *et al.*, 2010) with limited benefits from horizontal relationships with research institutions, etc. on innovation outcomes (Greco *et al*., 2016; Ramirez-Portilla *et al.,* 2017). This finding also has positive implications for the practice of enterprise supplier development in South Africa as a lever and platform to create these strategic ties between large firms and small firms in the network to improve innovation outcomes.

Our review of the literature also attests to the beneficial impact to SMEs of the social capital embedded in the network of venture capitalists that invariably accrues to the innovation ecosystem. These benefits include the crowdfunding effect of venture capital that results in additional investment in SMEs, complementary and knowledge assets, access to customers, and influencing the innovation strategies of the investee firms. This is a significant link between networks and the ability of SMEs to access early-stage to mid-stage funding from corporate venture capitalists to improve IIP and EIP innovation outcomes that lead to financial sustainability (Drover *et al.,* 2017).

In summary, there is evidence that open networks support innovation in SMEs through strategic ties, and to a lesser extent through embedded ties (Gay, 2014; Huggins & Thompson, 2017; Zeng *et al.,* 2010). As demonstrated in the literature, improved innovation outcomes also play a positive mediating role on SME performance primarily through enhanced IIP and EIP from deeper supplier-customer contracts that increase the share of revenue of new innovations (Verbano *et al.*, 2015; Verreynne & Kastelle, 2012).

Furthermore, the network effect of corporate venture capitalists appears to be a reliable contributor to innovation and financial sustainability with strong implications for funding strategies for SMEs that still require investigation (Drover *et al.*, 2017). More importantly, our preliminary observation of the role of corporate venture capitalists points towards a greater bias of the network effect for both the R&D and commercialisation stages of the innovation process (Greco *et al.*, 2016; Ramirez-Portilla *et al.*, 2017; Verbano *et al.*, 2015; Verreynne & Kastelle, 2012).

2.4 Entrepreneurial Financial Capital

Block *et al.* (2018) define financial capital as an asset that is convertible to money for the purpose of investment to generate a profit. Financial capital in the entrepreneurial domain takes many forms, ranging from angel networks and crowdfunding to venture capital (Block *et al.*, 2018; Drover *et al.*, 2017; Herciu, 2017b). Herciu (2017) argues that different investor groups generally focus on specific success factors with angel funders valuing strategic

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readiness and affective commitment, whereas private equity funders place a premium on the economic viability of the venture.

Financial capital is a critical input into the entrepreneurial process and its lack is typically the predominant contributor to the demise of a business venture. However, financial capital alone is not sufficient to ensure the success of a venturing exercise (Block *et al.*, 2018; Drover *et al.*, 2017). Human capital and social capital – both beyond the ambit of this study - are some of the additional positive mediating factors that determine the nature and extent of the financial capital that entrepreneurs are able to access in the market (Alexy, Block, Sandner & Ter Wal, 2012; Leyden, Link & Siegel, 2014; Matlala, 2013).

Our literature review on entrepreneurial finance has examined the role of both equity financing and debt funding in the venture creation process, and finds a strong bias towards equity financing for ventures in established markets such as the United States and Europe (Drover *et al.,* 2017; Proimos & Murray, 2006). In the domestic market, a FinFind (2018) study of SME access to finance shows a high degree of bootstrapping at 87% and limited bank and equity funding. This constraint exists in spite of a burgeoning, albeit small venture capital market that grew at 137% in 2017 and the emergence of digital lending channels such as Lulalend and Merchant Capital (FinFind, 2018).

The research has made a consistent finding in regard to the paucity of debt funding for the SME sector, confirming an inverse relationship between the concentration of the banking sector and the magnitude of SME financing. In South Africa, 90% of assets are concentrated in six banks (FinFind, 2018) resulting in lower levels of SME (FinFind, 2018; Ryan, O'Toole, & McCann, 2014).

Ryan *et al.* (2014) also show that the propagation mechanism that results in lower SME financing in concentrated markets can be better explained by the "market power hypothesis", where the exercise of market power, as measured by the Lerner Index,[6] results in the undersupply of loans and high interest rates. The Lerner Index has been shown to be a more consistent explanatory variable of limited loan finance for SMEs than the Herfindahl Index[7] (HHI) (Carb-Valverde, Rodrguez-Fernndez & Udell, 2009).

Equally, our study has not found evidence in the literature to support the "information hypothesis", which posits that market power enables banks to waive the risk premium associated with information asymmetries in the short term in favour of economic rents from

6 The Lerner Index is a measure of the discretionary mark-up on price on the marginal cost. The mark-up represents economic rents that are associated with concentrated, monopolistic markets.
7 The HHI is a measure of structural concentration in an industry.

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information advantages in the long term when lending to relatively risky or opaque SMEs (Petersen & Rajan, 1995; Ryan *et al*., 2014). Coupled with the conclusions of the FinFind (2018) study that referenced high transaction costs and failure rates, and a lack of collateral, experience and financial literacy, we have found that bank finance for SMEs continues to significantly account for the low levels of external financing for SMEs (Beck, Demirgüç-Kunt & Maksimovic, 2008; Block *et al.*, 2018; Kersten, Harms, Liket & Maas, 2017).

As a result, our study did not expect that open networks would have the capacity to mitigate information asymmetries resulting in significantly more loan financing for SMEs above the average level of 10.4% of the total loan book in November 2017 (Block *et al.,* 2018; FinFind, 2018; Kersten *et al.,* 2017). On this basis, the literature review was intentionally limited to studying equity financing in greater detail than bank loan financing.

Finally, the literature on entrepreneurial finance shows empirical evidence of new players and financing instruments in the venture capital space in addition to traditional sources. These new sources include crowdfunding platforms and accelerators that are becoming more popular (Block *et al.*, 2018). Arguably, small firms will increasingly use a portfolio of financing instruments in the future instead of relying on one source of funding. This area of entrepreneurial finance still requires further study but presents opportunities for SMEs to access more funding much earlier in the venture creation process than was historically possible (Drover *et al.,* 2017; Proimos & Murray, 2006).

2.4.1 Funding Portfolio – Nature and Mix

Although SMEs face the significant challenge of low bank financing in the venture creation process (Block *et al.*, 2018; FinFind, 2018; Kersten *et al.*, 2017; Ryan *et al.*, 2014), there is a plethora of equity financing instruments that mitigate this challenge, including other emerging non-traditional funding sources (Block *et al.*, 2018; Drover *et al*., 2017; Proimos & Murray, 2006). This diverse portfolio of equity funding instruments ranges from angel funding and venture capital (VC) to corporate venture capital (CVC). In addition, crowdfunding and accelerators have become a growing part of the portfolio mix of equity funding for SMEs (Drover *et al.*, 2017).

Block *et al*. (2018) argue that each funding instrument is driven by the commercial motives and risk appetite of the investor group. For example, angel investors are typically former entrepreneurs who provide their own capital to start-ups. Angels invest either as individuals or more recently as groups in the early stages of venture creation to bring both financial and non-financial support such as expertise to new ventures (Alexy *et al.*, 2012; Drover *et al.*, 2017; Kliphuis, 2011; Leyden *et al.*, 2014; Matlala, 2013).

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In general, angel funding does not require the same level of financial probity and rigorous contracting and formal control as other forms of funding. Instead, angels evaluate their appetite for investing in certain ventures based on the affective commitment, enthusiasm and skill base of the venture owners (Alexy *et al.,* 2012; Block *et al.*, 2018; Drover *et al.,* 2017). The short-term nature of the focus of angel funding and the high risk appetite of angels can derive significant benefits from the network effect that alleviates information asymmetries. The estimated low level of angel funding of 2% in South Africa may also benefit from greater coordination and social capital in the network (FinFind, 2018).

In contrast, venture capital funding takes a more formal approach to investing in ventures, often prioritising mid-stage to late-stage investing in a select portfolio of companies. Venture capital funding is the best known form of entrepreneurial equity funding but still funds only a small number of ventures based on a targeted return on investment on behalf of investors and a finite time horizon that culminates either in outright acquisition or initial public offering (IPO) as an exit mechanism (Block *et al.,* 2018; Drover *et al*., 2017). In South Africa the venture capital market is relatively under-developed and under-capitalised, but it grew at 137% in 2017 according to the South African Venture Capitalist Association (SAVCA) (FinFind, 2018; Herrinngton, 2017).

As demonstrated by Alexy *et al.* (2012), Drover *et al.* (2017), Kliphuis (2011), Leyden *et al.* (2014) and Matlala (2013), venture capitalists also offer non-financial contributions such as professional guidance and management support to the ventures they fund to improve their sustainability and secure a successful exit strategy from the investment (Block *et al*., 2018).

However, other related studies in the literature underscore the role of inferential logic used by venture capitalists in selecting their venture portfolios, with a strong predilection for the entrepreneur's preparedness or expertise in lieu of entrepreneurial passion (Chemmanur & Fulghieri, 2014; Drover *et al.*, 2017; Proimos & Murray, 2006). Thus, the more experienced and/or prestigious the venture management team, the less likely that there will be venture capitalist intermediation activities such as professional guidance and management control in the venture capitalist-entrepreneur dyadic relationship.

Our literature study also revealed that a matching principle is used by venture capitalists in the selection process, whereby high-growth start-ups receive the highest preference. The result of this bias to mitigate the risk of adverse selection and moral hazard in start-ups is the observed strong evidence of revenue growth (Chemmanur *et al.*, 2011) but not always concomitant profitability (Puri & Zarutskie, 2012) as a result of venture capitalist intermediation activities (Drover *et al.,* 2017).

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The different *modi operandi* of both angel investors and venture capitalists present synergy opportunities that can be enhanced and formalised through better collaboration in networks to add greater value to SMEs. For example, the “intimate” knowledge of early stage and low-growth ventures that angels possess can prove indispensable to venture capitalists to expand their funded portfolios and add greater value earlier in the process. Similarly, venture capitalists can harness the higher risk appetite of angels to mitigate their risk, should they opt to fund in the early stage of the entrepreneurial process.

Corporate venture capital (CVC) represents another interesting form and source of entrepreneurial finance whereby established companies make equity investments in business ventures. These investments generally target early-stage to mid-stage ventures in line with corporate objectives while bringing capital, a wealth of complementary assets, and access to customer networks (Drover *et al.*, 2017). More significantly, the literature links CVC to the fundamental shift in the focus of R&D strategies of big companies to the collaboration mindset of open innovation (Chemmanur & Fulghieri, 2014; Marcolin *et al.*, 2017; Proimos & Murray, 2006; Wonglimpiyarat, 2016).

Related literature on corporate venture capital also shows that corporate investments in business ventures are driven by innovation objectives as much as by financial motives. Scholars also show that corporates use CVC units as institutional mechanisms to connect with outside innovation (Chemmanur & Fulghieri, 2014). Indeed, CVC has been linked with high R&D spending, patents, etc. (Abramo *et al.*, 2013; Drover *et al.*, 2017; Huggins & Thompson, 2017). Like angel funding and venture capital, early-stage ventures arguably have the opportunity to benefit from the positive mediating effect of open networks on CVC. Indeed, CVC may be most responsive to the power of networks that link big companies and SMEs in an innovation ecosystem.

Lastly, both crowdfunding and accelerators are now attracting significant attention in the equity finance literature. Crowdfunding involves a large group of online investors who invest small amounts of capital for a fraction of ownership, whereas accelerators provide a combination of mentorship, office space and some capital (Block *et al*., 2018; Drover *et al.*, 2017; Herciu, 2017b; Proimos & Murray, 2006).

Both these new forms of entrepreneurial finance target early-stage ventures with the potential to augment the effectiveness of angel funding. Our review of the literature suggests that the network-based operating model of these two emerging funding mechanisms can provide important leverage for social capital, in addition to financial capital, to improve outcomes (Alexy *et al.*, 2012; Kliphuis, 2011; Leyden *et al.*, 2014; Matlala, 2013; Rosen, 2013).

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2.4.2 Funding Propensity – Early-Stage and Quantum

Our literature review has unearthed factors that contribute to the likelihood that SMEs will receive external funding either in the form of loan finance from banks or equity finance from funders (Alexy *et al*., 2012; Kliphuis, 2011; Ryan *et al*., 2014). In the case of external finance from banks, Beck, Demirgüç-Kunt and Singer (2013), Ryan *et al*. (2014) and Wonglimpiyarat (2016) cogently demonstrate that the concentrated market structure of the banking sector results in lower financing for SMEs in favour of larger firms.

This trend particularly affects early-stage SMEs where the market power of banks allows them to forgo the risk premium associated with the information asymmetries and opacity of new business ventures (Ryan *et al*., 2014). This observation is consistent with the limited bank financing of SMEs at 2% and the high level of bootstrapping (87%) amongst entrepreneurs in the concentrated domestic banking sector (FinFind, 2018). Paradoxically, South Africa possesses a highly developed banking sector and regulatory environment that supports property rights, including government policy that supports SMEs through DFIs, etc. (Herrinngton, 2017; Report *et al.*, 2018), which does not translate into higher funding outcomes from banks (Beck *et al.*, 2013; FinFind, 2018; Ryan *et al.,* 2014).

In contrast to the dearth of bank financing, the international literature confirms a high propensity of funding for SMEs through equity finance instruments (Block *et al*., 2018; Drover *et al*., 2017; Proimos & Murray, 2006). In developed venture capital markets, the financing of business ventures includes all stages of venture creation ranging from angel funding, crowd-funding (Herciu, 2017a) and corporate venture capital for early stage funding to traditional venture capital for mid-to-late stage funding (Block *et al.*, 2018; Drover *et al.*, 2017).

Our review of entrepreneurial equity finance reveals an important benefit that derives from the network effort whereby the social capital of venture capitalists, corporate venture capital units and crowdfunding platforms works to mitigate the “liability of newness” of SMEs (Alexy *et al.*, 2012; Leyden *et al.,* 2014; Rosen, 2013). It therefore appears that open networks have the propensity to augment the amount of equity finance that is available to SMEs in markets where there are well established venture capital markets (Drover *et al.*, 2017; Proimos & Murray, 2006).

The relationship between networks and venture capital is an important observation in our research study, as it has tremendous implications for the domestic market, where both networks and venture capital markets are relatively underdeveloped. While South Africa has a strong regulatory and policy framework (Report *et al*., 2018) and an abundance of financial resources to support SMEs (FinFind, 2018; Herrinngton, 2017) relative to the African Region

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as a whole, investment in networks is a critical prerequisite to drive the growth and efficacy of the funding of SMEs (Alexy *et al.*, 2012; Kliphuis, 2011; Matlala, 2013).

2.4.3 Innovative Choice – Replicative vs. Innovative Entrepreneurship

The literature on open innovation establishes a strong relationship between networks and innovation amongst firms (Cheng & Shiu, 2015; Huggins & Thompson, 2017; Inauen & Schenker-Wicki, 2012; Verreynne & Kastelle, 2012; Zeng *et al.*, 2010). More importantly, this relationship is also observed in SMEs, resulting in substantial benefits from innovation (Lee *et al*., 2010; Ramirez-Portilla *et al.,* 2017).

As demonstrated in the literature, improved innovation outcomes also play a positive mediating role on SME performance primarily through enhanced IIP and EIP from deeper supplier-customer contracts that increase the revenue share of new innovation (Gay, 2014; Verbano *et al.*, 2015; Verreynne & Kastelle, 2012). However, the observed overall curvilinear relationship between OI strategies[8] and innovation outcomes (de Paulo *et al.*, 2017; Greco *et al.*, 2016; West & Bogers, 2014) has profound implications for the requisite network relationships and venture funding strategies. Mid-to-late stage firms that have the capacity to access either corporate venture capital or venture capital can harness external search depth through the network to augment radical innovation (de Paulo *et al.,* 2017; Huggins & Thompson, 2017; Inauen & Schenker-Wicki, 2012).

The network effect of corporate venture capitalists appears to be a strong contributor to innovation, working strongly to encourage outside-in innovation collaboration in R&D activities between large firms and small firms (Cheng & Shiu, 2015; de Paulo *et al.*, 2017; Hochleitner *et al*., 2017; Proimos & Murray, 2006). Corporate venture capital and other supplier-customer relationships between small firms and big firms confirm a positive link between networks and radical innovation that favours big firms through the funding interface (de Paulo *et al.*, 2017; Greco *et al*., 2016; Verbano *et al.*, 2015; Verreynne & Kastelle, 2012). This is an important proposition that suggests that corporate venture capital encourages open collaborations that lead to radical innovation or more specifically innovative entrepreneurship.

The finding of the network effect of corporate venture capital is consistent with the conclusions of Huggins and Thompson (2017) that a strategic dyad between big firms and small firms also leads to radical innovation, and the findings of Greco *et al.* (2016) that external search depth is far more conducive to innovation than external search breadth. As previously demonstrated, external search depth with regard to a stronger dyad between SMEs and big firms supports

8 OI strategies include both external search breadth and external search depth.

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both IIP (Abramo *et al.*, 2013; Greco *et al.*, 2016; Inauen & Schenker-Wicki, 2012), and EIP (Abramo *et al.*, 2013; Greco *et al.*, 2016; West & Bogers, 2014), and leads to innovative entrepreneurship.

