Creative innovation framework for informal micro-enterprises in the townships of Gauteng Province

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DEDICATION

This thesis is dedicated to Elohim for his mercy and obligement. Although you have granted me free will, please help me choose wisely as I do not know much of this world and the heavens.

This thesis is also dedicated to my late little brother, Ronewa Mulibana. I was hard on you at times but it was for a good course. Unfortunately, just when I was about to witness you contribute to the development of this world as an electrical engineer, your life was instantaneously cut short. It has been difficult for us to accept that you are gone and make peace with it but I guess Elohim allowed it to happen.Thus, we need to find it in our hearts to accept it and let His will be done, for the battle is not ours but His.

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ABSTRACT

South Africa and a substantial number of other developing countries continue to experience economic stagnation, inequality, poverty, and high crime and unemployment rates. Decades ago, in South Africa, the emphasis was placed on the need to unleash small businesses' potential to grow the economy, create jobs and alleviate poverty in the process. Nonetheless, the existing literature revealed that 70-80% of South African small businesses, including informal micro-enterprises shut down in the first year of their existence. Whereas in countries such as the United States of America, 70% of small businesses get through the first two years and about 55% only shut down in the fifth year.

When small businesses shut down, the potential to grow the economy and create jobs ceases to exist. Innovation has been widely recognised as a catalyst that can enhance informal micro-enterprises' probabilities to survive and transform them from survivalists to sustainable businesses that grow the economy and create jobs. Unfortunately, previous related studies focused on the identification and measurement of innovations that occurred in the informal sector. Subsequently, they did not establish an understanding of the process that is followed by informal micro-enterprises to engage in innovation activity. Moreover, the existing innovation models/frameworks were not tailored for informal micro-enterprises context as they assume an established innovation system and do not provide direct support on a practical level on what activities should be carried out in each basic innovation phase. Thus, this study sought to design a tailored creative innovation framework that will serve as a guide for informal micro-enterprises to engage in radical and incremental innovation with their imperfections.

The study employed the sequential explanatory mixed-methods research. Accordingly, the quantitative phase informed the qualitative phase. Following the principles of pragmatism research philosophy, several research instruments were used to study the research problem at length to establish an in-depth understanding and formulate well-informed solutions. Primary data were collected through a questionnaire and semi-structured interviews from 400 informal micro-enterprises in four townships of the Gauteng Province, South Africa. Among others, the study revealed that curiosity drives innovation among informal micro-enterprises and innovative ideas are evaluated and selected based on customers' priorities and affordability of the potential innovations. The findings are contrary to the large enterprises and other formal small businesses practices as their innovation

activities are mostly driven by investment in research and development and innovative ideas are evaluated and selected based on costs and benefits to the firm.

The findings suggest that while informal micro-enterprises are mostly concerned about satisfying the customers, large enterprises and formal small businesses are mostly concerned about creating wealth for the stockholders. Nonetheless, emphasis on customers' ability to afford innovations may limit radical innovations as radical innovations are costly. Radical innovations are what South Africa and a substantial number of other developing countries need as they often lead to the birth of new industries that often create humongous jobs. Thus, informal micro-enterprises face a challenge to engage in radical innovation in such a manner that such innovations will be affordable to the customers that they serve while they remain competitive. The tailored creative innovation framework was designed with the need for radical innovations in perspective. Overall, the study's findings are in line with Arrow's innovation management theory and the legalist school of thought. Contrary to the dualist and the structuralist schools of thought, the informal sector is neither temporary nor transitional but permanent. Thus, introducing initiatives to aid this sector to flourish will make a significant contribution in resolving Gauteng Province's and South African economic problems.

Keywords: informal micro-enterprises, innovation framework, Gauteng Province, South Africa

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LIST OF ABBREVIATIONS

BRICS:	Brazil, Russia, India, China and South Africa
CIPC:	Companies and Intellectual Property Commission
CoP:	Communities of Practice
DSBD:	Department of Small Business Development
DUI:	Doing, Using and Interacting
GDP:	Gross Domestic Product
GEM:	Global Entrepreneurship Monitor
IMD:	International Institute for Management Development
IMEs:	Informal Micro-Enterprises
NDP:	National Development Plan
R&D:	Research and Development
R&I:	Research and Innovation
SAICA:	South African Institute of Chartered Accountants
SEDA:	Small Enterprises Development Agency
SMMEs:	Small, Medium and Micro-sized Enterprises
SPSS:	Statistical Package for Social Sciences
STATSSA:	Statistics South Africa
STI:	Science, Technology and Innovation
STEM:	Science, Technology, Engineering and Mathematics
WIPO:	World Intellectual Property Organisation

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 Introduction

Before the 1990s, Small, Medium and Micro-sized Enterprises (SMMEs) were perceived as a remedy for the unskilled and excess labour in the market. The SMME sector provided jobs for the informal sector. Therefore, SMMEs were considered a marginal sector and integrating this sector into the mainstream economy was considered unimportant. However, in the late 1990s and early 2000, SMMEs were recognised as one of the prominent contributors to economic growth. Subsequently, strategies were put in place all over the world to support this sector and amalgamate it with the wider economy. To date, SMMEs substantially contribute to economic growth, job creation and poverty alleviation in many countries (De Beer and Armstrong, 2015: 63; Marnewick, 2014: 1; TIPS, 2002: 1-11; Thulo, 2015).

In Japan, China, the United States of America (USA), and European Union countries, SMMEs contribute more than 60% to the Gross Domestic Product (GDP). Whereas South African SMMEs contribute 36% to national GDP and create 40% of the jobs, the lowest among the BRICS economies (Kumah and Omilola, 2014: 3; GEM, 2017: 93; Yu, 2017).

In South Africa and other developing countries, small businesses, in particular, micro-enterprises operate in both informal and formal sectors (Mendi and Mudida, 2018: 326). This study focused on micro-enterprises that operate in the informal sector of the Gauteng Province, South Africa. According to Links, Hart and Jacobs (2014: 175) and De Beer and Armstrong (2015: 62), there is still a debate about what constitutes the informal sector. A synopsis of this debate is provided under the literature review section (Chapter 2) of this study.

In 2015, STATSSA reported that there were 2 251 821 SMMEs in South Africa. Of the 2 251 821 SMMEs, 667 433 are formal whereas 1 497 860 are informal. The remaining 86 528 SMMEs were classified as other. Of the 1 497 860 informal firms, 465 100 are in the Gauteng Province. This represents 31% of informal firms in South Africa (SEDA, 2016: 17). Although South Africa is not short of small businesses, according to SEDA (2016: 10) and Asikhia and Van Rensburg (2015: 1-2), it is estimated that 70 - 80% of all new small businesses shut down in the first year and those that survive the first year rarely exist for more than five years (Rogerson, 2000: 687; Nemaenzhe, 2010: 34; DSBD, 2018: 6). On

the contrary, in the USA, at least 70% of small businesses get through the first two years and about 55% only shut down in the fifth year (Remund, Ortiz and Gehrke, 2017: 1).

Innovation has been recognised as a catalyst that increases informal micro-enterprises' probabilities to survive. Innovative informal micro-enterprises are likely to grow faster than those that do not innovate (Mendi and Mudida, 2018: 327; Links, Hart and Jacobs, 2014: 177-179). Furthermore, informal micro-enterprises can use innovation to outperform competitors, stay relevant, increase their export probabilities, become large enterprises and also become intriguing employers of highly skilled personnel (Smit, 2017; Asikhia and Van Rensburg, 2015: 6; Ivers, 2013; Gkypali, Rafailidis and Tsekouras, 2015).

Despite the aforementioned innovation benefits, empirical innovation studies conducted in the informal sector of the Gauteng Province and other parts of South Africa revealed that informal micro-enterprises engage less in innovation activity and those that innovate often engage in incremental rather than radical innovation (Mendi and Mudida, 2018: 328; De Beer and Armstrong, 2015: 63; Links, Hart and Jacobs, 2014: 178; La Porta and Shleifer, 2014).

The aforementioned predicament has been attributed to informal micro-enterprises' lack of innovation capacity. Thus, this study sought to design a tailored creative innovation framework that can aid informal micro-enterprises to engage in innovation activities with their imperfections.

This study was guided by Arrow's (1962) innovation management theory, which hypothesised that small businesses are more innovative than large businesses as they are in a race to increase their market share. The study was also guided by the dualist and the legalist schools of thought. Furthermore, this study was guided by Cooper's stage-gate model (Cooper, 1993), which provides for all basic key innovation stages. Accordingly, this model assisted us to understand if innovation has taken place during the investigation process and also assisted us to design the creative innovation framework. As explained by Izadi, Zarrabi and Zarrabi (2013: 150), "innovation models can be very important as benchmarking tools for understanding the actual pattern followed by firms and they can also assist to develop other models".

The study employed the sequential explanatory mixed-methods research. Both primary and secondary data were obtained through literature review, questionnaire, and semi-structured interview. The collected data were analysed through descriptive statistics,

correlation analysis, factor analysis, thematic and constant comparison methods; themes were extracted, compared and interpreted.

1.2 Background

In terms of the National Development Plan, South African small businesses are expected to contribute more than 60% to the GDP and create 90% of all new jobs by 2030 (The Presidency, 2012: 119; Kumah and Omilola, 2014: 4).

Despite the aforementioned targets, it was noted in the preceding section that the survival rate of small businesses, including informal micro-enterprises in the townships of the Gauteng Province and other parts of South Africa is comparatively low (SEDA, 2016: 10; Asikhia and Van Rensburg, 2015: 1-2; Rogerson, 2000: 687-712). When small businesses shut down, the probability to sufficiently grow the economy, create jobs and alleviate poverty ceases to exist (SeedAcademy, 2017).

It is apparent from the literature reviewed that innovation is a catalyst that can increase informal micro-enterprises' probabilities to survive and transform them from survivalists to sustainable firms that create jobs, grow the economy and alleviate poverty in the process (Mendi and Mudida, 2018: 327; Links, Hart and Jacobs, 2014: 177-179).

As mentioned earlier, informal micro-enterprises engage less in innovation activities and those that do innovate often engage in incremental rather than radical innovation. According to the European Commission (2014: 2), this can be attributed to the actuality that, very small businesses – mostly informal micro-enterprises cannot substantially invest in research and development as they have limited financial and human resources. Thus, they have low R&I development and absorptive capacity. The innovation capacity is seriously limited by firm size and a lack of collaboration networks between informal micro-enterprises, large enterprises and universities (Groepe, 2015: 9; Nieuwenhuizen and Roberts, 2012: 20; Booyens, Molotja and Phiri, 2012: 295; Booyens, 2011: 69-70). Furthermore, as explained by SeedAcademy (2017: 2) the overall challenges facing South African small businesses remain the same and small businesses are becoming less optimistic.

Meanwhile, innovation Scholars, who are mostly from western economies designed innovation models/frameworks that illustrate that radical and incremental innovation require substantial investment in R&D, formally groomed human capital, well established structural capital and innovation collaboration networks between small businesses, large enterprises and knowledge organisations, such as universities (Silviana, 2018: 894-896;

Abdu and Jibir, 2017: 1-7; Stock *et al*., 2017: 221; Seifried, Katz and Tutka, 2016; Izadi, Zarrabi and Zarrabi, 2013: 147-150; Serrano-Santoyo, 2013; Luiz, 2002; Georgellis, Joyce and Woods, 2000).

1.3 Problem statement

The existing literature revealed that previous empirical studies conducted in the informal sector focused on the identification and measurement of informal micro-enterprises' innovations. Some of these studies concluded that the informal sector is not a viable environment for innovation activities (Mendi and Mudida, 2018: 326-335; De Beer and Armstrong, 2015; Links, Hart and Jacobs, 2014: 175-184; La Porta and Shleifer, 2014). These studies paid little attention to the need to determine how the existing informal micro-enterprises' innovations took place throughout the key basic innovation stages (i.e., the innovation value chain). Subsequently, previous related studies did not establish an understanding of the process that is followed by informal micro-enterprises to engage in innovation activity. They do not clearly indicate how innovative ideas are generated, evaluated and selected; how the selected ideas are transformed into products, services, processes, marketing strategies and other forms of innovations; how new products, services, processes and so forth are tested; and how such innovations are introduced in the market. Moreover, the existing innovation models do not provide direct guidance on how informal micro-enterprises can engage in radical and incremental innovation activity with their imperfections.

The existing innovation models/frameworks are not tailored for informal micro-enterprises' context. Subsequently, they fail to provide guidance on how to creatively innovate with little or no formal investment in research and development; no financial and non-financial support from the government; as well as innovation collaboration networks between informal micro-enterprises, large enterprises and universities. As explained by Izadi, Zarrabi and Zarrabi (2013), the existing innovation models assume an established innovation system. Thus, the application of these models in developing countries becomes a challenge. Similarly, De Beer and Armstrong (2015) explained that the existing innovation models do not provide direct support on a practical level on how ideas can be generated for innovation purposes.

This study thus sought to design a tailored creative innovation framework that will serve as a guide for informal micro-enterprises in the townships of Gauteng Province to engage in radical and incremental innovation with their imperfections. To realise this, the study had to establish an understanding of the process that is followed by informal micro-enterprises

to engage in radical and incremental innovation. In light of the challenges that informal micro-enterprises encounter, the designed creative innovation framework will aid to turn threats into opportunities.

The world is imperfect and the necessary conditions are often absent. In cognisance of the innovation benefits in a global economy, it is necessary to establish new means to encourage its adoption and leverage (Gummesson, 2014). Similarly, Rose, Jones and Furneaux (2016: 308) posit that innovation in small businesses requires independent studies because smaller businesses may innovate in a manner that is different from large enterprises. Whereas De Beer and Armstrong (2015: 68) concluded their study by pointing out that, the innovation activity of micro-enterprises on the African continent remains an under-explored area, with many gaps to be filled. Kalitanyi (2019: 54) also explained that SMMEs studies in South Africa, “have paid little attention to the informal sector”.

A study conducted by Pylak and Wojnicka-Sycz (2016: 2179) proved that amendments to regional innovation models and frameworks enhance the development process of developing regions. Furthermore, Groepe (2015: 5) explained that micro-enterprises and other small businesses irrespective of their circumstances have to innovate to become sustainable. Similarly, according to SAICA (2015: 3), it is not sufficient to only stimulate small business creation to create jobs and grow the economy. The stimulation of existing micro-enterprises and other small businesses to grow may be more beneficial to job creation and economic growth. In his study, Van Der Merwe (2017: 17) maintained that there is a need to develop micro-sized enterprises.

1.4 Research questions

The identified research problem(s), aim and objectives led to the formulation of the following research questions:

1) What is the contemporary innovation orientation of informal micro-enterprises in the townships of Gauteng Province?

2) How do informal micro-enterprises in the townships of Gauteng Province engage in radical and incremental innovation?

3) To what extent do informal micro-enterprises in the townships of Gauteng Province use the existing innovation models/frameworks as a guide to engage in radical and incremental innovation?

4) What should a creative innovation framework that will guide informal micro-enterprises in the townships to engage in radical and incremental innovation with little or no investment in research and development; no financial and non-financial support from the government; and no collaboration networks with large enterprises and universities look like?

1.5 Research aim and objectives

Aim: This study sought to design a tailored creative innovation framework that will guide informal micro-enterprises in the townships of Gauteng Province to engage in radical and incremental innovation with their imperfections.

The designed creative innovation framework includes idea generation mechanisms suitable for informal micro-enterprises; feasible idea evaluation mechanisms; feasible sources of funding; suitable product, service, process and other forms of innovation development mechanisms; suitable product, service, process and other forms of innovation testing mechanisms; and suitable marketing strategies for innovation diffusion amongst others. The identified research problem(s) and the aforementioned aim led to the formulation of the following research objectives:

1) To understand the contemporary innovation orientation of informal micro-enterprises in the townships of Gauteng Province.

2) To understand how informal micro-enterprises in the townships of Gauteng Province engage in radical and incremental innovation.

3) To determine the extent to which informal micro-enterprises in the townships of Gauteng Province use the existing innovation models/frameworks as a guide to engage in radical and incremental innovation.

4) To determine how a creative innovation framework that will guide informal micro-enterprises in the townships to engage in radical and incremental innovation with little or no investment in research and development; no financial and non-financial support from the government; and no collaboration networks with large enterprises and universities should look like.

1.6 Contributions of the study

Although innovation has been recognised as a catalyst that can enable informal micro-enterprises to transform from survivalists to sustainable businesses that create jobs, grow the economy and alleviate poverty, the existing literature revealed that the innovation

activity of South African informal micro-enterprises is comparatively low and often incremental rather than radical (Groepe, 2015; De Beer and Armstrong, 2015: 63). This has been attributed to innovation capacity constraints that informal micro-enterprises continue to encounter.

It is further evident from the reviewed literature that the existing innovation models/ frameworks are not tailored for informal micro-enterprises' context. Subsequently, the existing innovation models/ frameworks fail to provide guidance on how informal micro-enterprises can innovate with little or no investment in R&D, no financial and non-financial support from the government, as well as collaboration networks between informal micro-enterprises, large enterprises and universities.

This study sought to design a creative innovation framework suitable for informal micro-enterprises in the townships of Gauteng Province. The creative innovation framework referred to here, will guide informal micro-enterprises in the townships of Gauteng and most probably other parts of South Africa to engage in radical and incremental innovation with little or no investment in research and development; no financial and non-financial support from the government; and no collaboration networks with large enterprises and universities, thereby turning threats into opportunities.

The aforementioned creative innovation framework will be a major contribution to literature. Effective application of the creative innovation framework would enhance corporate performance. This would enable informal micro-enterprises to transform from survivalists to sustainable businesses that create jobs, grow the economy and alleviate poverty in the process. The creation of jobs would be a positive response to the policy targets set in the South African National Development Plan. The NDP indicates that small businesses are expected to create 90% of all new jobs by 2030 (The Presidency, 2012). Moreover, the study extends the concept of innovation activity to informal micro-enterprises.

Lastly, this study has led to the conceptualisation of the following manuscripts:

a) Innovation activities of informal micro-enterprises in Gauteng, South Africa: A systematic review of the literature. This article was presented at the ICBMD Conference – 2019 and the refined version thereof was submitted to the African Journal of Science, Technology, Innovation and Development for publication.

Following a long battle between the authors, the reviewers and the editor, the manuscript was accepted and published.

b) Establishing a Creative Innovation Framework for informal Micro-Enterprises. This manuscript was submitted to the Acta Universitatis Danubius, Economica. Fortunately, it was accepted and published.

c) Understanding the contemporary innovation orientation of informal micro-enterprises. This article was presented at the 12th annual ISDSI Conference – 2018 and the refined version thereof was submitted to the International Journal of Innovation, Creativity and Change for publication. Fortunately, it was accepted and published.

d) Establishing an understanding of the innovation value chain of informal micro-enterprises. This manuscript was submitted to the African Journal of Science, Technology, Innovation and Development for publication. At the time of submission of this thesis, the manuscript was under review.

Since the aforementioned manuscripts were extracted from this thesis, the reviewers' comments assisted us to improve the contents of this thesis as well.

1.7 Research delimitations

In cognisance of the significance of the study and the desire to enhance the generalisability of the findings, it was ideal to conduct this study in several provinces of the Republic of South Africa, but due to financial, time and other constraints, the study was only conducted in the townships of the Gauteng Province.

There could be formal small businesses, urban and rural informal micro-enterprises that engage in successful creative innovation activity with little or no investment in research and development, no government support and collaboration networks with large enterprises and universities. Thus, to enhance the validity and reliability of the findings of the study, it would have been ideal to get an insight of how the aforementioned firms successfully engage in creative innovation activity under the aforementioned circumstances but the study only sampled informal micro-enterprises in the townships as the research problem is more relevant to them. As explained by Agwa-Ejon and Mbohwa (2015), informal micro-enterprises are mostly concentrated in the townships and townships' informal micro-enterprises have great potential to engage in innovation activities.

1.8 Research limitations

We consider the limited availability of literature on innovation activities of informal micro-enterprises and unavailability of secondary data such as databases and statistical data relating to innovation activities of informal micro-enterprises as major limitations of the study. If the aforementioned data were available, it would have allowed us to gain an in-depth insight into innovation activities of informal micro-enterprises in the townships before the collection of primary data. Moreover, the quantitative phase of the study would have had a sampling frame.

Furthermore, due to the limited availability of literature on innovation activities of informal micro-enterprises, some aspects of the study (e.g., factors that are considered when evaluating and selecting innovation ideas) could not be tested quantitatively. We have included this limitation in the recommendations for future research. Moreover, future researchers can replicate the study and test the aforementioned aspect(s) quantitatively.

This study was also limited by the sample as it was drawn conveniently from townships in Gauteng Province. This limits the generalisability of the study's findings. We have also included this limitation in the recommendations for future research.

1.9 Definition of key concepts

1.9.1 Township informal micro-enterprises

In this study, township informal micro-enterprises refer to unincorporated micro-enterprises that are located in the suburb or city that is mostly occupied by black people and was set aside for black people by the apartheid regime (Marnewick, 2014: 1; Chimucheka, 2013: 785).

According to Moonsamy (2017: 8), the number of employees is the most reliable tool that can be used to measure the size of a firm. Therefore, the study focused on townships' unincorporated micro-enterprises that have one to ten employees, and often not registered. Furthermore, the study focused on informal micro-enterprises that have engaged in an innovation activity during the period, 01 January 2016 to 31 December 2018.

1.9.2 Innovation

In this study, innovation refers to the creation, commercialisation and diffusion of new products, services and also the introduction of novel or improved processes, marketing strategies and organisational structures (Smith, 2015).

According to Raymond *et al.* (2015: 286), a firm is considered an innovator, if it has introduced a novel or improved product, service, process, marketing strategy, or organisational structure in the past three years. Similarly, Mendi and Mudida (2018) argued that a business is regarded as an innovative business if it has launched a novel or improved product or service in a certain period. Thus, the study focused on townships' informal micro-enterprises that have launched a novel or improved product, service, or process in the past three years.

1.9.3 Creative Innovation

In this study, creative innovation is considered as a systematic process that requires owners and employees of firms to conceptualise new ideas, alternatives and possibilities; evaluate and select viable new ideas, alternatives and possibilities. Following the preceding steps, the selected new ideas, alternatives and possibilities are transformed into new or improved products or services that are offered and purchased in the market; and in the case of processes, implemented accordingly. Creative innovation often leads to radical changes (Batabyal and Yoo, 2017; Yu and Alex, 2014: 359-368).

While other forms of innovation emphasise the need to substantially invest in formal research and development to innovate, creative innovation requires intensive use of the human mind to innovate (i.e., to strategically think in order to innovate). Thus, the study focused on the intense use of the human mind and other suitable mechanisms by townships' informal micro-enterprises as innovation enablers.

1.10 Ethical considerations

According to Leedy and Ormrod (2014: 106), ethical issues are relevant in any study where the subjects of investigation are humans or any creature that has feelings and can think amongst other relevant features. Ethical issues have been grouped into the following categories, protection from harm, informed consent, right to privacy, and honesty with professional colleagues (De Vos, 2002; Leedy and Ormrod, 2014: 107-110).

Ethical issues are therefore relevant to this study as the subjects of investigation are informal micro-enterprises in the Gauteng Province that are owned, managed and operated by human beings. Accordingly, we sought and obtained ethical clearance from the University's Ethics Committee before primary data could be collected.

Through the completion of consent forms (Appendix B) with the respondents, we ensured that participants were fully informed about the purpose of the study; informed them that their participation was voluntary and they could withdraw at any given time. We ensured

that the participants understood the extent of their commitment to the study; that their identities will be protected and that there are minimal risks associated with their participation.

Furthermore, the study also adhered to copyrights prescripts to avoid plagiarism, and tertiary institutions' ethical codes. We further declare that no information of this study was misrepresented.

1.11 Study layout

This study followed the traditional thesis layout. Accordingly, the study is divided into five chapters as briefly explained below.

Chapter 1

This chapter includes the introduction and background of the study. It contains the research problem (s), aim of the study, objectives of the study, and research questions. It provides an overview of this study's contributions, sets out the preliminary review of the literature and briefly explains the methodology that was followed to conduct the study.

Chapter 2

This chapter includes full literature review. It provides insight into other researchers who studied a similar research problem. This was done not only to present what is already known but also to determine the research gaps that this study addressed and those that would be addressed by future studies.

Chapter 3

In this chapter, we presented the tools and techniques used to address the research problem and answer the research questions. Among others, we described the research method applied, the philosophical domain adopted, theories and schools of thought adopted, the study area and the population. We further explained how respondents and participants were sampled, how data were collected, analysed and interpreted.

Chapter 4

In this chapter, we presented the analysis of data from both the quantitative and qualitative phases. We presented the findings, integrated the findings from the quantitative and qualitative phases and provided a holistic discussion that is aligned to the research problem, objectives and questions. Moreover, we presented the creative innovation framework and the results of the validation process.

Chapter 5

Lastly, in this chapter, among others, we revisited the research objectives to determine if the study was able to meet its objectives. We also revisited the research design to determine if it was appropriate for the study. We then provided a detailed presentation of the study's contributions, recommendations for future research and conclusion.

1.12 Summary

There is still a debate relating to what constitutes the informal sector. Nonetheless, the common understanding has been that firms that operate in the informal sector are usually unincorporated, they are often unregistered and their employees are often unregistered. Notwithstanding this, a firm that is registered but fails to register its employees is considered to be informal.

Although the informal micro-enterprises often engage in small scale productions and employ up to ten employees, the literature reveals that they play a prominent role in the economy and have potential to transform from survivalists to sustainable businesses that significantly contribute to economic growth and job creation. Furthermore, the informal micro-enterprises require all forms of support.

It was also evident that some informal micro-enterprises engage in innovation activities. Nonetheless, their innovations are often incremental than radical. The informal micro-enterprises do not invest in research and development, they often do not engage in formal learning to acquire the knowledge necessary to innovate, they often lack human and structural capital. Thus, there is a need for an innovative solution that considers their imperfections. Such an innovative solution can aid to unleash informal micro-enterprises' potential. In the next chapter, we systematically review the literature on innovation activities of informal micro-enterprises.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter presents the arguments and views of previous authors on the key concepts of the study (i.e., what is known), and also present the gaps identified in the literature (i.e., what is not known). The existing literature was systematically reviewed. Key terms such as township, informal micro-enterprises, innovation, creative innovation, innovation orientation, innovation framework and model were used to search for relevant books, journal articles, theses, and dissertationson several databases (i.e., ScienceDirect, Sabinet, EBSCO, SA e-Publications, etc.). The identified documents were evaluated for relevance and relevant documents were selected. The selected documents were analysed and synthesised.

Accordingly, in this chapter, we review the literature on the innovation concept; the distinction between radical, incremental, open and closed innovation. We review the literature on the role of innovation in economic growth, the innovation process, and innovation fostering and limiting factors, among others. Furthermore, we review the literature on the informal sector, the role of informal micro-enterprises in the economy, and the innovation activity of informal micro-enterprises in the Gauteng Province under several topics. We did not only present what is known, wealso expressed our views and what is not known under each section.

2.2 Innovation activity

Ivers (2013) and Smith (2015) explained that innovation involves creativity, commercialisation and diffusion of new products or services; the launch of novel or improved processes; introduction and implementation of new or improved marketing strategies; and changes to the organisational structure. A complete innovation process can be resembled by the conception of a novel idea, conversion of that idea into a novel product or service that is offered in the market, purchased and consumed by customers. Innovation can also be in the form of novel or improved processes, organisational structure, marketing strategies that are introduced and implemented within the firm and in some instances shared with other firms.

Maas, De Coning and Smit (1999) assert that innovative businesses will most probably develop faster than businesses that do not innovate. Similarly, Gkypali, Rafailidis and

Tsekouras (2015) aver that innovation is crucial for businesses to remain competitive in a dynamic business environment. Innovative small businesses will most probably transform into large businesses and also become intriguing employers of highly skilled personnel. Innovation is a necessity for small businesses if they want to fully develop and become sustainable (Ivers, 2013).

2.3 Creative innovation

Creative innovation can be regarded as a systematic process that requires owners and employees of firms to conceptualise novel ideas, alternatives and possibilities; evaluate and select viable novel ideas, alternatives and possibilities. Following the preceding steps, the selected novel ideas, alternatives and possibilities are transformed into novel or improved products, services, or processes that are sold in the market and in the case of processes, implemented accordingly. If well applied, creative innovation often leads to radical changes (Batabyal and Yoo, 2017; Yu and Alex, 2014: 359-368).