Conversely, where SMEs do not get funding there is a tendency towards a greater bias of the network effect towards the commercialisation stage of the innovation process (Greco *et al.*, 2016; Ramirez-Portilla *et al.,* 2017; Verbano *et al*., 2015; Verreynne & Kastelle, 2012). Arguably, this link between inside-out innovation and commercialisation in SMEs is largely a function of the lack of funding and the consequent emphasis on building broader networks that support replicative entrepreneurship (Chemmanur & Fulghieri, 2014; Inauen & Schenker-Wicki, 2012; Kersten *et al*., 2017; Rosen, 2013).

In contrast to both corporate venture capital and venture capital, other equity funding mechanisms such as crowdfunding and accelerators have been shown to increase external search breadth that may diminish returns to innovation performance (Greco *et al.*, 2016; Herciu, 2017a). It is therefore evident in the literature that while the network effect may contribute to funding for SMEs, the nature of the funding and partnerships in the network have an impact on innovation posture and outcomes (Greco *et al*., 2016; Huggins & Thompson, 2017).

2.4.4 Financial Sustainability

Elfring, Tom and Hulsink (2003), Greco *et al*. (2016) and Ramirez-Portilla *et al.* (2017) argue that the relationship between open innovation networks and firm performance is ambiguous and not fully understood. However, there is evidence that the network influences firm performance through innovation outcomes which derive from open network ties. Furthermore, the nature of the network ties determines whether firms achieve radical innovation or incremental innovation outcomes (Gay, 2014; Greco *et al*., 2016; Huggins & Thompson, 2017; Zeng *et al*., 2010).

The literature identifies the role played by a big firm-SME dyad on both IIP (Abramo *et al.,* 2013; Greco *et al.*, 2016; Inauen & Schenker-Wicki, 2012), and EIP (Abramo *et al.*, 2013; Greco *et al.*, 2016; West & Bogers, 2014). These improved innovation outcomes also play a positive mediating role on SME performance primarily through enhanced IIP from R&D collaboration with corporate venture capital units and EIP from deeper supplier-customer contracts that increase the revenue share of new innovations (Greco *et al*., 2016; Verbano *et al*., 2015; Verreynne & Kastelle, 2012).

Related research also shows the strong role of social capital in networks (Alexy *et al.*, 2012;

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Kliphuis, 2011; Matlala, 2013) in improving funding outcomes for SMEs and the different way in which these networks drive financial sustainability, subject to the targeted venture creation stage for financing (Drover *et al.,* 2017; Proimos & Murray, 2006). In developed entrepreneurial capital markets, the financing of business ventures includes all stages of venture creation, ranging from angel funding, crowdfunding (Herciu, 2017a) and corporate venture capital for early stage funding, to traditional venture capital for mid-to-late stage funding (Block *et al.*, 2018; Drover *et al.,* 2017).

Due to the preference of venture capitalists for mid-late stage financing of high-growth start-ups to mitigate adverse selection and moral hazard, the network effect favours EIP innovation outcomes that result in high revenue growth (Chemmanur *et al.,* 2011; Greco et al., 2016; West & Bogers, 2014) without a concomitant profit uplift (Puri & Zarutskie, 2012) as a result of venture capitalist intermediation activities (Drover *et al.*, 2017). In contrast, the corporate venture capital network effect has been found to work differently in the early stage of venture creation to support R&D innovation and financial outcomes that promote both IIP and EIP that translate into both revenue and profitability growth (Abramo *et al.*, 2013; Drover *et al*., 2017; Huggins & Thompson, 2017).

Finally, our literature review has not yielded any insights into the network effect of early stage funding mechanisms such as angel funding, crowdfunding and accelerators on innovation and SME performance (Block *et al.*, 2018; Drover *et al.*, 2017; Herciu, 2017b; Proimos & Murray, 2006). However, the network-based operating model of both crowd-funding and accelerators can arguably provide an important social capital base to augment the effectiveness of angel funding in early stage ventures and potentially increase corporate venture capital activity in the early stage of venture creation to improve SME financial sustainability (Alexy *et al.*, 2012; Leyden *et al.*, 2014; Matlala, 2013; Rosen, 2013).

2.5 Literature Summary

The literature review has briefly discussed the two theoretical domains of entrepreneurship and innovation to provide a basis for the discussion on the role of open innovation in SMEs. The review confirms a relationship between the open innovation domain and innovation performance in both large and small firms (Inauen & Schenker-Wicki, 2012; Ramirez-Portilla *et al*., 2017; Verbano *et al.,* 2015; West & Bogers, 2014).

Our research has also established that inside-out innovation is more suited to SMEs with a focus on commercialisation (Bigliardi & Galati, 2016; Gay, 2014; Hochleitner *et al.*, 2017; Lee *et al*., 2010; Tucci *et al.*, 2016), whereas open innovation networks have a strong positive

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influence on firm performance where innovation is a mediating factor (Elfring, Tom & Hulsink, 2003; Greco *et al.*, 2016; Verreynne & Kastelle, 2012).

Our review also reveals that different network ties lead to different innovation outcomes where strategic ties contribute to radical innovation and horizontal ties lead to incremental innovation (Huggins & Thompson, 2017; Verreynne & Kastelle, 2012). Additionally, external search depth has been found to yield better innovation outcomes on both IIP and EIP without the drawback of diminishing marginal returns, in contrast to external search breadth (Elfring, Tom & Hulsink, 2003; Greco *et al.*, 2016; West & Bogers, 2014).

Finally, the literature on entrepreneurial finance shows a predominance of equity financing over bank loan financing (Beck *et al.*, 2008; Block *et al.,* 2018; Carb-Valverde *et al.*, 2009; Drover *et al.*, 2017; FinFind, 2018; Puri & Zarutskie, 2012; Ryan *et al*., 2014) in addition to new emerging funding mechanisms such as crowdfunding and accelerators (Herciu, 2017a). Social capital was found to be a mediating factor of the network effect (Alexy *et al.,* 2012; Leyden *et al.*, 2014; Matlala, 2013; Rosen, 2013), leading to different funding instruments for each target venture creation stage (Block *et al*., 2018; Drover *et al.,* 2017). Early stage funding, e.g. corporate venture capital, is associated with greater IIP and EIP outcomes in contrast to late stage funding, e.g. venture capital, that tends to augment EIP through revenue growth (Cheng & Shiu, 2015; Greco *et al.*, 2016).

Based on the literature review, the author expects to find a strong network effect on SME access to financing, innovation and financial sustainability in the South African context.

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3 Chapter 3: Research Questions and Propositions

3.1 Themes from the Literature Review

The review of the theory base on open innovation, open innovation networks and financial capital for small and medium enterprises (SMEs) translates into key themes that merit further research study. These themes also directly support both the academic and the business rationales of this investigation.

The first theme distilled from the literature review relates to the funding constraints that SMEs face and the predominance of equity financing. Secondly, SMEs have a low likelihood of obtaining financing in the early stages of the venture creation process. Where such finance becomes available, there is typically a funding gap that requires other supplementary sources of financing.

Financial sustainability was a recurring theme in the study, due to the limited availability of funding, often resulting in the failure of the SMEs. The fourth and last theme distilled from the literature review related to the finding that funded SMEs engage in innovative entrepreneurship, whereas a lack of funding results in replicative entrepreneurship, which is less financially onerous on the balance sheet of SMEs but also results in a diminished employment multiplier from the entrepreneurial process.

3.2 Overall Research Question

Based on a consideration of the above themes above, the objective of the study is to answer the following overarching research question:

RESEARCH QUESTION: What is the nature of the role of open innovation networks on entrepreneurial financial capital for SMEs in South Africa?

In order to probe this question, the study breaks down the research objective into four key research propositions in line with the identified themes from the literature review. In turn, the study incorporates each research proposition into the Interview Guide for further examination.

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3.3 Research Propositions

3.3.1 Research Proposition #1

- Open innovation networks influence the nature and mix of financing that is available to SMEs.

3.3.2 Research Proposition #2

- The network effect accelerates financing in the early venture creation stages and concurrently leads to higher funding levels.

3.3.3 Research Proposition #3

- Open innovation networks are associated with higher levels of innovative entrepreneurship.

3.3.4 Research Proposition #4

- Networked SMEs achieve greater financial sustainability.

Owing to the low levels of maturity and the lack of depth of open innovation networks in South Africa, the study followed an exploratory approach to gain a deeper understanding from qualitative inputs during interviews. These inputs were critical to the effort to reach tentative conclusions about the efficacy of these networks and their potential to mitigate the funding and sustainability challenges facing SMEs in South Africa.

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4 Chapter 4: Proposed Research Methodology and Design

4.1 Introduction

This chapter provides the context and rationale for the research design and methodology that underpin this research study. The researcher has taken great care to ensure a clear golden thread from the underlying philosophy of the study to the approach, investigative techniques and procedures used to gather and analyse the data.

This section presents the research techniques that were deemed to be appropriate for the qualitative nature of this research effort including the assumptions and limitations of the study to aid the interpretation of the results. Collectively, the focus of the research techniques and tools recommended in this section is to answer the main research question and four research propositions of the research project.

4.2 Lessons from the Literature Review

A significant body of literature in the area of open innovation networks forms the basis of this study and influenced the choice of research methodology. Due to the genesis of open innovation practices amongst technology firms and substantial advances in this field in developed economies, the literature review found a plethora of quantitative studies. These studies seek to explain and quantify the impact of established variables in the open innovation value chain.

However, the nascent nature of the open innovation domain in South Africa requires that this study should follow an exploratory and interpretivist approach to gain better insight into the role of the networks in entrepreneurial financial capital for SMEs. The literature review focused on the following two domains:

- **Open Innovation Networks:** These networks are both strategic ties (between SMEs and big corporations) and horizontal ties (between SMEs) in a network ecosystem that facilitates collaboration. The literature review suggested that these ties were underdeveloped in the local context and required an exploratory approach for further study and investigation.

- **Financial Capital:** Block *et al.* (2018) define financial capital as an asset that is convertible to money for the purpose of investment to generate a profit. However, South Africa counter-intuitively records low levels of TEA relative to available pools of

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capital. This finding in the literature also inclined the study towards an exploratory research paradigm.

In relation to the domain of financing, the literature review identified four critical themes that merit further examination. The first of these themes refers to the funding constraints that SMEs face, resulting in their having limited access to only certain forms of financing. The available forms of financing for SMEs show low levels of bank financing and some level of equity financing, in particular angel funding, corporate venture capital and venture capital.

Secondly, new SMEs are unlikely to obtain financing in the early stages of the venture creation process. The literature also suggests that funding for SMEs typically requires other supplementary sources of financial and non-financial support to allow investors to manage their risk exposure properly.

Thirdly, financial sustainability was a recurring theme in the study due to the limited availability of funding, which often results in the failure of SMEs. The fourth and last theme from the literature review is the strong bias towards replicative entrepreneurship in response to the limited availability of funding for SMEs, as replicative entrepreneurship is less financially onerous on the balance sheet. It also results in a diminished employment creation multiplier from the entrepreneurial process.

4.3 Research Design and Methodology

4.3.1 Research Design

The study is exploratory in nature. An interpretivist epistemology was judged to be appropriate to it, to enable the scrutiny of the social phenomena relevant to this investigation, including the manner in which human beings understand and perceive their social environment (Saunders, 2012). Zikmund (2000) and Saunders (2012) describe this approach as subjectivist in nature, thereby allowing the researcher to interpret qualitative data that is unquantifiable. The exploratory nature of this study was deemed to be appropriate due to the limited present understanding of the constructs under study in the domestic context.

The approach adopted in this study was deductive. It relied heavily on the existing theory base and literature on open innovation networks and constructs of entrepreneurial financial capital to guide the analysis. This approach was essential to anchor the phenomena observed and extrapolated in a sound theoretical framework, and hence to draw credible conclusions. With this in mind, the researcher is confident of the rigour of the analysis and transferability of the conclusions of the research study (Saunders, 2012).

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The study also used qualitative methods in conjunction with the interpretivist epistemology primarily to explore and analyse the data emanating from the study. The qualitative method was instrumental to obtaining deeper insights from the participants in the interviews. This method also allowed the researcher to probe hitherto unexplored areas of the constructs under study in greater detail in order to understand the motivations and perceptions of entrepreneurs in the innovation ecosystem (Cresswell, 2014).

The study involved ten semi-structured interviews. These semi-structured interviews used an open-ended interview guide, which provided a structure to the interview while allowing for sufficient flexibility to enable the interviewer to probe the experiences of the participants, generate fresh insights, draw inferential conclusions and arrive at consequent recommendations (Saunders, 2012).

In view of the limited timeframe of this research project, the study was cross-sectional and focused on a snapshot of data at a given point in time (Saunders, 2012). In conducting the study, the researcher also probed for comparisons between firms in the network and those that provide lending to SMEs in order to get a good sense of the network effect on financial outcomes for SMEs.

4.3.2 Population, Sampling, Sampling Method

A population is the complete universe of participants from which a study wishes to make a finding, while a sample represents the participants that are drawn from the population and form part of the study (Saunders, 2012; Cresswell, 2014). The defined population for this study was entrepreneurs who own venture start-up firms that are embedded in the entrepreneurial open network ecosystem and lending officers that approve funding for SMEs (Saunders, 2012). This population excluded start-up firms that do not participate in network ecosystems of any kind.

Saunders (2016) defines a sampling method as a technique in research of selecting a sub-group of participants (a sample) from the population universe. This study used the non-probability purposive sampling method to allow the researcher some discretion to select participants in the study based on certain criteria such as professional level, specialist knowledge, etc. This sampling technique was essential to minimise costs and ensure that the sample was appropriate to the study.

The targeted sample for the interviews included entrepreneurs and lending officers who are actively engaged in innovation networks. The inclusion of lending officers was necessary to provide some objectivity to the data from the entrepreneurs and to improve reliability and

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validity. Due to the qualitative nature of this study, the sample was limited to a maximum of ten interviews once the responses reached a reasonable degree of assurance regarding saturation.

4.3.3 Research Instrument

The research design involved the use of a semi-structured interview questionnaire for data collection, which provided for both structure and flexibility to probe further during the various engagements (See Appendix A: Semi-Structured Interview Guide). Structure was imperative to ensure the consistency of the outputs for analysis and interpretation, whilst the flexibility allowed for deeper engagement in areas that required clarity and further exploration during the interview.

The research instrument was accompanied by an Informed Consent Letter (See Appendix B: Informed Consent Letter) that was sent to the prospective participant in advance and a printed copy that each participant was requested to sign before the formal start of the interview. The interviews took place over a period of one full calendar month, with each interview session lasting about 60 minutes.

The researcher piloted the interview questionnaire prior to the interview process in order to confirm its internal consistency and the ability of the participants to understand the questions.

4.3.4 Procedure for Data Collection

The researcher conducted all of the interviews on a face-to-face basis to build trust and ensure a deeper level of engagement with each participant. Prior to the commencement of each interview, the researcher expressed gratitude to the participant and addressed the conversation to the requirement of informed consent to build trust and rapport. The researcher also took great care to reiterate the assurance of anonymity and confidentiality, and communicate the tools that are in place to store the data safely and securely.

The procedure for data collection also included some pilot testing to ensure that the questions were comprehensible, and to reduce errors and bias. During the data-gathering process, the researcher sought and obtained the consent of each respondent to use a voice-recorder to ensure that the entire interview was accurately captured without causing undue delays. After the interviews, the researcher ensured the transcription of all of the voice material to safeguard the integrity of the data.

The interview process followed the interview guide to provide some structure, which was based on the themes identified in the literature review. The questions were structured in such

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a fashion that participants did not only give brief “yes or no” answers. Additional measures were taken to probe further and garner deeper insights and detailed descriptions of the participants’ reactions to the themes under investigation.

The researcher has stored all of the transcripts and voice recordings of the interviews in a safe, local backup drive and the reliable Apple cloud storage facility. For the purpose of this qualitative study, the ten participants selected for the interviews were sufficient for their responses to reach saturation point. The conclusive judgement on saturation was based on repetitive feedback and observations of the immature and underdeveloped nature of networks in the local context including the recurring themes of the limited availability of bank financing and the dearth of equity financing.

4.3.5 Ethical Clearance and Informed Consent

Prior to commencing with the interviews and data collection, the researcher applied for and obtained all the required ethical approvals from the GIBS Ethics Committee (See Appendix C: Ethical Clearance Letter). In addition, all participants signed the necessary Informed Consent Forms at the inception of each interview. These forms will be properly filed for later retrieval should this become necessary (Saunders, 2012).

4.3.6 Data Analysis and Interpretation

Saunders (2012) describes analysis and interpretation as the process of giving meaning to raw data. In the context of this qualitative study, the data analysis was conducted based on the interpretivist epistemology to give substantive meaning to unquantifiable data based on the themes identified in the literature review and any other emerging themes from the interview process. This analytic approach resulted in both closed themes, which are linked to the theory base, and open themes that emerged from the interview responses (Joffe, 2012).

The researcher used the ATLAS.ti software tool, a qualitative research analysis tool, to categorise the data into both open and closed themes to identify trends in the data. ATLAS.ti allowed for the systematic coding of the data into themes after all the transcripts had been uploaded into the tool (See Appendix D: ATLAS.ti Codes). To safeguard anonymity and confidentiality, the names of the participants were removed prior to the data upload into ATLAS.ti, and each participant was assigned an anonymous code such as P1. (Saunders, 2012)

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4.4 Limitations of the Study

- The domain of open innovation is recent, with a limited body of knowledge output and theoretical underpinning that links it to the field of entrepreneurship. This may weaken the deductive power of this research project and the ability of the researcher to test the findings against an established theoretical paradigm.