While other forms of innovation emphasise the need to invest in R&D to innovate, creative innovation requires an intensive use of the human mind to innovate.In the table below, we provided a comparison between creativity features and innovation features. A combination of the features of these two concepts informed the creative innovation phenomenon:

Table 2.1: Distinction between creativity and innovation

Basis for comparison	**Creativity**	**Innovation**
Meaning	Creativity involves creating novel ideas, imaginations, possibilities, alternatives, solutions. Ability to conceive something unique, unpredictable, and original	Innovation relates to the launch of something novel or an alternative in the market
Process	Imagination	Production
Quantifiable	No	Yes
Related to	Conceptualising something novel or an alternative	Launching something novel or an alternative
Money consumption	No	Yes
Risk	No	Yes

Source: Lavoie and Abdulnour (2015: 911); Yu and Alex (2014: 359-368)

We observed in the table above that, on the one hand, creativity relies heavily on the use of the human mind to conceptualise something novel or an alternative and no financial resources are required to be creative. On the other hand, innovation takes place when something novel or an alternative is launched in the market and financial, as well as other forms of resources are required to innovate. Accordingly, creativity can lead to innovation when conceptualised novel things or alternatives are brought to reality, launched and diffused in the market. Novel ideas that are not implemented are not innovation.

Lavoie and Abdulnour (2015: 911) explained that a creative firm creates new, improved and useful products, procedure or process by individuals who work together. The creative performance of a firm can be judged by appropriate observers who are experts in that domain by confirming that indeed an idea generated, product or process introduced is novel, orignial or unsual (Lavoie and Abdulnour, 2015: 911).

Brunow, Birkeneder and Rodriguez-Pose (2017: 1) argued that to be able to produce original and unsual ideas that would often lead to new or improved innovations, one needs to have knowledge and information. Moreover, Lavoie and Abdulnour (2015: 912) argued that a creative individual(s) formulates creative ideas, establishes feasible plans for

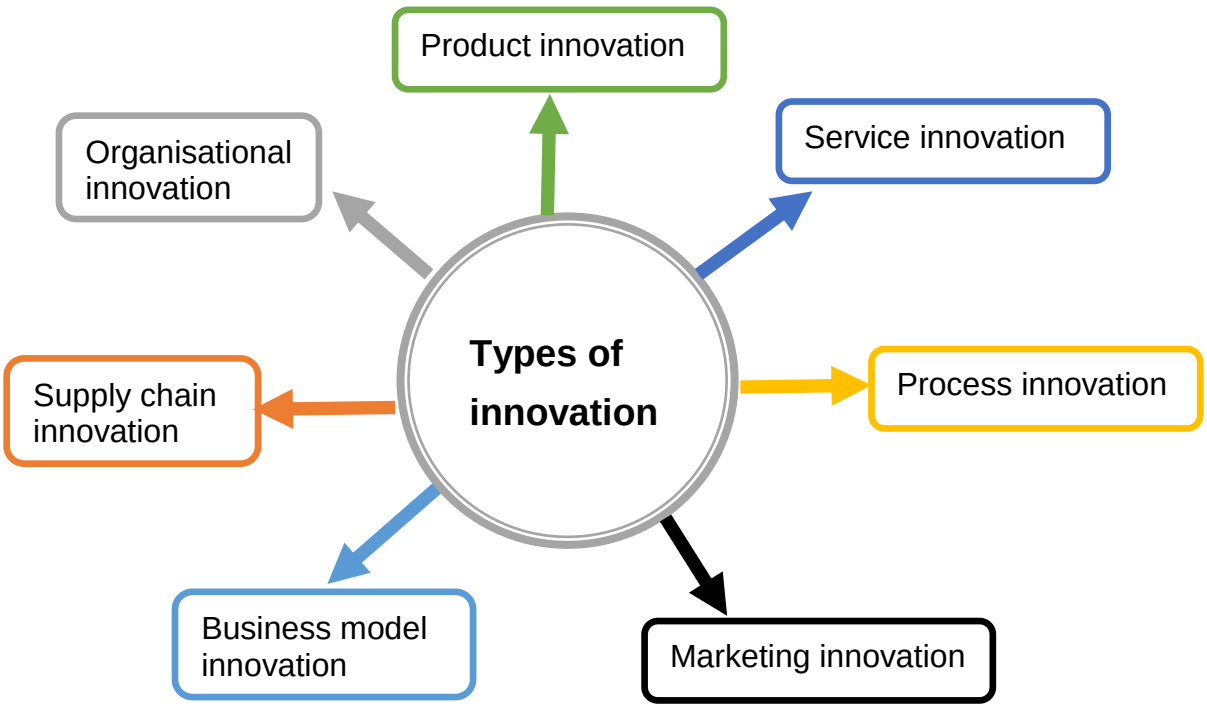
implementation, promotes ideas, seeks and obtains resources required to implement creative ideas; and is innovative.

The existing literature revealed that owners and employees of informal micro-enterprises lack formal education, thus we are yet to find out how the innovating informal micro-enterprises acquire knowledge and information necessary to formulate original and unusual ideas. So far we know that they depend on experiential learning to do day-to-day activities but coming up with an original and unusual idea may require knowledge and information that may not solely be obtainable from experiential learning. The existing literature further revealed that informal micro-enterprises do not invest in R&D, and they lack resources necessary to innovate. Thus, we are yet to find out how innovating informal micro-enterprises formulate innovative ideas, how they transform such ideas into innovations that are sold in the market, and so forth.

2.4 Types of innovation

There are several forms of innovation. To ascertain if innovation has taken place, it is imperative to be familiar with these forms of innovation. The contemporary known forms of innovation are explained below:

Figure 2.1: Types of innovation



Source: Kahn (2018: 2); Hsieh and Chou (2018: 85); Booyens, Molotja and Phiri (2012)

2.4.1 Product innovation

According to Kahn (2018: 2), product innovation refers to novel products, services, and novel programmes that are offered and consumed in the market. What is important to note in this definition is that the author qualifies a new product to be a product innovation only when it has been offered in the market. Product innovation can be broken down into several types, namely, new to the world products, product improvements, line extensions, new markets, and new category entries.

New to the world products are product innovations that are radical and often lead to the establishment of new industries or markets. An example of a new to the world product will be the launch of a drug that cures COVID-19. New products often require substantial supplementary resources and amendments to the organisation's production procedures or processes (Kahn, 2018: 3). This suggests that radical innovation is more costly than incremental innovation.

Product improvements are changes that enhance form or performance. In most cases, the improved product would replace the original product in the market. Product improvements could also be in the form of packaging changes, in case the core product offered to the customer does not change (Kahn, 2018: 2).

Line extensions occur when a firm introduces options to an existing product. The new options would offer exceptional benefits and performance that the original product does not offer. For instance, the original Coca-Cola and the additional flavours. Product improvement differs from a line extension in the sense that, when a line extension is launched, the existing offering can still be purchased by the consumer in the market (Kahn, 2018: 3). Other types of product innovation such as new markets involve taking existing offerings to new markets with minimal amendments to the offering; whereas new category entries are offerings that are new to the firm but not new to the customer as a category. For instance, the introduction of a pick up truck by Mercedes Benz. Although a pick up truck is new to Mercedes Benz, it is not new to the customer.

2.4.2 Service innovation

Hsieh and Chou (2018: 85) described service innovation as, "a core concept to improve service performance and add customer value through a systematic and scientific approach".

2.4.3 Process innovation

According to Booyens, Molotja and Phiri (2012), process innovation occurs when a firm implements novel or substantially refined production or delivery processes/mechanisms. This also includes substantial amendments to equipment and systems or software. Process innovation is often aimed at faster processing, greater output and cost reduction, among others (Kahn, 2018: 4).

2.4.4 Marketing innovation

Marketing innovation involves introducing new ways of reaching out to customers. Such new ways include the introduction of novel promotional methods. Accordingly, marketing innovation aims to stimulate demand for a firm's offerings by generating cognisance, brand realisation, and offering distinctiveness (Kahn, 2018: 4).

2.4.5 Business model innovation

Kahn (2018: 4) argued that business model innovation can be considered as an output that modifies the industry. Accordingly, there are three basic forms of business model innovation, which are, "industry model innovation, revenue model innovation and enterprise model innovation". Industry model innovation involves venturing into new industries or reinventing the existing industries. Revenue model innovation relates to the making of revenue by offering reform of the product, service or value mix and pricing models. Lastly, the enterprise model innovation relates to "innovating the role played in the value chain by changing extended enterprise and networks with employees, suppliers, and customers" (Kahn, 2018: 4).

2.4.6 Supply Chain Innovation

Supply chain innovation occurs when the firm effect changes to supply chain processes, supply chain networks and technology. This is often done to enhance efficiency while generating value for the customers and stakeholders simultaneously (Kahn, 2018: 4).

2.4.7 Organisational innovation

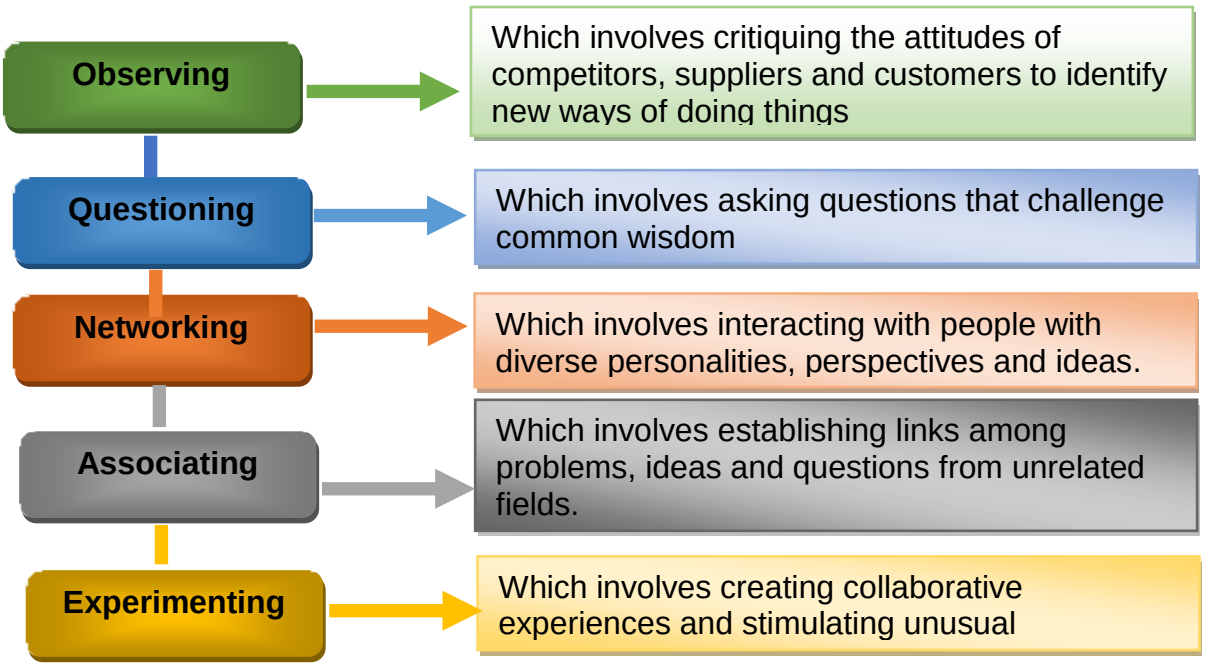
Organisational innovation occurs when changes are made to the organisational structure or hierarchy and when new management styles and working conditions or environments are introduced (Kahn, 2018: 5).

2.5 Innovation as an outcome, a process and a mindset

To reap innovation benefits, firms must understand that innovation can take a form of an outcome (i.e., types of innovation explained above), process (the innovation process is described in Section 2.9 of this chapter) and mindset. Innovation as a mindset relates to

the internalisation of innovation by every person in the business and enabling a conducive environment in the firm. Dyer, Gregersen and Christensen (2011) described five factors that trigger new ways of thinking, stimulate and support innovation. The figure below depicts these factors:

Figure 2.2: Factors that trigger new ways of thinking



Source: Dyer, Gregersen and Christensen (2011)

When practiced at an individual and organisational setting, these factors enable individuals and organisations to think differently, across the board and openly. Kahn (2018: 6-7) distinguished between innovation as an outcome, a process, and a mind-set. This distinction is depicted in the table below:

Table 2.2: Distinction between innovation as an outcome, process and mind-set

Element	Strategic focus	Strategic question	Consideration
Innovation as an outcome	Output	What has to happen	Product innovation, service innovation, process innovation, marketing innovation, business model innovation, supply chain innovation, organisational innovation
Innovation as a process	Procedures and techniques	How will we bring it to reality	Innovation process
Innovation as a mind-set	Human capital	What should be inculcated and deep-rooted to prepare for the what and the how	Individual mindset, organisational culture

Source: Kahn (2018: 6-7)

2.6 Distinguishing radical innovation from incremental innovation

All types of innovation explained in Section 2.4 of this chapter can either be radical or incremental. This triggers a need to distinguish radical innovations fromincremental innovations.

Booyens, Molotja and Phiri (2012) explained that the extent to which a firm innovates its products, services, and processes, among other forms of innovation, is classified as either radical or incremental innovation. Radical innovations are innovations that are new to the world whereas incremental innovations are improvements that are made to existing products, processes, services and so forth. Incremental innovations also relate to the introduction of products, services and so forth that are new to the firm but not generally new to the customer; as well as product line extensions among other forms of incremental innovations.

Jugend *et al.* (2018: 10) asserts that “it is widely understood that radical and incremental innovation efforts require different management practices, capabilities and organisational components”. Firms that often introduce radical innovations extensively invest in R&D and practice open innovation to some extent. Similarly, De Beer and Armstrong (2015) argued that radical innovations are primarily found in developed countries and are based on research and development at the frontiers of global knowledge. The authors further argued that, in developing countries, innovations are primarily new to the market or new to the firm (incremental innovations). This argument is questionable as there has been evidence of radical innovations that occurred in developing countries. As pointed out by Mowatt (2018), the first heart transplant was performed in South Africa, and South Africa was also the first country in the world to produce oil from coal. Nonetheless, it is imperative to acknowledge that, if the developing countries’ innovations are to be quantified, they may not be approximate to those of the developed countries.

Kahn (2018: 1) considers radical innovation to be demanding, depending on the nature of the business, it may need distinct resources and it is riskier than incremental innovation. Thus, businesses must strike a balance between radical and incremental innovations. This will enable businesses to attain short term wins while they are pursuing long term wins. Accordingly, businesses should engage in both radical and incremental innovation simultaneously. Notwithstanding the above, for a country like South Africa with economic stagnation and high unemployment rates, radical innovations are more desirable, as radical innovations often lead to the emergence of new industries.

2.7 Radical and incremental innovations can occur as a result of open or closed innovation process

Although we have distinguished between radical and incremental innovation above, it is also crucial to highlight that these two key forms of innovation can occur as a result of open or closed innovation process.

2.7.1 Open innovation versus closed innovation

Traditionally innovation occurred as a closed process often due to issues relating to competitive advantage. Open innovation is a phenomenon that was introduced by Henry William Chesbrough in 2003. It involves the utilisation of both internal and external knowledge and innovative ideas to innovate (Moonsamy, 2017). This suggests that it requires a substantial utilisation of innovation collaboration networks among role players within and outside the firm or within the national innovation system. Accordingly,

innovative ideas generated outside the firm by other role players could be implemented by and within the firm.

The open innovation concept was conceptualised based on the view that businesses should leverage external innovative ideas and technologies in their own businesses and let unutilised internal innovative ideas and technologies be utilised by other firms (Moonsamy, 2017). Similarly, Amini, Torane and Hernandez-Munoz (2015) argued that open innovation involves collaborating with associated partners sharing risks and rewards. The widely accepted forms of innovation collaboration networks are "CoPs, virtual networks and networked organisations" (Links, Hart and Jacobs, 2014).

Accordingly, a firm would address its needs with the capabilities of other firms/organisations, thereby reducing the R&D costs. Although the open innovation process sounds beneficial, businesses that engage in this process may have to reveal confidential information or intellectual property rights.

In light of the benefits of open innovation, and the challenges small businesses continue to experience, open innovation sounds like an ideal innovation process for small businesses. As explained by Dodourova and Bevis (2014), the application of open innovation suggests that small businesses would provide innovative ideas to large businesses and large businesses would take over experimentation, exploitation, manufacturing, launch, delivery and other processes that follow. Such a cooperative relationship can complement the cumbersome structures of large businesses and resource shortages of small firms.

Notwithstanding the above, Dodourova and Bevis (2014) further explained that open innovation or rather the incoming and outgoing of innovative ideas is highly dependent on trust. Links, Hart and Jacobs (2014) corroborated this argument by stating that innovation collaboration networks are mostly based on trust built in a certain period and perceived subsequent benefits. Accordingly, literature revealed that it is difficult for large businesses to share knowledge with small businesses often due to lack of trust. It is also difficult for small businesses to engage in innovation collaboration networks with universities as in small firms' perspective, universities have a different agenda.

Despite all odds associated with open innovation, a study conducted by Jugend *et al.* (2018) revealed that innovation collaboration networks have a positive effect on firms' innovative performance. On the contrary, a study conducted by Gkypali, Filiou and Tsekouras (2017: 143) revealed that closed innovation (i.e., mostly what has been discussed under innovation process, Section 2.9) or internal innovation efforts positively

influence firm innovative performance. Despite the benefits that can be accrued from open innovation, open innovation could be costly as a result of associated activities such as research, management, coordination, knowledge exchange, and so forth. This could fundamentally discourage small businesses to engage in open innovation.

In light of the above, there are contrary views relating to the relationship between open innovation and firm's innovative performance, as well as the relationship between closed innovation and firm's innovative performance. Where there are contrary theories, empirical studies can assist us to find clarity.

Silviana (2018) distinguished closed innovation from open innovation by stating the principles relating to both phenomena. The following table depicts a distinction between closed and open innovation:

Table 2.3: Distinction between closed and open innovation

Closed innovation	**Open innovation**
The business employs experts to work as employees	Uses experts as either employees or external collaborators or even both
The business carries out all phases of the innovation process	Innovation phases are complementarily carried out externally and internally
"The first market uptake of innovation is ensured only if the innovation is created and developed internally".	"Innovation exploitation is possible even when it was not created and or developed by the firm itself".
If the business is the first to launch the innovation, it would have high probabilities to leverage the innovation	Designing and implementing an efficient business model is imperative for the business to leverage innovations than launching the innovation first
The business can attain a competitive advantage by constantly conceptualising leading innovative ideas	The business can attain a competitive advantage by efficiently utilising both internal and external innovative ideas
The business can maintain a competitive advantage by protecting its innovations	The business can maintain a competitive advantage by designing joint strategies to ensure cost reduction and technological advancement based on selling or licensing own innovations and purchasing external innovations

Source: Silviana (2018)

The key point to note on the distinction between closed and open innovation is that, with closed innovation, all innovation stages take place within the business. Whereas with open innovation, at least one innovation stage should take place in collaboration with another business, organisation or any other innovation role player that is outside the firm.

Little is known about whether informal micro-enterprises often practice closed or open innovation.

2.7.2 A scenario illustrating innovation collaboration networks between firms at work

Links, Hart and Jacobs (2014) conducted a study in South Africa that, among others, investigated the innovation activities of businesses based in rural areas. Although the firms interviewed were registered and classified as formal firms, the study provided a good example of innovation collaboration networks at work, hence it has been used in this study.

The authors interviewed a farmer, who farms groundnuts. The farmer engaged in innovation activity to increase profits. One of the farmer's recent innovations at the time of the interview was the establishment of the peanut blower. The peanut blower is a motorised device mounted to the rear of a tractor to speed up the peanuts picking process by sucking up the peanuts and dropping them in mobile trucks that move alongside (Links, Hart and Jacobs, 2014). The innovative idea was generated due to the need to decrease the number of employees required during the peanuts picking period and also to minimise the picking period. This would then enable the farmer to offer the peanuts in the market before the expected time.

After generating the innovative idea, the farmer designed the peanut blower for implementation and took the designs to an engineering firm for manufacturing. The engineer is located in the local town and had in the past carried out some work for the farmer (Links, Hart and Jacobs, 2014). Thus, trust built through previous interactions had a role in influencing the farmer's decision to approach the engineer and the engineer's decision to accept the task.

The farmer together with the engineer improved the idea and manufactured the peanut blower in line with the farmer's requirements. After completion, the peanut blower was tested on the farm and it met the farmer's expectations (i.e., reducing employees and harvesting time). After it was evident that the peanut blower was effective, it was then marketed and sold in the local market to other farmers (Links, Hart and Jacobs, 2014). In this scenario, what was initiated as a tailor-made innovation ended up being sold in the market to other farmers.

Although this is a good scenario of open innovation activity, the authors fail to enlighten us of how the farmer initially (before refinement with the engineer) conceptualised the innovative idea, what sources of knowledge were used and how the manufacturing process was financed, among others. What triggered the need to innovate was very clear among other issues that were clear.

2.8 The role of innovation in economic growth

LeBel (2008: 335) explained that several factors affect economic growth. These factors are local investment, country's rate of saving, foreign direct investment, the governance of economic institutions such as equity markets, increases in the stock of productive inputs, research and development, as well as technical change. Innovations often happen as a result of R&D that leads to technical change. Thus, innovation substantially contributes to economic growth. Highly innovative economies often attain higher rates of economic growth, whereas less innovative economies often attain low rates of economic growth.

Zhang and Stough (2013) argued that innovation-related investments are crucial drivers of a country's productivity, growth and competitiveness. Moreover, Mohr and Fourie (2008) argued that the promotion of exports is a more sensible growth strategy than stimulating domestic demand. Similarly, Rangasamy (2009) explained that export production promotes long-run economic growth. Accordingly, innovative businesses have a higher chance to enhance productivity and export than non-innovative businesses (Gkypali, Rafailidis and Tsekouras, 2015).

In the United States of America, areas that encountered exceptional economic performance for decades such as Silicon Valley and Northern Virginia, among others, are highly innovative. This also applies to European Union countries and other western economies (Zhang and Stough, 2013).

Ivers (2013) shared the aforementioned sentiment by explaining that small entrepreneurs that innovate play a fundamental role in the U.S. economy, create a substantial number of jobs and substantially contribute to GDP. Furthermore, innovative small businesses have high probabilities to transform into sustainable large businesses that create humongous jobs for highly skilled personnel. Innovation is a necessity for small businesses if they want to fully develop themselves and become sustainable.

Innovation-economic growth nexus is affected by the transformation of ideas into goods and services that are offered and purchased in the market. As explained by Braunerhjelm (2010), a new idea or discovery can only positively contribute to economic growth if it is transformed into commercial value. Thus, a patent that is not commercialised does not necessarily contribute to economic growth. According to Ivers (2013), few patents are commercialised around the globe and the patents that are commercialised do not necessarily give rise to new products and give birth to new industries. The existing literature fails to adequately enlighten us of why very few patents are commercialised globally.

The innovation-economic growth relationship is also affected by the diffusion of new products or services, amongst others. Innovation may not lead to economic progress if the diffusion process is slow or does not occur at all (Compagni, Mele and Ravasi, 2015). This argument makes much sense as, if people are not buying what is being produced irrespective of the attempts made to convince them to buy, then, firms cannot supply more. In such instances, innovation may not translate to economic growth. On the other hand, if firms supply new products and consumers buy, then firms would be encouraged to increase the capacity to produce more. Subsequently, this would translate into economic growth and job creation.

To mitigate risks associated with diffusion failures, Compagni, Mele and Ravasi (2015) explained that information regarding the benefits of innovation has to be widely spread to encourage wide adoptions. However, in an early phase post the launch of a new offering in the market, diffusion is fundamentally influenced by rational valuations of technical, economic, and social gains, amongst others. Word of mouth, media platforms, and other channels scatter information about the positive encounters of early adopters. This fundamentally decreases the uncertainties associated with the innovation, thereby enhancing the chances of late adopters to diffuse the innovation.

Notwithstanding the above, there is a grey area around whether or not innovation translates into job opportunities. In South Africa, Mochiko (2016) wrote an article on financial mail about financial technology, Fintech (a product of technological innovation), which is being adopted by financial institutions in Africa and it makes banking easier and accessible remotely. In this article, the author indicates that Fintech helps grow, educate and enrich the market. However, Fintech developments will come at a price. Automation may result in the reduction of the number of bank branches and this will have an impact on the number of people employed by the financial services sector as some people may lose their jobs and the number of new jobs created would be minimised.

We are of the view that in developing countries like South Africa, where there is a high unemployment rate, it is crucial to promote innovations that enhance corporate performance while creating sustainable jobs in the process. Unfortunately, within the South African context, the existing literature does not adequately enlighten us of how innovations can be implemented in such a manner that does not comprise socio-economic benefits, such as job creation.

Moreover, LeBel (2008: 335) argued that, “in an ever-shrinking world, where growing population places continuous pressure on the stock of natural resources, sustainable growth depends more on how innovation can be nurtured”.

In light of the above, developing countries need innovation more than developed countries as developing countries often have high population growth while they continue to experience a shortage of food, low gross domestic product, and few sources of power, among other economic challenges. These countries should practice innovation in a manner that resolves their economic challenges.

2.9 The innovation process

According to Kahn (2018: 5), a basic innovation process model depicts three stages, namely, “discovery, development and delivery”. During the discovery stage, a firm examines the environments for possible opportunities and evaluates the identified opportunities. Qualifying opportunities are then referred to the development stage. Ideation and invention occur at this stage. Ideation is a creative endeavour which results in the generation of new or improved ideas while invention involves using new knowledge to create something that has not existed before. Booyens, Molotja and Phiri (2012) argued that innovative ideas can be developed internally through R&D or externally as a result of innovation-oriented interactions with external role players.

Figure 2.3: Innovation process



Source: Kahn (2018: 5)

2.9.1 Innovative ideas generation mechanisms (Discovery)

Geum and Park (2016: 176) explained that, in any firm, the innovation process has several interdependent stages, from idea generation to implementation. The idea generation stage accounts for the substantial share of the innovation endeavour and significantly influences the success of subsequent innovations. The idea generation endeavour is challenging as a result of limited availability of reliable information, validated decision rules and clear processes. Ideas are usually generated utilising experts’ knowledge. Nonetheless, there has been a sudden increase in the utilisation of ideation techniques. This has fostered the creative ideation process. The utilisation of these techniques enables the firm to

methodically determine the causes of the problem and identify possible solutions to the problem (Geum and Park, 2016: 177).

Lee and Walsh (2016: 353) argued that formal research and development is a widely accepted endeavour necessary to generate innovative ideas that are later transformed into certain forms of innovation. R&D workers are often highly educated and in possession of Ph.D. degrees. Their job involves searching for knowledge and transforming the acquired knowledge into something new, an alternative, or an improved version of something that already existed. It is easier for research and development inventors to complete their first patent application process than non-research and development inventors. Research and development inventors seem to be older than non-research and development inventors. Thus, research and development inventors could be more experienced.

Notwithstanding the above, innovative ideas can be generated through other ways (Lee and Walsh, 2016: 346). Yu and Alex (2014) and Geum and Park (2016: 177) recognised brainstorming as one of the key innovative ideas generation mechanisms. Brainstorming was conceptualised and proposed by Osborn in 1957 and it involves encouraging intuitive thinking in a group of people so that each participant can discuss and conceptualise good ideas.

A study by Fu, Mohnen and Zanello (2018: 317) revealed that ingenuity, which refers to someone's ability to think of clever new ways of doing something is regarded as a driving force of innovation activities of informal businesses. Innovation creation and adoption in the informal sector is highly dependent on the acumen and skills of the entrepreneur. While the author provided us with valuable insight, the question of how the creative person comes up with an innovative idea remains unanswered. Moreover, how the innovative idea is developed remains a key question.

A study conducted by Pyrko, Dorfler and Eden (2017: 389) revealed that communities of practice (CoPs), which relate to thinking together are some of the structures that businesses use to generate new ideas. CoPs also provide a platform for people to share knowledge, as people express their views about common problems, they get to share tacit knowledge and learn from each other while formulating novel ideas at the same time. The CoP concept has been around for decades (more than 25 years) and ideally, CoPs should meet regularly. Nonetheless, operationalisation of CoPs in organisational settings has proven demanding (Pyrko, Dorfler and Eden, 2017: 389).

Lee and Walsh (2016: 345) argued that “innovative ideas can be generated from knowledge obtained through experience not just R&D lab. Employees working for different functions in a firm have different work practices and build their learning through different processes”.

The authors further argued that, while R&D is a crucial innovation fostering factor, there is growing evidence that a comparable share of innovations did not happen as a result of R&D investment. Recent studies on European firms revealed that, from the patented innovations surveyed, 12% were invented without internal R&D investment (Lee and Walsh, 2016: 353). These firms were found to rely on teamwork, HR management, marketing and organisational innovations to compensate for the lack of research and development investment. Nonetheless, the study also revealed that businesses that invest in R&D continue to be more likely to develop a product innovation than businesses that do not invest in R&D (Lee and Walsh, 2016: 345). The authors further explained that for firms that do not invest in R&D, the activities of design, training, learning by doing, visibility of problems or the cause and effect knowledge, use of advanced machinery, and technology forecasting are crucial.

While the authors confirm that it is possible to innovate without investing in R&D, they provide little explanation of how the firms that innovate without R&D investment engage in innovation activity throughout basic innovation phases. Thus, it would be beneficial to get an insight from the European firms in question on how they engage in innovation activity without R&D investment. Nonetheless, due to financial and time constraints, it would not be possible for us to collect primary data from the European firms in question.

With regards to learning, Lee and Walsh (2016: 347) argued that businesses have two different methods of learning, namely, “science, technology and innovation (STI) mode, which relies on science and technical knowledge and doing, using and interacting (DUI) mode, which relies on informal processes of learning, experience-based know-how and user needs”.

Lendel, Moravcikoza and Latka (2017: 618) argued that ideally as innovative ideas are being generated, they must be electronically recorded. From these ideas, one feasible idea must be selected for implementation. During the selection process, factors such as costs and benefits should be considered. Once the feasible idea is selected, the next process can start. Once the innovation manager has agreed to the selected innovative idea, the innovation team must be established. The employee that came with the idea must be part of the innovation team (Lendel, Moravcikoza and Latka, 2017: 618). The

availability of an innovation manager and an innovation team in a firm sounds interesting but informal micro-enterprises may not have these luxuries.

Most of the authors cited hereto, described processes that were designed for well-established firms with fully flagged organisational structures. Among others, they describe the appointment of an innovation manager, innovation commission, and an innovation team, which might not be feasible in an informal micro-enterprise setting. Nonetheless, the authors did provide valuable insight into factors that should be considered when selecting feasible innovative ideas. Furthermore, the aforementioned innovative idea generation mechanisms can be tested on the informal micro-enterprises' context.

2.9.2 Transformation of ideas into prototypes, products, services and other forms of innovation (Development)

At the development phase, the innovation manager designs the implementation roadmap and distributes tasks to the innovation team. Following this, the team begins to work on the implementation (Lendel, Moravcikoza and Latka, 2017: 618-619). Technical specifications are determined and relevant designs are made. The designs are then transformed into prototypes.

Bell *et al.* (2013) defines a prototype as a story or fictional depiction of a product. The prototype is not the actual product that the firm wants to construct but rather an example. Hence, prototypes are improved into something better when innovation funds are secured. Once a desirable product is developed, then the delivery stage follows. The existing literature is silent on how informal micro firms transform innovative ideas into prototypes and desired innovations.

2.9.3 Introduction of innovations in the market/innovation diffusion (delivery)

The introduction of innovations in the market and/or innovation diffusion is also regarded as the delivery stage. The delivery stage is a crucial step in the innovation process and it is what differentiates innovation from ideation and invention. Without the delivery stage, a firm has not achieved innovation (Kahn, 2018: 5).

Seifried, Katz and Tutka (2016) argued that to assess the probable success of innovations, a firm should consider offering the innovations in the market on a trial basis. If the innovation passes the trial, then it could be successful. The innovation and its results should be observable to other customers. If the potential customers can see the success or possible success of the innovation, they will most probably adopt the innovation for their own use.

Rogers (2003) explained that customers can be divided into several groups of adopters, namely, innovators, early majority, late majority and laggards. Innovators constitute a small share of the innovation diffusion groups. Early adopters use substantial interpersonal communication (social systems) with their counterparts to determine innovations. Accordingly, early adopters are opinion leaders (they are trendsetters) within a social system and can help increase the rate of innovation diffusion. On the one hand, early majority adopters intermingle with peers and move slowly to adopt, preferably after perceiving earlier users gain satisfaction. Late majority adopters often adopt the innovation due to fear of being left behind and pressure to be relevant.

Innovation diffusion is measured in terms of the time it took from introduction to diffusion (Rogers, 2003). For the innovation to be widely spread, there has to be an intensive communication. The mass media platforms, such as television, radio, newspapers, the internet, social media, and so forth are effective communication platforms. Interpersonal communication has also been found to be effective. This study will determine the communication channels that are used by informal micro-enterprises to publish their innovations.

The innovation diffusion process follows an s-shape curve. The s-shaped curve suggests that there will be a slow period of growth at the introduction stage when most potential customers are not familiar with the innovation, then a fast period of growth when most customers are familiar with the innovation and the success thereof, and lastly a plateauing period of saturation (Rogers, 2003).

The existing literature is silent on how informal micro-enterprises introduce their innovations in the market, and what marketing strategies are used for innovation diffusion purposes, among others. The informal sector often supplies goods and services to poor people who often reside in the townships. Due to their economic conditions (most of them are unemployed and depend on grants and piece jobs), these people often have limited disposable income. This often leads to poor demand for goods and services produced or offered by informal micro-enterprises and places a risk on innovation diffusion where innovation does take place.

Thus, informal micro-enterprises face a challenge to innovate in such a manner that their innovations will be affordable to the customers that they serve while remaining competitive at the same time. As pointed out by Lendel, Moravcikova and Latka (2017: 615) introduction of some innovations in the market requires overcoming obstacles that may get in the way of innovations.

2.10 Another well-recognised traditional innovation process

Kahn (2018: 5) explained that another widely accepted innovation process model is the Stage-Gate model. This model defines key innovation process steps and checkpoints, which are, “idea generation, pre-technical evaluation, business case preparation, technical development, testing and launch”. Empirical studies revealed that the Stage-Gate model can aid to identify and eliminate impractical projects, thereby ensuring that resources are only channelled to feasible projects. This can reduce development time and increase the likelihood of launching new or improved products quickly and successfully. Furthermore, the Stage-Gate model can aid to manage innovation risks and increase efficiency through adherence to a structured new product development process.

2.11 Other innovation processes

Salerno *et al.* (2015: 59) explained that although the innovation process has been traditionally understood as predefined sequence phases (i.e., idea generation, selection, development and launch/diffusion/sales), there are other several ways of innovating that do not follow a linear process. Among the firms surveyed, 47% followed the other innovation paths whereas 53% of the firms surveyed followed the traditional linear innovation process. This suggests that the majority of the firms surveyed believed in the traditional linear innovation process.

The authors further explained that the other innovation paths are triggered by a need to create products that meet market demand (Salerno *et al.*, 2015: 63). The other innovation processes referred to here are briefly described below:

2.11.1 Anticipating sales: the tailor-made approach (open order)

In this process, the client or the customer request the firm to tailor-make a product or service for them but the client does not have pre-defined specifications. The client or customer, together with the firm, defines the end product’s specifications. When defining specifications, the firm has to manage the customer’s uncertainties and also assess its capacity to deliver the product. Once specifications are agreed on and the firm has confirmed capacity, the client issues a formal request, finance the product and the product is produced. The advantage of this process is that the financial and diffusion risks are mitigated. The process ends with the delivery of the product, 6.1% of the firms surveyed followed this process (Salerno *et al.*, 2015: 63-64).

2.11.2 Anticipating sales from a given client specification (closed order)

In this process, the client requests a product or service with pre-defined specifications. Although, the client provides pre-defined specifications, the firm is allowed to make suggestions on how the product or service should look like. 5.3% of the firms surveyed followed this process. In both this process and the previous process, sales precede development while as in the traditional innovation process, development precedes sales (Salerno *et al.*, 2015: 64).

Since the client funds the innovation process in this process and the previous process, both processes would be advantageous to small businesses as they often have financial constraints and some are risk-averse. As explained by Doruk and Soylemezoglu (2014: 945), innovation is a costly task and to engage in innovation, firms need to embrace risks. The relatively low annual turnover of small firms compared to large firms makes it almost impossible for small firms to consider innovation as they find it extremely costly (Agwa-Ejon and Mbohwa, 2015).

2.11.3 Started by a public or private call

In this process, a procurement entity, be it public or private in line with its innovation policy would outsource its innovation requirements to a firm and fund the innovation process. The invite for competitive bids or quotations would often define the functional specifications of the product to be developed or service to be rendered. In this process, risks on diffusion are also mitigated as there is already a buyer. 12.9% of the firms surveyed followed this process (Salerno *et al.*, 2015: 64).

2.11.4 Processes with stoppages

Innovation processes with stoppages adhere to the traditional innovation process. Nonetheless, there would be stoppages at the diffusion stage in order to wait for market growth and technological improvements. The product would be stopped for a certain period, it would then be improved and re-introduced in the market (Salerno *et al.*, 2015: 65-66).

2.11.5 Process with parallel activities

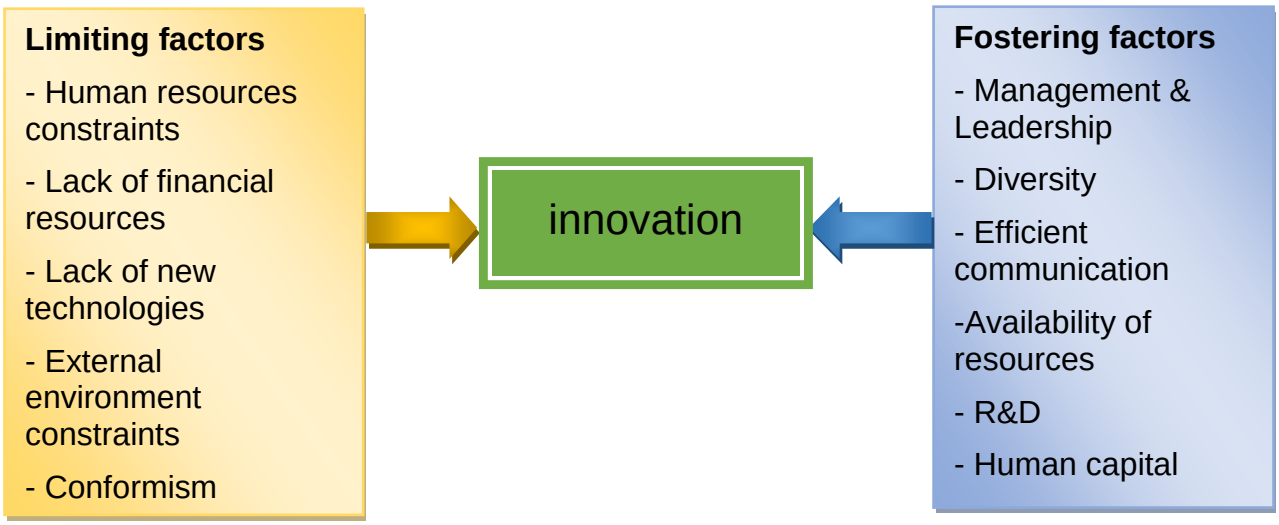
Among the firms that the authors surveyed, some firms would put the prototypes on sale before the product could be fully developed. While the initial version of the product is on sale, the firm would be producing models, accessories, versions of different colours and so forth for introduction in the market on a later stage. Thus, parallelisation in this context refers to shortening the period to launch and decreasing market doubts as the more final

version of the product would be introduced in the market after several tests. This process is often applied by software developers but it is not appropriate for risky products such as pharmaceutical products and aviation products (aircrafts). 11.4% of the firms surveyed followed this process (Salerno *et al.*, 2015: 67).

2.12 Innovation fostering and limiting factors

Several studies were conducted in the past to determine innovation fostering and limiting factors among small firms. These studies revealed that the following are widely accepted innovation fostering and limiting factors among small firms.

Figure 2.4: Innovation fostering and limiting factors



Source: Claudino *et al.* (2017: 134-136); Rose, Jones and Furneaux (2016); Booyens, Molotja and Phiri (2012: 295); Abdu and Jibir (2017: 1-7); Mendi and Mudida (2018: 327-328); Hsieh and Chou (2018: 88)

2.12.1 Innovation fostering factors

a) Management and leadership support

Claudino *et al.* (2017: 134-136) aver that management and leadership support involves creating an environment where people within the firm are encouraged to be creative and generate new ideas. Such an environment should tolerate risks and mistakes. Leaders present in this environment should be able to spot, reinforce and nurture talent. Leaders also need to have knowledge and foresight of where they might want to get to as well as where they are (Rose, Jones and Furneaux, 2016).

Similarly, Lendel, Moravcikova and Latka (2017: 617) explained that employees must be motivated for them to generate innovative ideas. A firm should have an innovation

incentive programme, which must be created based on the actual needs of employees. Accordingly, employees will be rewarded for innovative ideas based on predetermined criteria. Such criteria should be determined by management, innovation manager and human resources personnel.

Lastly, a study relating to South African small firms' innovation activity conducted by Booyens, Molotja and Phiri (2012: 295) in Cape Town revealed that innovation fostering factors in small firms consist of the internal features of the entrepreneurs and management strategies.

b) Diversity of competencies in the group responsible for innovation

Claudino *et al.* (2017: 134-136) assert that innovative small firms often have diverse innovation teams. In other words, the people involved in the innovation process have different qualifications, experiences, competencies, skills, and to some extent different in terms of race and demography. A combination of most of the elements mentioned here is often referred to as human capital.

Brunow, Birkeneder and Rodriguez-Pose (2017: 1) argued that businesses that employ innovative STEM employees and also invest in research and development are more innovative than those that do not. This argument is questionable, as history enlightens us of the fact that there have been great innovators who did not possess any technical qualification, for instance, innovators such as Steve Jobs. When these innovators were still small and growing, they did not have any highly qualified technical employees on their payroll but they were recognised as gazelles (i.e., firms that are more innovative than others).

c) Use of efficient communication channels to implement innovation

For effective innovation implementation, there has to be an efficient flow of information between managers and staff. Such communication should include knowledge sharing and learning (Claudino *et al.*, 2017: 134-136; Rose, Jones and Furneaux, 2016).

d) Availability of financial, material and technological resources

Booyens, Molotja and Phiri (2012: 295) explained that access to finance; equipment, external linkages and collaborations for the adoption of new technologies are crucial innovation fostering factors. These factors are often referred to as structural capital and are crucial for the implementation of all key innovation stages.

e) R&D investment, collaboration networks, government support and other factors

A study conducted by Abdu and Jibir (2017: 1-7) in Nigeria revealed that “R&D investment, formal training, collaboration networks, government support, a firm’s size, exporting status, competitors, location, type and sector, or activity of firms all positively drive the propensity of a firm to innovate”. The study also revealed that there is a relationship between a firm’s age, employees’ education and the firm’s chances to engage in an innovation activity.

2.12.2 Innovation limiting factors

a) Limitation of people

According to Rose, Jones and Furneaux (2016), limitation of people relates to lack of human capital necessary for innovation to take place. It also relates to Limited training, resistance to impart knowledge, individualism, limited availability of skilled labour in the firm, lack of managerial knowledge and little diversity of qualifications, among others. Similarly, Booyens, Molotja and Phiri (2012) explained that human resources constraints are major limitations of innovation. Businesses struggle to recruit and select competent staff to drive innovation. In the South African context, the pool of appropriately skilled and competent potential staff is limited. Skilled people often migrate to other countries and the skilled people that remain come at a high cost.

b) Limitation of financial resources

Innovation activities are costly and often have inherent financial risks. Booyens, Molotja and Phiri (2012: 304) and Costa and Olave (2014) pointed out that limitation of financial resources relates to challenges to access and effectively utilise financial resources required for innovation. Poor access to financial resources is often due to low capacity to get credit and other disadvantageous circumstances.

c) Limitation of technological resources

To a certain extent, innovation requires constant use of contemporary technologies. Hsieh and Chou (2018: 88) explained that the effective utilisation of technologies can significantly enhance the effectiveness of information processing, enhance the efficiency of processes and also enhance employees' productivity.

Thus, difficulties to access and effectively use technologies necessary for innovation is one of the major innovation limiting factors (Booyens, Molotja and Phiri 2012: 304; Costa and Olave, 2014). Similarly, Silva and Dacorso (2013) argued that technological deficiencies often lead to a low frequency of radical innovations and increased existence

of incremental innovations, which often occur as a result of small changes implemented to solve day-to-day problems.

d) Obstacles originating in the external environment

There are also challenges resulting from the external environment such as regulations that limit the implementation of innovation activities. Examples of regulatory constraints include cumbersome taxes for small businesses, cumbersome import taxes for technologies, difficulties in registering trademarks to protect intellectual property and challenges in exporting innovations (Booyens, Molotja and Phiri, 2012).

e) Priority to core or short-term activities

Another innovation limiting factor is prioritising the firm's core activities or short term activities. This would lead to the absence of research and development activities, repetitive and unchallenging tasks, difficulty to develop long term risky projects and lack of planning and maturation (Rose, Jones and Furneaux*,* 2016; Booyens, Molotja and Phiri, 2012: 304; Costa and Olave, 2014).

f) Fear of innovation consequences

Innovation is a risky endeavour that if not well-managed could lead to financial and non-financial loss. Thus, some people are afraid of engaging in innovation activities. These are some of the features of firms that fear innovation, risk aversion, rejection of innovation ideas, fear of the unknown, fear of making mistakes, fear of investment in innovation and possibility of cuts and layoffs are innovation limiting factors that fall under this group (Rose, Jones and Furneaux*,* 2016; Booyens, Molotja and Phiri, 2012: 304; Costa and Olave, 2014).

g) Resistance to innovation due to conformism

Claudino *et al.* (2017: 134-136) explained that this relates to "actions, attitudes and behaviours that fight innovation, showing difficulties to accept new ideas and practices". Such characteristics can be referred to as habit, formalism and attachment to tradition.

Costa and Olave (2014) observed that other innovation limiting factors applicable to formal small businesses include, isolation from research organisations, little or no investment in research and development, limited innovation planning and maturation, challenges associated with learning and financial constraints.

Due to the limited availability of literature relating to the innovation activity of informal micro-enterprises in the townships of Gauteng Province and other parts of South Africa, it

is not known if the aforementioned innovation fostering and limiting factors are also common amongst informal micro-enterprises in the townships of Gauteng province.

2.13 Approaches to innovation

Doruk and Soylemezoglu (2014: 945) explained that there are numerous approaches to innovation. There is a systems approach and the neoclassical approach. With the neoclassical view, innovation is a linear process. Knowledge is developed by scientists and researchers, then communicated in codified ways and becomes an input for the production of outputs. Science and technology are central to innovation and the approach is based upon experimentation (often in labs), formalisation and codification of the identified knowledge.

Accordingly, in this view, innovation activity utilises inputs such as knowledge to develop an output such as a product. The neoclassical approach is often critiqued since its rectilinear notion of innovation triggers an overemphasis on research and development while overlooking the uncertainties associated with the process.

We acknowledge the fact that knowledge is crucial as an input to the innovation process but R&D is not the only key mechanism to generate knowledge necessary for innovation as literature has revealed that there is evidence of innovations that took place without R&D investment. Moreover, scientists and researchers are not the only key knowledge generators as history has taught us that, there has been successful innovators who are not scientists nor researchers.

The innovation systems approach emerged to respond to some of the challenges identified in the neoclassical framework, in particular with its practical applications. The founding principle of the innovation systems approach is the conceptualisation of innovation as a set of things working together and not a linear process. The things referred to here are role players that bring about innovation through their interactions with each other. Accordingly, as explained by Doruk and Soylemezoglu (2014: 945), with this approach, innovation is not “something which an individual can achieve alone if given the right inputs of skills, investment and incentive. Rather, innovation includes both traditional R&D activities and the diffusion of technologies through society and all of the factors which influence these”.

Similarly, Omobhude and Chen (2017: 367) argued that innovation has been widely recognised as a social process, involving the networking of role players, and is driven by relationships, learning, knowledge and collaborations. The collaborations referred to here

often occur among research organisations, regulators, capital providers, customers, and clients.

In developed countries, innovation networks have several benefits, including but not limited to innovation diffusion and the establishment of novel technology areas. Subsequently, Omobhude and Chen (2017: 368) argued that an innovation network may, therefore, be an appropriate platform for exploring the system of innovation in developing countries. Innovation networks are deemed to enhance innovation and promote the survival and growth of role players and their innovative environments.

The most significant problem with the innovation systems approach is its adoption in the developing countries as it assumes a well-established innovation system since it was conceptualised in the context of the developed countries in North America, Japan and Europe (Doruk and Soylemezoglu, 2014).

Application of the innovation systems approach becomes a challenge in developing countries as they have limited innovation infrastructure, perceived low levels of revenue and education, as well as limited or poor clear-cut market mechanisms for consumers to express their innovation needs.

In light of the above, the innovation systems approach may not be suitable for developing countries until such time when they are well-established.

2.14 Innovation success

Herrera (2016: 1725) maintained that innovations are considered successful if they enhance a firm's performance and create substantial long term social impact. Five organisational factors affect the success of innovations, namely, "strategic alignment, responsible purpose, institutional drivers, stakeholder engagement, and business model management" (Herrera, 2016: 1725). The author further argued that six institutional factors also affect the success of innovations, namely, "values, leadership, culture, strategy, structure and policies" (Herrera, 2016: 1725).

2.15 Innovation failure

While innovation is a valuable endeavour due to substantial benefits that could be accrued from it, it is imperative to point out that innovation is a risky endeavour and some innovations fail (Kahn, 2018: 7). It is argued that only 1 in 100 innovations cover their costs; 1 in 300 innovations make a substantial difference and only 1 in 1400 innovations make a remarkable mark in the world.

Kahn (2018: 7) further argued that “sometimes the innovation outcome may be quite compelling, but due to poor execution, results in a failure. Sometimes it would be a success when introduced and fail on a long term”. Similarly, in their study, Jugend *et al.* (2018: 9) found that businesses that were more ambitious about innovation were mostly disappointed by sales volume and return on investment.

The certainty of innovation failure triggers a need for effective innovation management to assure innovation success. Unfortunately, the existing literature fails to enlighten us of how informal micro-enterprises manage innovation-related risks in order to avoid innovation failures.

2.16 Informal micro-enterprises and their role in the economy

Micro-enterprises are conceptualised differently in different countries. In the South African context, the National Small Business Act, 1996 (Act 102 of 1996), read with the revised Schedule 1 of the National Definition of Small Enterprise in South Africa 2019, describe micro-enterprises as firms that have on average, ten employees and have an annual turnover of about R10 million. Chimucheka (2013: 786-787) argued that micro-enterprises like survivalists often operate informally. Owners of micro-enterprises often do not have competences required to operate a business, they are not registered and subsequently, do not adhere to the legislative framework. Similarly, Fu, Mohnen and Zanello (2018: 316) explained that informal micro-enterprises tend to avoid tax and rules set by the legislative authorities. The author further argued that these firms are operated by poorly educated entrepreneurs and due to this their productivity is low. Key examples of micro-enterprises include household industries, hair salons, taverns, tuckshops and so forth, which are often considered small. Nonetheless, the aforementioned businesses have the potential to transform into viable well-established businesses. The table below depicts a distinction between informal and formal firms:

Table 2.4: Distinction between informal and formal firms

	Informal businesses	**Formal businesses**
Firm size	Less than five remunerated workers	More than five remunerated workers
Start-up capital/ qualification	Low, easy to start	High, challenging to start
Factor of production	Labour intensive	Automated production

Work condition	Unprotected by contracts, social welfare or unions	Protected by contracts, social welfare and unions
Skills	Experiential learning	Formal learning
Raw materials	Scrap from formal and informal sources	New from local and overseas sources
Infrastructure	Untrustworthy energy and insecure premises	Trustworthy energy and secure premises
Resources	Lack access to equipment, funding and other resources	Extensive access to equipment, funding and other resources
Selling price	Affordable to potential customers. Mostly local	Expensive for local potential customers
Demand	Little	High
Quality	Low to moderate	High
Proximity to consumer	Close	Distant
Profit	Low to moderate	High
Medium of exchange	Cash	Cash and credit card
Market linkages	Poor distribution network	Well-established distribution network
Flexibility	Adapts well to market conditions	Difficult to adapt
Efficiency	Efficiency through coordination among businesses	Efficiency through vertical integration
Risk attitude	Risk averse	Risk takers
Culture	Embedded in social relations	Relies on impersonal written rules of the firm

Source: WIPO (2013)

According to De Beer and Armstrong (2015), the informal sector substantially contributes to job creation and economic growth in a substantial number of developing countries.

Nonetheless, accurately capturing the size and economic impact of the informal sector has been a challenge across the globe. It is however estimated that the weighted average size of the informal sector as a percentage of the GDP in the period 1999 – 2007 in Africa was around 40% and made up to 80% of non-agricultural employment (Fu, Mohnen and Zanello, 2018: 316).

In the South African context, it is estimated that South African micro-enterprises together with other small businesses contribute 36% to national GDP (GEM, 2017: 93; TIPS, 2002; Yu, 2017); while creating 40% of the jobs (Kumah and Omilola, 2014: 3). STATSSA (2013: 9) reported that informal micro-enterprises in South Africa play a crucial role in job creation and income generation among the most marginalised in society, such as female heads of households, disabled people, and rural-based families. Through their engagement in informal businesses, these people are better able to survive during economic downturns when formal sector jobs are in short supply and when social security systems are inadequate. De Beer and Armstrong (2015) posit that without the informal sector and informal micro-enterprises, the unemployment rate would rise to 47.5%. The South African unemployment rate was recorded at 27.7% in 2017 (Yu, 2017).

Charman (2016: 1) maintained that the informal sector, in particular, the informal micro-enterprises in the townships provide opportunities to obtain skills, on the job experience and social networks for a huge portion of the South African population.

Since the South African economy continues to grow at a rate lower than the population growth, the unemployment rate is high and a substantial portion of the population still lives below the poverty line, nurturing the informal sector by introducing initiatives that can make informal micro-enterprises to be more sustainable will have significant socio-economic benefits for the country.

2.17 The informal sector and its schools of thought

Links, Hart and Jacobs (2014: 175) explained that the informal sector is a dwelling for approximately half of the global population. Similarly, Mendi and Mudida (2018: 326) explained that a noticeable characteristic of most African countries, including South Africa, Kenya, Ghana, and Nigeria, is the existence of a huge informal sector. There is no universally accepted definition of the informal sector and its scope. Nonetheless, WIPO (2013: 1) conceptualised the informal sector as, economic activities that take place in unincorporated entities. These entities and their employees are often unregistered. Other authors conceptualised the informal sector, as unregistered small firms that operate as

street vendors and home-based businesses established on residential sites. These firms usually have less than five employees and do not pay tax (De Beer and Armstrong, 2015: 62; Woodward *et al*., 2011). A firm may be registered but due to its small size and lack of registration of employees, it can still be classified as an informal firm (De Beer and Armstrong, 2015: 62-63).

The limited agreement on what constitutes the informal sector and how to compute its economic impact correctly has led to severe reporting discrepancies in the levels of activity in the informal sector. It is alleged that products or services offered by the informal sector are of lower quality than those offered by the formal sector (Mendi and Mudida, 2018: 327). It is further alleged that sales per worker among informal firms are lower than those of formal firms, employees in formal firms are highly educated whereas those in informal firms are less educated. Similarly, La Porta and Shleifer (2014) argued that informal businesses are less productive. They often do not advertise their offerings and often sell their offerings for cash.

Links, Hart and Jacobs (2014: 177) explained that there are several schools of thought relating to the informal sector. The first is the dualist school, which is of the view that the formal and informal sectors are two different and separate sectors operating within the same society. The informal sector is considered a transitional sector that temporarily provides employment and income for the poor, especially those who cannot get employment in the formal sector.

The second school is the structuralist, which emerged between the 1970s and 1980s. This school is of the view that the informal sector is subordinate to the formal sector. In other words, informal firms that often provide services on the behalf of large businesses in the formal sector aid to decrease operation costs and subsequently enhance the competitiveness of large businesses. This school emerged due to the recognition of a need for cooperation between the formal and informal sectors to address common socio-economic problems (Links, Hart and Jacobs, 2014).

The third school is the legalist, which emerged between the 1980s and early 1990s. This school is of the view that the informal sector came into existence because some firms prefer to function informally. Informal operation enables these businesses to avoid costs and legislative requirements imposed on the formal sector by governments. The informal sector is therefore not temporary but permanent and it is a substantial characteristic of modern economies (De Beer and Armstrong, 2015; Links, Hart and Jacobs, 2014: 177).

Despite the aforementioned debate, informal micro-enterprises are crucial for the creation of jobs and the production of goods and services. Depending on the country's context, the informal jobs can also be transformational and profits are not necessarily low (De Beer and Armstrong, 2015: 63).

De Beer and Armstrong (2015: 63) maintained that the debate relating to formal and informal contrast has to come to an end. Governments and other role players have to indisputably acknowledge the value of the informal sector and put measures in place to promote its growth.

2.18 Unsuccessful attempts to document and regulate informal sector activities

Globally, it has been proven difficult to record and regulate the activities of the informal sector. Nonetheless, in the South African context, in an attempt to record and regulate the activities of the informal sector and informal micro-enterprises, the South African government together with the South African Local Government Association (SALGA) and the South African National Informal Economy Forum, among others, introduced the Business Licensing Bill and model by-laws entitled, "making the informal economy visible" (Greve, 2017). These documents require all businesses to have a licence.