- The study used a non-probability, purposive sampling technique based on certain identified criteria for the target population in the sample frame. The non-probability nature of the study is such that there is no absolute certainty about the extent to which the sample frame represented the population universe. The researcher had very little control over this.

- The cross-sectional nature of this study limits the insights that may emerge from a comparative study over a period of time. A longitudinal study over a period of time would provide much more reliable insights and data, but the limited timeframes of this study do not permit a longitudinal study.

- There is a risk of self-reporting bias during the interview process as participants might not want to be seen in a bad light. To the extent possible, the responses of the lending officials in the sample were used to triangulate the veracity of the data from the entrepreneurs.

4.5 Validity and Reliability

The researcher endeavoured to safeguard the reliability and validity of the quality data by ensuring their credibility, dependability, confirmability, and transferability. Pilot testing of the measuring instrument, audit trails of respondents' responses, meticulous transcription of the voice-recordings, etc. all formed part of the safeguards to protect the integrity of the results (Saunders, 2012).

The researcher also followed the following prescripts regarding ensuring the integrity and validity of the research findings (Cresswell, 2014):

- Prolonged engagement and persistent observations in the field - having as many interviews and discussion with the participants as you can;

- Triangulation strategies - having many sources of data using several data

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collection methods and tools;

- Producing rich, thick descriptions of phenomena you are studying; and

- Respondent validation of preliminary findings - going to the research area for feedback and getting the feedback from the research participants.

Table 5 below demonstrates the intended actions to safeguard reliability and validity throughout the process:

Table 5: Validity and Reliability

Evaluation Measurement	Purpose of Control	Mitigation Action
Validity	To generalise the outcomes of this research to multiple industries/sectors and SMEs.	Sampling covered more than one industry/sector.
		Sampling was a multi-sectoral approach of network ecosystem participants.
Reliability	To ensure replicability and repeatability of the same study with consistent results.	The use of lending officers in the sample to verify the responses of the entrepreneurs.
		The use of an independent analyst to stress-test the analysis and inferences.

4.6 Assumptions

- This study assumed the existence of formal open innovation networks in South Africa and the requisite processes and governance institutions that regulate and optimise network ties.

- Furthermore, the study assumed that the participants had a mature and accurate understanding of the open innovation domain and used this understanding as a ground upon which to respond to the questions during the

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interview.

- Lastly, the study made the cardinal assumption that the responses given during the interview process were authentic and truthful. If this were not the case, the validity and reliability of the research project would have been in doubt.

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5 Chapter 5: Results

5.1 Introduction

This section provides a detailed discussion of the results obtained from the ten interviews conducted with small and medium enterprise (SME) business owners and officials in lending institutions that interact with SMEs in the entrepreneurial ecosystem. The collection of the results adhered to the data collection method and procedures described in Chapter 4.

In order to provide context to the results and subsequent discussion, Table 6: Description of Interview Participants and Context gives an overview of the demographic profiles of the interview participants. The discussion of the results is structured according to the themes identified in the literature review in Chapter 2 and the research propositions discussed in Chapter 3. This chapter concludes with a summary of high-level observations derived from the data to contextualise both the internal and the external themes identified in the participants' feedback.

5.2 Description of Interview Participants and Context

The sample interviewed for this study included SME owners across a diverse range of industries and different sector of economic activity, and professionals who interact with SME owners in the wider ecosystem. All the entrepreneurs interviewed for this study, but one, had tertiary education and commanded significant network ties in their industries and entrepreneurial ecosystem.

Table 6: Description of Interview Participants and Context

Interview Participant ID	Job Title	Economic Sector	Industry	Education
P1 - LT	Founder/Owner	Manufacturing	FMCG	Tertiary
P2 - MM	Director	Logistics	FMCG	Tertiary
P3 - GS	Founder/Owner	Services	Consumer	Tertiary
P4 - TL	CEO	Fleet Management	Transport	Tertiary
P5 - KS	Director	Business Consulting	ESD - Services	Tertiary

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Interview Participant ID	Job Title	Economic Sector	Industry	Education
P6 – CC	Founder/Owner	Recruitment/Coaching	Services	Tertiary
P7 – RR	Founder/Owner	Manufacturing	Products	Secondary
P8 – TN	Snr. Manager	Development Finance	Finance	Tertiary
P9 – NM	Founder/Owner	Business Consulting	Services	Tertiary
P10 - YP	Director	Business Consulting	ESD - Services	Tertiary

As per the ethical considerations of this study, we have changed the names of the participants and their businesses and assigned codes to them to preserve their anonymity as demonstrated in Table 6 above. In order to assist the participants to familiarise themselves with the questions for the interview, each participant received a copy of the Interview Guide in advance. All the participants were based in Johannesburg and the interviews were done on a face-to-face basis.

Each interview began with an explanation of the ethical imperatives of the study, in order to obtain informed consent from each participant. All participants signed the Informed Consent Form to confirm their voluntary participation in the process and to consent to the interviewer's using a recording device. Each interview lasted approximately one hour.

5.3 Results

The discussion of the results in this section is broken down into the four research propositions given in Chapter 3 and used as the basis for the Interview Guide. As noted, the aim of this study was to decode the role of networks in the four constructs under investigation. Owing to the varying responses relating to the nature of the network ecosystem in the domestic market, it is appropriate to provide an overview of the responses with respect to this, to provide an appropriate context for understanding and interpreting the results of this study.

5.3.1 Description and Nature of the Networks

At the outset, the majority of the participants stressed the low levels of maturity and connectedness of the open innovation network in the local context. Where these nascent networks exist, the degree of formalisation of governance mechanisms and processes is

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limited, resulting in many entrepreneurs relying on their own personal networks to drive their business ventures.

A salient finding related to the limited horizontal collaboration between SMEs in the ecosystem to share ideas in a structured fashion, pool resources and leverage synergies to achieve business outcomes. The result of this constraint is that each entrepreneur places a disproportionate focus on his or her own social capital networks to identify opportunities and add value to the business in the early stages of venture creation.

The participants described the networks as comprising a mixture of enterprise and supplier development networks, incubators and accelerators, and a network of funders such as the DTI, SEFA, IDC, etc., and other social capital networks.

- “Our model is that we work on the sponsored model where we have large corporates that approach us to become some sort of an implementation partner on their ESD programmes … for instance, we have a client for which we are supporting 40 businesses.” (P10)

- “My business is basically a partnership with the Coca-Cola Bottling Company of South Africa (CCBSA).” (P2)

- “The actual ecosystem is anchored around the corporate enterprises themselves. However, they do need support in the implementation of the programmes. So there’s your management consulting firms that will assist with the development of the strategy, and then there's also the incubation entities that will support with the implementation of the development plans for the entrepreneurs. There’s also entities that work with funding, ESD funding be it banks or private equity firms that manage funds on behalf of the enterprise [SME] or on behalf of the corporates.” (P5)

- “We have just been invited to be part of an ESD programme with Nedbank, because we do close to 95 of their branches in the Gauteng region.” (P3)

- “We have incubated about 1000 small businesses in this space. We run our own incubator. In fact where we sitting right now is an incubator.” (P10)

- “… [between] the DTI network and the IDC network there is a synergy.” (P9)

- “The networks are more of a constellation of relationships that are built or anchored around a specific entrepreneur as opposed to a formalised big ecosystem…” (P6)

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Within these networks, there are many vertical and horizontal partnerships including suppliers, customers, funders, and others that bring the necessary skills.

- "We deal with the stores, which will be your Norman Goodfellows, your distributors and redistributors. Those are more or less the customer side of things. Then obviously your suppliers from Consol to Glass Decorations … to companies like Foam Pak who do the packaging". (P1)

- … what's happening is that they're bringing in money, but they're also bringing in networks globally and also expertise. So for instance, now we've got an IP attorney on the team, you know, as an investor. It's more about the skills and the money." (P1)

- "Coca-Cola Bottling in South Africa is the main partner and then we have got Unilever South Africa which is also another partner. We do the same for them as well distribution services for their products and they are responsible for sales as well. As part of the network we have got the Small Enterprise Finance Agency ("SEFA"), which provides financing to all entrepreneurs embedded in the network." (P2)

- "We have established some form of good relationships with motor mechanic suppliers in terms of repair shops, panel beaters, accessories such as vehicle canopies, your bull bars, rubber rising of bakkies and branding of vehicles." (P4)

- "I've got a very nice mix of relationships with people that also run SMEs and run their own businesses that I coach and support and as well as several large clients." (P6)

5.3.1.1 *Summary of Results: Description and Nature of Networks*

Table 7 below presents a summary description of the nature of the networks discussed in the course of the interviews:

Table 7: Summary: Description and Nature of Networks

Issue	Summary of Results
Enterprise and Supplier Development	• The network comprises mostly ESD collaborations that are driven through legislation and anchored by the big corporates. • These networks provide limited scope to SMEs for innovation. • The ESD networks provide human capital support such as training to ensure the sustainability of the relationship with SMEs.
Incubators and	• There is a plethora of incubators and accelerators in the ecosystem that

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Issue	Summary of Results
Accelerators	work only with SMEs with a viable proof of concept that can be taken to the commercialisation stage. • These platforms have stringent acceptance criteria, often using hack-a-thons to select meritorious SMEs. • Both platforms provide only in-kind funding such as free office space, etc., but may also be instrumental in supporting SMEs to access other funders.
Partnerships	• The network consists of vertical partnerships with corporates, suppliers, customers, etc. • There is limited evidence of horizontal partnerships between SMEs to drive collaboration … however, some SMEs leverage their social capital extensively in the network. • There are committed funders in the network such as the DTI, IDC, SEFA, and to some extent banks as well.

Overall, the nature and maturity level of the local networks provide an important context in terms of which to decipher their influence on the following four research constructs, which were the subject of the investigation.

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5.3.2 Research Proposition #1

- *Open innovation networks influence the nature and mix of financing that is available to SMEs.*

The aim of this research proposition was to determine whether open innovation networks support networked SMEs to access different types of entrepreneurial finance. Consequently, this proposition also sought to understand whether these networked SMEs have a funding mix different from those of firms that operate outside of these networks.

5.3.2.1 *Degree of Self-Funding*

The aim of this question was to probe the extent to which the network effect reduces the amount of funding that is required from an entrepreneur. The responses below yield some interesting insights.

Two of the entrepreneurs reported self-funding as their predominant funding model and indicated the challenge of early funding in the absence of a proof of concept.

- "We strapped it so we self-funded it and so it's 100% equity, if you want to put it that way. So we had to self-fund it ourselves, there was no banks that would loan you money unless you are established … and private networks are where the money actually is but you must have built something substantial to be able to access those kinds of people." (P1)

- "So, entrepreneurs are therefore in a situation where if they want to do that first tranche of innovation, they are increasingly required to do that out of their own funds." (P5)

- "It was completely self-funded at the start … I use my home Wi-Fi, I work out of clients' offices, I drive a car that was bought for me in 2004, since then I've never gotten a new car. I'm actually taking half the salary I probably should for my labour and what I do." (P6)

Others have been able to secure funding through the network although they have also had to contribute their own funding as well – or "skin in the game" as they referred to it.

- "In terms of what has been invested so far, I would say on a 100% scale, SEFA has provided 50% of the finance and Coca-Cola company through their support provides about 20% of the cost in terms of financing and the business person, being myself, I am carrying the other 30% of the financing. The first financing by SEFA was directly

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because one is part of the network. Because it was only available to people who are part of the network." (P2)

- "I must say when you are at IDC and say I am part of the Innovation Hub being incubated there, you can see their eyes open up and get excited. When you are at the Innovation Hub and you say IDC are funding us for the first round of this project, they are very excited. They seem to want to give more as well." (P3)

- "I would say 60%, I would amount it to being in the networks and eco-system as opposed to us just having a unique proposition or having the unique track record." (P4)

- "Remember the major part of this kind of network is once you have a grant, it will be easy to fund any business because you can have that as collateral to say that grant when it comes in it pays off the debt directly … whether you like it or not a funder will always say to you I want 10% from your pocket. That, you will never run away from." (P9)

- "Sometimes they tend to get better funding rates and access to more funds, so being in an incubator often helps the entrepreneur." (P10)

- "For working capital, in general they will give them a grant. So, they would get a grant, especially if, for example, an entrepreneur is already a bit extended from an overdraft perspective with the traditional banks, they will generally assist them in closing their gap in terms of their debt levels." (P5)

However, the participants also emphasised the importance of having a track record or proof of concept to be able to access funding.

- "I wouldn't say it was driven by the networks because when we went to the IDC it was a matter of . . . I would say we had a business plan with a proven concept which we had already taken to the market and we tested it and it looked like it was a viable product and I think that's why the IDC backed us." (P3)

- "Not any one can just get into the Innovation Hub. You come in because you have proved yourself or you have proved your concept or you have proved whatever offering you have and they believe in it." (P3)

- "With banks there is no relationship to the network *per se* because they only look at the financial statements for the past two years and decide on whether to finance you

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or not. Even though it would display that it was part of the Coca-Cola network. But they only started getting involved voluntarily when they saw the cash flows of the business." (P2)

- "And I think this is what I've picked up, that if you haven't been operating in the space for some time, it's quite difficult for one to get that kind of support from the banks." (P4)

- "… that the enterprise must have already been initiated and operational, it must already be having a customer base, even if it may be a smaller customer base." (P5)

- "It's a bit difficult to fund an entity where there's no network and there's no track record because in the end, I mean we have to get back the money that provide to these entities." (P8)

5.3.2.2 Bank Funding vs. DFI Funding

The aim of this question was to probe whether networks create a higher predilection for bank funding in comparison with DFI funding.

We found only two instances where banking funding was the dominant funding model . . .

- "I think I must mention that the biggest role players in this kind of business are the banks. Purely because you need a lot of capital to be in this kind of business. To be honest with you, the banks are actually doing a lot. It's, I would say 80% is the bank funding and 20% is self-funding." (P4)

- "Our bank has been very supportive of us, in terms of our financial requirements. We deal with a reasonably small bank." (P7)

. . . with the rest of the participants working through one DFI, a government department and other government-owned entities.

- "I think government funding is definitely playing a huge role because banks are still very much reluctant investing in micro enterprises." (P10)

- "With banks there is no relationship to the network *per se* because they only look at the financial statements for the past two years and decide on whether to finance you or not." (P2)

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- "This is where the IDC came in when we embarked on this project of the paper mill, which is quite substantial. The total investment including the properties is in excess of 80 million." (P7)

However, both bank financing and DFI funding came with stringent requirements for collateral to secure the lending exposure.

- "Like every other bank, they are very conservative. And the collateral requirements were there. They were a bit different because they were fairly comfortable having the collateral there whereas other banks … So collateral still plays a part in the borrowings, but obviously it is the financial results of the company, and the profile that the company has built." (P7)

- "Skin in the game is good because it shows commitment. It shows that the entrepreneur is willing to lose some of their own money." (P8)

5.3.2.3 Debt vs. Equity Funding

The objective of this question was to determine the extent to which and the circumstances under which SMEs in a network relied on either debt or equity.

The participants used a combination of debt and equity in their funding portfolios with the equity portion being used for the long-term financing of capital assets in contrast to loan financing, which went towards short-term financing, e.g. working capital, etc.

- "You want more equity where your risk is higher. Where you perceive more risk, you want more equity, right? Where there is a network, you can increase this. For instance, you could have a 90/10." (P8)

- "I would say [some of my funding] is equity because that 20% gives them a say in how the business operates. They are covering the warehousing costs, but they have a say in terms of what products are carried in that warehouse. So, it gives them the capacity to have some equity say in the business." (P2)

- "It's [a combination of] debt-funding and equity, so what they're saying is it's a sub-ordinated loan. And the sweetener there is, they don't charge interest, they will only start demanding, or asking for repayments, when the business shows profit." (P3)

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- “The equity funding is mostly done for capital assets, it’s mostly an instrument of last resort, so if the corporate believes that there’s still a gap from a funding perspective the entrepreneur cannot raise it themselves.” (P5)

- “The equity component is still utilised as a smaller portion, so most clients will do either no equity at all going or they can have their equity component going up to 15-20% of their programme.” (P5)

- “SARS, having introduced the concept of Section 12J, corporates are increasingly leveraging the 12J vehicle that provides the corporate tax breaks for investing equity in emerging businesses.” (P5)

In other cases, SMEs are able to access grant funding through the network, which they then use to leverage into either debt or equity financing.

- “A lot of clients still use grants as a model, especially on funding incubators and accelerators because that is seen as the foundation to provide the entrepreneurs with skills development and mentorship over a period of time and make sure that they're sustainable. So that will generally make up between 30% to as high as 50%.” (P5)

5.3.2.4 Enterprise and Supplier Development

This question sought to probe the nature and extent of enterprise and supplier development in the network ecosystem.

The majority of the participants reported some involvement in the ESD networks as the driver of their access to funding and markets, with some questioning the motives and long-term sustainability of these networks.

- “I think given that South Africa doesn't have a mature venture capital market, most funding in this country comes through enterprises/supplier development programmes, and obviously, the enterprise and supplier development programmes are to some extent legislated through the triple BEE codes of the good practice. So corporates are required to spend about 3% of their net profit after tax on enterprises and supplier development as a whole. So that's really where most of the funding comes from.” (P5)

- “For enterprise development a lot of them are early stage. So, it may be an enterprise that has been in existence for a year, two years, or three years and they have just begun to get traction in terms of the market.” (P5)

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- “I think, particularly in the ESD programme, if that programme has a reputation in the market, it actually is a leverage for people to go into the market and knock on doors to say that ‘I have been part of this Supplier Development Programme and I think I am ready to grow’ and some people have been able to get a loan based on that.” (P10)

- “We have just been invited to be part of an ESD programme with Nedbank, because we do close to 95 of their branches in the Gauteng region. We have been fortunate enough to be invited to ESD programmes … by the likes of GrowthPoint Properties.” (P3)

- “I would say it’s partly enterprise supply development as the agreement at the start I would say it is enterprise supply development network because they cover the cost for warehousing for instance which is a major cost of the business when it starts.” (P2)

- “SIFA wouldn’t take a chance on a small business unless they are certain that it’s a business that would be sustainable because of the Coca-Cola brand being behind it.” (P2)

- “You are more willing to provide seed capital at the very early stages, which are the more risky stages, because you take comfort from the fact that there is this big brother, who is Telkom, which is willing to get behind this entity.” (P8)

- “But in most cases, sponsors of the programmes come with their own suppliers, existing suppliers in the supplier base that they have identified that they want to provide bigger and more market access to.” (P10)

- “I guess the companies do these things for tax purposes obviously. They get tax cuts … but at the same time the people that they hire to run those facilities don’t know what they’re doing.” (P1)

- “But I think in the long run, we are creating businesses that are not future proof because they don’t have any speciality in terms of what value proposition they are bringing to market.” (P10)

- “But I definitely don’t get the sense that they are nurturing my business to be bigger.” (P6)

5.3.2.5 *Summary of Results: Research Proposition #1*

Table 8 presents a summary of the results that are pertinent to the above research proposition.

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Table 8: Results Summary: Research Proposition #1

Issue	Summary of Results
Degree of Self-Funding	• Self-funding is the norm for most early stage ventures regardless of their immersion in a network. . . • … however, those that are able to secure some funding are often required to have a viable proof of concept to join an incubator/accelerator and provide some "skin in the game" of up to 10% of the funding portfolio. • There is a positive network effect that facilitates funding for SMEs. This, however, requires a demonstrable track record of financial stability. • Mid-stage SMEs with a proof of concept and developed products are more likely to get access to incubators and accelerators, grant funding, and/or ESD off-take agreements.
Bank Financing vs. DFI Funding	• There is a low level of both bank funding and DFI funding for small businesses in the local market with the majority of new funding going to large corporates. There is also evidence of funding that is mediated through ESD networks and incubators. • Entrepreneurs are averse to the high costs of bank finance and the financial risks associated with debt financing. • … however, SMEs are able to access some funding at a lower cost from SEFA, UYF and other institutions that offer micro-finance loans.
Debt vs. Equity Funding	• The participants used a combination of debt and equity in their funding portfolios with the equity portion being used for the long-term financing of capital assets, in contrast to loan financing, which goes towards short-term financing. • Equity funding is the more preferred form of financing in comparison with debt financing to relieve financing pressures on SMEs. . . • … however, equity financing still accounts for a small share of the portfolio when compared with self-funding. • Where strong networks exist to reduce risk to lenders, debt financing is preferred to equity.
ESD Participation	• There is substantial evidence of ESD activity in the network that allows SMEs to partner with big corporates to access markets and in-kind funding for training. • In addition, ESD provides strong leverage for SMEs to access early stage financing from banks and other funders such as SEFA . . . • . . . however, some participants raised concerns about the rationale of,

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Issue	Summary of Results
	and lack of innovation in, ESD networks and the long-term future sustainability of enterprises in these networks.

5.3.3 Research Proposition #2

- *The network effect accelerates financing in the early venture creation stages and concurrently leads to higher funding levels.*

The aim of this research proposition was to test the capacity of open innovation networks to sufficiently de-risk the entrepreneurial process to allow SMEs to access external financing earlier in the process. Additionally, this proposition also attempted to understand whether a lower risk profile linked to a network ecosystem translates into higher levels of funding for SMEs.

5.3.3.1 *Time Taken to Fund*

This section probes the speed with which networked SMEs are able to access funding owing to their perceived diminished risk profile resulting from lower opacity and reduced information asymmetries.

The participants confirmed the positive role that networks play to de-risk SMEs and make information easily available, which facilitates quick decision making on funding, including a higher propensity to fund earlier in the venture creation process.

- “Sometimes they tend to get better funding rates and access to more funds, so being in an incubator often helps the entrepreneur.” (P10)

- “But twelve months down the line SEFA came into the picture and then SEFA had an arrangement with Coca-Cola that Coca-Cola would guarantee payment for SEFA. By making sure that before they pay you they pay SIFA for the trucks. So, then that made it easier to access finance from SEFA.” (P2)

- “For enterprise development a lot of them are early stage. So, it may be an enterprise that has been in existence for a year, two years, or three years and they have just begun to get traction in terms of the market.” (P5)

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- “It will happen quicker, because as a funder, you don’t have to do much … the amount of [due diligence] DD that you have to do is much less than the DD you would have to do for a business that has no networks. I would say no non-networked business would get funding between three to six months, a networked business could get funding within a month.” (P8)

- “Even though it would display that it was part of the Coca-Cola network. But they only started getting involved voluntarily when they saw the cash flows of the business.” (P2)

- “It’s a bit difficult to fund an entity where there’s no network and there’s no track record because in the end, I mean we have to get back the money that we provide to these entities.” (P8)

- “A lot of clients still use grants as a model, especially on funding incubators and accelerators because that is seen as the foundation to provide the entrepreneurs with skills development and mentorship over a period of time and make sure that they're sustainable. So that will generally make up between 30% to as high as 50%.” (P5)

5.3.3.2 *Level of Funding*

This section probed the amount of funding that networked SMEs are able to access owing to their perceived diminished risk profile resulting from lower opacity and reduced information asymmetries.

Participants in the networks reported higher levels of funding in the form of bigger amounts and repeat funding decisions. This phenomenon appears to be attributable to the credibility of the initial due diligence (“DD”) and free flow of information in the network.

- “They [SEFA] don’t question the amounts that you come up with. I’m sure they rely on Coca-Cola through [due] diligence of the business requirements.” (P2)

- “So, we’ve just submitted our business plan for the second run of funding, and that was originally for the mobile basins but because of the collaborations that we have now with the, what do you call it, waste water recycling plants, they are even saying: ‘guys, extend your funding to include this’.” (P3)

- “I must say when you are at IDC and say I am part of the Innovation Hub being incubated there, you can see their eyes open up and get excited. When you are at the Innovation Hub and you say IDC are funding us for the first round of this project, they are very excited. They seem to want to give more as well.” (P3)

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- "This is where the IDC came in when we embarked on this project of the paper mill which is quite substantial. The total investment including the properties is in excess of 80 million." (P7)

- "Ja, an incubator would be exposed to more networks, whereas with an ESD model, you'll find, for instance, the relationship would be with just that one specific corporate. So, the incubator would expose the entrepreneur to more sources of funding." (P8)

- "Remember these guys are working on a performance basis. They give you a grant, they give you loan on the other side, it becomes easy. For me it became easy because I was in the DTI network, while at the DTI network they become excited to say we got a referral from a public sector, which is the DTI and then they help you." (P9)

5.3.3.3 *Summary of Results: Research Proposition #2*

Table 9 presents a summary of the results that are pertinent to the above research proposition.

Table 9: Results Summary: Research Proposition #2

Issue	Summary of Results
Time Taken to Fund	• Both the ESD network and the incubator/accelerators are conducive to quicker funding outcomes for SMEs. • These quicker funding outcomes are, however, dependent on the existence of a track record. • Often, grant funding is also used first to mitigate the risk of debt financing while expediting the use of other funding instruments.
Level of Funding	• The networks have a positive effect that augments the amount of funding that SMEs are able to access after the initial due diligence … • … and there is evidence of repeat funding within the network. • For SMEs, the network increases the amount of funding from small institutions such as SEFA, but there is no evidence of this with respect to the larger DFIs.

5.3.4 Research Proposition #3

- *Open innovation networks are associated with higher levels of innovative entrepreneurship.*

This research proposition probed the degree to which networked SMEs engaged in

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innovative entrepreneurship to bring new products and services to the market in contrast with replicating existing value.

5.3.4.1 *Innovativeness*

This question examined the extent to which collaboration and the exchange of ideas in the network ecosystem contributes to a higher propensity to innovate new products and services rather than to replicate existing products and services.

Some participants reported a focus on innovation to drive growth and sustainability . . .

- "What tends to happen is we get a lot of customer feedback, which helps us get into what we call 'co-creation', so we create together with our customers. So, the feedback that we get from our customers helps us improve and do whatever modifications that we need to improve on our current version of the mobile basins. So that's in the product space, so you co-create … and talking about the mobile basins, and this is because of collaboration, what we've done now." (P3)

- "So, yes, we collaborate but innovation plays a very critical role in these partnerships. Because if you are not innovative, people tend to not want to welcome you, because you should bring something new to the table." (P4)

- "So, you'll find, for instance, that we funded an SME for a specific product but then over time, they then expanded within Telkom, you know, other services, which helped them grow … so they were not limited to Telkom, which then allowed the SMMEs to develop further products, to grow their offering." (P8)

- "We do everything new because the moment you do something that's been done before you force yourself to have the same results that whatever the previous thing has basically achieved." (P1)

- "I think about your question around the innovation that I'm driving in my business is how can we provide a service to our clients that is cost effective." (P6)

. . . while others indicated significant constraints in the network to be innovative, thereby favouring replication.

- "It [ESD] will mostly be developing product offerings or commercializing ideas that the entrepreneur would already have. So if you have an entrepreneur that needs to

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innovate, then that innovation should be tailored to what the corporate that is sponsoring them would need within their value chain." (P5)

- "Well as it stands there is no scope for innovation because we are confined within the Coca-Cola products or Unilever products which you can't tamper with in any way." (P2)

- "It is not something new. It is more pharmaceuticals. Johnson & Johnson has been doing the business. There is no issue of innovation. The only place where we say we beat our competitors is our lead time." (P9)

- "The delivery hasn't really been revolving around innovation and ideation much. But I think in the long run, we are creating businesses that are not future proof because they don't have any speciality in terms of what value proposition they are bringing to market." (P10)

5.3.4.2 *Job Creation*

This question sought to establish whether networked SMEs make a greater contribution to job creation than their solo counterparts.

Only four of the participants were able to directly attribute job-creation to the network effect.

- "I think from a job creation perspective, the [ESD] programmes certainly do translate into increased jobs." (P5)

- "Theoretically, that should be the case because through the networks they are able to get market, through the networks they are able to get funding. So that's … they should then be able to be more sustainable and be able to generate jobs." (P8)

- "It has been very significant because I think 60% of our staff, I'm talking about staff that have come from people we have worked with before. Someone who would say, I can find someone who would help your team, train them." (P4)

- "Also, to add that the same company was basically two people in the company and once we got the costing right, they were able to employ more people. I think up to six and they were able to get an international contract." (P10)

5.3.4.3 *Summary of Results: Research Proposition #3*

Table 10 presents a summary of the results that are pertinent to the above research proposition.

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Table 10: Results Summary: Research Proposition #3

Issue	Summary of Results
Innovativeness	• The current state of the networks does not contribute to radical innovation in SMEs. The mindset of the entrepreneur is the key decisive factor that determines and drives innovation. • Incubators and accelerators require innovative proofs of concept as a condition of admission. Consequently, their focus is not driving innovation but rather providing a platform to accelerate commercialisation. • ESD networks tend to be more conducive to the replication of existing products in line with supplier contracts. There is little scope for SMEs in the ESD ecosystem to innovate and stay competitive over a period of time. • The lack of governance mechanisms in the current networks hinders horizontal collaboration between SMEs due to the high risk of the appropriation of intellectual property.
Job Creation	• There is no conclusive evidence of job creation that is directly attributable to networks. However, SMEs have been able to contribute to job creation on their own.

5.3.5 Research Proposition #4

- *Networked SMEs achieve greater financial sustainability.*

This research proposition sought to determine the extent to which SMEs embedded in networks achieve greater financial sustainability owing to their greater levels of co-operation and supplier/customer networks.

5.3.5.1 Commercialisation Rate

The rationale behind this question was to understand the extent to which the network effect works to accelerate the speed to market from incubation or the proof of the concept for SMEs.

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The participants confirmed the positive role that networks plays in creating a platform to accelerate the commercialisation part of the value chain for SMEs to access markets expeditiously.

- "If we combine the whole gap analysis and the solution that we provide to fill in those gaps, I think we provide them with that ability to go to market quicker than if they would have gone to anyone else." (P10)

- "I must say when you are at IDC and say I am part of the Innovation Hub being incubated there, you can see their eyes open up and get excited. When you are at the Innovation Hub and you say IDC are funding us for the first round of this project, they are very excited. They seem to want to give more as well." (P3)

- "And it makes it easier for you to bring a solution that is needed by the client with speed. The reason I'm saying this is it's easy to commercialise something that has been co-created by numerous stakeholders or entities, or maybe players in the industry." (P4)

- "So, the majority of wholesalers supply small individual-owned stores, spazas and so forth and they are looking at how they can develop those channels in such a way that enables them to access markets at retail level that as a wholesaler they wouldn't have been able to access. So, it's really about enabling either the supplier base or enabling the distribution base." (P5)

5.3.5.2 *Innovation Cover*

This question sought to understand whether the network provides stability that allows funders to extend some latitude to SMEs to either invest their funding tranches or reinvest their profits into innovation projects.

Only two of the participants confirmed this outcome. Most of the participants did not provide a conclusive view.

- "The money comes in and it goes back to innovation, it goes back to whatever modifications we need to make and we need to develop … but look, we've been fortunate that we've developed a business plan to the IDC and they bought into this idea and they bought into the product and they gave us funding." (P3)

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- "Remember your POC or pilot might need to have a couple of modifications and that helps to accelerate what you want to finish. It helps you take forward something that is now well advanced with some enhancements, with some modifications that your potential clients would have bought into. You are constantly working, constantly innovating and constantly improving what we have and the only way we can do this is if we get funding. So, funding is there and we are able to improve what we have." (P3)

- "In terms of expansion and growth we have times where we have engaged the bank to say we want to develop this new solution and we need some funds. Then they would give us some money and then we would, it's usually not for long periods, 2 years, 3 years maximum. Then we can execute those new products or innovation." (P4)

5.3.5.3 *Profitability*

This question sought to understand whether the network is a driver of both revenue and profitability for SMEs.

The majority of the participants confirmed both a revenue and a profit uplift benefit from being in the network.

- "But we have seen numerous cases where people have drawn real value out of the programme and been able to run their businesses more sustainably." (P10)

- "But being part of the network and being guaranteed that Coca-Cola products are mostly likely to sell in the next twelve months ahead. So that gives you peace of mind and some financial stability as well." (P2)

- "So, it actually creates more business for you as a company. So, I know we have received a lot of business contracts based on that. But also when you engage with a client and say this is my track record you are more likely to get business. Yes, referrals, we have received them and there is a lot of repeat clients." (P4)

- "I think corporates are realising that if you want to have these emerging suppliers being sustainable within your value chain, you need to make sure that they are not just accessing growth from a top line perspective, but that they are profitable." (P5)

- "I think my strongest relationships are my strongest revenue generators." (P6)

- "It has to come into the DD, into the DD that you do, because if it's not profitable, it will not translate into cash-flows." (P8)

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5.3.5.4 *Summary of Results: Research Proposition #4*

Table 11 presents a summary of the results that are pertinent to the above research proposition.

Table 11: Results Summary: Research Proposition #4

Issue	Summary of Results
Commercialisation rate	• Incubators and accelerators provide ideal platforms to accelerate the rate of commercialisation of ideas. • Co-creation in the network is also another powerful mechanism to accelerate access to the market. • The ESD network provides speedy and reliable access to the market for SMEs.
Innovation Cover	• The study did not find conclusive evidence of this although some SMEs do derive some benefit from the network to invest financial resources in innovation activities.
Profitability	• SMEs in the network demonstrate high levels of profitability and financial sustainability. • Access to the market is key for SMEs in the ESD network for the stability of revenue and collateral to access additional funding that guarantees financial sustainability.

5.4 Additional Themes

In addition to the themes identified in the literature review, the research study also identified two additional themes during the interview process that merit discussion below, viz., social capital and human capital.

5.4.1 Social Capital

The participants identified the role of social capital in the networks as a key mediator and contributor to their success.

- "So for me, my network of people that are in my life are the kinds of people that are already in this space. So for them it's easy to go and say well 'I've got this thing and I know this person who does ABCD' and therefore it's really just about upward mobility." (P1)
- "The relationships are there, and they are very important, but it's more about how I have built those relationships and used those relationships." (P6)

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- “The reason they call him is because he has proven himself to be someone of credibility. Someone that has what I refer to as ethics, someone that you know that would do everything according to the book. So, I don’t know how you term that or what you call that, but again it is because of networks that he gets called.” (P3)
- “Whenever you go and do a certain project, certain clients already know that you have done some work for a particular client, and it is much easier for them to relate to you.” P4
- “And in that respect networks can only give you that opportunity, because also the banks do all this background checks to see what you have done, who you’ve worked with and how successful were your partnerships with the people you worked with previously.” (P4)

5.4.2 Human Capital

The participants identified the role of human capital in the networks as a key mediator and contributor to their success.