In spite of the aforementioned initiatives, STATSSA (2013: 17) reported that only 12.5% of informal micro-enterprises had an operating licence or permit and more informal micro-enterprises are not willing to obtain an operating licence. Of the 12.5% licenced informal micro-enterprises, 33.9% were licensed by the Municipal or Provincial authority, 21.2% by the professional association, 20.6% by the business association, and the rest by others. This suggests that the other significant portion of informal micro-enterprises operate without a licence.

Municipalities such as the City of Johannesburg established what they call, "City's informal trading policy" to provide for the proper management of informal trading (Greve, 2017). Accordingly, informal micro-enterprises wishing to utilise trading zones that have been set aside for informal traders have to list their names with the Johannesburg Property Company. Following this, they have to enter into a lease agreement and they will be given an operating licence. The costs for a trading space range from R100 to R300, the higher the price the better the services and infrastructure provided by the City. The City provides services such as water supply, storage facilities, electricity, shelter, and so forth.

This initiative could be considered as one of the attempts by the government to formalise informal micro-enterprises and enforce compliance with municipal by-laws, especially for informal micro-enterprises that operate in the CBD of the City of Johannesburg. Nonetheless, according to Greve (2017), few informal traders listed with the City and many more informal traders remain undocumented.

It was noted above that a significant proportion of informal micro-enterprises remain undocumented and the City of Johannesburg initiative focused in the inner city and neglected other areas that are outside the CBD but within the City's area of jurisdiction such as Soweto township. Other metropolitan municipalities such as the City of Ekurhuleni and City of Tshwane where there are townships such as Katlehong and Soshanguve, respectively, do not seem to have the aforementioned initiatives. Thus, the informal micro-enterprises in these areas remain undocumented.

2.19 Informal micro-enterprises and the existing support mechanisms in South Africa

According to Luiz (2002), micro-enterprises and other small businesses require various forms of assistance to survive they need financial and non-financial support.This is because, they encounter several challenges, including but not limited to, access to finance; lack of equipment; lack of access to markets; poor demand for their products or services; little investment in research and development; and lack of human and structural capital (Tlokwe City Council, 2009; Luiz, 2002).

In South Africa, the government has attempted to address the issue of finance through the introduction of programmes and organisations such as Khula Credit Guarantee; National Empowerment Fund; Venture capital; Equity funds; National Development Agency, and so on (Tlokwe City Council, 2009; Luiz, 2002). Organisations and programmes such as SEDA District; UYF; SEDA National; SETA and Department of Labour amongst others were introduced to provide non-financial support (Tlokwe City Council, 2009).

Unfortunately, a firm has to be recognised as a formal firm by way of registration before it can be granted access to services of support institutions. Furthermore, although support institutions exist in South Africa, they are very fragmented as they operate in silos and are not accessible to most formal firms as well (Ndlovu, 2016).

In a study conducted in South Africa, Ghana and Kenya by WIPO (2013: 5), the authors explained that policies of most developing countries have been focused on formal businesses more than informal micro-enterprises. Similarly, Links, Hart, and Jacobs (2014:

179), aver that, in South Africa, most innovation initiatives since 1996, focused on supporting formal innovation activities. This has been the case because most of the innovation activities in the national system of innovation are carried out by formal role players (De Beer and Armstrong, 2015; Links, Hart, and Jacobs, 2014: 179; WIPO, 2013: 5; La Porta and Shleifer, 2014).

The limited policies and regulations that focus on the informal micro-enterprises are mostly temporary, not properly structured, and not properly coordinated among various departments at various spheres of government. It should also be pointed out that informal sector-oriented policies and regulations are emerging. Subsequently, such policies are often unfit for purpose (De Beer and Armstrong, 2015; Links, Hart, and Jacobs, 2014: 179; WIPO, 2013: 44-48; La Porta and Shleifer, 2014).

2.19.1 Government support

Jugend *et al.* (2018: 3-4) assert that government support affects businesses' innovation performance by stimulating internal R&D. Research conducted among firms operating in the USA and Brazil, amongst others, indicates that government support positively contributes toward firms' innovative performance. Governments often support high risk applied and basic research. Such assistance has often led to radical innovations or path-breaking types of innovation. Government support for firms can be in the form of grants, R&D tax incentives, government-sponsored labs, and public venture capital or some form of collaboration (Jugend *et al.*, 2018: 7).

Rivera-Huerta, Lopez and Mendoza (2016: 1) argued that, despite their low productivity levels, informal micro-enterprises substantially contribute to job creation and income in developing countries. Thus, governments should support informal micro-enterprises so that they may flourish. The author further argued that various countries such as India have introduced policies, reforms and support institutions to strengthen productive activities of informal micro-enterprises. India has also introduced initiatives and programmes to encourage innovation among informal micro-enterprises. These include but not limited to, the Honey Bee Network, the society for research and initiatives for sustainable technologies and institutions, and Techpedia, which are networks of innovative individuals, scholars, entrepreneurs, and so forth. A study by Rivera-Huerta, Lopez and Mendoza (2016) revealed that countries like Mexico are still lagging behind when it comes to informal sector support as no initiatives aimed at informal micro-enterprises support could be identified.

Similarly, Van Der Merwe (2017) explained that globally, government initiatives aimed at supporting small businesses have often not been successful. It has mostly been the initiatives of private organisations that have constantly proven to be successful. Government initiatives have often led to wasted funds and favoured certain businesses over others.

2.19.2 An overview of South African Government innovation tailored support mechanisms

Van Der Merwe (2017) pointed out that, economies of most developing countries, including South Africa are highly dependent on natural resources. Meaning, these economies are highly dependent on the primary sector activities such as mining. The risk of such dependence is that the natural or primary resources could be exhausted someday. Subsequently, the competitiveness of a country will depend on its ability to innovate.

Booyens (2011) argued that research and development is a vital source of information and knowledge required to innovate. Small businesses invest less in research and development. Subsequently, small businesses are mostly the beneficiaries of knowledge formulated by the research and development efforts of large businesses and tertiary education institutions such as universities. On the contrary, in South Africa, there is lack of cooperation between small businesses and large businesses and poor flow of knowledge from universities to corporate (SEDA, 2016: 8). This is despite the innovation fostering initiatives introduced by the South African government, such as the technology stations programme developed by the Department of Science and Technology; GODISA programme introduced by the Council for Scientific and Industrial Research; the Innovation hub; the Technology and Human Resources for Industry Programme (THRIP); the Support Programme for Industrial Innovation (SPII); and the Innovation Fund.

The aforementioned initiatives were introduced with a common objective, which is to strengthen and accelerate the interaction between the research institutions, universities of technology, universities and small firms (Agwa-Ejon and Mbohwa, 2015). This had to be done in a manner that ensures that, the research institutions, universities of technology, and universities provide technology support, R&D, and transfer knowledge into small firms' applications. Unfortunately, it is not within the scope of this study to assess the effectiveness of these innovation initiatives. Nonetheless, the existing literature reveals that there is a lack of collaboration networks between small firms and other relevant innovation role players. Subsequently, small firms are not as innovative as they should be.

Accordingly, Agwa-Ejon and Mbohwa (2015) and Booyens' (2011) studies concluded that small firms are not drivers of innovation in South Africa. The identified innovation constraints among small firms necessitate the discovery of other means through which the adoption of innovation among small firms can be promoted.

Booyens (2011) further argued that for firms to be innovative and competitive, formally groomed human capital (i.e., scientists and engineers) is required to formulate novel knowledge. Although we highly appreciate the fact that innovation requires a certain degree of human capital, we believe that people of all disciplines are capable of innovating. Innovation is not an endeavour that is only limited to scientists and engineers. This study substantiates this argument.

Links, Hart and Jacobs (2014) explained that much of the work on innovation in the Republic of South Africa remains extensively focused on the formal sector in urban areas. The various policies and strategic plans on innovation introduced since 1996 are evident to this. Innovation initiatives that are often introduced focus on supporting formal innovation activities. Such policies are exclusive and do not focus on the informal sector and informal micro-enterprises.

Links, Hart and Jacobs (2014) explained that research on innovation has also primarily emphasised the contributions of the formal sector, thereby neglecting the informal sector. This is often the case with national studies that aim to quantify and measure innovation activities and outputs in South Africa for comparative purposes.

The authors' review of previous and existing initiatives reveals that informal sector initiatives are often not developed to promote innovation and intellectual property rights among informal micro-enterprises. Innovation-oriented policies in most countries do not perceive informal micro-enterprises as a possible source of innovation. The informal sector is often not considered as an innovation policy target. Innovation policies in various spheres of government are constantly dominated by science and technology views and ignore the informal micro-enterprises (De Beer and Armstrong, 2015; Links, Hart, and Jacobs, 2014: 179; WIPO, 2013: 5; La Porta and Shleifer, 2014).

In light of the above, it is evident that in the South African context, there is no adequate government support and cooperation between informal micro-enterprises and large enterprises.

2.20 Why do small businesses innovate

Firms innovate for various reasons. These include but not limited to, the need to increase market share; to obtain a competitive advantage; to increase product range; to enter new markets; to increase the ability to produce novel goods; to cut costs and so forth (Charmes, Gault and Wunsch-Vincent, 2016: 2; Brunow, Birkeneder and Rodriguez-Pose, 2017: 2).

While most firms often innovate for the aforementioned reasons, a study conducted by Lima and Muller (2017: 290) revealed that small businesses often innovate to survive; to effectively compete with competitors; as well as knowledge and experience. This study determined whether the aforementioned reasons also serve as a motive for informal micro enterprises to innovate.

2.21 Measuring innovation in the informal sector

According to Charmes, Gault and Wunsch-Vincent (2016), innovation can be measured as an input or as an output. As an input, innovation is measured through research and development expenditure. Whereas as an output, innovation is measured through patents applications. Groepe (2015) explained that the IMD World Competitiveness Yearbook 2015, illustrate that South Africans register few patents. Following the 2 211 patent applications registered by South Africans in 2013, South Africa is ranked number 49 out of 61 countries in the patent applications per capita category of competitiveness measurement. 0.73% of GDP R&D expenditure places South Africa at number 46 out of the 61 countries surveyed by the IMD, with Israel topping the list with 4.2% of GDP R&D expenditure.

On the overall competitiveness scoreboard, the IMD ranks South Africa 53rd out of the 61 countries ranked. Of the BRICS countries, only Brazil, at number 56 was below South Africa. The United States of America, China and Singapore occupied the first three places (Groepe, 2015).

Notwithstanding the above, Jugend *et al.* (2018: 4), argued that a firm's innovative performance can be depicted by the launch of novel or improved products, services, processes, marketing strategies and organisational structures. Such innovations can be identified through surveys, among other mechanisms.

Despite the aforementioned innovation measuring mechanisms, Charmes, Gault and Wunsch-Vincent (2016: 1) maintained that measuring innovation is a challenge for researchers and statisticians, especially in the informal sector. This is because, firms in

the informal sector often do not invest in research and development and they do not apply for patent rights to protect their innovations. Thus, it could be argued that surveys aiming to identify the launch of novel or improved products, services, processes, marketing strategies, and organisational structures are the most appropriate measures of innovation in the informal sector.

2.22 Informal micro-enterprises' innovation activity

Mendi and Mudida (2018: 327) recognised innovation as a catalyst that may transform developing informal micro-enterprises into formal businesses. The survival of informal micro-enterprises is dependent on their capacity to innovate. Similarly, Links, Hart and Jacobs (2014: 178) argued that "the survival of most firms in the informal sector is based on their ability to quickly respond to the demands for goods and services from their clients and the environment. The ability to offer a product or a service that directly addresses customers' needs, combined with the ability to adapt to any changing conditions, often drives innovative activities in the informal micro-enterprises". Despite all odds and innovation capacity constraints, existing literature reveals that innovation activities take place in some informal micro-enterprises (De Beer and Armstrong, 2015). Similarly, Links, Hart and Jacobs (2014: 178) argued that, to some extent, the informal sector has been a breeding ground of innovations, some of these innovations happened as a result of collaboration between formal and informal businesses.

La Porta and Shleifer (2014) argued that informal sector innovations vary from the innovations in the formal sector. Innovations in the informal sector are often executed by unregistered businesses, they are often separate from large innovation programmes supported by key role players in the national innovation system or other role-players involved in formal research and development; they are incremental and the innovation activities are informal (Links, Hart and Jacobs, 2014: 178).

In corroboration with the aforementioned statement, La Porta and Shleifer (2014) explained that innovation in informal micro-enterprises has often been understood as the procurement and utilisation of new equipment such as machines to improve production processes. The authors also suggested that there are more adaptations and imitations than original inventions in the informal sector. To some extent, some authors argued that informality is not a favourable context for innovation. This has been attributed to the intangible features of the entrepreneur, including but not limited to lower managerial skills, or lack of ambitious goals. Furthermore, informal micro-enterprises often do not have access to crucial information necessary to innovate; they have low capital intensity; they

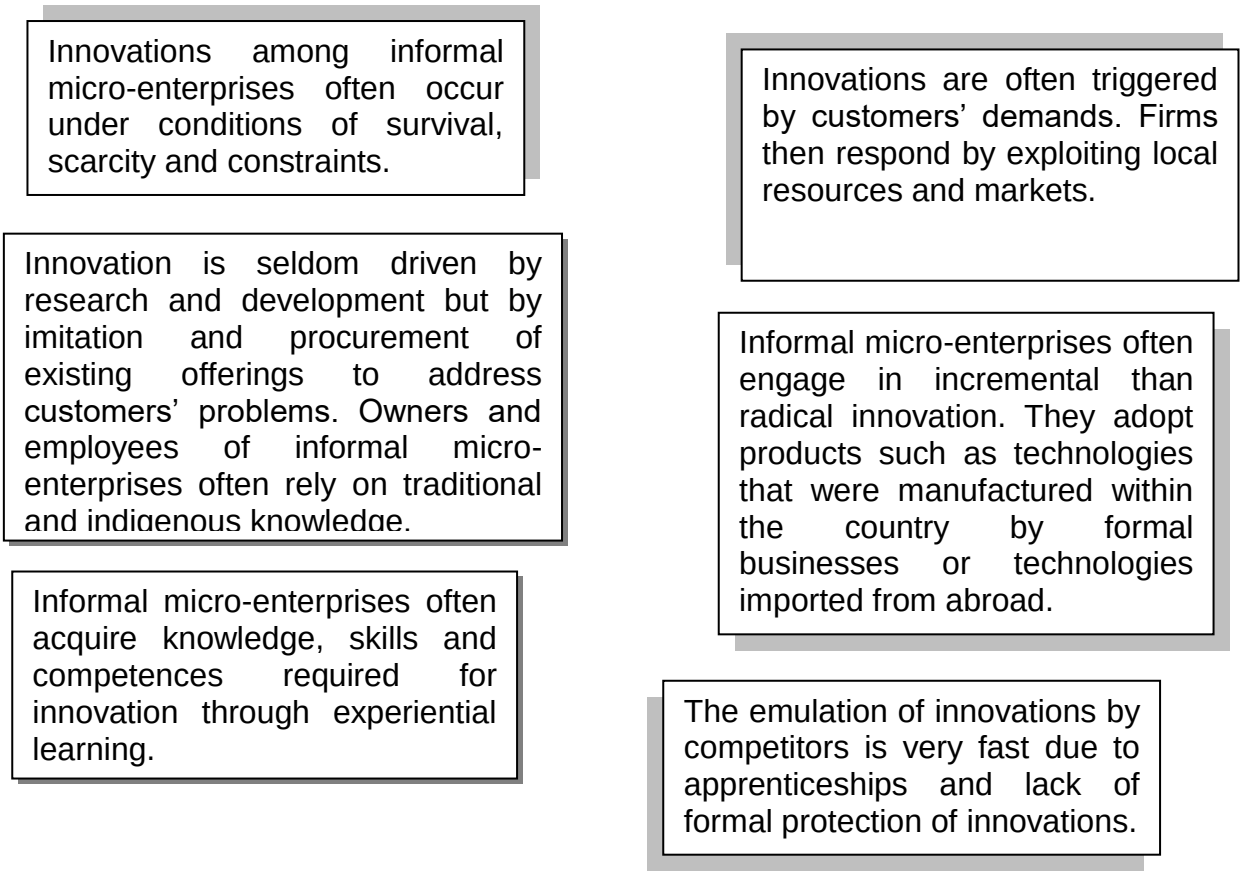
face limitations to technical upgrading; they tend to use low technology; they invest less in research and development; and there is insufficient demand for their offerings (La Porta and Shleifer, 2014).

According to Links, Hart and Jacobs (2014: 178) innovations among informal micro-enterprises are seldom driven by traditional research and development but rather by imitation and procurement of existing offerings. Similarly, Mendi and Mudida (2018) argued that the innovation probabilities of an informal micro-enterprise are highly dependant on the creativity of one individual, in particular, the owner. If this is a valid revelation, it suggests that informal micro-enterprises that are not owned by creative individuals would not be innovative.

De Beer and Armstrong (2015) argued that innovations that are new to the world seldom exist among informal micro-enterprises. Unfortunately, although the innovation models/frameworks should be prescriptive, no direct guidance is provided on a practical level on how ideas can be generated for innovation purposes. Subsequently, supply and demand interactions are argued to play a crucial role in shaping learning and innovation processes in informal micro-enterprises. Customers and suppliers are considered an important source of learning. Traditional knowledge is transmitted from one generation to the other; within the family or social groups (De Beer and Armstrong, 2015).

The characteristics of informal micro-enterprises' innovations can be summarised as follows:

Figure 2.5: Features of informal micro-enterprises' innovations



Source: De Beer and Armstrong (2015); Links, Hart and Jacobs (2014); Fu, Mohnen and Zanello (2018: 318)

It is apparent from the above literature review that some innovations take place in the informal sector. Yet, little is known about how new services, processes, products and other forms of innovation are produced throughout informal micro-enterprises' value chain. Furthermore, little is known about what motivates informal micro-enterprises to innovate.

2.23 Do the characteristics of informal micro-enterprises in Gauteng province favour innovation

Fu, Mohnen and Zanello (2018: 316) explained that the "different capabilities of firms in the formal and informal sectors often shape the innovation adoption and diffusion". Formal firms would often have human and structural capital; they may be able to invest in R&D; and they may be able to collaborate with large firms and foreign institutions. On the other hand, informal micro-enterprises would seldom have well-established innovation-oriented capabilities. Thus, they would often engage in innovation as a result of the entrepreneurs' creativity and in response to the challenges arising from the environment in which they operate.

Moreover, in developing countries, there is often poor infrastructure with less developed markets, and possible local clients have limited disposable income. Under such circumstances, informal micro-enterprises become vulnerable as their innovation capability is limited. Nonetheless, the informal micro-enterprises that can successfully innovate would survive, create more employment opportunities and lead the market (Fu, Mohnen and Zanello, 2018: 316).

In the South African context, the informal sector is diverse and diversity is considered a source of knowledge necessary to engage in innovation activities. A study conducted by Agwa-Ejon and Mbohwa (2015) revealed that two-thirds of the owners of micro-enterprises surveyed in Baragwana in the Gauteng Province are youth between the ages of 25 and 34. Youth are considered to have the potential to innovate and develop new ideas. Nonetheless, the authors further argued that, although the majority of informal micro enterprises are young and capable of innovating, they are not well-equipped to think out of the box as their education levels are low and they are not willing to go back to school.

The study also revealed that, although two-thirds of the firms surveyed acknowledge the significance of innovation, they do not invest in research and development. On the contrary, passionate behaviour within the firm seems to equal if not exceed research and innovation in determining the success of the firm (Agwa-Ejon and Mbohwa, 2015).

The study was concluded by stating that, informal micro-enterprises' owners in Gauteng need to acquire the necessary skills to enable them to be more creative and to adopt and adapt new ideas, and that government must support them in doing so (Agwa-Ejon and Mbohwa, 2015). In light of this conclusion, it can be further concluded that the authors still hold the views that, to be innovative, a firm must invest in R&D, human resources must be highly educated, and there must be adequate government support, among others. We strongly argued in this study that, this is not always the case.

Amongst others, one does not need high levels of education to innovate. Anyone can think, whether they are highly educated or not. What could be different would be the quality of ideas.

2.24 The relationship between R&D and innovation among micro-enterprises

A study conducted by Baumann and Kritikos (2016: 1) to assess the nexus between research and development, innovation and productivity of micro-enterprises revealed that micro-enterprises benefit from innovation processes in a manner that is comparable to that

of small, medium and large businesses since they are also able to enhance their labour productivity. Subsequently, it can be concluded that the R&D, innovation and productivity nexus in micro-enterprises is similar to that of small, medium and large businesses.

Micro-enterprises are often considered as marginal businesses with limited probabilities to grow and limited R&D investment. Nonetheless, these firms can substantially grow if they innovate and produce more. A positive relationship exists between R&D investment and product or process innovation as well as other forms of innovation (Baumann and Kritikos, 2016: 1).

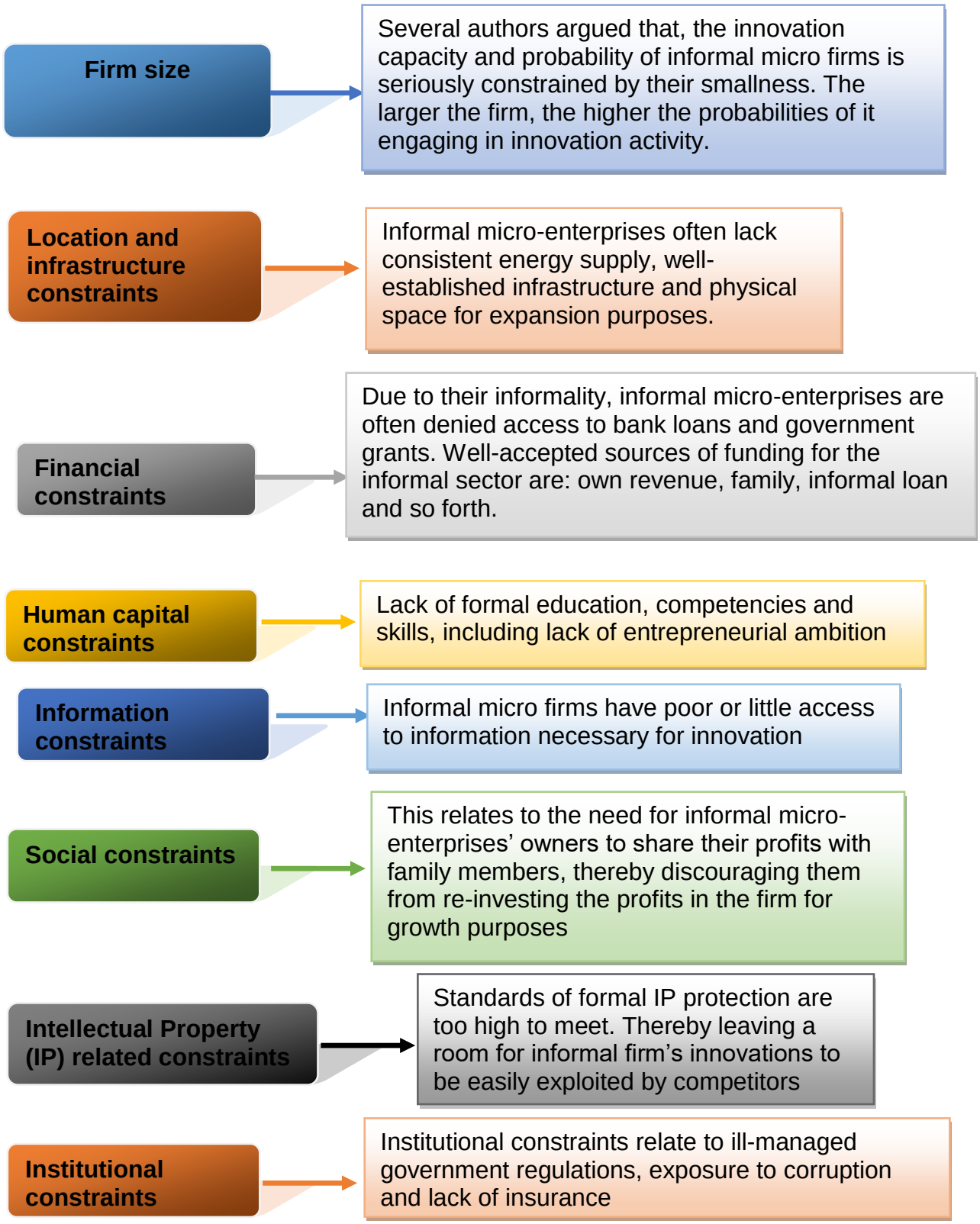
Although it is believed that there is a positive relationship between R&D investment and innovation, it is crucial to note that investing in R&D has inherent risks. For instance, a firm may fail to get a positive return on R&D investment. Subsequently, some firms were found to be innovative without investing in R&D. Firms can become innovators without R&D investment. Furthermore, due to the risks associated with R&D investment and other constraints that micro-enterprises encounter, the authors argued that micro-enterprises' investment in R&D would be low compared to large firms (Baumann and Kritikos, 2016: 1-2).

The study further revealed that 39% of the micro firms surveyed are innovators. Some of these micro firms were found to be engaging in innovation activities without formal R&D investment (Baumann and Kritikos, 2016: 10).

2.25 Barriers to innovation in the informal sector

Several constraints have been found to hamper innovation activities in the informal sector. Fu, Mohnen and Zanello (2018: 317) and De Beer and Armstrong (2015) summarised these constraints as follows:

Figure 2.6: Barriers to innovation in the informal sector



Source: Fu, Mohnen and Zanello (2018: 317) and De Beer and Armstrong (2015)

In light of the above, the informal sector has not traditionally been considered as an ideal environment for innovation activities because innovation has often been associated with

traditional R&D, human and structural capital. Nonetheless, De Beer and Armstrong (2015) argued that traditional R&D is not the only way through which innovation can be exploited.

2.26 Existing innovation theories and models/frameworks

2.26.1 Existing Innovation Theories

Zemplinerova and Hromadkova (2012) explained that two dominant theories of innovation paid attention to market structure, firm's size and innovation nexus. There is the Schumpeterian theory, which holds the view that large businesses are more innovative than small businesses as they are well-established, have sufficient financial resources, human and structural capital. The other theory is the Arrow's (1962) theory, which is of the view that small businesses are more innovative than large businesses, as small businesses compete to increase their market share. This study was conducted with the Arrow's (1962) theory in perspective.

Studies conducted by Acs and Audretsch (1987; 1988) revealed that large businesses proved to be more innovative than small firms in certain industries. On the other hand, small businesses proved to be more innovative in highly innovative industries. Nonetheless, Wennekers *et al.* (2005) explained that studies conducted in the decades preceding 2005 revealed that the innovative advantage has shifted from large businesses to small businesses. Furthermore, Wagner and Hansen (2005) explained that firms of different magnitude require different forms of innovation.

In light of the above, there are contrary theories relating to the innovation activities of small businesses and large enterprises. When contrary theories exist, future related studies become necessary as they can clarify the differences in the existing theories.

In order to present innovation patterns in small firms, Silva and Dacorso (2013) presented three theoretical propositions. The first argues that these firms constantly innovate through the introduction of new or improved processes. The second argues that these firms benefit the most from open innovation. Open innovation involves the use of external and internal ideas, inventions and discoveries to innovate. Sources of external ideas include customers, suppliers and competitors. The third proposition argues that these external sources of knowledge (ideas, inventions and discoveries) act as substitutes for internal R&D, thereby addressing internal deficiencies at low cost. For open innovation to take place, there has to be cooperation between the firm and the external role players.

Although open innovation seems to be an easy form of innovation for small businesses, it is not known if informal micro-enterprises in the townships of Gauteng province apply it and whether or not it has worked for them. Presumably, the application of open innovation in township informal micro-enterprises is a phenomenon that could be less effective as the existing literature reveals that in the South African context, there is a lack of innovation collaboration networks between informal micro-enterprises and large enterprises and there is also a poor flow of knowledge from universities to the corporate world.

2.26.2 Existing Innovation Models/Frameworks

Izadi, Zarrabi and Zarrabi (2013: 150) explained that “innovation models can be quite useful both for understanding and for practical purposes if used appropriately”. The authors further explained that “innovation models can be very important as benchmarking tools for understanding the actual pattern followed by firms”. Similarly, Chesbrough (2010) asserts that models/ frameworks were useful in explaining and understanding a firm’s business model. Thus, frameworks should not only define elements but also define the relationship between the elements.

Innovation models can also be beneficial for practical application. Accordingly, managers can use them as a method for recognising actual practices and customise them to suit their context (Izadi, Zarrabi and Zarrabi, 2013: 150).

Izadi, Zarrabi and Zarrabi (2013: 146) critically reviewed firm-level innovation models over three decades. The review revealed that in terms of the innovation systems framework, innovation includes the traditional research and development activities and the adoption of technologies in the society and other factors that influence these. The most fundamental difficulty associated with the innovation systems framework is its adoption in the developing countries as it assumes a well-established innovation system. This is mostly because the innovation systems framework was conceptualised in the context of western economies such as those in America, Europe and Japan (Izadi, Zarrabi and Zarrabi, 2013: 147-150).

Cooper (1993) developed Cooper’s Stage-Gate Model, which illustrates the basic stages of the innovation process. Although the model covers all basic innovation stages, it was designed for well-established firms with R&D facilities.

Zhang and Stough (2013: 37) highlighted that R&D investment and human capital development are primary determinants of innovative output as they aid to determine the

possibility of transforming ideas into successful business ventures. Countries that invest more in R&D and their facilities often innovate more.

In light of the above, establishing R&D capabilities is crucial for small firms, because it can enhance their abilities to transform innovative ideas into innovations. Nonetheless, in the South African context, small businesses' ability to build R&D capabilities has not been adequate due to the financial and other challenges they continue to encounter. Unfortunately, the existing literature paid little or no attention to the establishment of a viable alternative to R&D.

Stock *et al.* (2017: 221) designed a model for sustainable innovations. This model paid attention to ideation which is an early stage in the innovation process with an emphasis on sustainability and innovation drivers. Stock *et al.* (2017) further argued that there are three drivers of ideation, namely, creativity, motivation and knowledge.

Unfortunately, Stock *et al.'s* (2017: 221) model only focuses on the first stage of innovation (i.e., invention or discovery stage), and does not cater for other stages. Furthermore, the model focuses more on sustainable innovations, which are innovations aimed at sustainable development and not relevant to this study.

Rose, Jones and Furneaux (2016) tailor-designed an innovation model for formal software firms constituted by highly qualified technicians. Unfortunately, this model was designed to cater for the circumstances of formal software firms. The model is a bit complex, as the elements on the model are not in a pattern that is easy to understand. The existing literature reveals that the level of education of owners and employees of informal firms is low.

Amini, Torane and Hernandez-Munoz (2015) designed an innovation model described as a system that creates, fosters and catalyses open innovation. Unfortunately, this model was specifically designed for open innovation. Open innovation emphasises the existence of innovation collaboration networks between small firms, large enterprises and universities. The existence of innovation collaboration networks between small firms, large enterprises and universities remains a challenge in the South African context.

Other innovation models, such as innovation models developed by Serrano-Santoyo (2013) and Silviana (2018) were conceptualised for complexity science and open innovation. Thus, they are not suitable for informal micro-enterprises. Rogers (2003) and Seifried, Katz and Tutka (2016) also developed innovation models but just for the last

innovation stage, which is innovation diffusion. These models were developed for formal firms.

Lastly, a study conducted by Pylak and Wojnicka-Sycz (2016: 2179) revealed that changes in regional innovation models could expedite the development process of developing regions. Thus, developing countries can significantly benefit from tailor-made innovation models/frameworks.

2.27 Summary

It is evident from the literature reviewed that innovation has been recognised as a catalyst that can enable informal micro-enterprises to grow from survivalists to sustainable well-established businesses that create jobs and significantly contribute to economic growth. There is also evidence of small-scale innovations that took place in the informal sector. Informal sector innovations have not only been in small-scale but they have also been incremental rather than radical. This has been attributed to informal micro-enterprises' innovation capacity constraints.

Unfortunately, the existing innovation models/frameworks offer less assistance as they were not tailored for the informal micro-enterprises' context and mostly developed in western economies. The existing innovation models assume an established innovation system and they do not provide direct support on a practical level on what activities should be carried out in each basic innovation phase.

Moreover, through the literature review, we were able to identify a substantial number of research gaps. These are research gaps in innovation, research methodologies, and so forth. Accordingly, this study focused on key research gaps identified. In the next chapter, we present the research methodology.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This study sought to design a tailored creative innovation framework that will guide informal micro-enterprises in the townships of Gauteng Province to engage in radical and incremental innovation with their imperfections. Thus, this chapter presents the research design that was adopted to solve the identified research problem(s) and answer the formulated main research questions, which ultimately led to the realisation of the research aim and objectives. In this chapter, we describe the research area. Following this section, we explain the research methodology/design, provide a mixed-methods rationale, and describe our philosophical domain. Following these sections, we explain the study's population and how an appropriate representation of the population was determined. We further explain how quantitative and qualitative data were collected and analysed. Lastly, towards the end of this chapter, we describe measures that were put in place to ensure that data were reliable and valid. For research delimitation, limitations of the study and ethical considerations, please refer to Sections 1.7, 1.8 and 1.10, respectively.

3.2 Research focus area

This study was conducted in the Gauteng Province, which is one of the nine provinces in the Republic of South Africa. Gauteng Province is the economic hub of the country and it is home to 14 717 000 people (STATSSA, 2018: 2). This represents 25.49% of the country's population. The South African population was recorded at 57 725 600 in 2018 (STATSSA, 2018: 2).

According to SEDA (2012), Gauteng Province is also home to the biggest townships in the Republic of South Africa (i.e., Soweto, Katlehong, Soshanguve, etc.). Furthermore, as recorded by SEDA (2016), Gauteng Province had 465 100 informal micro-enterprises, this represents 31% of informal micro-enterprises in the Republic of South Africa. In total, South Africa had 1 497 860 informal micro-enterprises (SEDA, 2016: 17).

As explained in Section 3.6 below (population and sampling), this study sampled 400 informal micro-enterprises in four townships of the Gauteng Province. Leedy and Ormrod (2014: 221-222) explained that, statistically, where the research population exceeds 5000, a sample of 400 participants would be sufficient. Thus, a sample of 400 informal micro-enterprises is considered a sufficient representation of informal micro-enterprises in the Gauteng Province and the entire country.

The table below depicts the number of informal firms per province as recorded by SEDA (2016):

Table 3.1: Small businesses per province

SMMEs	Number (2015Q2)			
	Formal	**Informal**	**Other**	**Total**
Total	667 433	1 497 860	86 528	2 251 821
North West	27 430	79 153	6 273	112 856
Gauteng	306 231	465 100	13 989	785 321
Western Cape	110 107	110 188	10 030	230 324
Eastern Cape	50 670	141 739	4 957	197 366
Northern Cape	8 534	9 058	3 019	20 611
Free State	26 224	60 816	9 806	96 846
KwaZulu-Natal	74 976	283 165	15 293	373 434
Mpumalanga	35 208	141 129	9 063	185 399
Limpopo	28 054	207 512	14 098	249 663

Source: SEDA (2016)

As depicted in Table 3.1, Gauteng Province had the highest number of informal firms. Since a list of informal firms does not exist, it is not clear as to how SEDA recorded the number of informal firms in the Republic of South Africa.

3.3 Research methodology

We understand research design or methodology as a road map that illustrates how the researcher intends to solve the identified research problem and answer the formulated main research questions, which will ultimately lead to the attainment of research aim and objectives. Wong, Musa and Wong (2011: 11546) maintained that identifying an appropriate and effective research design/ methodology is a major apprehension in research. Thus, researchers need to intensively think, plan and identify an appropriate research design before collecting data. By so doing, the researchers will eliminate unnecessary challenges after data collection (Leppink, 2017: 99).

Research questions are major determinants of an appropriate research method. Once a certain research method is selected, rules about that particular research method should be followed (Leppink, 2017: 100; Weathington, Cunningham, and Pittenger, 2010: 529). The table below portrays some of the research methods and their features:

Table 3.2: Features of various research methods

Features	Quantitative research method	Qualitative research method	Mixed-methods
Sample size	Large	Small	Large for the quantitative aspect; and small for the qualitative aspect
Type of research	Confirmatory	Exploratory	Both confirmatory and exploratory
Data format	Numerical	Textual, words and few numbers	Both numerical and textual data
Philosophy	Positivism	Constructivism	Combines multiple philosophies

Source: Leppink (2017); Weathington, Cunningham and Pittenger (2010); Leedy and Ormrod (2014)

The study was based on the application of sequential explanatory mixed-methods research. Quantitative data were collected and analysed before qualitative data could be collected and analysed. Accordingly, the quantitative phase informed the qualitative phase. As explained by Onwuegbuzie and Leech (2006: 484), mixed-methods studies are sequential and not concurrent when the qualitative phase follows the quantitative phase.

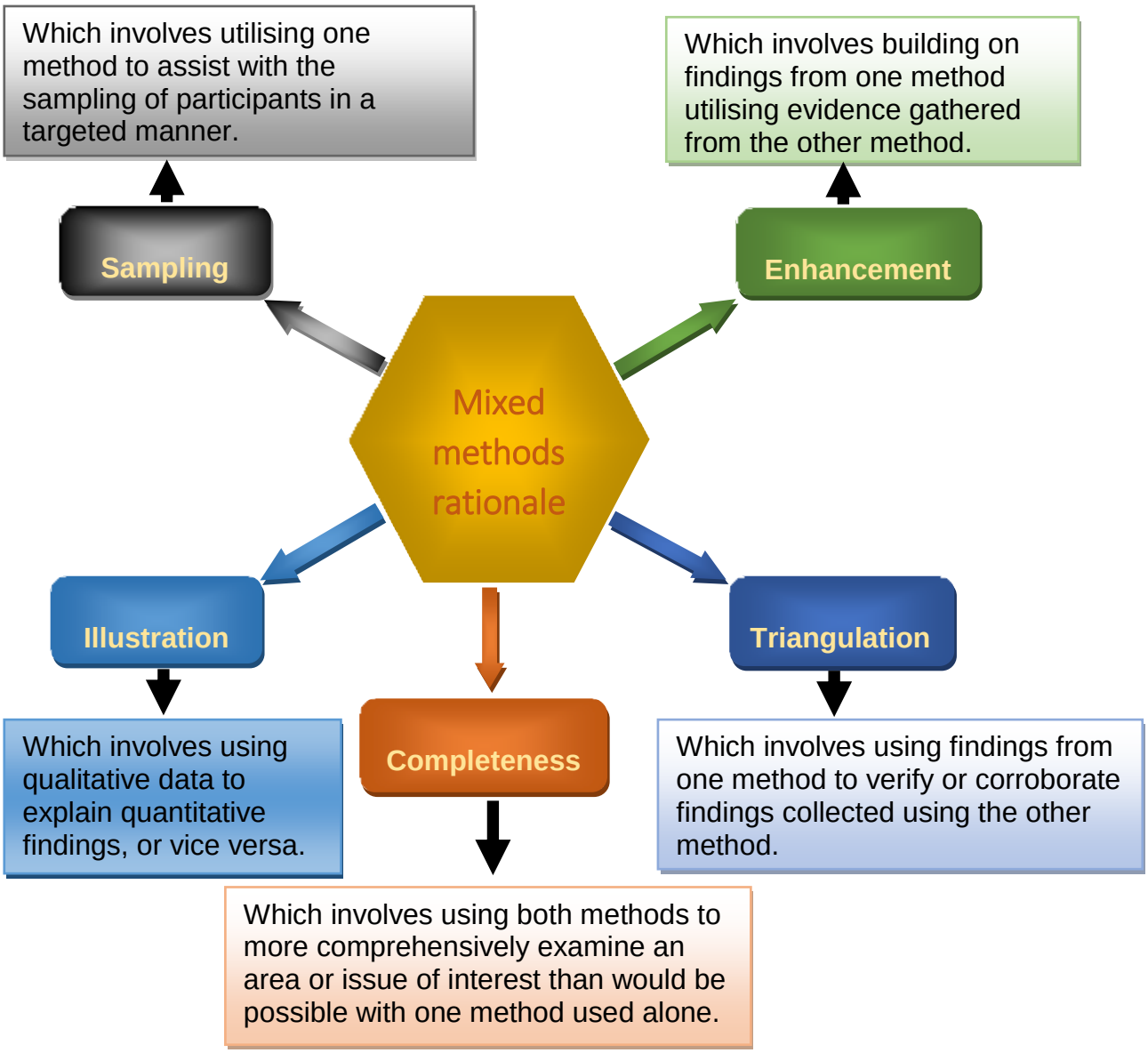
Moreover, the research questions of the study require less quantification and more qualification. Weathington, Cunningham, and Pittenger (2010: 529) explained that mixed-methods research is more relevant when the researcher asks questions that require more detailed explanation and description and less statistics and numbers. The researchers were mostly concerned about systematically developing an in-depth understanding of how innovative informal micro-enterprises engage in incremental and radical innovation.

Nonetheless, it was within the scope of this study to also quantitatively determine the extent to which informal micro enterprises in the townships of the Gauteng Province use the existing innovation models/frameworks as a guide to engage in radical and incremental innovation.

3.4 Mixed-methods rationale

The study adopted the sequential explanatory mixed-methods research to ensure that the most appropriate respondents and participants were sampled, for illustration, and to ensure that complete data were collected, analysed and interpreted accordingly. Onwuegbuzie and Leech (2006: 477) explained that, when adopting the mixed methods research, the researcher has to determine the mixing rationale. Similarly, Weathington, Cunningham and Pittenger (2010) aver that researchers adopt mixed methods research for several reasons. The figure below illustrates some of the reasons:

Figure 3.1: Mixed-methods rationale



Source: Weathington, Cunningham, and Pittenger (2010)

In this study, a database of informal micro-enterprises in the townships and that engaged in innovation activity between January 2016 and December 2018 does not exist. Subsequently, there is no sampling frame. Thus, the use of quantitative research, in particular the collection of data using a questionnaire assisted with the sampling of the most relevant participants, who were further interviewed for completeness of data. Dodourova and Bevis (2014) argued that it is usually difficult for the researcher to identify and sample key participants who can provide the most relevant information. Thus, researchers should put measures in place to identify the most suitable participants for the study.

Notably, most South African studies relating to small businesses' innovation activity adopted qualitative research methodology (Dodourova and Bevis, 2014; Rose, Jones and Furneaux, 2016: 312; Maphalla, Nieuwenhuizen and Roberts, 2012: 3). The usage of one method has limitations. Thus, we adopted mixed-methods research to obtain complete information. As explained by Omobhude and Chen (2017: 367) mixed-methods research adopts instruments or tools of both quantitative and qualitative research approaches for a broad depth and breadth of understanding. Furthermore, the adoption of a single research method has hereditary constraints caused by the adoption of a single research method (Omobhude and Chen, 2017: 372).

Thus, a combination of research methods may complement the weaknesses of individual research methods and enhance the chances of generalising the research findings, as the phenomenon would have been studied from multiple angles using a combination of large and small samples. Lastly, mixed methods research has been adopted for illustration, meaning qualitative data will also be used to explain quantitative findings.

3.5 Research philosophy

Wong, Musa and Wong (2011: 11547–11548) explained that any type of scientific research requires a philosophical domain to interpret issues and events. The philosophical beliefs of the researcher often influence the researcher's choice of research method, how the researcher collects data and analyse it. There are several philosophies or paradigms from which researchers define phenomena. Some researchers define phenomena from positivism philosophy, others from constructivism philosophy, whereas other researchers define phenomena from pragmatism philosophy, among other philosophies.

Positivism research philosophy holds the belief that science is the only means through which researchers can learn the truth about certain phenomena (Leppink, 2017: 98). Positivism often includes the utilisation of the existing knowledge to formulate a hypothesis that is tested during the research process. Researchers who adopt positivism philosophy often apply the deductive reasoning approach, they often collect and objectively interpret data, meaning through observation and measurement. They do not allow their personal views, beliefs and emotions to influence their studies (Wong, Musa and Wong, 2011: 11547–11548).

Constructivism research philosophy holds the belief that human mental activity is crucial in learning truths about phenomena. Accordingly, researchers who adopt constructivism philosophy, collect and interpret data in a subjective manner. In other words, they allow

their personal views, beliefs and emotions to influence their studies. With this philosophy, the researcher pays attention to meanings, to understand the meaning of events; inductive reasoning approach is utilised; and small samples are intensively analysed (Leppink, 2017: 100; Wong, Musa and Wong, 2011: 11548).

Onwuegbuzie and Leech (2006: 476) explained that pragmatism research philosophy holds the belief that, there are many various ways of construing the world and conducting research. Pragmatics believe that there is no single paradigm that can provide a complete picture as there are multiple realities to a phenomenon. They also believe that the research question dictates the type of research philosophy a researcher should adopt.

In light of the above, pragmatics can combine both positivism and constructivism research tools in a single study to answer the formulated research question(s). In a nutshell, pragmatics adopt any research tool necessary to address research questions (Leppink, 2017; Wong, Musa and Wong, 2011). The table below summarises the features of the aforementioned three different types of research philosophies:

Table 3.3: Research philosophies

Philosophy	Positivism	Constructivism	Pragmatism
Type of research	Quantitative	Qualitative	Mixed
Research questions	Closed-ended	Open-ended	Both, open and closed-ended questions
Sample	Large	Small	Large sample often used for quantitative aspect while a small sample is often used for the qualitative aspect
Research driver	Science	Human mental activity	Both science and human mental activity

Source: Onwuegbuzie and Leech (2006: 476)

In this study, we adopted the pragmatism research philosophy. The research questions were analysed, and we reached an understanding that they can best be addressed by a

combination of both positivism and constructivism research tools. Accordingly, we believe that there are many different ways through which we can learn the truth about certain phenomena. The study had several phases, and in the first phase, data were collected and analysed objectively. Whereas in the second phase, data were collected and analysed with the application of mental activity. The researchers believed that collecting and analysing both quantitative and qualitative data will give the researchers a complete picture of the phenomenon that was studied.

3.6 Population and sampling

The subjects of investigation are informal micro-enterprises in the townships of Gauteng Province. Unfortunately, a sampling frame of informal micro-enterprises in the townships and that engaged in innovation activity between January 2016 and December 2018does not exist. This is mostly because informal firms avoid registering with legislative authorities to remain informal or invisible before the law and its requirements. Thus, the study employed convenience sampling during the quantitative phase. The study further employed a purposive sampling method during the qualitative phase. Leedy and Ormrod (2014: 220-221) define samples as population microcosms. Convenience sampling is utilised when the researcher intends to randomly select respondents or participants who are conveniently available to participate in the study (Bryman and Bell, 2011). On the other hand, purposive sampling is utilised when the researcher intends to sample only a certain group of participants, mostly because of their relevance to the study (Charmes, Gault and Wunsch-Vincent, 2016: 17; Weathington, Cunningham, and Pittenger, 2010: 205-206).

The study focused on sampling informal micro-enterprises in the townships of Gauteng Province. Accordingly, for the quantitative phase, questionnaires were randomly distributed to informal micro-enterprises with one to ten employees following the principles of convenience sampling. Convenience sampling was considered appropriate for the quantitative phase as we were dealing with firms that are informal and invisible before the law to a certain extent. The most reasonable way to sample these firms was to go to the site and randomly sample firms that were available and willing to participate in the study. One of the disadvantages of convenience sampling is a high chance of a sampling error. Thus, to reduce the sampling error, we ensured that the sample for the quantitative phase was randomly selected from every section of each of the identified townships.

As the questionnaires were being distributed, we developed a sampling frame for the qualitative phase by listing informal micro-enterprises that received questionnaires,

allocated them participant numbers, recorded their names and physical addresses. The sample for the interviews was drawn from the sampling frame referred to here.

Following the analysis of the quantitative data collected, purposive sampling was applied to sample participants for the interview. Accordingly, unincorporated townships micro-enterprises with one to ten employees and often not registered with the Companies and Intellectual Property Commission (CIPC) were sampled. If a micro-enterprise is registered with the CIPC, then the employees must not be registered with relevant labour bodies for that micro-enterprise to qualify to be sampled. Furthermore, the qualifying unincorporated townships micro-enterprises had to have engaged in innovation activity between January 2016 and December 2018without R&D investment, an innovation aimed government support, and innovation aimed collaboration networks with large enterprises and universities.

According to Leedy and Ormrod (2014: 221-222), a key rule in sampling is that the larger the sample the better the representation of the population. Practically, if the population size is 100, there is little point in sampling, the researcher should survey the entire population. If the population size is around 500, 50% should be sampled; if the population size is around 1500, 20% should be sampled. Lastly, if the population size exceeds 5000, then the population size is almost irrelevant and a sample size of 400 will be adequate.

As recorded by STATSSA (2015), Gauteng Province had 465 100 informal micro-enterprises. Thus, a sample of 400 respondents is a fair representation of the population following Leedy and Ormrod's (2014) criteria. Furthermore, the informal micro-enterprises in the Gauteng Province are heterogeneous and they operate in various economic sectors. This increases the probabilities of generalising the conclusions of this study to other provinces in the Republic of South Africa.

The sample was constituted by informal micro-enterprises from Soweto, Katlehong, Vosloorus, and Soshanguve because SEDA (2012) identified them as the key areas in which there exist huge informal small businesses activities. Furthermore, these are some of the biggest townships, not only in the Gauteng Province but also in the entire country, thereby enhancing the chances of transferability and validity of research findings. In this regard, 400 participants (100 from each of the identified townships) were sampled, see Table 3.3 below:

Table 3.4: Informal micro-enterprises per township

Gauteng key townships	**Sample of informal micro-enterprises**
Soweto	100, informal firms with 1-10 employees
Katlehong	100, informal firms with 1-10 employees
Vosloorus	100, informal firms with 1-10 employees
Soshanguve	100, informal firms with 1-10 employees

Source: own compilation based on firms sampled

3.7 Data collection

Both primary and secondary data were obtained through literature review, questionnaire and semi-structured interview. For the collection of data during the quantitative phase of the study, we developed a questionnaire based on the revelations of the literature reviewed and the main research questions. The questionnaire was developed in consultation with the University's statistician. Accordingly, the questionnaire was divided into five sections. Section 1 solicited responses relating to business background, Section 2 solicited responses relating to the innovation orientation of a firm, and Section 3 solicited responses relating to innovation activities of informal micro-enterprises. Section 4 solicited responses relating to the existing innovation models/frameworks and Section 5 solicited responses relating to the creative innovation framework features.

The questionnaire was piloted. This was done to assist the researchers to refine the questionnaire to ensure that it was easy to understand; that relevant data were collected; and for the transferability of research findings. The pilot study was conducted on weekends from March to May 2019. Data for the pilot study were collected from Mamelodi, Nelmaphius, Freedom Park, Sebokeng, Orange Farm and Weilers Farm. About 69 questionnaires were distributed and 49 (70%) were received. Quantitative data collected through the pilot study were used to test the reliability of the questionnaire using Cronbach's alpha test. The four sections of the questionnaire with Likert scale type of questions scored 0.783, 0.927, 0.929 and 0.766 respectively on Cronbach's alpha test, suggesting that the research instrument is reliable.

During the pilot study, some potential respondents were reluctant to partake in the study due to their firm's registration status, some respondents struggled to understand some

technical concepts used in the questionnaire and most employees were reluctant to partake in the study, as they believed the owners were more relevant. Thus, technical concepts in the questionnaire were replaced with synonyms that are easy to understand. Moreover, during the full study, we assured respondents that we do not represent the government and that their information will be kept confidential and only used for the study. We also assured employees of informal micro-enterprises that their views are relevant to the study and that they are encouraged to participate.

Based on the lessons learnt from the pilot study, the questionnaire was refined into a final version (Appendix A). 400 questionnaires were physically distributed in four townships of the Gauteng Province from 01 July to 31 August 2019, which is two months. These townships are Soweto, Katlehong, Vosloorus and Soshanguve. The questionnaires were distributed and collected without taking breaks. This was a daily exercise for two months. As the questionnaires were being distributed, we established a sampling frame for the qualitative phase by recording the basic details of potential respondents in a diary. Details such as business name and physical address were recorded. It was necessary to keep such records for the sampling and location of participants for the qualitative phase. About 207 completed questionnaires were received from respondents, which constituted a response rate of 52%.

For the qualitative phase, interview questions were formulated based on the revelations of the literature reviewed, main research questions and analysis of quantitative data. There were also pilot interviews and the pre-formulated interview questions were refined based on the lessons from the pilot study. Pilot interviews were conducted with six participants in May 2019. Pilot interviews revealed that too many concepts should not be grouped in one question as this may lead to confusion. If several concepts should be addressed, where possible each concept should have its question.

Following the pilot study and post the analysis of the final quantitative data, the interview questions were refined again into final questions (Appendix C). The analysis of the final quantitative data revealed that 44 informal micro-enterprises complied with the interview criteria. We initially planned to interview all 44 identified participants, however, only 21 participants were interviewed due to the attainment of data saturation point. It is possible that the data saturation point was reached with the 16th participant, however, we decided to continue to interview participants who were next in line hoping to discover new information. Unfortunately, until the 21st participant, there was still no new information and

we decided to stop the interviews. Charmes, Gault and Wunsch-Vincent (2016: 19) argued that semi-structured interviews allow the researcher an opportunity to ask follow up questions. Thus, during the interviews, we had some flexibility and where necessary follow-up questions were asked to not only get an in-depth understanding but also to clarify responses. Data in this regard were recorded through a smartphone and by transcribing notes. Furthermore, the collected data were transferred into a personal computer for safekeeping.

Leppink (2017: 100) explained that, when conducting a mixed-methods study, the researcher does not have to collect both quantitative and qualitative data from all identified respondents. Accordingly, quantitative data were collected from 207 respondents, whereas qualitative data were only collected from 21 participants who engaged in innovation activity during the period, 01 January 2016 to 31 December 2018, without formal R&D investment, innovation aimed government support as well as innovation aimed collaboration networks with large enterprises and universities.

3.8 Data analysis

Neuman (2011) maintained that it is not enough to collect data, the collected data must be analysed and interpreted to find meanings, patterns, relationships and so forth. The analysis enables us to enhance comprehension, expand or build theory, and advance knowledge. According to Leedy and Ormrod (2014: 150-151) and Rubin and Rubin (2005), data analysis refers to the transition of data from its raw form to evidence-based interpretations which are the foundation for published reports.

As explained in Section 3.7 above, we collected both quantitative and qualitative data. Quantitative data are often analysed using descriptive statistics, exploratory factor analysis, and cluster analysis, among others (Onwuegbuzie and Leech, 2006). Descriptive statistics just describe in a summarised format what the data shows (Leedy and Ormrod, 2014: 294). It provides a powerful summary that may enable comparisons across units. This is often done through measures of central tendency and measures of variability. These two measures use graphs, tables, and general discussions to help people understand the meaning of the analysed data (Leedy and Ormrod, 2014: 288-289). Factor analysis is an exploratory technique that is applied to a set of observed variables to determine the underlying factors from which the observed variables emanated. Whereas cluster analysis is useful in determining natural groupings in the data set. It divides data into groups that are meaningful, useful, or both.

During the quantitative phase, the collected data were checked for completeness and coded. As explained by Neuman (2011), before quantitative data can be analysed, it must be coded. This means that raw data must be transformed into a format that is easy to analyse using statistics software on computers. Non-numerical information or variables must be transformed into numbers. The coded data were captured on the Statistical Package for Social Sciences 25 (SPSS v25) software designed for statistical computing. The captured data were then analysed through descriptive statistics, correlation analysis, and factor analysis.

Descriptive statistics provided a powerful summary of data in the form of graphs, figures, frequency tables, and so forth. This enabled comparison across units and the identification of themes to take place at ease. Correlation analysis enabled us to determine the correlation between respondents' demography and the items or variables that were tested. Lastly, although the review of the literature enabled us to identify relevant innovation factors and the questionnaire was developed in such a manner that similar innovation factors were grouped, we further applied factor analysis on the quantitative data. This was done due to the need to design a tailored creative innovation framework. Thus, the application of factor analysis enabled us to determine crucial factors that play a key role in the innovation activities of informal micro-enterprises. The study mostly collected metric data and some categorical data. Factor analysis is more reliable when applied to data that can mostly be classified as metric data.

Overall, percentages, tables, charts, graphs, and so forth were used to present the analysis. This was followed by the interpretation of analysis and descriptions to answer the main research questions and solve the research problem(s).

During the qualitative phase, data were analysed through thematic and constant comparison methodology. Weathington, Cunningham, and Pittenger (2010) aver that the goal of thematic and constant comparison methodology is basically to extract themes from a set of data. As explained by Dodourova and Bevis (2014), a theme is a recurring topic of discussion that captured an interview's central ideas. Continuous comparison across interviews ensures that all recurring events are accounted for and grouped. By scrutinising the data and comparing one participant's responses to another's, the researcher will start to see patterns in the data.

In this study, collected data were revisited and perused. Interviews' notes were then transcribed in short summarised sentences to allow comparison across the responses to take place at ease.