- “Corporate would be willing to pay an incubator to assess the maturity of the enterprise against aspects such as such as financial management, business development, marketing strategies, operational management, and also the management of their people.” (5)
- “What we are finding is that a lot of these clients don't necessarily struggle with product development but struggle with business management. So, sound financial management, getting their financials in order, compliance to tax requirements and all other statutory requirements. So, in general, that's why the incubation aspect is important, in that you can have an incubator supporting various entrepreneurs with a diverse customer - a product base because they have them more in the business management and less in the technical solution/development itself.” (P5)
- “They do assist in terms of bringing people to come and have a look at your business when it’s struggling to say what’s contributing. Whether you are having stock losses or you are not managing your business, maybe your risk is too high, there are too many robberies.” (P2)
- “They’ve got ways of saying OK, we are going to help you in terms of skills transferral, we are also going to train your people, we are also going to ensure that you get certain systems and processes in place and we are going to equip you with these capabilities.” (P4)
- “So, you want to be able to influence decisions, you want to be able to replace management when you identify that the problem is management here, you want to be able to replace them.” (P8)

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6 Chapter 6: Analysis and Discussion

6.1 Introduction

This section provides an analysis and discussion of the results presented in Chapter 5. The approach taken in this chapter is to examine the results pertaining to each of the research propositions against the established body of academic literature that was presented in Chapter 2. The purpose of this approach is primarily to either confirm or refute each of the propositions introduced in Chapter 3 based on academic insights and evidence from the field.

The analysis and discussion of the results in this section is broken down into the four research propositions discussed in Chapter 3 that were used as the basis for the Interview Guide. As noted, the aim of this study was to decode the role of networks in the four constructs under investigation. In the final analysis of the findings, this chapter closes with a summary conclusion on the existence of a network effect or absence thereof.

6.2 Research Proposition #1

- *Open innovation networks influence the nature and mix of financing that is available to SMEs.*

The aim of this research proposition was to determine whether open innovation networks support networked SMEs to access different types of entrepreneurial finance. The issues that were probed under the nature and mix of financing were the degree of self-funding, bank funding vs. DFI funding, debt vs. equity funding, and finally enterprise and supplier development.

Each of these issues is tested below against the theory found in the literature in order to extract meaning and insight.

6.2.1 Degree of Self-Funding

The aim of this question was to probe the extent to which the network effect reduces the amount of funding that is required from an entrepreneur.

Ryan, O'Toole and McCann (2014) show an inverse relationship between the concentration of the banking sector and the magnitude of SME financing. In South Africa 90% of assets are concentrated in six banks (FinFind, 2018) resulting in the limited availability of bank and equity funding and a high degree of bootstrapping at 87%.

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Coupled with the conclusions of the FinFind (2018) study that found high transaction costs and failure rates, and a lack of collateral, experience and financial literacy, we found that bank finance for SMEs significantly accounted for the low levels of external financing for SMEs (Beck *et al.*, 2008; Block *et al.*, 2018; Kersten *et al.*, 2017). This finding is consistent with the "market power hypothesis", in terms of which the exercise of market power, as measured by the Lerner Index,[9] results in the undersupply of loans and high interest rates (Carb-Valverde *et al.*, 2009).

The findings of this study, distilled from the responses of participants P1, P2, P5 and P6, confirm the high levels of self-funding and virtually non-existent bank financing for small businesses. All three participants underscored the challenge of obtaining bank finance due to the requirements for collateral, experience and a financial track record. For example, P1 indicated that his business was fully self-funded because he could not find a bank that could fund him at the inception of his business. P6 also expressed a similar view that she had to use her own savings and reduce her salary by half so that she could adequately finance her own business in addition to reaching out to people in her private network for financial support.

- "We strapped it so we self-funded it and so it's 100% equity, if you want to put it that way. So we had to self-fund it ourselves, there was no banks that would loan you money unless you are established …" (P1)

- "It was completely self-funded at the start… I use my home Wi-Fi, I work out of clients' offices, I drive a car that was bought for me in 2004, since then I've never gotten a new car. I'm actually taking half the salary I probably should for my labour and what I do." (P6)

Other participants such as P2 and P5 indicated the importance of collateral and a track record to unlock bank financing, as they demonstrate the capacity to afford the relatively high transaction and financing costs irrespective of the network. This is an important insight as it substantiates the market power hypothesis discussed above which results in prohibitive financing and transaction costs for SMEs. As a result of this concentration in the banking sector, the participants also confirmed the undersupply of loan finance to the sector in favour of big corporates in line with the findings of the FinFind (2018) survey as well.

- "With banks there is no relationship to the network *per se* because they only look at the financial statements for the past two years and decide on whether to finance you

[9] The Lerner Index is a measure of the discretionary mark-up on price on the marginal cost. The mark-up represents economic rents that are associated with concentrated, monopolistic markets.

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or not … they only started getting involved voluntarily when they saw the cash flows of the business." (P2)

- "So, entrepreneurs are therefore in a situation where if they want to do that first tranche of innovation, they are increasingly required to do that out of their own funds." (P5)

Other participants, such as P3, P10, P9, and including P2 had been able to secure other forms of funding such as grant funding from the DTI, etc., in-kind funding from incubators and accelerators, micro-loans from institutions such as SEFA, and other forms of loan finance from the IDC. Notwithstanding, these entrepreneurs had also had to contribute their own funding as well – or to "skin in the game", as they referred to it.

However, the observed limited mixture of available funding to SMEs in the local context does not take full advantage of the emergence of a diverse portfolio of equity funding instruments that ranges from angel funding and venture capital (VC), to corporate venture capital (CVC). Many of these instruments are suitable for early-stage funding requiring limited financial probity and are appropriately geared towards both the financial and innovation objectives of SMEs (Abramo *et al.*, 2013; Block *et al.*, 2018; Drover *et al*., 2017; Proimos & Murray, 2006).

- "In terms of what has been invested so far, I would say on a 100% scale, SEFA has provided 50% of the finance and Coca-Cola company through their support provides about 20% of the cost in terms of financing and the business person, being myself. I am carrying the other 30% of the financing. The first financing by SEFA was directly because one is part of the network. Because it was only available to people who are part of the network." (P2)

- "I must say when you are at IDC and say I am part of the Innovation Hub being incubated there, you can see their eyes open up and get excited. When you are at the Innovation Hub and you say IDC are funding us for the first round of this project, they are very excited. They seem to want to give more as well". (P3)

- "Sometimes they tend to get better funding rates and access to more funds, so being in an incubator often helps the entrepreneur". (P10

- "Remember the major part of this kind of network is once you have a grant, it will be easy to fund any business because you can have that as collateral to say that grant when it comes in it pays off the debt directly … whether you like it or not a funder will always say to you I want 10% from your pocket. That, you will never run away from." (P9)

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However, the participants also emphasised the importance of having a track record or proof of concept to be able to access funding in line with the observation in the literature that showed the importance of collateral, experience and financial literacy and track record in funding decisions (Beck *et al.*, 2008; Block *et al.*, 2018; Kersten *et al*., 2017).

- "Not any one can just get into the Innovation Hub. You come in because you have proved yourself or you have proved your concept or you have proved whatever offering you have and they believe in it." (P3)

- "And I think this is what I've picked up, that if you haven't been operating in the space for some time, it's quite difficult for one to get that kind of support from the banks." (P4)

- "… that the enterprise must have already been initiated and operational, it must be already having a customer base, even if it may be a smaller customer base." (P5)

- "It's a bit difficult to fund an entity where there's no network and there's no track record because in the end, I mean we have to get back the money that we provide to these entities." (P8)

On the basis of the findings from the participants, the high levels of self-funding and the limited diversity of funding instruments confirm the relative underdevelopment and immaturity of the networks in the local context. In addition, the concentrated nature of the banking sector is a factor that contributes to this finding, coupled with the infancy of the equity market for SME financing.

6.2.2 Bank Funding vs. DFI Funding

The aim of this question was to probe whether networks create a higher predilection for bank funding as against DFI funding.

Due to the highly concentrated nature of the banking sector in South Africa with only six banks controlling 90% of the assets (FinFind, 2018), our findings confirm the observation of Ryan, O'Toole and McCann (2014) of an inverse relationship between the concentration of the banking sector and the magnitude of SME financing.

Only P4 and P7 confirmed bank funding as the dominant funding model due to the capital intensive nature of their businesses. In both cases there was no attribution of this outcome to the network effect. Both businesses attributed their access to bank financing to their sound financial track record and ability to collateralise their loan finance. This finding on bank finance confirms the findings discussed in Section 6.2.1.

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- "I think I must mention that the biggest role player in this kind of business are the banks. Purely because you need a lot of capital to be in this kind of business. To be honest with you, the banks are actually doing a lot. It's, I would say 80% is the bank funding and 20% is self-funding." (P4)

- "Our bank has been very supportive of us, in terms of our financial requirements. We deal with a reasonably small bank." (P7)

The rest of the participants in the study work through one DFI, a government department and other government-owned entities such as SEFA. This finding also confirms the work done by Beck *et al*. (2008) and Kersten *et al.* (2017) demonstrating the low levels of bank financing when measured against other sources of financing. In addition, the relatively low transaction costs of these alternative sources of funding in comparison with bank finance create a crowding-in effect of funding to the SME sector. This finding is also in line with the findings of in the literature review (Beck *et al.*, 2008; Block *et al*., 2018; Kersten *et al*., 2017).

- "I think government funding is definitely playing a huge role because banks are still very much reluctant investing in micro enterprises." (P10)

- "With banks there is no relationship to the network *per se* because they only look at the financial statements for the past two years and decide on whether to finance you or not." (P2)

- "This is where the IDC came in when we embarked on this project of the paper mill, which is quite substantial. The total investment including the properties is in excess of 80 million." (P7)

However, the fact that both bank financing and DFI funding came with stringent requirements for collateral to secure the lending exposure confirmed the extant perception of the high risk associated with SMEs. This finding was also in line with the work of Petersen and Rajan (1995), who also found no corroboration of the "information hypothesis" discussed in the literature review.

- "Like every other bank, they are very conservative. And the collateral requirements were there. They were a bit different because they were fairly comfortable having the collateral there whereas other banks… So collateral still plays a part in the borrowings, but obviously it is the financial results of the company, and the profile that the company has built." (P7)

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- "Skin in the game is good because it shows commitment. It shows that the entrepreneur is willing to lose some of their own money." (P8)

The local network effect does not unequivocally augment bank financing but is instrumental in facilitating some government funding such as grant funding, SEFA funding and DFI funding, albeit with certain stringent conditions that act as a risk mitigation mechanism. More importantly, the local network does not act to sufficiently de-risk the entrepreneurial process to crowd-in higher levels of bank finance.

6.2.3 Debt vs. Equity Funding

The objective of this question was to determine the extent to which and circumstances under which SMEs in a network relied on either debt or equity.

The FinFind (2018) showed an average level of 10.4% of the total loan book in November 2017 in favour of loan financing for SMEs with the rest of the bank loans going to big corporates. This low level of bank financing for SMEs comports with the findings of both Beck *et al.* (2008) and Kersten *et al.* (2017) when measured against other sources of financing.

On the equity front, scholars have demonstrated that the social capital of venture capitalists, corporate venture capital units, and crowdfunding platforms all work to mitigate the "liability of newness" of SMEs (Alexy *et al.*, 2012; Leyden *et al.*, 2014; Rosen, 2013). As a result, our study found a greater preponderance of equity-based financing in the network, which supports the findings in our literature review. In the main, SMEs used their equity funding for the long-term financing of capital assets with loan financing going towards short-term financing requirements, e.g. working capital, etc.

Participants P2, P3, P5 and P8 attributed their relatively greater access to equity financing largely to the network effect.

- "I would say [some of my funding] is equity because that 20% gives them a say in how the business operates." (P2)

- "It's [a combination of] debt-funding and equity, so what they're saying is it's a sub-ordinated loan. And the sweetener there is, they don't charge interest, they will only start demanding, or asking for repayments, when the business shows profit." (P3)

- "You want more equity where your risk is higher. Where you perceive more risk, you want more equity, right? Where there is a network, you can increase this. For instance, you could have a 90/10." (P8)

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- "SARS, having introduced the concept of Section 12J, corporate are increasingly leveraging the 12J vehicle that provides the corporate tax breaks for investing equity in emerging businesses." (P5)

In other cases, SMEs are able to initially access grant funding through the network, which they are then able to use to leverage into either debt or equity financing. In general, the vast majority of grant funding was said to come through accelerators and incubators rather than entrepreneurs accessing this type of funding of their own accord.

- "A lot of clients still use grants as a model, especially on funding incubators and accelerators because that is seen as the foundation to provide the entrepreneurs with skills development and mentorship over a period of time and make sure that they're sustainable. So that will generally make up between 30 to as high as 50%." (P5)

In summary, the local network effect works to support and increase equity financing for SMEs more than it does debt financing. Where there are opportunities for grant funding, this funding is best accessed through the network of accelerators and incubators. This is an important finding as it suggests that there is an opportunity for both the venture capital and corporate venture capital markets to play a more active and mutually beneficial role with regard to SMEs.

6.2.4 Enterprise and Supplier Development

This question sought to probe the nature and extent of enterprise and supplier development in the network ecosystem.

Gay (2014) argues that a firm's relative position within a network structure influences its resource flows and ultimately its performance. In several studies conducted to assess the preferred model of cooperation for SMEs the findings were that SMEs engage in vertical ties with suppliers and customers to achieve product innovation (Abramo *et al.*, 2013; Tomlinson & Fai, 2013; Verbano *et al.*, 2015).

As demonstrated by Greco, Grimaldi and Cricelli (2016), the researcher argues that enterprise and supplier development (ESD) is an example of external search depth (SD) that holds immense potential for SMEs to improve both IIP and EIP outcomes without the drawback of diminishing marginal returns. However, although the evidence collated from the participants showed extensive participation in ESD in the local network, the significant benefits of ESD accrued to EIP outcomes only, to the detriment of IIP outcomes.

The majority of the participants reported involvement in the ESD networks as the driver of their access to funding and markets to improve their economic and financial outcomes.

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- “I think given that South Africa doesn't have a mature venture capital market, most funding in this country comes through enterprises/supplier development programmes. So that's really where most of the funding comes from.” (P5)

- “I think, particularly in the ESD programme, if that programme has a reputation in the market, it actually is a leverage for people to go into the market and knock on doors to say that ‘I have been part of this Supplier Development Programme and I think I am ready to grow’ and some people have been able to get a loan based on that.” (P10)

- “We have just been invited to be part of an ESD programme with Nedbank, because we do close to 95 of their branches in the Gauteng region. We have been fortunate enough to be invited to ESD programmes … by the likes of GrowthPoint Properties.” (P3)

- “SEFA wouldn’t take a chance on a small business unless they are certain that it’s a business that would be sustainable because of the Coca-Cola brand being behind it.” (P2)

- “You are more willing to provide seed capital at the very early stages, which are the more risky stages, because you take comfort from the fact that there is this big brother, who is Telkom, which is willing to get behind this entity.” (P8)

However, the logic and structure of ESD in the local context does not extend beyond financial outcomes to enhance innovation outcomes. As argued by Huggins and Thompson (2017), Verbano *et al.* (2015) and Verreynne and Kastelle (2012), such vertical ties ought to be conducive to radical innovation. Three participants were critical of the lack of innovation in the ESD network.

- “I guess the companies do these things for tax purposes obviously. They get tax cuts … but at the same time the people that they hire to run those facilities don’t know what they’re doing.” (P1)

- “But I think in the long run, we are creating businesses that are not future proof- because they don’t have any speciality in terms of what value proposition they are bringing to market.” (P10)

- “But I definitely don’t get the sense that they are nurturing my business to be bigger.” (P6)

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With respect to ESD, there is overwhelming evidence of activity by SMEs which leads to positive financial outcomes. However, these vertical ties do not translate into innovation outcomes that drive the growth and sustainability of SMEs in the future. The lack of innovation in the local ESD network is plausibly a factor of the significant focus on regulatory compliance instead of a compelling commercial rationale, which can extend to corporate venture capital investments through 12J incentives of the tax code.

The lack of corporate venture capital activity in the ESD network is a significant gap because CVC is a strong contributor to innovation, working to encourage outside-in innovation collaboration in R&D activities between large firms and small firms (Cheng & Shiu, 2015; de Paulo *et al.*, 2017; Hochleitner *et al.*, 2017; Proimos & Murray, 2006)

6.2.5 Conclusion: Research Proposition #1

The aim of this research proposition was to determine whether open innovation networks support networked SMEs to access different types of entrepreneurial finance.

Table 12 below presents the conclusions that are pertinent to the above research proposition.