The responses were closely reviewed and one participant's responses were compared with the other to determine patterns or themes. Identified themes were named and quantified in terms of frequencies and percentages. This was followed by interpretations. Leedy and Ormrod (2014: 161) argued that the analysis and interpretation of qualitative data are susceptible to subjectivity. Thus, to ensure that the inherent subjectivity does not lead to the misrepresentation of the findings, we first presented the themes following what the data presented and only intensively applied our minds during the discussion.

The overall data analysis process for both the quantitative and qualitative phases took place over one month. In accordance with the principles of mixed methods research, we integrated the findings of the quantitative and qualitative phases to present consolidated conclusions. This was followed by discussion.

3.9 Reliability of data

Dodourova and Bevis (2014) assert that reliability during data collection and analysis phases relates to consistency and ensuring that the collected data are free from errors. One way of ensuring consistency would be to ensure that all participants are asked the same questions under similar settings, and that data are appropriately recorded, consistently coded and analysed.

In this study, all participants were asked the same questions during both the quantitative and qualitative phases. However, during the qualitative phase, follow-up questions slightly differed depending on the responses of participants. Both quantitative and qualitative data were collected in similar settings. Completed questionnaires were safely stored. Interviews were mechanically recorded, transcribed and transferred into a personal computer for safekeeping. A consistent coding system was applied to the collected data.

As explained in Section 3.4, the usage of one research method and data collection technique has inherent risks and possible errors (Omobhude and Chen, 2017: 372). Thus, to enhance the reliability of data and to ensure that the collected data are free from errors, more than one data collection technique was utilised. Accordingly, data were collected through questionnaires and interviews. The interviews complemented the weaknesses of the questionnaire.

3.10 Validity of data

Weathington, Cunningham and Pittenger (2010) explained that validity in research relates to the alignment between what has been observed and recorded by the researcher and what is true in the real setting. Leedy and Ormrod (2014: 103) aver that there is internal

and external validity, “internal validity relates to the extent to which the study’s design and the data it yields allow the researcher to draw accurate conclusions about cause and effect and other relationships within the data”. Thus, any conclusion that the researcher draws must be supported by the data collected.

Sequential explanatory mixed methods research was considered to be more appropriate for this study (see Section 3.4 for justification). Questions on the questionnaire as well as interview questions were aligned to the main research questions. The statistician was consulted for an independent assessment and the statistician confirmed that there is indeed an alignment. Post the collection of the quantitative data and during the assessment of completed questionnaires, some responses were not clear and instead of discarding the responses, clarity on the collected data was sought from the relevant respondents. Accordingly, the collected data were reviewed with the relevant respondents for accuracy.

Quantitative data were objectively analysed to ensure that the findings are a true reflection of the views of the respondents. Even during the qualitative phase, we tried to be as objective as possible during the analysis of data and only allowed the mental activity and our subjectivity to take place during the interpretation of analysis and discussion. Conducting the study in this fashion allowed us to draw conclusions that are informed only by the research design and the data collected.

External validity refers to the extent to which the study’s findings can be generalised to other contexts (Leedy and Ormrod, 2014: 105). In this study, the sample identified is considered a fair representation of all informal micro-enterprises in the Republic of South Africa. Subsequently, although the study was only conducted in the Gauteng province, the findings thereof may apply to informal micro-enterprises in other parts of the Republic of South Africa.

The tailored creative innovation framework was shared with innovation experts for validation. The process thereof is explained in more detail in Section 4.6 of this thesis.

3.11 Summary

This chapter provided a road map that illustrates how we intended to solve the identified research problem, answer the formulated research questions, and realise the research aim and objectives. Accordingly, we explained that the study adopted sequential explanatory mixed-methods research and a justification for this was provided. The research population and sampling criteria were described; it was explained that both

quantitative and qualitative data were collected from consenting respondents and participants. We explained that the collected quantitative data were captured on the SPSS v25 and analysed through descriptive statistics, correlation analysis and factor analysis. We also explained that qualitative data were analysed through thematic and constant comparison methods. This was done to extract, compare and interpret themes. We also explained measures that were put in place to ensure the reliability and validity of data.

In the next chapter, among others, the analysis of the collected data will be presented, themes will be extracted and interpreted. This will be followed by the integration of quantitative and qualitative findings and discussion. The discussion will be aligned to the research problem, objectives and research questions.

CHAPTER 4: ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This study sought to design a tailored creative innovation framework that will guide informal micro-enterprises in the townships of Gauteng Province to engage in radical and incremental innovation with their imperfections. The previous chapter provided a road map that illustrated how we collected and analysed data to solve the identified research problem(s) and answer the formulated research questions. In this chapter, we present the collected data, an analysis of the data, and discuss the findings. The last section(s) of this chapter presents the creative innovation framework which was informed by the findings of the study.

Two research instruments were used to collect primary data. A questionnaire was used to collect quantitative data and semi-structured interview was used to collect qualitative data. Thus, in the following sections, quantitative data, its analysis and results will be presented before qualitative data, its analysis and findings can be presented. This will be followed by the integration of the quantitative and qualitative, and findings a discussion that is aligned to the main research questions, aim and objectives.

4.2 Phase one: quantitative data analysis, results and discussion

4.2.1 Response rate

A questionnaire was used to collect quantitative data. 400 questionnaires were physically distributed in four townships of the Gauteng Province from 01 July to 31 August 2019, which is two months. These townships are Soweto, Katlehong, Vosloorus and Soshanguve.

About 207 completed questionnaires were received from the respondents. This constituted a response rate of 52%. Although the purpose of the study and associated ethical issues were clearly articulated, some respondents were reluctant to participate in the study due to fear of being exposed to government organisations. They explained that they were afraid that the researchers might leak their information to the government, and the government would impose taxes on them.

Table 4.1: Response rate

Gender	**Frequency**	**%**
Male	126	61
Female	81	39
Total	**N = 207**	**100**

Source: Primary data

4.2.2 Data processing and analysis

Received questionnaires were checked for completeness, coded and captured on the SPSS v25. About three questionnaires had spoiled responses on several sections. Instead of discarding the spoiled responses, we re-visited the relevant respondents to correct the mistakes. Corrected questionnaires were coded and captured accordingly.

4.2.3 Validity and reliability of the research instrument

Cronbach's alpha (α) reliability coefficient was utilised to test the reliability of the research instrument (i.e., the questionnaire). Cronbach's alpha (α) reliability coefficient, whose numerical value ranges from 0 to 1, measures the internal consistency of a questionnaire consisting of Likert-type scales and items. A value of at least 0.7 indicates good internal consistency of the items in the scale. The following are the results together with interpretation:

Table 4.2: Reliability analysis of innovation items

Subscale	**Cronbach's Alpha (α)**	**N of Items**	**Mean**	**Standard Deviation**	**Internal consistency**
Innovation orientation (Section 2)	0.7	12	3.4	0.9	Acceptable
Innovation activity (Section 3)	0.9	27	2.9	1	Excellent
Existing innovation models (Section 4)	0.9	7	1.7	0.3	Excellent
Creative innovation framework features (Section 5)	0.7	8	4.3	0.1	Acceptable
Total	**0.9**	**54**	**3.1**	**1.1**	**Excellent**

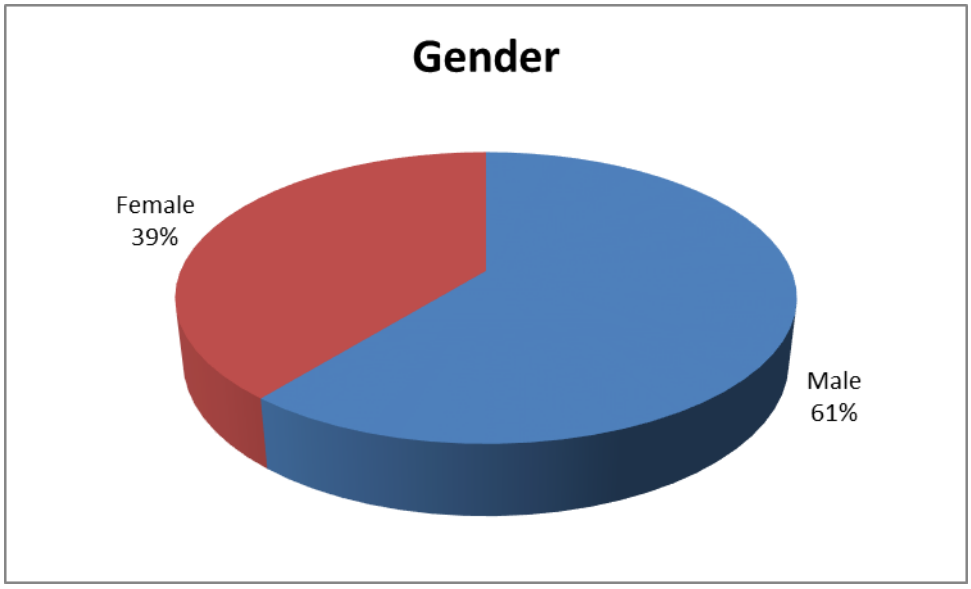
Source: Primary data

The Cronbach's alpha coefficients in Table 4.2 are all greater than or equal to 0.7. This suggests that the respondents have responded consistently to the survey items, and the questionnaire used in this study was proven to be reliable.

4.2.4 Demographic statistics

Section 1 of the questionnaire mostly solicited data relating to the demography of respondents. Among others, this included respondents' gender, level of education and their position in the respective firms.

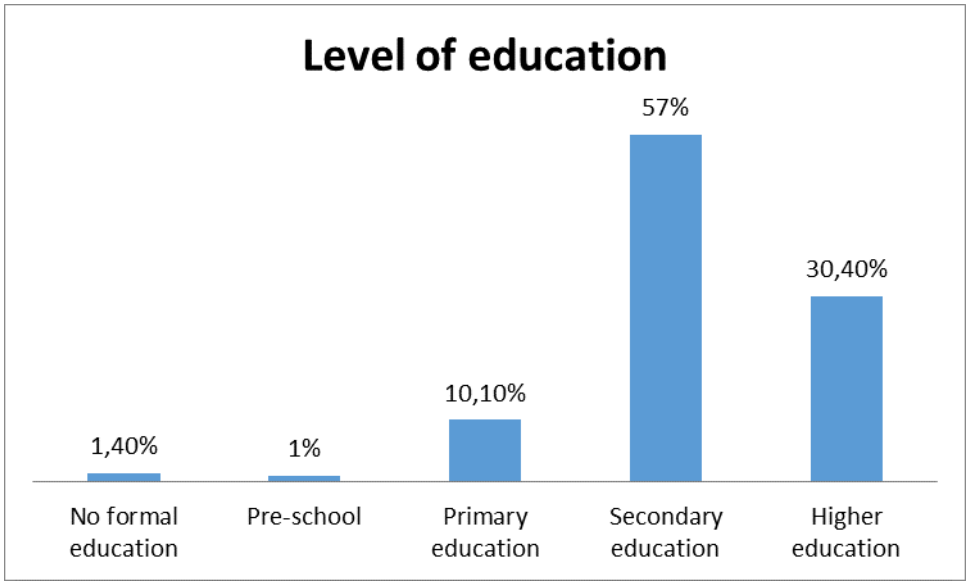
Figure 4.1: Gender



Source: Primary data

As illustrated in Figure 4.1, 61% of the respondents are male whereas 39% are female. While there is a representation of the two genders, it is imperative to point out that, there has been a slight shift in gender representation among townships' informal micro-enterprises' owners/employees. Decades ago, townships' informal micro-enterprises were mostly run by women who were said to be single parents of households who established businesses to feed their families (De Beer and Armstrong, 2015).

Figure 4.2: Level of education

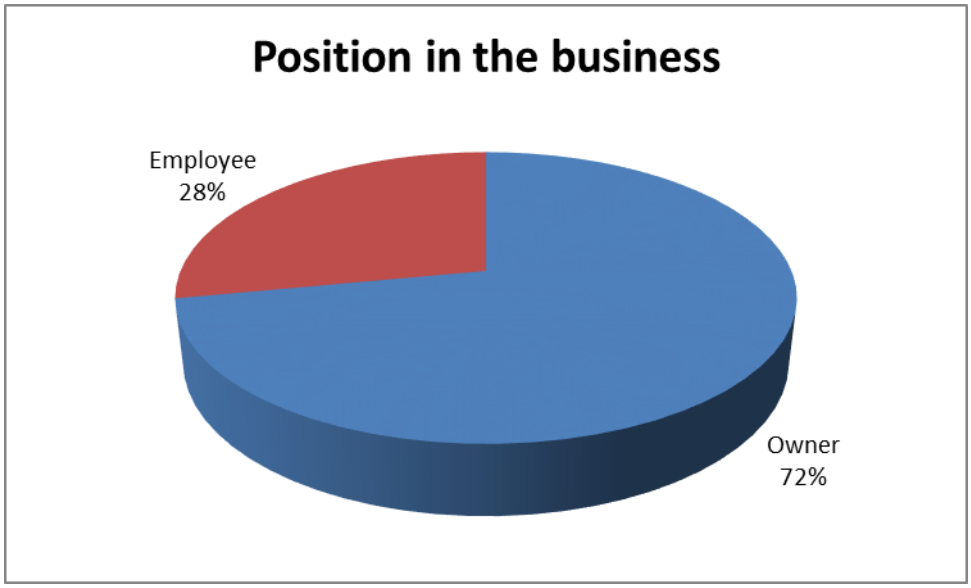


Source: Primary data

Figure 4.2 above exhibits that, 10.10% of the respondents across Gauteng Province have primary education, 57% have secondary education and 30.40% have tertiary education. This is contrary to the findings of previous studies. As explained in Chapter 2, previous related studies described owners and employees of informal micro-enterprises in the Gauteng Province as illiterate (Fu, Mohnen and Zanello, 2018; Chimucheka, 2013). It seems that over the years this has changed, a substantial percentage of owners and employees of informal micro enterprises have been to institutions of higher learning and they have obtained higher qualifications. This suggests that, due to high levels of unemployment rates in South Africa, unemployed graduates have opted to venture into business to make a living.

Furthermore, since there is a positive relationship between the level of education and the firms' ability to innovate, informal micro-enterprises have great potential to engage in innovation activities. This development also enhances the reliability and validity of the findings, as it implies that the respondents are literate enough to read, listen and understand what was asked, and provide rational responses.

Figure 4.3: Position in the business

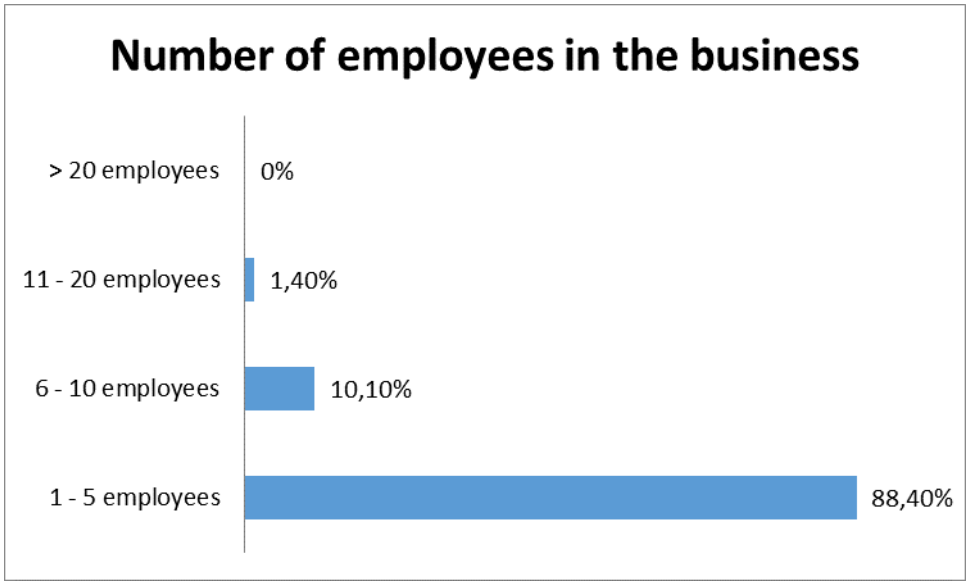


Source: Primary data

72% of the respondents are owners of the respective informal micro-enterprises, whereas 28% are employees. As explained in Chapter 2, the existing literature revealed that the previous SMMEs innovation studies conducted in South Africa and other developing countries paid no attention to the views of employees as they mostly solicited the views of small businesses' owners. In this study, we ensured that the views of employees are solicited and captured. Accordingly, both small businesses' owners and employees were encouraged to participate in the study. Nonetheless, as depicted by the percentage of employees who participated in the study, very few employees were willing to participate.

Most employees who declined to participate in the study explained that they think the views of the owners of the respective businesses are more important than their views. Some were just not comfortable to participate as they were of the view that they were not worthy of participating in the study. This triggers curiosity on how employees of informal micro-enterprises are treated by the owners, as whatever treatment they receive could be affecting their levels of confidence. In Section 4.2.10(b), we present the T-test between these two independent samples.

Figure 4.4: Number of employees



Source: Primary data

As portrayed in Figure 4.4 above, 98.50% of the respondents have 1-10 employees. This suggests that 98,50% of the respondents met the definition of micro-enterprises, as defined in Chapter 1 of this study.

Table 4.3: Types of small businesses

Type of service or product	Frequency	Percent
Auto parts	1	.5
Building bricks	1	.5
Car repairs	1	.5
Carwash	7	3.4
Cement production and sales	2	1.0
Child daycare services	8	3.8
Construction services	1	.5
Craft	2	1.0
Driving school	6	2.9
Electrical services	3	1.4
Events management	1	.5
Fast food	18	8.7
Fruits and vegetables	9	4.3
Gates, frames, doors and tables	6	2.9
General dealer	1	.5
Gym machines	1	.5
Hair salon and related accessories	28	13.5
Hardware	1	.5
House plans	1	.5
Internet café	5	2.4
Kota	24	11.6
Lottery services	1	.5

Medical Doctor	1	.5
Oil and oil filters	2	1.0
Packaging services	1	.5
Paint production and sales	1	.5
Panel beater	1	.5
Perfume production and sales	1	.5
Phone repairs	2	1.0
Pub	1	.5
Public phones	1	.5
Restaurant	3	1.4
Security services and other	2	1.0
Shisanyama	3	1.4
Tailor, sewing and clothing sales	4	1.9
Tavern (alcohol sales)	23	11.1
Therapist	1	.5
Transport services	1	.5
Tuckshop and related services	23	11.1
TV repairs	1	.5
Tyre sales and repairs	3	1.4
Welding	1	.5
Wheel alignment and related services	2	1.0
Zincs	1	.5
Total	**207**	**100**

Source: Primary data

Table 4.3 portrays that the small businesses that participated in the study are heterogeneous. Similar to disciplines such as Supply Chain Management, Innovation is a common discipline. Moreover, innovation models such as Stage-Gate model are standard and applied in various industries. Thus, we randomly sampled firms to get responses from various firms to design a standard creative innovation framework. The questionnaire was also compiled in such a way that it would be compatible with each and every informal micro-enterprise's context.

The results in Table 4.3 also revealed that small businesses such as carwash, child daycare services, fast food services, tuckshops, hair salons, taverns, fruits and vegetables are highly concentrated in the townships.

Table 4.4: Business registration status

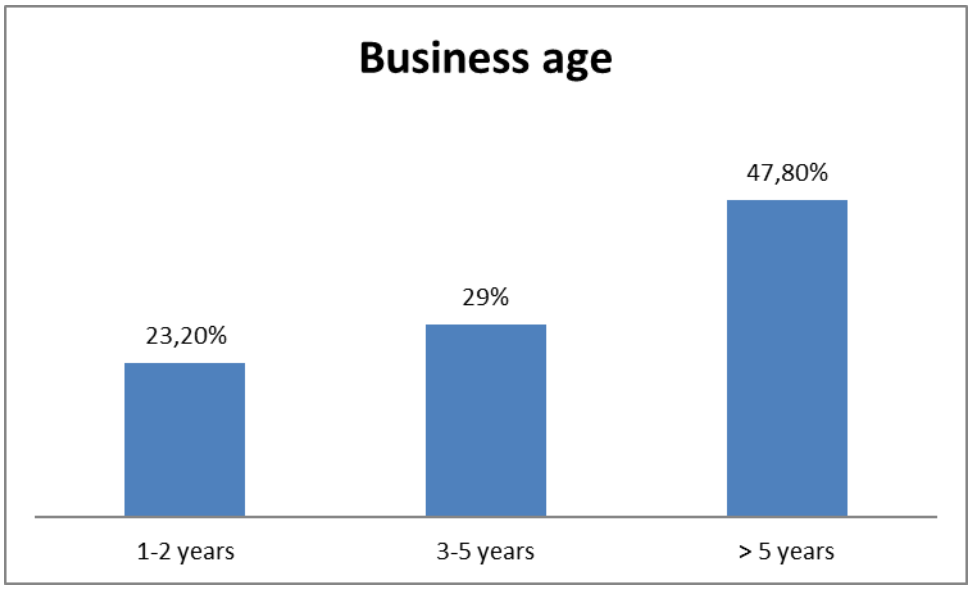
Registered?	**Frequency**	**%**
Yes	56 (19 of 56 registered their labour)	27.1
No	151 (+37= 188)	72.9
Total	**N = 207**	**100**

Source: Primary data

In this study, it was crucial to distinguish between formal and informal micro-enterprises. As pointed out in Chapter 2 of this study, there is no universally accepted definition of informal micro-enterprises. Thus, criteria had to be established to distinguish formal firms from informal ones. Accordingly, in this study, to be recognised as a formal firm, a firm had to be registered with the Companies and Intellectual Property Commission (CIPC), which is a Companies' registration body in South Africa. In addition to this body, to be recognised as a formal firm, the employees had to be registered with labour organisations.

As depicted in Table 4.4 above, 151 firms surveyed are not registered with the CIPC, and 56 firms are. Of the 56 registered firms, 37 did not register their employees. Thus, following the definition of informal firms as indicated in Chapter 1 of this study, a firm that is registered but fails to register its employees is recognised as an informal firm. It can thus be concluded that 188 firms surveyed are informal micro-enterprises. This constitutes 91% of the firms surveyed. It can further be concluded that more than 90% of the firms in the townships are informal businesses with 1 to 10 employees.

Figure 4.5: Business age

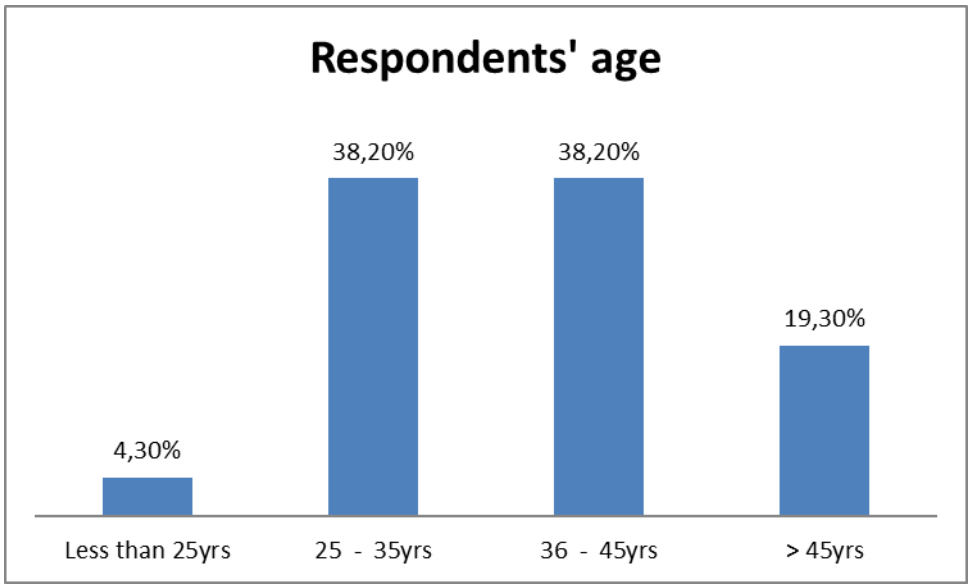


Source: Primary data

As illustrated in Figure 4.5, 47.80% of the firms surveyed are more than 5 years old, 29% are 3 to 5 years old and 23.20% are 1 to 2 years old. The high percentage in the >5 years classification suggests that firms that manage to graduate from the 1 to 2 years classification and also graduate from the 3 to 5 years classification often continue to exist

for a long period, hence there is a substantial number of firms that are more than 5 years old.

Figure 4.6: Respondents' age

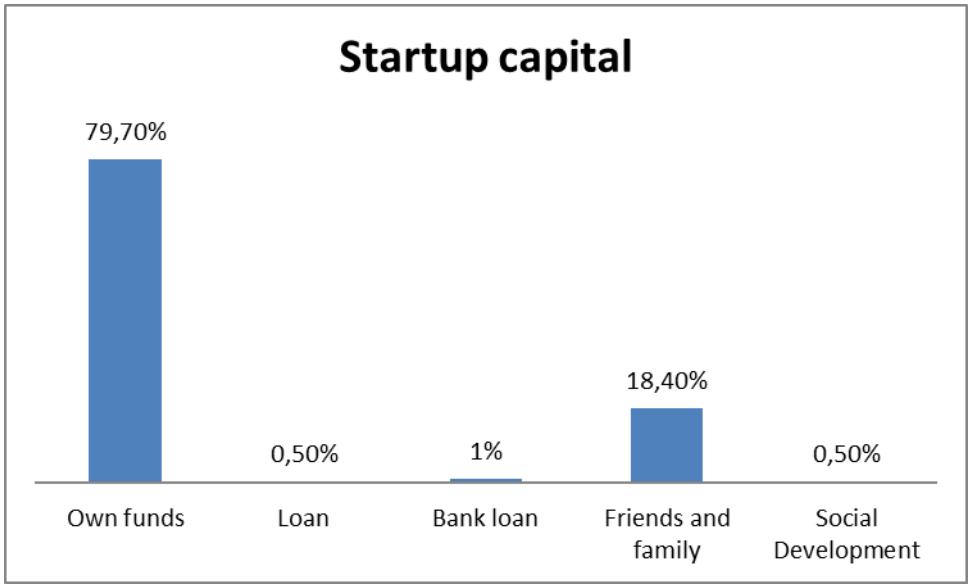


Source: Primary data

As illustrated in Figure 4.6, 4.30% of the respondents are less than 25 years old, 38.20% are 25 to 35 years old, 38.20% are 36 to 45 years old, and 19.30% are more than 45 years old. As depicted in Figure 4.7, the study revealed that more than 70% of informal micro-enterprises' owners started their businesses using own funding, which was mostly saved from previous employment. This clarifies why there are very few respondents who are less than 25 years old. It can thus be argued that people at this age group would seek employment elsewhere and save some money before they reach the age of 25, and later at the age of 25 or even in their 30s they would venture into business.

It is also imperative to point out that the majority of the respondents (42.50%) are youth and thus have great potential to engage in innovation activities. The existing literature revealed that youth have proven to be more innovative than their seniors.

Figure 4.7: Startup capital



Source: Primary data

As depicted in Figure 4.7, 79.70% of the respondents indicated that they started their businesses using their own funds, 18.40% indicated that they obtained startup capital from friends and family, 1% obtained a bank loan, 0.50% obtained other loans (e.g., loan shark), and 0.50% of the respondents were sponsored by the Department of Social Development. This finding supports the findings of the previous studies which revealed that, due to their informality, informal micro-enterprises are hardly granted access to bank loans and financial support initiatives from the government. Moreover, the finding also suggests that even the 56 formal informal micro-enterprises surveyed struggle to access funding and non-financial support from the Government as only 0.50% of the firms surveyed received support from the Government.

Since the majority of the respondents started their businesses using own funding, it became crucial to establish an understanding of how the own funding was obtained. Thus, we ensured that this was clarified during the second phase of the study (i.e., qualitative phase). This was due to the perception that own funding must have emanated from somewhere.

Table 4.5: Financial support from the government

	Frequency	**%**
Yes	10	4.8
No	197	95.2
Total	**N = 207**	**100**

Source: Primary data

Figure 4.7 focused on startup capital, whereas with Table 4.5, we wanted to determine the extent to which informal micro-enterprises would access financial support from the Government while in operation (post establishment). Finance is a crucial innovation fostering factor, innovation is almost impossible without finance.

As illustrated in the frequency table above, 95.2% of the respondents did not receive any form of financial support from the government. Whereas 4.8% of the respondents received financial support from the government. This was in the form of grants and tax incentives. This suggests that the existing government funding initiatives remain inaccessible to informal micro-enterprises.

Table 4.6: Non-financial support from the government

	Frequency	**%**
Yes (in training and development)	16	7.7
No	191	92.3
Total	**N = 207**	**100**

Source: Primary data

As portrayed in the frequency table above, at least 7.7% of the respondents received non-financial support from the government, which was in the form of training and development. Whereas 92.3% of the respondents did not receive any form of non-financial support from the government. Although the number of respondents who received non-financial support from the government is significantly low, it seems that non-financial support from the government is more accessible than financial support. Overall, even non-financial support from the government remains inaccessible to informal micro-enterprises.

4.2.5 Descriptive statistics

Table 4.7: Innovation activity between January 2016 and December 2018

	Frequency	**%**	**Valid%**
New product	61	29.5	35.7
New service	42	20.3	24.6
New process	29	14.0	17
New marketing strategy	31	15.0	18.1
New way of selling your product/service	8	3.9	4.7
Total	**171**	**82.6**	**100**
Missing system	**36**	**17.4**	
Total	**207**	**100**	

Source: Primary data

Table 4.7 illustrates that 82.6% of the respondents engaged in innovation activity between 01 January 2016 and 31 December 2018. Whereas 17.4% of the respondents did not engage in innovation activity in the same period. The nature of innovation varied from introducing a new product, service, process, marketing strategy to introducing a new way of selling a product/service. This suggests that informal micro-enterprises engage in innovation activities despite the circumstances under which they operate. Furthermore, this finding is contrary to the findings of the previous studies, which generally argued that the informal sector is not a viable environment for innovation activity, as there is evidence of innovations that took place in the informal sector. It can thus be concluded that informal micro-enterprises are more innovative than anticipated.

Table 4.8: Innovation classification

	Frequency	**%**
It was new to the world	1	0.6
It was new to the country	7	4.1
It was new to my business	163	95.3
Total	**N = 171**	**100**

Source: Primary data

To determine whether the respondents are engaging in radical or incremental innovation, respondents were asked to classify their innovations. As depicted in frequency Table 4.8, about 170 (99.4%) of the respondents engaged in incremental innovation whereas just 1 (0.6%) respondent engaged in radical innovation.

The existing literature revealed that innovations that take place in the informal sector are more incremental than radical. While it is imperative to acknowledge the one respondent who engaged in radical innovation, it can be concluded that this finding is in line with the findings of previous studies. Innovations in the informal sector are more incremental than radical. This should be a serious concern because radical innovations are more likely to have a positive impact on the economy than incremental innovations.

Table 4.9: R&D investment and innovation collaboration networks

	Yes (%)	**No (%)**
Do you invest in research and development for innovation purposes?	18.4	81.6
Do you collaborate with large enterprises for innovation?	17.9	82.1
Do you collaborate with universities for innovation?	2.9	97.1
Do you collaborate with your suppliers for innovation?	32.4	67.6

Source: Primary data

R&D has been widely recognised as a backbone of most if not all innovations that occur in well-established formal firms. This study focused on informal firms, however, the research problem dictated that we make a practical determination of whether R&D is also a backbone of innovations that occur in the informal sector. Accordingly, respondents were asked if they invest in R&D for innovation purposes. 81.6% of the respondents indicated that they do not invest in research and development. Since we learnt earlier in Table 4.7 that 82.6% of the respondents engaged in innovation activity in the past three years, their lack of investment in R&D suggests that they innovate using other means. Thus, the second phase of the study (i.e., the qualitative phase or interviews) sought clarity in this regard.

As portrayed in Table 4.9, 82.1% of the respondents indicated that they do not have innovation collaboration networks with large enterprises. Innovation collaboration networks with large enterprises can enable open innovation to take place at ease, as the weaknesses of informal micro-enterprises can be complemented by the capabilities of large enterprises. Thus, the little existence of innovation collaboration networks between IMEs and large enterprises limits the chances of open innovation.

97.1% of the respondents indicated that they do not have innovation collaboration networks with universities. Universities are knowledge organisations and they are on the supply side of the national innovation system. Thus, ideally, they should be engaging in research activities and feed the corporate on the demand side of the national innovation system with innovative ideas. Thus, the poor transfer of knowledge from universities to corporate is a major contributory factor to little existence of radical innovations in the informal sector and perhaps even in other sectors.

4.2.6 Innovation orientation

Innovation orientation of a firm is defined by the presence or absence of innovation fostering and limiting factors in the firm's micro, macro and market environment. Previous innovation studies (mostly conducted in the formal sector) identified widely accepted innovation fostering and limiting factors (Claudino *et al.*, 2017; Rose, Jones and Furneaux, 2016; Booyens, Molotja and Phiri, 2012; Abdu and Jibir, 2017; Mendi and Mudida, 2018; Hsieh and Chou, 2018). Thus, the identified widely accepted innovation fostering and limiting factors were tested among informal micro-enterprises in the townships of Gauteng Province to understand their contemporary innovation orientation during the first phase of the study. In the second phase of the study, participants were objectively offered an

opportunity to express their views on what fosters and limits innovation in their firms. This was done to discover innovation fostering and limiting factors that have not yet been documented.

a) Innovation fostering factors

Likert scale for means: 1 = strongly disagree, 2 = disagree, 3 = not sure, 4 = agree, 5 = strongly agree

Key: SD = strongly disagree, D = disagree, NS = not sure, A = agree, SA = strongly agree

Table 4.10: Innovation fostering factors

No	Innovation fostering factors	SD(%)	D(%)	NS(%)	A(%)	SA(%)	Mean	Skewness
1	The owner of the business is visionary	4.3	7.2	3.4	12.1	72.9	4.4	-1.9
2	Employees of the business are visionaries	4.8	12.6	9.7	30.9	42	3.9	-1.0
3	The owner of the business encourages employees to formulate new ideas	4.3	13.5	6.8	43	32.4	3.9	-1.0
4	Risks and mistakes are tolerated in the business	6.3	7.7	7.7	49.8	28.5	3.9	-1.2
5	The business embraces changes	3.9	2.9	1.9	56.5	34.8	4.2	-1.8
6	Funds, material and technological resources are adequately available	31.9	34.3	7.7	18.8	7.2	2.4	0.7
7	The business is made up of people of different age, gender, race, and qualifications	17.4	13	4.8	36.2	28.5	3.5	-0.6

Source: Primary data

Seven innovation fostering factors were tested as indicated in Table 4.10. Negative skewness values suggest that the respondents agree with the items listed, whereas positive skewness values imply that the respondents disagree. Mean values greater than 3 indicate that the respondents agree, whilst mean values less than 3 indicate that the respondents disagree with the items that were tested.

Accordingly, respondents agreed that six of the seven tested innovation fostering factors exist in their firms. They indicated that the owners and employees of informal micro-

enterprises are visionaries, employees are encouraged to formulate new ideas, risks and mistakes are tolerated; they embrace changes and are diverse.

Having a vision that spans at least over 5 years motivates and guides the innovation activities to take place. Businesses that encourage employees to formulate new ideas are more innovative, as long as such businesses tolerate risks and mistakes, and also embrace changes. Innovation activities are risky by nature and some innovations vigorously fail, thereby causing a serious financial and non-financial loss to the firm. Thus, to engage in innovation activities, a firm must be open to disappointments. Nonetheless, measures must be put in place to minimise the chances of failure, as successful innovations have great rewards. Lastly, diversity often leads to creativity. Firms that have a labour force that is different in terms of age, gender, qualifications, ethnicity, race, cultural and traditional backgrounds are more innovative. Some innovation experts go to an extent of arguing that creative and innovative people are just different and to some extent, they are justweird.

Notwithstanding the above, shortage of financial, qualified human and material resources remains a challenge in informal micro-enterprises, as respondents indicated that they do not have adequate resources. Overall, the presence of six innovation fostering factors suggests that informal micro-enterprises have great potential to engage in innovation activities.

b) Innovation limiting factors

Likert scale for means: 1 = strongly disagree, 2 = disagree, 3 = not sure, 4 = agree, 5 = strongly agree

Key: SD = strongly disagree, D = disagree, NS = not sure, A = agree, SA = strongly agree

Table 4.11: Innovation limiting factors

No	Factors that limit innovation within the business	SD(%)	D(%)	NS(%)	A(%)	SA(%)	Mean	Skewness
1	Lack of knowledge, skills, competences and attitudes required for innovation	27.5	31.9	2.9	25.6	12.1	2.6	0.4
2	Lack of financial resources	4.8	9.7	2.9	36.7	45.9	4.1	-1.4
3	Lack of technological resources	9.2	18.8	2.9	30	39.1	3.7	-0.7
4	Fear of innovation	41.1	45.9	2.4	4.3	6.3	1.9	1.6

5	Comfortable with the current status quo	49.8	27.5	4.8	9.7	8.2	2.0	1.2

Source: Primary data

Five innovation limiting factors were tested as illustrated in Table 4.11. Negative skewness values suggest that the respondents agree with the items listed, whereas positive skewness values imply that the respondents disagree. Mean values greater than 3 indicate that the respondents agree, whilst mean values less than 3 indicate that the respondents disagree with the items that were tested.

Accordingly, respondents disagreed that three of the five tested innovation limiting factors exist in their firms. The respondents indicated that their ability to innovate is not limited by lack of knowledge, skills and competences required for innovation. This suggests that owners and employees of informal micro-enterprises have knowledge, skills and competences required to innovate. This can be substantiated by their levels of education as depicted in Figure 4.2 of this study. Nonetheless, since they often engage in incremental rather than radical innovation, proper guidance is required to unleash their potential to engage in radical innovation.

Respondents also indicated that they are not afraid of innovating and that they are not comfortable with the current status quo. If the owner and employees of a firm are not afraid of innovating, they can take risks which is a key feature of innovators and entrepreneurs. Furthermore, a firm that is not comfortable with its status quo is always eager for change. The desire for change is also an important feature of innovators and entrepreneurs.

While it is comforting to discover that there are more innovation fostering than limiting factors among informal micro-enterprises, it is imperative to acknowledge that limitations of financial and technological resources remain as major innovation limiting factors among informal micro-enterprises. This triggers a need to explore suitable finance mechanisms that could be used to fund innovations among informal micro-enterprises. This study determined such mechanisms through the second phase of the study (interviews).

4.2.7 Innovation activities

The existing literature revealed that a complete innovation process is constituted by a handful of phases. These phases are the generation of innovative ideas (also referred to as discovery), evaluation of the innovative ideas, transformation of the selected idea (s) into products or services or other forms of innovation, product or service testing, marketing

of innovations, introduction and diffusion of innovations. To understand how informal micro-enterprises in the townships of Gauteng Province engage in radical and incremental innovation, we had to obtain data on how informal micro-enterprises carry out each innovation phase. Phases that could not be assessed through the questionnaire were assessed through the interview.

a) Innovative ideas generation mechanisms

Likert scale for means: 1 = strongly disagree, 2 = disagree, 3 = not sure, 4 = agree, 5 = strongly agree

Key: SD = strongly disagree, D = disagree, NS = not sure, A = agree, SA = strongly agree

Table 4.12: Innovative ideas generation mechanisms

No	Innovative ideas generation mechanisms	SD(%)	D(%)	NS(%)	A(%)	SA(%)	Mean	Skewness
1	The business invests in research and development for innovation purposes	73.9	3.4	2.4	9.2	11.1	1.8	1.4
2	The business relies on ingenuity (creatively thinking) in order to innovate	1.9	5.3	1.9	37.7	53.1	4.3	-1.8
3	Customers provide the business with innovative ideas	4.3	13.5	2.4	36.2	43.5	4.0	-1.1
4	The business makes use of communities of practice to innovate	5.8	18.4	6.3	40.6	29	3.7	-0.7
5	Other small businesses provide the business with innovative ideas	23.7	26.1	3.9	30	16.4	2.9	0.0
6	Large enterprises and universities provide the business with innovative ideas	59.4	21.3	2.9	10.1	6.3	1.8	1.4

Source: Primary data

As depicted in Table 4.12, innovative ideas generation mechanisms were tested to determine the mechanisms that are used by informal micro-enterprises to generate novel ideas. Negative skewness values suggest that the respondents agree with the innovative ideas generation mechanisms listed, whereas positive skewness values imply that the

respondents disagree. Mean values greater than 3 indicate that the respondents agree, whilst mean values less than 3 indicate that the respondents disagree with the innovative ideas generation mechanisms that were tested.

Respondents indicated that they rely on ingenuity, customers and communities of practice to generate innovative ideas. Ingenuity is mostly used as it has the highest mean value of 4.3, followed by customers with a mean value of 4.0, and communities of practice with a mean value of 3.7. Respondents also indicated that they do not invest in research and development, and they do not cooperate with other small businesses, large enterprises and universities for the generation of innovative ideas.

R&D is a major innovation trigger among well-established businesses, which are formal and mostly large. In these businesses, an entire directorate is established and specifically focuses on R&D for innovation purposes. The existing literature revealed that firms with high R&D spend seem to be more innovative than firms with low R&D spend (Brunow, Birkeneder and Rodriguez-Pose, 2017). While investing in R&D is a major contributory factor to innovation, firms often complain that due to the risky nature of innovation, they do not always get a return on investment (Jugend *et al.*, 2018). Thus, firms should consider adopting less expensive and convenient ways of innovating.

Following the findings in Table 4.12 above, informal micro-enterprises do not invest in R&D but have managed to engage in innovation activities. We were curious about how the agreed to innovative ideas' generation mechanisms work. Thus, we sought clarity on this during the second phase of the study.

b) Innovation purpose

Likert scale for means: 1 = strongly disagree, 2 = disagree, 3 = not sure, 4 = agree, 5 = strongly agree

Key: SD = strongly disagree, D = disagree, NS = not sure, A = agree, SA = strongly agree

Table 4.13: Innovation purpose

No	Innovation purpose	SD(%)	D(%)	NS(%)	A(%)	SA(%)	Mean	Skewness
1	In order to survive	21.7	20.3	1.9	21.3	34.8	3.3	-0.3
2	To increase market share	5.8	10.1	3.4	34.8	45.9	4.0	-1.3
3	To enter new markets	6.3	31.4	6.8	35.7	19.8	3.3	-0.2
4	To improve product range	4.8	11.6	2.4	44	37.2	4.0	-1.2
5	To improve processes	7.2	31.9	2.4	23.7	34.8	3.5	-0.3
6	In order to increase profits	3.4	13	2.4	16.4	64.7	4.3	-1.5

Source: Primary data

Respondents were asked to indicate the rationale for engaging in innovation activities. Negative skewness values suggest that the respondents agree with the innovation purposes listed, whereas positive skewness values imply that the respondents disagree. Mean values greater than 3 indicate that the respondents agree, whilst mean values less than 3 indicate that the respondents disagree with the innovation purposes listed. As indicated in Table 4.13, respondents agreed with all innovation purposes listed. In other words, they indicated that they engage in innovation activities to survive, increase market share, enter new markets, improve product range, improve processes and increase profits.

Nonetheless, what is interesting is that while we expected informal micro-enterprises to be more concerned about survival, this is not the case. Informal micro-enterprises mostly engage in innovation activities to increase profits, increase market share (simply put, attract more customers), and improve product range so that customers can have options. As indicated in Table 4.13, these innovation purposes attained mean values of 4.3, 4.0 and 4.0, respectively. The need to survive, enter new markets and improve processes attained mean values of 3.3, 3.3 and 3.5, respectively.

Overall, there is a positive relationship between increasing profits, attracting more customers and survival. For instance, if a firm attracts more customers, it would not only increase its profits but it would also be sustainable, which is synonymous to survival. Thus, by focusing more on growth aspects, the informal micro-enterprise simultaneously survives.

c) Transformation of ideas into innovations

Likert scale for means: 1 = strongly disagree, 2 = disagree, 3 = not sure, 4 = agree, 5 = strongly agree

Key: SD = strongly disagree, D = disagree, NS = not sure, A = agree, SA = strongly agree

Table 4.14: Innovation development mechanisms

No	Transformation of ideas into innovations	SD(%)	D(%)	NS(%)	A(%)	SA(%)	Mean	Skewness
1	Internal resources are used to transform ideas into innovations	2.4	4.8	3.4	24.6	64.7	4.4	-2.0
2	Resources of other small businesses are used to transform ideas into innovations	20.8	33.8	2.9	28.5	14	2.8	0.2
3	Resources of large enterprises are used to transform ideas into innovations	42.5	27.1	1.9	16.4	12.1	2.3	0.8
4	Universities' resources are used to transform ideas into innovations	55.1	33.3	2.4	6.8	2.4	1.7	1.7
5	Government resources are used to transform ideas into innovations	62.3	24.6	2.9	4.8	5.3	1.7	1.9

Source: Primary data

Respondents were asked to indicate how they transform innovative ideas into innovations. Negative skewness values suggest that the respondents agree with the innovation development mechanisms listed, whereas positive skewness values imply that the respondents disagree. Mean values greater than 3 indicate that the respondents agree, whilst mean values less than 3 indicate that the respondents disagree with the innovation development mechanisms listed.

Respondents indicated that they use internal resources to transform innovative ideas into innovations, as this mechanism has a mean value of 4.4. Respondents also indicated that they do not use the resources of other small businesses, large enterprises, government and universities to transform novel ideas into innovations. Accordingly, these innovation development mechanisms have mean values of 2.8, 2.3, 1.7 and 1.7, respectively. This finding suggests that informal micro-enterprises practice closed innovation more than open innovation. It can further be argued that when it comes to innovation development, it is every man for himself in the townships of the Gauteng Province.

Since the majority of informal micro-enterprises use their internal resources to transform innovative ideas into innovations, it became imperative to determine how this works. Subsequently, we clarified this during the second phase of the study.

d) Marketing of innovations

Likert scale for means: 1 = strongly disagree, 2 = disagree, 3 = not sure, 4 = agree, 5 = strongly agree

Key: SD = strongly disagree, D = disagree, NS = not sure, A = agree, SA = strongly agree

Table 4.15: Marketing strategies

No	The following platforms are used to market innovations to customers	SD(%)	D(%)	NS(%)	A(%)	SA(%)	Mean	Skewness
1	Formal advertisement on media platforms such as TV, Newspaper, Radio, etc.	71	13	1.4	6.8	7.7	1.7	1.8
2	Word of mouth	5.3	5.8	0.5	29.5	58.9	4.3	-1.9
3	Online (internet) advertisement	18.8	24.6	1	19.3	36.2	3.3	-0.2
4	Usage of social media applications such as WhatsApp groups	14	16.9	1.4	17.4	50.2	3.7	-0.7
5	Public speaking	54.6	17.9	2.9	9.2	15.5	2.1	1.0

Source: Primary data

Respondents were asked to indicate marketing strategies that they use to market their innovations. Negative skewness values suggest that the respondents agree with the marketing strategies listed, whereas positive skewness values imply that the respondents disagree. Mean values greater than 3 indicate that the respondents agree, whilst mean

values less than 3 indicate that the respondents disagree with the marketing strategies listed.

Respondents indicated that they market their innovations through word of mouth, internet, and social media platforms such as WhatsApp. As indicated in Table 4.15, these marketing strategies have mean values of 4.3, 3.3, and 3.7, respectively. Word of mouth and WhatsApp are used more than other marketing strategies. This could be because these are affordable and effective marketing strategies in the townships.

Respondents also indicated that they do not use media platforms such as television, radio, and newspapers to market their innovations. This marketing strategy has a mean value of 1.7. In cognisance of informal micro-enterprises' circumstances, this is justifiable as placing an advert on media platforms such as television and newspaper is often very expensive. Even in the formal sector, very few firms are capable of placing an advert on television and newspaper. Lastly, public speaking has a mean value of 2.1, suggesting that informal micro-enterprises do not use public speaking to market their innovations. Since options provided in the questionnaire are often limiting, we conducted interviews to determine unknown or less known marketing strategies that are utilised by informal micro-enterprises to market their innovations.

e) Intellectual property rights

Likert scale for means: 1 = strongly disagree, 2 = disagree, 3 = not sure, 4 = agree, 5 = strongly agree

Key: SD = strongly disagree, D = disagree, NS = not sure, A = agree, SA = strongly agree

Table 4.16: Intellectual property rights

No	Intellectual Property Rights (mechanisms used to protect innovations)	SD(%)	D(%)	NS(%)	A(%)	SA(%)	Mean	Skewness
1	Patent rights	63.8	23.2	1.9	4.3	6.8	1.7	1.9
2	Copyrights	58.5	29.5	1	4.8	6.3	1.7	1.9
3	Keep it a secret (Trade secrets)	17.4	13	2.4	16.4	50.7	3.7	-0.7
4	Trade mark	40.1	34.8	0.5	16.4	8.2	2.2	0.9
5	Industrial design rights	64.7	25.6	0	5.8	3.9	1.6	2.1

Source: Primary data

Respondents were asked to indicate how they protect their innovations to leverage them and also to protect them from imitators. Negative skewness values suggest that the respondents agree with the innovation protection mechanisms listed, whereas positive skewness values imply that the respondents disagree. Mean values greater than 3 indicate that the respondents agree, whilst mean values less than 3 indicate that the respondents disagree with the innovation protection mechanisms listed.

Respondents indicated that they have trade secrets with a mean value of 3.7. A trade secret is a secret on how a firm produces its products. Such secrets make it difficult for competitors to emulate the firm's products, thereby affording the firm a competitive advantage. Unfortunately, respondents indicated that they do not apply for patent rights, copyrights, trademark, and industrial design rights to protect their innovations. Accordingly, these innovation protection mechanisms have mean values of 1.7, 1.7, 2.2 and 1.6, respectively.

In light of the statistics indicated in Table 4.16, it is imperative to point out that, overall, most informal micro-enterprises do not adequately protect their innovations, probably because their innovations have been incremental rather than radical. Moreover, the application for patent rights and copyrights is stringent. Thus, this could be a major contributory factor to the informal micro-enterprises' failure to formally protect their innovations.

4.2.8 Existing innovation models/frameworks

Likert scale for means: 1 = strongly disagree, 2 = disagree, 3 = not sure, 4 = agree, 5 = strongly agree

Key: SD = strongly disagree, D = disagree, NS = not sure, A = agree, SA = strongly agree

Table 4.17: Existing innovation models/frameworks assessment

No		SD(%)	D(%)	NS(%)	A(%)	SA(%)	Mean	Skewness
1	The business makes use of the existing innovation models / frameworks as a guide to innovate	28	38.6	5.3	14	14	2.5	0.7
2	Existing innovation models provide suitable guidance in ideas generation process	56	34.8	2.4	3.4	3.4	1.6	2.0
3	Existing innovation models provide suitable guidance in ideas	54.6	37.2	2.4	2.9	2.9	1.6	2.0

	evaluation process							
4	Existing innovation models provide suitable guidance in development process	60.9	30.9	1.9	3.4	2.9	1.6	2.2
5	Existing innovation models provide suitable guidance in prototypes testing process	60.4	31.4	2.4	3.9	1.9	1.6	2.1
6	Existing innovation models provide suitable guidance in the diffusion process	61.8	29.5	2.9	3.9	1.9	1.5	2.1
7	The existing innovation models are relevant to business setting	64.7	27.5	2.4	2.9	2.4	1.5	2.3

Source: Primary data

Respondents were asked to indicate whether they make use of the existing innovation models or frameworks as a guide to engage in innovation activities. Irrespective of whether or not respondents had made use of the existing innovation models or frameworks, they were further asked to express their views about the suitability of the existing innovation models or frameworks to the informal micro-enterprises context or setting. Respondents were asked the same questions as there could be respondents who have just seen at least one of the existing innovation models or frameworks but have never used any. Negative skewness values suggest that the respondents agree with the items listed, whereas positive skewness values imply that the respondents disagree. Mean values greater than 3 indicate that the respondents agree, whilst mean values less than 3 indicate that the respondents disagree with the listed items.

As indicated in Table 4.17, respondents disagreed with all items listed. All listed items have mean values that are less than 3. To try to adequately answer the research question, let us zoom into the actual percentages. About 67% of the respondents indicated that they do not use any of the existing innovation models or frameworks as a guide to engage in innovation activities. Whereas 28% indicated that they do use the existing innovation models or frameworks. Since the majority of the informal micro-enterprises do not use the existing innovation models, it was interesting to determine why they do not. It was also interesting to get the views of the 28% who used the existing innovation models. Thus, during the interview, we sought more information in this regard.

91% of the respondents indicated that the existing innovation models or frameworks are not suitable to serve as a guide for informal micro enterprises to generate innovative ideas. 92% of the respondents indicated that the existing innovation models or frameworks are not suitable to serve as a guide for informal micro enterprises to evaluate innovative ideas. 92% of the respondents agreed that the existing innovation models or frameworks are not suitable to serve as a guide for informal micro enterprises to transform innovative ideas into innovations. 92% of the respondents revealed that the existing innovation models or frameworks are not suitable to serve as a guide for informal micro enterprises to test prototypes before they can be refined into final products or services. 91% of the respondents highlighted that the existing innovation models are not suitable to guide the innovation diffusion process or the introduction and adoption of innovations in the market. And lastly, 92% of the respondents indicated that the existing innovation models or frameworks are not relevant to the informal micro-enterprises' context. We were interested in finding out why respondents pointed out that the existing innovation models are not suitable for informal micro-enterprises context. Thus, we clarified this during the interview.

Overall the findings suggest that there is a need for a tailor-made innovation model/framework that takes into account the circumstances of the informal micro-enterprises. Notably, this study addressed this need.

4.2.9 Creative innovation framework features

Likert scale for means: 1 = unimportant, 2 = of little importance, 3 = moderately important, 4 = important, 5 = very important

Key: U = unimportant, LI = of little importance, MI = moderately important, I = important, VI = very important

Table 4.18: Creative innovation framework features

No	Tested feature	U(%)	LI(%)	MI(%)	I(%)	VI(%)	Mean	Skewness
1	Provide guidance on appropriate sources of funding	2.4	4.3	3.9	29.5	59.9	4.4	-1.9
2	Provide guidance on appropriate sources of knowledge / information	2.4	1	2.9	45.9	47.8	4.4	-2.0
3	Provide guidance on how to generate innovative ideas	2.4	1	2.9	52.7	41.1	4.3	-1.9
4	Provide guidance on how to evaluate innovative ideas	1.9	1.4	3.4	48.3	44.9	4.3	-1.8
5	Provide guidance on how to	2.4	1.9	6.3	55.6	33.8	4.2	-1.6

	transform ideas into products/ services that are sold in the market; Processes & marketing strategies that are implemented.							
6	Provide guidance on how to test prototypes	2.4	1.9	6.3	56	33.3	4.2	-1.6
7	Provide guidance on how to market innovations	2.4	1.4	2.9	54.6	38.6	4.3	-1.8
8	Provide guidance on how to introduce innovations into the market	3.4	1	1.9	59.4	34.3	4.2	-2.0

Source: Primary data

Since respondents indicated that the existing innovation models or frameworks are not relevant to the informal micro-enterprises context, it remained imperative to design a creative innovation framework that is suitable for their context based on an understanding of how they engage in innovation activities.

Respondents were therefore asked to identify features that they would like to see on a tailor-made creative innovation framework. Negative skewness values suggest that the respondents agree with the items listed, whereas positive skewness values imply that the respondents disagree. Mean values greater than 3 indicate that the respondents agree, whilst mean values less than 3 indicate that the respondents disagree with the listed items. All listed items have mean values greater than 3. This suggests that respondents indicated that they want to see all listed items as features of the tailor-made creative innovation framework.

In other words, respondents indicated that the creative innovation framework that will be designed must provide guidance on funding mechanisms and sources of knowledge and information. It must provide guidance on how to generate innovative ideas and how to evaluate them. It must guide the innovation development process; and how to market innovations. And lastly, it must provide guidance on how to introduce innovations in the market.

4.2.10 Correlation analysis

Following the above analysis, we determined the correlation between respondents' demography and the innovation items using Spearman's rank correlation. Among the

innovation items tested, there were few items with meaningful results. The results are denoted below as follows:

a) Spearman's rank rho test

This test is concerned with the correlation between two ranked variables (X and Y). The correlation is statistically significant if the p-value is less than 0.05 level of significance.

The coefficient of Spearman's rank correlation is given by

$$r = 1 - \frac{6\sum D^2}{N(N^2-1)}$$

where

D = differences of ranks of corresponding values of X and Y

N = number of paired values in the data

$-1 \leq r \leq 1$

Table 4.19: Spearman's rank correlation between the level of education and views of respondents about the innovation issues

Items		
Purpose for innovation is to improve processes. (N = 207)	Correlation coefficient (r)	-0.142*
	p – value	0.041
Social media applications such as WhatsApp groups are used to market innovations to customers. (N = 207)	Correlation coefficient (r)	-0.138*
	p – value	0.048
Existing innovation models provide suitable guidance in ideas evaluation process. (N = 207)	Correlation coefficient (r)	-0.142*
	p – value	0.041

Source: Primary data

*Correlation is significant at the 0.05 level (2-tailed)

Since all the p-values are less than 0.05 level of significance, then the correlation between the level of education and views of respondents about the innovation items listed in Table 4.19 is statistically significant. Negative correlation coefficients ($r < 0$) mean that business people with a higher level of education disagree with the items listed in Table 4.19, whereas less educated business people agree. The finding suggests that highly educated respondents engage in innovation for reasons other than to improve processes. They are more interested in increasing the product range and attracting more customers, among others. The finding also suggests that highly educated respondents prefer to use other

advertising mechanisms other than WhatsApp and they find existing innovation models unsuitable for informal micro-enterprises' context.