Table 12: Summary of Findings: Research Proposition #1

Issue	Network Effect	Summary of Findings
Degree of Self-Funding	No	On the basis of the findings from the participants, the high levels of self-funding and the limited diversity of funding instruments confirm the relative underdevelopment and immaturity of the networks. Our findings have also shown that the high levels of self-funding are influenced by the concentration of the banking sector and limited amounts of equity funding instruments for SMEs in the ecosystem.
Bank Financing vs. DFI Funding	Partial	The local network effect does not unequivocally augment bank financing but is instrumental in facilitating some government funding such as grant funding, SEFA funding and DFI funding, albeit with certain stringent conditions that act as a risk mitigation mechanism.
Debt vs. Equity Funding	Yes	The local network effect works to support and increase equity financing for SMEs more than it does debt financing. Where there are opportunities

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Issue	Network Effect	Summary of Findings
		for grant funding, this funding is best accessed through the network of accelerators and incubators. This is an important finding as it suggests an opportunity for both the venture capital and the corporate venture capital markets to play a more active and mutually beneficial role for SMEs.
ESD Participation	Partial	With respect to ESD, there is overwhelming evidence of activity by SMEs, which leads to positive financial outcomes. However, these vertical ties do not translate into innovation outcomes that drive the growth and sustainability of SMEs in the future. The lack of innovation in the local ESD network is plausibly a factor of the significant focus on regulatory compliance instead of a compelling commercial rationale, which can extend to corporate venture capital investments through 12J incentives of the tax code.

6.3 Research Proposition #2

- *The network effect accelerates financing in the early venture creation stages and concurrently leads to higher funding levels.*

The aim of this research proposition was to test the capacity of open innovation networks to sufficiently de-risk the entrepreneurial process to allow SMEs to access external financing earlier in the process. Additionally, this proposition attempted to understand whether a lower risk profile linked to a network ecosystem translated into higher levels of funding for SMEs.

6.3.1 Time Taken to Fund

This question probed the speed with which networked SMEs are able to access funding owing to their perceived diminished risk profile resulting from lower opacity and reduced information asymmetries.

In the case of external finance from banks, Beck, DemirgüÇ-Kunt and Singer (2013), Ryan *et al.* (2014) and Wonglimpiyarat (2016) cogently demonstrate that the concentrated market

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structure of the banking sector results in lower financing for SMEs in the early stages of venture creation due to the stringent requirements for collateral and a financial track record. Most of the participants in this study also attested to this fact.

However, the high propensity of early stage-funding for SMEs through equity finance instruments confirmed by Block *et al*. (2018), Drover *et al*. (2017) and Proimos and Murray (2006) also appears to be the norm in the local context. In addition, the literature shows that early stage-funding benefits from the network effect through social capital networks to mitigate the "liability of newness" of SMEs (Alexy *et al.*, 2012; Leyden *et al.,* 2014; Rosen, 2013)

The participants confirmed the positive role that networks play to de-risk SMEs and make information easily available, which facilitates quick decision making on funding including a higher propensity to fund earlier in the venture creation process.

- "It will happen quicker, because as a funder, you don't have to do much … the amount of DD that you have to do is much less than the DD you would have to do for a business that has no networks." (P8)

- "Sometimes they tend to get better funding rates and access to more funds, so being in an incubator often helps the entrepreneur." (P10)

- "But twelve months down the line SEFA came into the picture and then SEFA had an arrangement with Coca-Cola that Coca-Cola would guarantee payment for SEFA. So, then that made it easier to access finance form SEFA." (P2)

- "For enterprise development a lot of them are early stage. So, it may be an enterprise that has been in existence for a year, two years, or three years and they have just begun to get traction in terms of the market." (P5)

Based on the evidence from both the literature and participants, the network plays a positive role to accelerate early-stage equity funding through social capital networks that reduce information asymmetries and the risk of adverse selection. However, this effect does not hold for bank loan financing as demonstrated in the literature review.

6.3.2 Level of Funding

This section probed whether networked SMEs are able to access higher levels of funding owing to their perceived diminished risk profile stemming from lower opacity and reduced information asymmetries.

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As demonstrated by Alexy *et al.* (2012), Leyden *et al.* (2014) and Rosen (2013), social capital networks within the broader network contribute to mitigate the "liability of newness" of SMEs and reduce opacity and information asymmetries, which increases the amount of funding available and the likelihood of repeat funding decisions.

Participants in the networks reported higher levels of funding in the form of bigger amounts and repeat funding decisions. This phenomenon appears to be attributable to the credibility and trust that is typically established in the initial due diligence ("DD") process and the on-going free flow of information in the network.

- "They [SEFA] don't question the amounts that you come up with. I'm sure they rely on Coca-Cola through diligence of the business requirements." (P2)

- "So, we've just submitted our business plan for the second run of funding, and that was originally for the mobile basins but because of the collaborations that we have now with the, what do you call it, waste water recycling plants, they are even saying: 'guys, extend your funding to include this." (P3)

- "I must say when you are at IDC and say I am part of the Innovation Hub being incubated there, you can see their eyes open up and excited. When you are at the Innovation Hub and you say IDC are funding us for the first round of this project, they are very excited. They seem to want to give more as well." (P3)

- "Ja, an incubator would be exposed to more networks, whereas with an ESD model, you'll find, for instance, the relationship would be with just with that one specific corporate. So, the incubator would expose the entrepreneur to more sources of funding." (P8)

There is strong evidence of a network effect leading to greater amounts of funding and higher frequency of repeat funding for SMEs in the network. The network contributes to de-risk SMEs through transparency and building trust and familiarity, which collectively work to mitigate the "liability of newness" that typically hinders SME financing.

6.3.3 Conclusion: Research Proposition #2

The aim of this research proposition was to test the capacity of open innovation networks to expedite funding and increase the amount of funding committed to SMEs.

Table 13 below presents the conclusions that are pertinent to the above research proposition.

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Table 13: Summary of Findings: Research Proposition #2

Issue	Network Effect	Summary of Findings
Time Taken to Fund	Yes	Based on the evidence from both the literature and the participants, the network plays a positive role in accelerating early-stage equity funding through social capital networks that reduce information asymmetries and the risk of adverse selection. However, this effect does not hold for bank loan financing, as demonstrated in the literature review.
Level of Funding	Yes	There is strong evidence of a network effect leading to greater amounts of funding and repeat funding for SMEs in the network in line with the findings in Ch.2. The network works to de-risk SMEs through transparency and building trust and familiarity, which collectively work to mitigate the "liability of newness" that typically hinders SME financing.

6.4 Research Proposition #3

- *Open innovation networks are associated with higher levels of innovative entrepreneurship.*

This research proposition probed the degree to which networked SMEs engaged in innovative entrepreneurship to bring new products and services to the market in contrast to replicating existing value propositions.

6.4.1 Innovativeness

This question examined the extent to which collaboration and the exchange of ideas in the network ecosystem contributes to a higher propensity to innovate new products and services rather than to replicate existing products and services.

The literature review on open innovation established a strong relationship between networks and innovation amongst firms (Cheng & Shiu, 2015; Huggins & Thompson, 2017; Inauen & Schenker-Wicki, 2012; Verreynne & Kastelle, 2012; Zeng *et al*., 2010). In addition, both Greco *et al.* (2016) and Huggins & Thompson (2017) demonstrate that the nature of funding and partnerships in the network have an impact on innovation posture and outcomes.

In the absence of funding, there is a tendency of a greater bias of the network effect towards

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replication in the commercialisation stage of the innovation process (Greco *et al.*, 2016; Ramirez-Portilla *et al.,* 2017; Verbano *et al.*, 2015; Verreynne & Kastelle, 2012).

In contrast to replicative innovation, some scholars have demonstrated that a stronger vertical dyad between SMEs and big firms supports both IIP (Abramo *et al.*, 2013; Greco *et al.,* 2016; Inauen & Schenker-Wicki, 2012), and EIP (Abramo *et al.*, 2013; Greco *et al.,* 2016; West & Bogers, 2014), which leads to innovative entrepreneurship. The remit of this dyad includes a vertical relationship such as enterprise and supplier development in the local context.

Some participants reported a focus on innovative activity to drive growth and sustainability as a result of the funding and vertical relationships with big firms in the network. This cohort of participants confirmed the positive role of funding on innovation outcomes found in the academic literature.

- "So, you'll find, for instance, that we funded an SME for a specific product but then over time, they then expanded within Telkom, you know, to other services, which helped them grow." (P8)
- "What tends to happen is we get a lot of customer feedback, which helps us get into what we call 'co-creation', so we create together with our customers." (P3)
- "So, yes, we collaborate but innovation plays a very critical role in these partnerships." (P4)
- "We do everything new because the moment you do something that's been done before you force yourself to have the same results that whatever the previous thing has basically achieved." (P1)
- "I think about your question around the innovation that I'm driving in my business is how can we provide a service to our clients that is cost effective." (P6)

However, others indicated significant constraints in the network to be innovative emanating from limited funding, thereby favouring replication, as confirmed in the literature.

- "It [ESD] will mostly be developing product offerings or commercialising ideas that the entrepreneur would already have." P5
- "Well as it stands, there is no scope for innovation because we are confined within the Coca-Cola products or Unilever products which you can't tamper with in any way." (P2)

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- "The delivery hasn't really been revolving around innovation and ideation much." (P10)

- "There is no issue of innovation. The only place where we say we beat our competitors is our lead time." (P9)

The result on innovation is at best ambiguous and inconclusive in spite of the fact that ESD networks are fundamentally vertical in nature and provide a platform to attract funding. However, in spite of these two factors, the results from the field did not confirm the finding from the literature review that this scenario should translate into innovative entrepreneurship.

We believe that the nature of, and rationale for, ESD in South Africa to ensure regulatory compliance rather than meet a commercial imperative creates this bizarre anomaly.

As a result of the lack of a commercial focus in the ESD value chain, we also found very little evidence of corporate venture capital activity to take advantage of the tax incentives of Section J12. CVC, though absent in the local ESD networks, is a strong contributor to innovation, working to encourage outside-in innovation collaboration in R&D activities between large firms and small firms (Cheng & Shiu, *2015;* de Paulo *et al.*, 2017; Hochleitner *et al.*, 2017; Proimos & Murray, 2006).

6.4.2 Job Creation

This question sought to establish whether networked SMEs make a greater contribution to job creation than their solo counterparts.

Verreynne and Kastelle (2012) and Zeng *et al.* (2010) argue that entrepreneurship leads to job creation and is a critical mechanism for social inclusion, economic empowerment, and global competitiveness. In developing economies, entrepreneurship works to facilitate the inclusion of marginalised groups such as the youth and women in the formal economy, whereas in developed economies, entrepreneurship has the effect of expanding the innovation frontier (Afzal *et al*., 2018; Jones *et al.,* 2018; Kasseeah, 2016; Ukanwa *et al.,* 2017*)*.

Where networks facilitate the success of entrepreneurial effort, our study postulated a greater contribution to job creation. However, only four of the participants in the study were able to directly attribute job-creation to the network effect.

- "I think from a job creation perspective, the [ESD] programmes certainly do translate into increased jobs." (P5)

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- "Theoretically, that should be the case because through the networks they are able to get market, through the networks they are able to get funding." (P8)

- "It has been very significant because I think 60% of our staff, I'm talking about staff that have come from people we have worked with before." (P4)

- "Also, to add that the same company was basically two people in the company and once we got the costing right, they were able to employ more people. I think up to six and they were able to get an international contract." (P10)

This finding is in line with the findings in the literature where entrepreneurship works through innovation to contribute to job creation. Where there is limited innovation and a prevalence of replication, entrepreneurship loses its job creation potential significantly. This finding is consistent with the finding in Section 6.4.1 attesting to the lack of innovative entrepreneurship in the local network. The lack of strong job creation is largely attributable to the high degree of replication in the ecosystem, as demonstrated in Section 6.2.4 in our discussion of enterprise and supplier development.

Our study did not find conclusive evidence of a positive network effect that improves job creation. As shown in the literature, significant and sustainable job creation in SMEs is mediated by innovation – and as we have argued in the previous section, the local network does not conclusively contribute to innovative entrepreneurship.

6.4.3 Conclusion: Research Proposition #3

Table 14 presents a summary of the results that are pertinent to the above research proposition.

Table 14: Summary of Findings: Research Proposition #3

Issue	Network Effect	Summary of Findings
Innovativeness	No	The finding on innovation is at best ambiguous and inconclusive in spite of the fact that ESD networks are fundamentally vertical in nature and provide a platform to attract funding. However, in spite of these two factors, the results from the field did not confirm the finding from the literature review that this scenario should translate into innovative entrepreneurship.

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Issue	Network Effect	Summary of Findings
		Owing to the strong regulatory focus to the detriment of a commercial rationale for ESD networks in South Africa, the study also did not find evidence of corporate venture capital activity that takes advantage of the tax incentives of Section J12 to support R&D and innovation.
Job Creation	No	Our study did not find conclusive evidence of a positive network effect that improves job creation. As shown in the literature, significant and sustainable job creation in SMEs is mediated by innovation. This finding is consistent with the finding in Section 1.4.1 attesting to the lack of innovative entrepreneurship in the local network, and the high degree of replication in the ecosystem as demonstrated in Section 1.2.4 in our discussion of enterprise and supplier development.

6.5 Research Proposition #4

- *Networked SMEs achieve greater financial sustainability.*

This research proposition sought to determine the extent to which SMEs embedded in networks achieve financial sustainability owing to greater levels of co-operation and supplier/customer networks. The three questions probed related to the speed to market of SMEs to commercialise, the availability of financial resources to cover the innovation agenda, and financial sustainability.

6.5.1 Commercialisation Rate

The rationale behind this question was to understand the extent to which the network effect works to accelerate speed to market from incubation or proof of concept for SMEs.

The review of the literature revealed that inside-out innovation was more suited to smaller entrepreneurial firms (Chesbrough H, 2014; Chesbrough HW & Appleyard, 2007; Gay, 2014) and more conducive to the efficient commercialisation of innovation to achieve economic and financial outcomes for SMEs (de Paulo *et al.,* 2017; Greco *et al.*, 2016; Inauen & Schenker-Wicki, 2012).

As a consequence of the commercialisation imperative, Greco *et al.* (2016) and Verbano *et al.* (2015) successfully demonstrated that SMEs tended to partner with larger firms during the

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exploitation phase through supplier-customer contracts to access a wider commercialisation network, strategic alliances with other SMEs, or outsourcing agreements.

The participants confirmed the positive role that networks play in creating a platform to accelerate the commercialisation part of the value chain for SMEs to access markets expeditiously.

- "And it makes it easier for you to bring a solution that is needed by the client with speed. The reason I'm saying this is it's easy to commercialise something that has been co-created by numerous stakeholders or entities, or maybe players in the industry." (P4)

- "If we combine the whole gap analysis and the solution that we provide to fill in those gaps, I think we provide them with that ability to go to market quicker than if they would have gone to anyone else." (P10)

- "So, the majority of wholesalers supply small individual-owned stores, spazas and so forth and they are looking at how they can develop those channels in such a way that enables them to access markets at retail level that as a wholesaler they wouldn't have been able to access. So, it's really about enabling either the supplier base or enabling the distribution base." (P5)

Our finding confirmed two critical themes discussed in the literature review. First, the participants confirmed a strong bias of SMEs in the network towards commercialisation due to the high degree of replication in the innovation value chain (see Section 6.4.1). Second, the limited funding in the network also appeared to intensify the dynamic towards commercialisation in a similar fashion as a lack of funding.

In this regard, it is also equally important to interpret this finding in the context of the ESD networks, which predominantly favour replication to the detriment of innovation (see Section 6.2.4) without unlocking corporate venture capital to take advantage of the 12J tax incentive to galvanise R&D activity amongst SMEs.

6.5.2 Innovation Cover

This question sought to understand whether the network provided some stability that allows funders to extend some latitude to SMEs to either invest their funding tranches or reinvest their profits into innovation projects.

Greco *et al.* (2016), Ramirez-Portilla *et al.* (2017), Verbano *et al.* (2015) and Verreynne &

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Kastelle (2012) all demonstrate that, where SMEs do not get funding, there is a tendency of a greater bias of the network effect towards the commercialisation stage of the innovation process. Additionally, others have shown a positive link between lack of funding on the one hand and the consequent emphasis on building broader networks that support replicative entrepreneurship on the other hand (Chemmanur & Fulghieri, 2014; Inauen & Schenker-Wicki, 2012; Kersten *et al.*, 2017; Rosen, 2013).

Only two of the participants (P3 and P4) confirmed a positive link between funding and innovativeness. The majority of the participants did not provide a conclusive view.

- "The money comes in and it goes back to innovation, it goes back to whatever modifications we need to make and we need to develop … but look, we've been fortunate that we've developed a business plan to the IDC and they bought into this idea and they bought into the product and they gave us funding." (P3)

- "Remember your POC or pilot might need to have a couple of modifications and that helps to accelerate what you want to finish. It helps you take forward something that is now well advanced with some enhancements, with some modifications that your potential clients would have bought into. You are constantly working, constantly innovating and constantly improving what we have and the only way we can do this, is if we get funding. So, funding is there and we are able to improve what we have." (P3)

- "In terms of expansion and growth we have times where we have engaged the bank to say we want to develop this new solution and we need some funds. Then they would give us some money and then we would, it's usually not for long periods, 2 years, 3 years maximum. Then we can execute those new products or innovation." (P4)

Based on inferential logic, these results are in line with the themes unearthed in the literature review regarding the role, or lack thereof, of funding in innovation. In the context of the local networks, our findings confirm the adverse effect of the limited availability of funding on creating a stable environment for SMEs to invest in long-term innovation initiatives.

6.5.3 Profitability

This question sought to understand whether the network is a driver of both revenue and profitability for SMEs.

Research shows that firms that innovate achieve greater profitability in contrast to those firms that do not have an innovation mindset. However, the dynamics of this relationship between

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innovation and profitability remain the subject of debate and scrutiny (Tomlinson & Fai, 2013; Verbano *et al*., 2015; Verreynne & Kastelle, 2012).

In the findings of our study, participants that were embedded in a replicative entrepreneurship model confirmed revenue generation as a significant benefit of the network effect from commercialisation. This finding is also consistent with the innovation literature that shows a relationship between replication and revenue uplift but not necessarily profitability (Greco *et al*., 2016; Ramirez-Portilla *et al.*, 2017; Verbano *et al.*, 2015; Verreynne & Kastelle, 2012).

- "I think my strongest relationships are my strongest revenue generators." (P6)
- "But being part of the network and being guaranteed that Coca-Cola products are mostly likely to sell in the next twelve months ahead. So that gives you peace of mind and some financial stability as well." (P2)
- "But we have seen numerous cases where people have drawn real value out of the programme and been able to run their businesses more sustainably." (P10)

On the other hand, where participants were embedded in a dominant innovative entrepreneurship model, there was strong evidence of a profit uplift.

- "You need to make sure that they are not just accessing growth from a top line perspective, but that they are profitable." (P5)
- "It has to come into the DD, into the DD that you do, because if it's not profitable, it will not translate into cash-flows." (P8)
- "So, it actually creates more business for you as a company." (P4)

Based on the above findings, the local network is beneficial to both the revenue and the profitability objectives of SMEs, which is consistent with the insights found in the literature review. As argued before and shown in the literature, innovation is a key mediator of the outcomes that lead to profitability. However, where there is replication in the network, there is a greater tendency towards revenue generation but not necessarily profitability. This is an important finding of our study and underscores the importance of innovation - and its antecedent funding - in achieving sustainable profitability.

6.5.4 Conclusion: Research Proposition #4

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Table 15 presents a summary of the results that are pertinent to the above research proposition.

Table 15: Summary of Findings: Research Proposition #4

Issue	Network Effect	Summary of Findings
Commercialisation rate	Yes	Our finding confirmed two critical themes discussed in the literature review. First, the participants confirmed a strong bias of SMEs in the network towards commercialisation due to the high degree of replication in the innovation value chain (see Section 6.4.1). Second, the limited funding in the network also appeared to intensify the dynamic towards commercialisation in a fashion similar to a lack of funding. In this regard, it is equally important to interpret this finding in the context of the ESD networks, which predominantly favour replication to the detriment of innovation (see Section 6.2.4) without unlocking corporate venture capital to take advantage of the 12J tax incentive to galvanise R&D activity amongst SMEs.
Innovation Cover	Partial	Based on inferential logic, these results are in line with the themes unearthed in the literature review regarding the role, or lack thereof, of funding in innovation. In the context of the local networks, our findings confirm the adverse effect of limited funding on creating a stable environment for SMEs to invest in long term innovation initiatives.
Profitability	Partial	The local network is beneficial to both the revenue and profitability objectives of SMEs consistent with the insights found in the literature review. However, due to the high level of replication resulting from the limited availability of SME funding in the network, there is a greater revenue effect than a profitability effect.

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7 Chapter 7: Conclusion

7.1 Introduction

The analysis conducted in the foregoing chapter interrogated the results of the interviews against the review of the literature in Chapter 2 to make sense of the findings within the context of an established and credible base of academic knowledge. This chapter compares the research objectives of this study outlined in Chapter 1 with the findings and provides a consolidated and conclusive view of the findings.

Finally, this chapter closes by making recommendations of the way forward, discusses the limitations of the study, and makes suggestions for future research.

7.2 Academic and Commercial Rationale of the Research Study

The purpose of this study was to explore the role of open innovation networks on entrepreneurial financial capital for small and medium enterprises ("SMEs").

More specifically, the study set out to establish whether open innovation networks positively influence the nature, mix and quantum of funding instruments that are available to SMEs that operate within a network ecosystem, and whether these firms are able to access financial capital early in the venture creation process. In addition, the study examined the role of the networks *vis-a-vis* the financial sustainability and innovation practices of these networked firms.

The primary academic rationale of this study was to make a contribution to the research output on network ecosystems, to deepen our understanding of the impact of open innovation networks beyond the firm-centric level (Chesbrough H, 2017; Huggins & Thompson, 2017; Randhawa *et al.*, 2016) while linking open innovation thinking with a different discipline, namely entrepreneurship (Randhawa *et al.*, 2016).

Lastly, this study sought to examine the network effect beyond macro constructs such as innovation and profitability (Huggins & Thompson, 2017; Randhawa *et al*., 2016; Zeng *et al*., 2010) to delve deeper into micro-constructs such as entrepreneurial financial capital in an efficiency-driven economy such as South Africa.

The business rationale for this study focused on how best to harness the power of networks to improve the ability of SMEs to contribute to economic growth in a way that addresses the intractable triple challenge of poverty, unemployment, and inequality (FinFind, 2018; Hartini,

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2017; Kasseeah, 2016). At a micro level, the commercial objectives of this study were to understand the appropriate open innovation network architecture that de-risks the entrepreneurial effort for both aspiring entrants and lenders. This outcome is imperative to reducing the cost of financing for startups, and increasing and diversifying the funding available to improve the financial sustainability of SMEs.

Ultimately, the overriding objective of this project was to determine whether local networks contribute to better funding outcomes for SMEs and create a sustainable platform for both innovation and job creation.

7.3 Key Findings

The discussion of the results in this section is broken down into the four research propositions discussed in Chapter 3 and used as the basis for the Interview Guide.

7.3.1 Nature and Mix of Financing

At the outset, a foundational imperative of our research study was to establish the nature and mix of financing that is available to SMEs as a result of the existence of the network, given the strong relationship between funding on the one hand and innovative entrepreneurship and job creation discussed in the literature review. The findings is this regard are essentially inconclusive for a number of reasons, in spite of our expectation of a strong positive network effect.

First, there is a significant amount of self-funding in the local ecosystem owing the concentration of the banking sector, which has the effect of reducing the loan supply and rendering bank loan financing exorbitant for SMEs to access. This finding also stands in direct contrast to evidence in the literature suggesting that where there is a robust regime of the protection of property rights, there is a higher rate of bank funding to SMEs.

Instead, we found limited evidence of bank funding where SMEs had either established a strong track record of financial sustainability or possessed the capacity to collateralise the lending exposure as risk mitigation.

Second, although the network was found to be beneficial in terms of its facilitating access to some equity financing, the range of available equity instruments is quite narrow, and does not include other funding options such as venture capital or corporate venture capital owing to the low levels of their maturity. Nonetheless, the local network effect works to support and increase equity financing for SMEs more than it does debt financing. This is an important finding as it exposes an opportunity to invest and develop both the venture capital and

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corporate venture capital markets to play a more active and beneficial role in the network ecosystem.

Third, the network was found to be quite strong in its ability to facilitate some government funding such as grant funding, SEFA funding and DFI funding, albeit with certain stringent conditions to limit risk exposure. Where there are opportunities for grant funding, this funding is best accessed through the network of accelerators and incubators. This is crucial, because SMEs report a strong opportunity to leverage government funding such as grant funding to access both bank financing to a less extent and equity financing to a higher degree.

Lastly, we found overwhelming evidence of ESD activity in the network, which leads to strong positive financial outcomes that are linked to the focus on replication and commercialisation rather than innovation. Contrary to some strong evidence in the literature, these vertical ESD ties do not translate into innovation outcomes to drive sustainable growth and job creation.

A curious feature of the ESD network in the local context was its complete disregard for the potential benefits of corporate venture capital investment in the SMEs that are already in the network to support innovation outcomes using the 12J incentives of the tax code. One explanation for this anomaly is the high focus on regulatory compliance rather than driving a commercial rationale in the ESD relationships.

7.3.2 Early-stage Funding

Given the strong evidence that most SMEs fail in the early stages of venture creation, our study focused on determining the ability of the networks to unlock funding during this crucial, formative stage of the entrepreneurial process, and whether these amounts are sufficient to cover the financial requirements of SMEs.

We found evidence of the network's playing a positive role to accelerate early-stage equity funding through social capital networks that reduce information asymmetries and the risk of adverse selection. However, this effect does not hold for bank loan financing, as demonstrated in the literature review and in the findings from the interviews with the participants.

Throughout our engagements, there was a strong emphasis on the role played by social capital networks to de-risk SMEs and alleviate the adverse effects of information asymmetries. This is a material finding, because it also contributes to SMEs obtaining substantial funding as they are able to overcome the liability of newness through these networks.

Another finding about these social capital networks related to the fact that they exist in two forms. First, we found evidence of private networks that are linked to individual entrepreneurs,

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which tend to resemble angel networks and result in innovative entrepreneurship. The second body of evidence of networks found was of relationships that are either linked to corporates through ESD or embedded in institutions such as accelerators and incubators. In both cases, SMEs were able to leverage these networks to access some form pf equity funding, or grant funding, albeit with different outcomes on innovation.

7.3.3 Innovativeness

The question of innovation was critical in our research because of its role in mediating firm performance in the network to achieve sustainable growth and job creation. The finding on innovation was at best ambiguous and inconclusive in spite of the fact that ESD networks are fundamentally vertical in nature and provide a platform to attract funding. Our finding of this lack of innovation in the network has been explained in terms of the failure of corporates to take advantage of the 12J incentives to engage in corporate venture capital investment, which has been shown to contribute to SME R&D and innovation.

As a consequence of the lack of innovation in the network, our study did not find conclusive evidence of a positive network effect that improves job creation. As shown in the literature, significant and sustainable job creation in SMEs is mediated by innovation.

7.3.4 Commercialisation and Financial Sustainability

Our findings confirmed a strong bias of SMEs in the network towards commercialisation due to the high degree of replication in the innovation value chain. In addition, we found that the limited funding in the network also appears to intensify the dynamic towards commercialisation in a fashion similar to a lack of funding. This network effect is a reflection of the dominance of ESD in the local network, as demonstrated throughout this study.

Our study also found that SMEs in the local network do not have sufficient financial resources to create a stable environment enabling them to invest in long-term innovation initiatives. This finding is also consistent with the dominant themes of our findings from the field and the literature review, which show a positive link between funding and innovation.

Finally, our study made a finding of a positive revenue effect from the local network due to its focus on replication and commercialisation. However, the link to profitability was weak due to the lack of innovation in the network.

7.4 Recommendations

We make the following critical recommendations arising out of the findings of this study, which are focused on improving the capacity of networks to alleviate funding constraints for SMEs,

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to develop the local venture capital and corporate venture capital markets, and to create commercial incentives in the ESD networks to support the SME innovation agenda:

- Invest in networks as a critical prerequisite to drive the growth and efficacy of funding in SMEs. Networks are important to de-risk the entrepreneurial process and unlock funding to support innovation, job creation and profitability. It is essential that the current parlous state of the networks in South Africa should receive attention through focused measures to improve governance, establish norms and rules of engagement, create centers of excellence and collaboration and general co-ordination mechanisms.

- Prioritise critical human capital interventions such as financial training, risk management, cost management and business management to improve the sustainability of SMEs. These interventions should be coordinated through the network ecosystem to yield the maximum benefit.

- Encourage the growth and development of venture capital and corporate venture capital markets to increase the breadth and depth of available funding instruments for SMEs. It is worthwhile also to explore the viability of a symbiotic model that links these instruments to the network to harness their full benefits.

- The role of social capital in the networks has been shown to be demonstrably strong in mediating positive outcomes particularly for funding. We recommend that there should be some degree of formality to bring these relationships into the network in order to leverage them effectively across a broader group of SMEs for economies of scale.

7.5 Limitations of the Study

This study experienced the following limitations which may have an impact on the reliability and validity of the findings. These limitations are discussed below:

- **Interviewer inexperience:** Owing to the limited experience of the researcher in conducting research interviews of this nature, there is a likelihood of leading questions and personal bias in the findings.

- **Self-reporting bias:** The entrepreneurial disposition of the interviewees presents a significant risk of self-reporting bias due to their high internal locus of control. As a result, there is a potential attribution error of positive outcomes to self-efficacy and

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mindset at the expense of the broader network effect. In mitigation, the researcher made a concerted effort during the interviews to probe deeper in different ways where there was a strong attribution of outcomes to the self-efficacy and mindset of the entrepreneur.

- **Relevance of the theory base:** Almost all of the research literature reviewed for this study focused on the US, the EU, and to some extent Asia, due to the dearth research on emerging market networks. This limitation also presented challenges during the interview process and the interpretation of the findings.

  Dearth of formalised networks: The domestic market has a significant network of incubators, accelerators and enterprise and supplier development networks. However, beyond this constellation, there is a dearth of formalised and mature networks that support SMEs in a structured and consistent way. This constraint limited the richness of the findings and the conclusions of the study.

- **Multi-sectoral study:** The multi-sector nature of the companies that were the selected for this study may be thought to have diluted the depth of the findings and recommendations.

7.6 Directions for Future Research

This study sought to understand the role of open networks in entrepreneurial financial outcomes. However, due to limitations of time, the study did not delve into the nature of the networks themselves, across different industries in South Africa. Future research will add to our understanding of the industry-specific nature of networks in South Africa, and how these networks function.

Given the prominence of the role of social capital in the ability of SMEs to access a range of resources, it is appropriate to extend this study to look at the manner in which social capital works to facilitate access to financial capital for entrepreneurs and its related antecedents.

Lastly, our understanding stands to benefit significantly from a thorough investigation of the appropriate network architecture to facilitate the financial outcomes that were within the purview of this study. Currently, the network landscape is fragmented, underdeveloped and not well coordinated, resulting in sub-optimal outcomes for SMEs to access finance and achieve sustainability.

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7.7 Conclusion

This research study set out a clear academic rationale to contribute to our understanding of open innovation networks and the extent to which these networks facilitate access to finance for SMEs, thereby contributing to their innovation objectives, financial sustainability and job creation. The academic rationale for this study further extended to making a contribution to our understanding of the interplay between networks and the established discipline of entrepreneurship.

The study also sought to make a commercial contribution to our understanding of how best networks can contribute to sustainable outcomes for SMEs, to create jobs, alleviate poverty and reduce inequality in South Africa. To this end, the commercial rationale for this study was also in line with the bold ambition of the NDP to create 90% of new jobs in the SME sector.

Our findings of the network effect on entrepreneurial finance varied across each of the themes that were investigated in our study. The finding of the low maturity and development of the local ecosystem and its reliance on ESD was quite significant for us as it set the context for the observed outcomes. The network worked strongly to facilitate more equity financing than loan finance, although the range of equity finance instruments was limited. There was also evidence of significant financing such as grant funding, DFI funding, etc. in the network. Early stage funding also benefited from a positive network effect, resulting in repeat funding as well.

However, we also found a strong propensity for replicative innovation resulting in poor job creation and low profitability for SMEs. Given the significant role of funding in driving the critical outcomes tested in the study, we conclude that there should be a concerted effort to bolster the capacity of the network ecosystem to work more effectively while investing in the development of both the venture capital and the corporate venture capital markets.

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8 References

Abramo, G., Moro, P. A., Ingegneria, F., Tor, R., Politecnico, V., Politecnico, V., … Table, T. O. (2013). Leveraging External Sources of Innovation : A Review of Research on Open Innovation *. *Industrial Marketing Management*, *31*(4), 814–831. https://doi.org/10.1111/jpim.12125

Academy, T., & Journal, M. (2017). A Social Capital Model of High-Growth Ventures Author (s): Juan Florin , Michael Lubatkin and William Schulze Source : The Academy of Management Journal , Vol . 46 , No . 3 (Jun ., 2003), pp . 374-384 Published by : Academy of Management Stable URL : , *46*(3), 374–384.

Accenture. (2015). Harnessing the Power of Entrepreneurs to Open Innovation, 24.

Afzal, M. N. I., Sulong, R. S., Dutta, S., & Mansur, D. K. H. J. M. (2018). An investigation on Triple Helix model and national innovation systems: The case of Malaysia. *Journal of Entrepreneurship Education*, *21*(2), 1–16.

Alexy, O. T., Block, J. H., Sandner, P., & Ter Wal, A. L. J. (2012). Social capital of venture capitalists and start-up funding. *Small Business Economics*, *39*(4), 835–851. https://doi.org/10.1007/s11187-011-9337-4

Ayer, N. (2010). Learning from Mentors : Perspectives of South African Entrepreneurs, (November), 1–119.

Baregheh, A., Rowley, J., & Sambrook, S. (2009). Towards a multidisciplinary definition of innovation. *Management Decision*, *47*(8), 1323–1339. https://doi.org/10.1108/00251740910984578

Barnard, H., & Chaminade, C. (2017). Openness of innovation systems through global innovation networks: a comparative analysis of firms in developed and emerging economies. *International Journal of Technological Learning, Innovation and Development*, *9*(3), 269. https://doi.org/10.1504/IJTLID.2017.087426

Beck, T., Demirgüç-Kunt, A., & Maksimovic, V. (2008). Financing patterns around the world: Are small firms different? *Journal of Financial Economics*, *89*(3), 467–487. https://doi.org/10.1016/j.jfineco.2007.10.005

Beck, T., DemirgüÇ-Kunt, A., & Singer, D. (2013). Is Small Beautiful? Financial Structure, Size and Access to Finance. *World Development*, *52*, 19–33. https://doi.org/10.1016/j.worlddev.2013.05.014

© University of Pretoria

Bigliardi, B., & Galati, F. (2016). Which factors hinder the adoption of open innovation in SMEs? *Technology Analysis & Strategic Management*, *28*(8), 869–885. https://doi.org/10.1080/09537325.2016.1180353

Block, J. H., Colombo, M. G., Cumming, D. J., & Vismara, S. (2018). New players in entrepreneurial finance and why they are there. *Small Business Economics*, *50*(2), 239–250. https://doi.org/10.1007/s11187-016-9826-6

Carb-Valverde, S., Rodrguez-Fernndez, F., & Udell, G. F. (2009). Bank market power and SME financing constraints. *Review of Finance*, *13*(2), 309–340. https://doi.org/10.1093/rof/rfp003

Carvalho, E., & Sugano, J. (2016). Entrepreneurial orientation and open innovation in brazilian startups : a multicase study Orientação empreendedora e inovação aberta em startups brasileiras : um estudo multicaso Orientation entrepreneuriale et innovation ouverte dans des startups Orienta. *Interacoes (Campo Grande)*, *17*(3), 448–462. https://doi.org/10.20435/1984-042X-2016-v.17-n.3(08)

Chemmanur, T. J., & Fulghieri, P. (2014). Entrepreneurial finance and innovation: An introduction and agenda for future research. *Review of Financial Studies*, *27*(1), 1–19. https://doi.org/10.1093/rfs/hht063

Chemmanur, T. J., Krishnan, K., & Nandy, D. K. (2011). How does venture capital financing improve efficiency in private firms? A look beneath the surface. *Review of Financial Studies*, *24*(12), 4037–4090. https://doi.org/10.1093/rfs/hhr096

Cheng, C. C. J., & Shiu, E. C. (2015). The inconvenient truth of the relationship between open innovation activities and innovation performance. *Management Decision*, *53*(3), 625–647. https://doi.org/10.1108/MD-03-2014-0163

Chesbrough, H. (2012). GE's Ecomagination Challenge: An Experiment in Open Innovation. *California Management Review*, *54*(3), 140–154. https://doi.org/10.1525/cmr.2012.54.3.140

Chesbrough, H. (2014). Chez Panisse:, *56*(4), 144–172.

Chesbrough, H. (2017). The Future of Open Innovation: IRI Medal AddressThe future of open innovation will be more extensive, more collaborative, and more engaged with a wider variety of participants. *Research Technology Management*, *60*(6), 29–35. https://doi.org/10.1080/08956308.2017.1373048

Chesbrough, H. W., & Appleyard, M. M. (2007). Open Innovation and Strategy. *California*

© University of Pretoria

Management Review, *50*(1), 57–76. https://doi.org/10.1016/j.jbiosc.2010.11.012

Chesbrough, H. W., & Crowther, A. K. (2006). Beyond high-tech: early adopters of Open Innovation in other industries. *R&D Management*, *36*(3), 229–236. https://doi.org/10.1111/j.1467-9310.2006.00428.x

Choi, B. (2014). The Sustainability of Joint Ventures between State Owned Enterprises and Global Firms for Car Making Business in China, *5*(4), 462–483. https://doi.org/10.15341/jbe(2155-7950)/04.05.2014/004

Christensen, C. M. (2015). Disruptive Innovation Is a Strategy, Not Just the Technology. *Business Today*, *23*(26), 150–158. Retrieved from http://0-search.ebscohost.com.millenium.itesm.mx/login.aspx?direct=true&db=buh&AN=100102138&lang=es&site=eds-live

de Paulo, A. F., De Oliveira, S. V. W. B., & Porto, G. S. (2017). Mapping impacts of open innovation practices in a firm competitiveness. *Journal of Technology Management and Innovation*, *12*(3), 108–117. https://doi.org/10.4067/S0718-27242017000300011

Drover, W., Busenitz, L., Matusik, S., Townsend, D., Anglin, A., & Dushnitsky, G. (2017). A Review and Road Map of Entrepreneurial Equity Financing Research: Venture Capital, Corporate Venture Capital, Angel Investment, Crowdfunding, and Accelerators. *Journal of Management*, *43*(6), 1820–1853. https://doi.org/10.1177/0149206317690584

Elfring, Tom & Hulsink, W. (2003). Networks in Entrepreneurship : The Case of High - Technology Firms. *Small Business Economics*, *21*, 409–422. https://doi.org/10.1023/A:1026180418357

FinFind. (2018). South African SMME access to finance.

Gartner, W. B. (1990). What are we talking about when we talk about entrepreneurship? *Journal of Business Venturing*, *5*(1), 15–28. https://doi.org/10.1016/0883-9026(90)90023-M

Gay, B. (2014). Open innovation, networking, and business model dynamics: the two sides. *Journal of Innovation and Entrepreneurship*, *3*(1), 2. https://doi.org/10.1186/2192-5372-3-2

Greco, M., Grimaldi, M., & Cricelli, L. (2016). An analysis of the open innovation effect on firm performance. *European Management Journal*, *34*(5), 501–516. https://doi.org/10.1016/j.emj.2016.02.008

HARTINI, M. N. (2017). State-Owned Enterprises : a Comparison Between the Uk , Japan , and Malaysia. *International Journal of Economics, Commerce and Management*, *5*(2), 114–130.

© University of Pretoria

Herciu, M. (2017a). Financing Small Businesses: From Venture Capital to Crowdfunding. *Studies in Business and Economics*, *12*(2), 63–70. https://doi.org/10.1515/sbe-2017-0022

Herciu, M. (2017b). Financing Small Businesses: From Venture Capital to Crowdfunding. *Studies in Business and Economics*, *12*(2), 63–70. https://doi.org/10.1515/sbe-2017-0022

Herrinngton, M. (2017). *GEM - South Africa*. *Global Entrepreneurship Monitor - South Africa*.

Hochleitner, F. P., Arbussà, A., & Coenders, G. (2017). Inbound open innovation in SMEs: indicators, non-financial outcomes and entry-timing. *Technology Analysis and Strategic Management*, *29*(2), 204–218. https://doi.org/10.1080/09537325.2016.1211264

Huggins, R., & Thompson, P. (2017). Entrepreneurial networks and open innovation: the role of strategic and embedded ties. *Industry and Innovation*, *24*(4), 403–435. https://doi.org/10.1080/13662716.2016.1255598

Inauen, M., & Schenker-Wicki, A. (2012). Fostering radical innovations with open innovation. *European Journal of Innovation Management*, *15*(2), 212–231. https://doi.org/10.1108/14601061211220986

Jainarain, R. (2013). Entrepreneur Education Assessment in Secondary Schools., (November 2012).

Jones, P., Maas, G., Dobson, S., Newbery, R., Agyapong, D., & Matlay, H. (2018). Entrepreneurship in Africa, part 1: entrepreneurial dynamics in Africa. *Journal of Small Business and Enterprise Development*, *25*(3), 346–348. https://doi.org/10.1108/JSBED-06-2018-399

Kasseeah, H. (2016). Investigating the impact of entrepreneurship on economic development: a regional analysis. *Journal of Small Business and Enterprise Development*, *23*(3), 896–916. https://doi.org/10.1108/JSBED-09-2015-0130

Kersten, R., Harms, J., Liket, K., & Maas, K. (2017). Small Firms, large Impact? A systematic review of the SME Finance Literature. *World Development*, *97*(2016), 330–348. https://doi.org/10.1016/j.worlddev.2017.04.012

Kliphuis, W. (2011). The value added by social networking to the entrepreneurial process, (November). Retrieved from http://repository.up.ac.za/handle/2263/24250

Lee, S., Park, G., Yoon, B., & Park, J. (2010). Open innovation in SMEs-An intermediated network model. *Research Policy*, *39*(2), 290–300. https://doi.org/10.1016/j.respol.2009.12.009

Leyden, D. P., Link, A. N., & Siegel, D. S. (2014). A theoretical analysis of the role of social networks in entrepreneurship. *Research Policy*, *43*(7), 1157–1163.

© University of Pretoria

https://doi.org/10.1016/j.respol.2014.04.010

Mamabolo, M. A. (2016). Human capital investments and skills outcomes specific to the different entrepreneurship phases, 277.

Marcelino Sádaba, S., Pérez-Ezcurdia, A., Echeverría-Lazcano, A. M., & Benito Amurrio, M. (2016). Definition of innovation projects in small firms: A Spanish study. *R and D Management*, *46*(1), 36–48. https://doi.org/10.1111/radm.12109

Marcolin, F., Vezzetti, E., & Montagna, F. (2017). How to practise Open Innovation today: what, where, how and why. *Creative Industries Journal*, *10*(3), 258–291. https://doi.org/10.1080/17510694.2017.1393178

Matlala, T. (2013). The role of social capital, social networks and incubation in launching and growing a new venture, (November 2012).

National Planning Commission. (2010). National Development Plan (2030). *Department: The Presedency Republic of South Africa*, 70. https://doi.org/ISBN: 978-0-621-41180-5

OECD Economic Surveys. (2017). South Africa, (July).

Petersen, M. A., & Rajan, R. G. (1995). EffectofCreditMarketLending_Rajan.pdf. *Quarterly of Journal of Economics*.

Proimos, A., & Murray, W. (2006). Entrepreneuring into Venture Capital. *Journal of Private Equity*, *9*(3), 23–34. https://doi.org/10.3905/jpe.2006.635426

Puri, M., & Zarutskie, R. (2012). On the Life Cycle Dynamics of Venture Capital and Non Venture-Capital Financed Firms. *Journal of Finance*, *67*(6), 2247–2293. https://doi.org/10.2307/23324373

Ramirez-Portilla, A., Cagno, E., & Brown, T. E. (2017). Open innovation in specialized SMEs: the case of supercars. *Business Process Management Journal*, *23*(6), 1167–1195. https://doi.org/10.1108/BPMJ-10-2016-0211

Randhawa, K., Wilden, R., & Hohberger, J. (2016). A Bibliometric Review of Open Innovation: Setting a Research Agenda. *Journal of Product Innovation Management*, *33*(6), 750–772. https://doi.org/10.1111/jpim.12312

Report, I., Schwab, K., & Forum, W. E. (2018). *The Global Competitiveness Report*.

Rosen, J. (2013). Friends with benefits : an investigation into the social dynamics of network creation in the born-global SME . A research proposal submitted to the Gordon Institute of Business

© University of Pretoria

Science , University of Pretoria , in partial fulfillment of the requirements , (November 2012).

Ryan, R. M., O'Toole, C. M., & McCann, F. (2014). Does bank market power affect SME financing constraints? *Journal of Banking and Finance*, *49*, 495–505. https://doi.org/10.1016/j.jbankfin.2013.12.024

Statistics South Africa. (2017). Quaterly Labour Force Survey, (Quarter 1:2017), 1–129.

Tomlinson, P. R., & Fai, F. M. (2013). The nature of SME co-operation and innovation: A multi-scalar and multi-dimensional analysis. *International Journal of Production Economics*, *141*(1), 316–326. https://doi.org/10.1016/j.ijpe.2012.08.012

Tucci, C. L., Chesbrough, H., Piller, F., & West, J. (2016). When do firms undertake open, collaborative activities? Introduction to the special section on open innovation and open business models. *Industrial and Corporate Change*, *25*(2), 283–288. https://doi.org/10.1093/icc/dtw002

Ukanwa, I., Xiong, L., & Anderson, A. (2017). Experiencing microfinance: Effects on poor women entrepreneurs' livelihood strategies. *Journal of Small Business and Enterprise Development*. https://doi.org/10.1108/JSBED-02-2017-0043

Verbano, C., Crema, M., & Venturini, K. (2015). The Identification and Characterization of Open Innovation Profiles in Italian Small and Medium-sized Enterprises. *Journal of Small Business Management*, *53*(4), 1052–1075. https://doi.org/10.1111/jsbm.12091

Verreynne, M., & Kastelle, T. (2012). Medium-Sized Enterprise Innovation and. *Journal of Small Business Management*, *50*(2), 257–282. https://doi.org/10.1111/j.1540-627X.2012.00353.x

von Briel, F., & Recker, J. (2017). Lessons from a failed implementation of an online open innovation community in an innovative organization. *MIS Quarterly Executive*, *16*(1), 35–46.

Von Zedtwitz, M., Corsi, S., Søberg, P. V., & Frega, R. (2015). A typology of reverse innovation. *Journal of Product Innovation Management*, *32*(1), 12–28. https://doi.org/10.1111/jpim.12181

West, J., & Bogers, M. (2014). Leveraging external sources of innovation: A review of research on open innovation. *Journal of Product Innovation Management*, *31*(4), 814–831. https://doi.org/10.1111/jpim.12125

Wonglimpiyarat, J. (2016). The new challenge of financing innovative economic growth through SME development in the People's Republic of China. *Technology in Society*, *46*, 49–57. https://doi.org/10.1016/j.techsoc.2016.05.002

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World Economic Forum. (2015). *The Global Competitiveness Report The Global Competitiveness Report* (Vol. 5). https://doi.org/92-95044-35-5

Zeng, S. X., Xie, X. M., & Tam, C. M. (2010). Relationship between cooperation networks and innovation performance of SMEs. *Technovation*, *30*(3), 181–194. https://doi.org/10.1016/j.technovation.2009.08.003

9 Additional References for Research Design & Methodology

Cresswell, J. (2014). *Research Design - Qualitative, Quantitative, and Mixed Method* (4th Edition ed.). California: SAGE Publications.

Golafshani, N. (2003). Understanding Reliability and Validity in Qualitative Research. *The Qualitative Report*, 597-607. Retrieved from http://nsuworks.nova.edu/tqr/vol8/iss4/6

J. Hair, W. B. (2010). *Multivariate Data Analysis* (7th Edition ed.). Upper Saddle River: Prentice Hall.

Mpanza, P. (2016). *Assessing the Impact of Forms of Entrepreneurial Capital on Corporate Entrepreneurship in SoEs.* Johannesburg: University of Witswatersrand.

Saunders, M. L. (2012). *Research Methods for Business Students* (5th Edition ed.). Harlow: Pearson Professional Limited.

Zikmund, W. G. (2000). *Business Research Methods* (6th Edition ed.). Orlando: The Dryden Press.

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10 Appendix A: Semi-Structured Interview Guide

Section 1: General Information/Open Innovation Network

A1. Business name: _____ Phone number: _____

A2. Contact name: _____ Title: _____

A3. What is your company's industry and main product? How many years has the company been in business?

A4. What is the nature of the open innovation network that you participate in? Who are the key players in your network?

A5. Can you describe your partners and linkages in the network?

A6. How do you describe your dominant entrepreneurial model – innovative entrepreneurship vs. replicative entrepreneurship?

Section 2: Nature and Mix of Venture Capital

A1. Is your business self-funded or does it benefit from funders in the network and beyond?

A2. How much equity vs. debt is in your business? How does the network influence this?

A3. How does the network influence the split between private funding (banks) and public funding (DFIs)?

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A4. Does the network increase the rate of ESD participation?

Section 3: Funding Rate and Quantum of Venture Capital

A1. Does the network improve the rate at which you are able to secure funding?

A2. Did the network increase your likelihood to get early stage funding?

A3. Is the average amount of your funding higher in the network than outside?

Section 4: Financial Sustainability

A1. Does the network contribute to your business having adequate financial cover for innovation projects?

A2. Has the network improved your commercialisation rate?

A3. Are you able to attribute the profitability of your business to the network effect?

Section 5: Propensity for Innovative Entrepreneurship

A1. Does the network effect lead to greater innovative entrepreneurship (in contrast to replication) in your business?

A2. Does your business employ more people in comparison to your peers outside the network?

Section 6: Recommendations

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A1. What should be done to increase the maturity of open networks in South Africa and their associated benefits to participants?

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11 Appendix B: Informed Consent Letter

My name is **Lungelo C. Nomvalo** and I am currently a Masters Student at the Gordon Institute of Business Science (GIBS). I am conducting a research project on The Role of Open Innovation Networks on Venture Capital for Business Startups. The focus of the study is to explore whether open innovation networks are conducive to the capacity of business start-ups to access financial capital in the early stages of venture creation, including the nature and quantum of financing these networks promote.

Ultimately, I would like to draw tentative conclusions regarding whether business start-ups embedded in these networks are more likely to engage in innovative entrepreneurship, which has greater job-creation potential, than replicative entrepreneurship.

Our interview will take approximately ONE hour.

Your participation is voluntary and you can withdraw at anytime without penalty. All data to be gathered will be reported without identifiers. If you have any concerns, please feel free to contact either my supervisor or me. Please see our details below.

Lungelo C. Nomvalo

Lnomvalo@deloitte.co.za

(083) 277-7003

Signature:

Mahendra Dedasaniya

mdedasaniya@deloitte.co.za

(082) 877-5275

Signature:

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12 Appendix C: Ethical Clearance Approval

Gordon Institute of Business Science
University of Pretoria

25 July 2018

Nomvalo Lungelo

Dear Lungelo

Please be advised that your application for Ethical Clearance has been approved.

You are therefore allowed to continue collecting your data.

Please note that approval is granted based on the methodology and research instruments provided in the application. If there is any deviation change or addition to the research method or tools, a supplementary application for approval must be obtained

We wish you everything of the best for the rest of the project.

Kind Regards

GIBS MBA Research Ethical Clearance Committee

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