Lastly, the finding suggests that highly educated respondents do not find the existing innovation models useful in the innovative ideas' evaluation phase, whereas less educated respondents find them useful to a certain extent. See Figure 4.8 below to display this research finding.

Figure 4.8: Views of respondents versus level of education (r < 0)

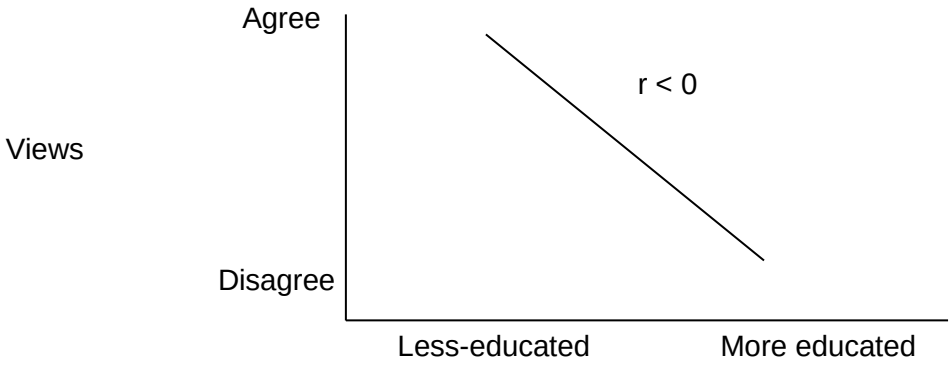


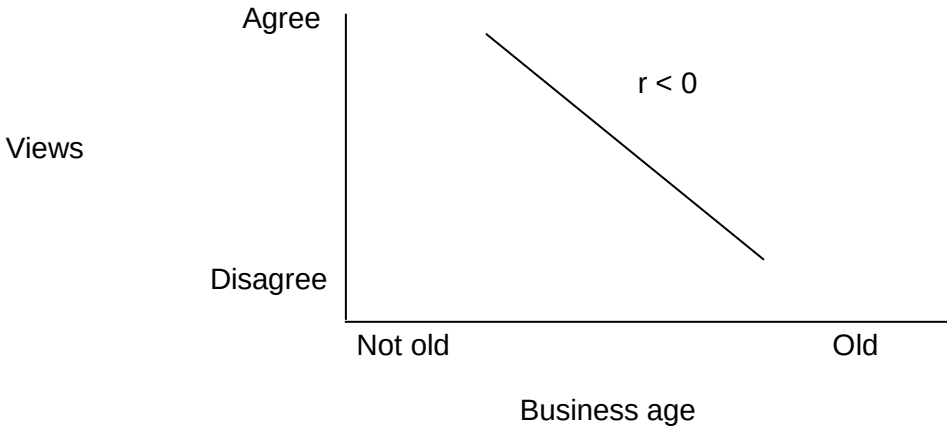
Table 4.20: Spearman's rank correlation between business age and views of respondents about the innovation issues

Items		
Creative innovation framework features: provide guidance on how to transform ideas into products/ services that are sold in the market; processes & marketing strategies that are implemented. (N = 207)	Correlation coefficient (r)	-0.185**
	p – value	0.007

Source: Primary data
**Correlation is significant at the 0.01 level (2-tailed)

Since the p-value (0.007) is less than 0.01 level of significance, then the correlation between business age and views of respondents about the innovation item listed in Table 4.20 is statistically significant. The negative correlation coefficient (r = -0.185) means that people who have been in business for a long time disagree with the item listed in Table 4.20, whereas people who are in businesses that have been in existence for a short period agree. Figure 4.9 below depicts this research finding. This suggests that firms that are too old have mastered the innovation development process. Whereas, firms that have been in business for a shorter period require guidance in the innovation development process.

Figure 4.9: Views of respondents versus business age (r < 0)



b) **T –Test Between Two Independent Samples**

***Scale 1 for means:** 1 = strongly disagree, 2 = disagree, 3 = not sure, 4 = agree, 5 = strongly agree
****Scale 2 for means**: 1 = unimportant, 2 = of little importance, 3 = moderately important, 4 = important, 5 = very important

Table 4.21: T-Test between two independent samples

	Position in the business	**Sample Size**	**Mean**	**p-value**	**Comments**
*Fear of innovation limits innovation within the business	Owner Employee	149 58	1.97 1.64	0.043	Significant difference, p-value < 0.05
**Creative innovation framework features provide guidance on how to generate innovative ideas	Owner Employee	149 58	4.38 4.05	0.012	Significant difference, p-value < 0.05
** Creative innovation framework features provide guidance on how to evaluate innovative ideas	Owner Employee	149 58	4.40 4.14	0.006	Significant difference, p-value < 0.05

Source: Primary data

The statistical software package (SPSS 25) was used to perform a t-test between two independent samples (owners and employees) in Table 4.21 above. Since the p-values are less than 0.05 level of significance, it means that there is a significant difference in perceptions between the owners and employees about the innovation itemsmentioned in the table above. The mean scores lie between 1 and 5 on the two scales. Innovation items that are not mentioned under this test have p-values greater than 0.05 level of significance, meaning that there is no significant difference in perceptions between employees and business owners about innovation issues.

Accordingly, while most owners just disagreed that fear of innovation limits innovation in the business, most employees strongly disagreed. Moreover, while most owners indicated that guidance on the generation of innovative ideas is very important, most employees just indicated that it was important. The finding suggests that while employees require guidance to generate innovative ideas, they may not require it as much as the owners.

Lastly, while most owners indicated that guidance on the evaluation of innovative ideas is very important, most employees just indicated that it was important. This finding suggests that while employees require guidance to evaluate innovative ideas, they do not require it as much as the owners.

4.2.11 Factor analysis

Table 4.22: List of Likert scale variables from the questionnaire

V1	The owner of the business is visionary
V2	Employees of the business are visionaries
V3	The owner of the business encourages employees to formulate new ideas
V4	Risks and mistakes are tolerated in the business
V5	The business embraces changes
V6	Funds, material and technological resources are adequately available
V7	The business is made up of people of different age, gender, race, and qualifications
V8	Lack of knowledge, skills, competences and attitudes required for innovation
V9	Limitation of financial resources
V10	Limitation of technological resources
V11	Fear of innovation
V12	Comfortable with the current status quo
V13	The business invests in research and development for innovation purposes
V14	The business relies on ingenuity (creatively thinking) in order to innovate
V15	The business makes use of communities of practice to innovate
V16	Other small businesses provide the business with innovation ideas
V17	Large enterprises and universities provide the business with innovation ideas
V18	In order to survive
V19	To increase market share
V20	To enter new markets
V21	To improve product range

V22	To improve processes
V23	In order to increase profits
V24	Internal resources are used to transform ideas into innovations
V25	Resources of other small businesses are used to transform ideas into innovations
V26	Resources of large enterprises are used to transform ideas into innovations
V27	Universities' resources are used to transform ideas into innovations
V28	Government resources are used to transform ideas into innovations
V29	Formal advertisement on media platforms such as TV, Newspaper, Radio, etc.
V30	Word of mouth
V31	Online (internet) advertisement
V32	Usage of social media applications such as WhatsApp groups
V33	Public speaking
V34	Patent rights
V35	Copyrights
V36	Keep it a secret (Trade secrets)
V37	Trademark
V38	Industrial design rights
V39	The business makes use of the existing innovation models/frameworks as a guide to innovate
V40	Existing innovation models provide suitable guidance in ideas generation process
V41	Existing innovation models provide suitable guidance in ideas evaluation process
V42	Existing innovation models provide suitable guidance in the development process
V43	Existing innovation models provide suitable guidance in prototypes testing process
V44	Existing innovation models provide suitable guidance in the diffusion process
V45	The existing innovation models are relevant to the business setting
V46	Provide guidance on appropriate sources of funding
V47	Provide guidance on appropriate sources of knowledge / information
V48	Provide guidance on how to generate innovative ideas
V49	Provide guidance on how to transform ideas into products/ services that are sold in the market; Processes & marketing strategies that are implemented.
V50	Provide guidance on how to market innovations
V51	Provide guidance on how to introduce innovations into the market
V52	Customers provide the business with innovative ideas
V53	Provide guidance on how to evaluate ideas

V54	Provide guidance on how to test prototypes

Source: Primary data

Table 4.23: Component Correlation Matrix[a]

		Component		
	Statements	**1**	**2**	**3**
V1	The owner of the business is visionary	.712	-.266	-.073
V2	Employees of the business are visionaries	.732	-.210	-.133
V3	The owner of the business encourages employees to formulate new ideas	.760	-.177	-.053
V4	Risks and mistakes are tolerated in the business	.479	-.237	.305
V5	The business embraces changes	.694	-.128	.076
V6	Funds, material and technological resources are adequately available	.429	.386	-.387
V7	The business is made up of people of different age, gender, race, and qualifications	.389	.239	-.294
V8	Lack of knowledge, skills, competences and attitudes required for innovation	.227	.573	.026
V9	Limitation of financial resources	.147	.047	.809
V10	Limitation of technological resources	.245	.304	.618
V11	Fear of innovation	.132	.820	.155
V12	Comfortable with the current status quo	.144	.705	-.175
	PERCENTAGE OF TOTAL VARIANCE	**23.64**	**16.81**	**12.10**
	CUMULATIVE PERCENTAGE OF VARIANCE	**23.64**	**40.45**	**52.55**

Source: Primary data

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Table 4.23 depicts the correlation coefficients of the three extracted principal components (factors), percentages of total variance and cumulative percentages of variance. Components 1, 2 and 3 explain 23.64%, 16.81% and 12.1% of the total variance, respectively. The first two components account for 40.45% and all three components account for 52.55% of the total variance.

The first component is highly correlated with variables V1, V2, V3 and V5. Component 1 may be thought of as a management factor.

The second component (Component 2) is highly correlated with variables V8, V11 and V12 Component 2 appears to be an attitude factor.

The third component (Component 3) is highly correlated with variables V9 and V10. It may be thought of as a resource factor.

Table 4.24: Component Correlation Matrix[a]

		Component						
		1	**2**	**3**	**4**	**5**	**6**	**7**
V13	The business invests in research and development for innovation purposes	.544	.328	-.149	.053	.044	.305	-.086
V14	The business relies on ingenuity (creatively thinking) in order to innovate	.188	.390	.477	-.105	-.156	.303	-.115
V15	The business makes use of communities of practice to innovate	.412	-.188	.461	-.142	-.085	.228	.089
V16	Other small businesses provide the business with innovation ideas	.507	-.349	.178	.252	-.054	.333	.139
V17	Large enterprises and universities provide the business with innovative ideas	.605	-.133	-.163	.173	.322	.113	-.189
V18	In order to survive	.023	.606	-.201	.180	-.224	.384	.191
V19	To increase market share	.015	.524	.412	.272	.239	-.308	.095
V20	To enter new markets	.525	.037	.290	.435	-.192	-.324	-.166
V21	To improve product range	.337	.337	.344	.284	.379	-.046	-.130
V22	To improve processes	.504	-.027	.168	.408	-.379	.047	.046
V23	In order to increase profits	.038	.757	.207	.221	-.008	-.006	.130
V24	Internal resources are used to transform ideas into innovations	-.057	.343	.581	-.175	.266	.171	.067

V25	Resources of other small businesses are used to transform ideas into innovations	.488	-.447	.224	.317	-.132	.127	.025
V26	Resources of large enterprises are used to transform ideas into innovations	.541	-.427	-.100	.151	.373	.068	-.148
V27	Universities' resources are used to transform ideas into innovations	.804	-.076	-.250	.012	.273	.084	.051
V28	Government resources are used to transform ideas into innovations	.687	-.021	-.265	-.018	.218	.105	.216
V29	Formal advertisement on media platforms such as TV, Newspaper, Radio, etc.	.740	.115	-.221	-.278	-.044	.060	.098
V30	Word of mouth	.174	.176	.438	-.433	.285	-.019	.213
V31	Online (internet) advertisement	.516	-.324	.371	-.286	-.143	-.113	-.085
V32	Usage of social media applications such as WhatsApp groups	.481	-.211	.458	-.302	-.147	.018	.007
V33	Public speaking	.586	.122	-.099	-.111	-.304	-.039	.218
V34	Patent rights	.618	.335	-.426	-.210	-.031	-.042	.022
V35	Copyrights	.753	.211	-.262	-.119	-.070	-.143	-.093
V36	Keep it a secret (Trade secrets)	.347	-.261	.492	-.050	.027	-.097	-.125
V37	Trademark	.625	.207	.064	-.120	-.180	-.431	.044
V38	Industrial design rights	.718	.193	-.292	-.034	.037	-.215	-.112
V52	Customers provide the business with innovation ideas	.013	-.358	.005	.187	.138	-.199	.770
	PERCENTAGE OF TOTAL	**25.25**	**10.79**	**10.04**	**5.32**	**4.44**	**4.08**	**3.74**

	VARIANCE							
	CUMULATIVE PERCENTAGE OF VARIANCE	**25.25**	**36.04**	**46.08**	**51.40**	**55.84**	**59.92**	**63.66**

Source: Primary data

Extraction Method: Principal Component Analysis.

a. 7 components extracted.

Table 4.24 illustrates the correlation coefficients of the seven extracted principal components (factors), percentages of total variance and cumulative percentages of variance. Components 1, 2, 3, 4, 5, 6 and 7 explain 25.25%, 10.79% , 10.04%, 5.32%, 4.44%, 4.08% and 3.74% of the total variance, respectively. The first two components account for 36.06%, the first three components account for 46.08%, the first four components account for 51.4%, the first five components account for 55.84%, the first six components account for 59.92% and all the first seven components account for 63.66% of the total variance.

The first component is highly correlated with variables V17, V27, V28, V29, V34, V35, V37 and V38. Component 1 may be thought of as an open innovation limiting factor.

The second component (Component 2) is highly correlated with variables V18 and V23. Component 2 appears to be a sustainability factor.

The third component (Component 3) is correlated with variables V14, V15, V24, V32 and V36. It may be thought of as a closed innovation factor.

The fourth component (Component 4) is correlated with variables V20, V22 and V30. It may be thought of as a Growth factor.

The fifth component (Component 5) is slightly correlated with variables V17, V21, V22, V26 and V33. It may be thought of as a productivity factor.

The sixth component (Component 6) is slightly correlated with variables V16, V18 and V37. It may be thought of as a coopetition factor.

The seventh component (Component 7) is highly correlated with variable V52. It may be thought of as a customers' factor.

Table 4.25: Component Correlation Matrix[a]

		Component
	Statements	**1**
V39	The business makes use of the existing innovation models/frameworks as a guide to innovate	.482
V40	Existing innovation models provide suitable guidance in the ideas generation process	.897
V41	Existing innovation models provide suitable guidance in the ideas evaluation process	.920
V42	Existing innovation models provide suitable guidance in the development process	.912
V43	Existing innovation models provide suitable guidance in prototypes testing process	.926
V44	Existing innovation models provide suitable guidance in the diffusion process	.915
V45	The existing innovation models are relevant to the business setting	.910
	PERCENTAGE OF TOTAL VARIANCE	**74.80**
	CUMULATIVE PERCENTAGE OF VARIANCE	**74.80**

Source: Primary data

Extraction Method: Principal Component Analysis.

a. 1 component extracted.

Table 4.25 portrays the correlation coefficients of the one extracted principal component (factor), percentages of total variance and cumulative percentages of variance. Component 1 explains 74.8% of the total variance. The first component is highly correlated with variables V40 – V45. Component 1 may be thought of as existing innovation models' factor.

Table 4.26: Component Correlation Matrix[a]

		Component	
	Statements	**1**	**2**
V46	Provide guidance on appropriate sources of funding	.697	-.040

V47	Provide guidance on appropriate sources of knowledge/information	.725	.000
V48	Provide guidance on how to generate innovative ideas	.775	-.005
V49	Provide guidance on how to transform ideas into products/ services that are sold in the market; Processes & marketing strategies that are implemented.	.757	.162
V50	Provide guidance on how to market innovations	.786	.057
V51	Provide guidance on how to introduce innovations into the market	.804	.044
V53	Provide guidance on how to evaluate ideas	-.062	.868
V54	Provide guidance on how to test prototypes	-.138	.853
	PERCENTAGE OF TOTAL VARIANCE	**43.38**	**18.94**
	CUMULATIVE PERCENTAGE OF VARIANCE	**43.38**	**62.32**

Source: Primary data

Extraction Method: Principal

Component Analysis.

a. 2 components extracted.

Table 4.26 depicts the correlation coefficients of the two extracted principal components (factors), percentages of total variance and cumulative percentages of variance. Components 1 and 2 explain 43.38% and 18.94%, respectively, of the total variance. The first two components account for 62.32% of the total variance.

The first component is highly correlated with variables V46 – V51. Component 1 may be thought of as an Innovation management factor. This factor encompasses crucial innovation phases that innovations go through, hence it is being referred to as an innovation management factor.

The second component is highly correlated with variables V53 and V54. Component 2 may be thought of as an Innovation quality assurance factor. The rationale for this is that innovative ideas are evaluated to ensure that only feasible ideas that are in the best interest of the customers are implemented. On the other hand, prototypes are tested to ensure that, only innovations that are fit for purpose are launched.

4.3 Phase two: qualitative data analysis, findings and discussion

4.3.1 Sampling of the interview participants

To sample the most appropriate participants for the interview, we applied the purposive sampling technique. For the surveyed informal micro-enterprises to be sampled for the interview, they had to have innovated between 01 January 2016 and 31 December 2018. The innovation activity should have been carried out without formal R&D investment, financial and non-financial support from the government, as well as innovation collaboration networks with large enterprises and universities.

During the analysis of the quantitative data (phase one), informal micro-enterprises that complied with the aforementioned criteria were identified. About 44 informal micro-enterprises complied with the aforementioned criteria. We planned to conduct interviews with all 44 but we only interviewed 21 participants due to the attainment of data saturation point. It is possible that the data saturation point was reached with the 16th participant, however, we decided to continue to interview participants who were next in line hoping to discover new information. Unfortunately, until the 21st participant, there was still no new information. Subsequently, we decided to stop conducting the interviews.

4.3.2 Data collection

Data in this phase were collected through semi-structured interviews. Semi-structured interviews afforded us some flexibility. Accordingly, we were able to ask follow up questions when necessary and participants were provided with a room to freely express their views. To some extent, participants answered questions by narrating stories. Final study interview questions were crafted post the pilot study. These questions were further refined after the analysis of the quantitative data of the final study.

After refining the interview questions, face-to-face individual interviews were conducted with 21 participants. Each interview lasted for about 15 to 20 minutes. The interviews were recorded using a galaxy smart cell phone and notes were transcribed using Microsoft Office Word during the course of the interviews. Recorded interviews and transcribed notes were saved on a personal computer and external hard drive for safekeeping.

4.3.3 Data analysis

Qualitative data were analysed through the application of thematic and constant comparison methodology. Collected data were revisited and perused. Interview notes were then transcribed in short summarised sentences to allow comparison across the responses to take place at ease.

The responses were closely reviewed and one participant's responses were compared with the other to determine patterns or themes. Identified themes were named and quantified in terms of frequencies and percentages.

4.3.4 Demography

Of the 21 interviewed participants, 13 are males and 8 are females. 14 are owners of the respective informal micro-enterprises. Whereas, 7 are employees of the respective informal micro-enterprises. The average age of the sampled informal micro-enterprises (businesses and not owners and employees) is 4 years.

4.3.5 Firm background

a) Market offerings and business age

Participants were asked to tell us about their businesses, when they were established and what they offer. Participants offer various products and services, such as beauty therapy, car paint production and sales, carpentry, tyre sales and repairs, car wash, perfumes production and sales, crafts sales, grocery items (tuckshops) and hair salons.

The 21 interviewed businesses have an average age of 4 years. The age of interviewed businesses suggests that informal micro-enterprises of at least 4 years and above are more innovative and innovation makes them sustainable to a certain extent. In light of the criteria that were adopted to sample participants for interviews, this also suggests that informal micro-enterprises that are at least 4 years old are capable of innovating without R&D investment, financial and non-financial support from the government, as well as innovation collaboration networks with large enterprises and universities.

The latter suggestion is supported by the findings of the following sections where it is pointed out that, informal micro-enterprises use their own savings to fund innovations. Most firms break-even at the age of 3, thus from 3 to 4 years, a firm can save profits and adequately fund desired innovations at the age of 4.

b) Funding

Participants were asked to explain how they obtained funding to establish their businesses. The following themes emerged.

(i) Own funding

Participants indicated that they established their businesses using their own funding. 71% (15 of 21) of the participants stated this. We then asked them how the own funding was obtained, as nobody can just wake up with their own startup capital. Accordingly, all 15

participants indicated that they worked for someone else before starting their own businesses. They saved money from their previous employment and the savings were used to start their businesses.

(ii) Friends and family

24% (5 of 21) of the participants used funds received from friends and family to start their businesses. Whereas, one participant did not need startup capital, as the business was passed over from the previous owner to the current owner at no charge.

Participants who received funds from their friends and family members have received the funds under different circumstances. Some discussed their business ideas with friends and family before getting the funds, whereas some received the funds for a certain purpose but instead of using the funds for the purpose intended they saved it and used it to start their businesses. For instance, Participant 20 who now runs a well-established tuckshop with a proper shelter said the following, “I used to receive R20 from my brother (who is a teacher by profession) every day for bread. Instead of buying bread, I saved the money until it was R200. With the R200, I bought vegetables and sold them on the streets to my neighbours. My brother and my neighbours would walk far to buy vegetables to prepare dinner. Therefore, I just thought if I could bring vegetables to their doorsteps, they would not have to walk far. I made some profits from selling vegetables, the profit was used to buy a container. While working in the container, I saw a need to buy and sell other grocery items, the business grew until I was able to move into the shelter that you see me in today. Today I do not only sell grocery items, I also do some stuff on the side. I produce unique sugary and alcoholic beverages using a combination of both traditional and modern ingredients”.

4.3.6 Innovation orientation

a) Innovation fostering factors

Participants were asked to indicate in their view what factors enable them to engage in innovation activities. The following themes were extracted from the analysis of their responses.

(i) Curiosity

About 48% (10 of 21) of the participants indicated that they engage in innovation activities because they are constantly curious about what their customers want, how they can serve them better and what their competitors are doing. This curiosity triggers the generation of

novel ideas that are often transformed into innovations. Accordingly, among others, Participant 4 said the following, “I am often curious about the contemporary trends in the market. Therefore, I attend public gatherings and also spend some time on social media to familiarise myself with trending stuff that are relevant to my business. If I see something I like which customers will also like, I emulate it and produce it in my business in order to stay relevant”.

Furthermore, Participant 20 said the following, “I am often curious about what customers want and what my competitors are doing. Therefore, as customers come to my shop, I ask them what can be added in the shop to make them more happy. I also walk around the township, pretend to be a customer and enter my competitors’ shops to see what they are doing. If I see something interesting that is not available in my shop, I introduce it to my customers. In some instances, I would identify something that my competitors are not doing but customers might like, and introduce it in my shop”.

(ii) Knowledge

About 57% (12 of 21) of the participants indicated that their knowledge enables them to engage in innovation activities. They explained that knowing the importance of bringing goods and services closer to the customer and knowing how to bring such goods and services to the customer enables them to innovate. Participants were further asked how knowledge referred to here was acquired, and they indicated that it was obtained through both experiential and formal learning.

For instance, Participant 3 explained that her parents were business owners, so she learnt from them. Whereas, Participant 13 explained that in addition to studying a course in business management, the participant also acquired his innovation knowledge from his previous employment. Furthermore, Participant 20 explained that he acquired in-depth knowledge of financial management through formal learning. Thus, he saves profits and invest it in the firm to fund innovations.

b) Innovation limiting factors

Participants were asked to indicate in their view what factors make it difficult for them to engage in innovation activities. The following themes were extracted from the analysis of their responses.

(i) Customers’ affordability of innovations

About 38% (8 of 21) of the participants indicated that the major innovation limiting factor among informal micro-enterprises is customers’ affordability of innovations. Informal micro-

enterprises in the townships serve customers who have limited disposable income, as these customers either depend on piece jobs, grants, etc., or they are unemployed. There are very few people with formal permanent jobs in the townships. This has proven to negatively affect customers' ability to afford informal micro-enterprises' innovations.

For instance, Participant 21 said the following, "customers often complain that innovations are expensive. Therefore, you end up being discouraged from innovating because they will probably not afford to buy the innovations".

(ii) Lack of finance

About 33% (7 of 21) of the participants cited lack of finance as another innovation limiting factor. While we expected lack of finance to be a major innovation limiting factor among informal micro-enterprises, the ranking of findings in terms of percentages suggests that it is not. Nonetheless, it remains a challenge.

(iii) Lack of equipment

About 29% (6 of 21) of the participants cited lack of equipment as an innovation limiting factor. For instance, Participant 12 said the following, "lack of reliable electricity supply and latest machinery really makes it difficult for us to engage in innovation activities".

(iv) Lack of sufficient security

Lastly, 14% (3 of 21) of the participants cited lack of adequate security as an innovation limiting factor. It was necessary to include this finding in the research report, as the participants indicated that they are often reluctant to innovate because there are high levels of theft and robbery in the townships. Sometimes during xenophobic attacks, looters also loot shops of South African residents. Thus, such criminal activities limit innovation activities.

Accordingly, among others, Participant 15 said the following, "there is too much theft and robbery in kasi (township). Therefore, I am reluctant to introduce too many new things, as I would lose in case of theft, robbery or xenophobic attacks".

4.3.7 Innovation activities

a) Information and knowledge

Information and knowledge are key inputs to the innovation process. For a firm to effectively engage in innovation activities, it has to be conversant with existing problems in the market, among other trends. Participants were asked to indicate how they obtain information and knowledge required to engage in innovation activities (in particular,

existing problems in the market). The following themes were extracted from the analysis of their responses.

(i) Credible customers' assemblies

About 67% (14 of 21) of the participants indicated that customers provide them with information about the existing problems in the market. As customers come to their premises they discuss issues that are happening in the market that have the potential to affect the business. Among others, one participant explained that, during the listeriosis outbreak in South Africa, he learnt about it for the first time from customers. Listeriosis severely affected Kota businesses in the townships as it was alleged that listeriosis was being transmitted through processed meat such as polony. Polony and other forms of processed meat are key ingredients in *kota*. Thus, *kota* businesses had to prepare *kotas* differently after being aware that polony and other forms of processed meat were contaminated.

Participants also indicated that, while they listen to every customer, they do not consider information from every customer. There are customers that they trust and these are the customers whose advice they take. We then asked a follow-up question to determine the criteria that are used to trust certain customers. The participants then indicated that trust was established over the years through the provision of reliable valid information. In light of this response, we conceptualised a term to refer to these customers and it is called: credible customers' assemblies, which means a group of reliable customers.

(ii) Social media and news platforms

About 33% (7 of 21) of the participants indicated that they acquire knowledge and information about the existing problems in the market through social media and news platforms. Social media and news platforms such as WhatsApp, Facebook, Instagram, television, radio and newspaper are mostly used. With participants indicating that they mostly use these platforms because they offer up to date information and they are affordable.

(iii) Coopetition

About 29% (6 of 21) of the participants indicated that they cooperate with other small businesses, their competitors to obtain information and knowledge about the existing problems in the market. Among others, Participant 5 said the following, "there is a group of about 12 of us, we are all small business owners. So, we meet regularly to discuss current issues in the market".

b) Generation of innovative ideas

Participants were asked to indicate how they generate innovative ideas. The following themes were extracted from the analysis of their responses.

(i) Ingenuity

About 52% (11 of 21) of the participants indicated that they rely on ingenuity or they creatively think to generate innovative ideas. We were interested in knowing how this works, thus we asked a follow-up question in this regard. The participants then indicated that creative thinking referred to here mostly happens in bed before falling asleep and at work during the day. The bed and late hours provide a peaceful environment that allows deep thinking to take place. Whereas during the day at work, some events would inspire creative thinking.

For instance, Participant 11 said the following, “When I am in bed before falling asleep, I meditate and reflect on what happened during the day. If I pick a problem on the day’s events or if I just want to expand my business, I then think deeply to discover solutions to the problem or ways to expand my business”.

(ii) Credible customers’ assemblies

About 43% (9 of 21) of the participants indicated that they rely on customers to provide them with innovative ideas. They explained that as customers come to their premises they would make suggestions of new things to introduce in the business. Nonetheless, the participants indicated that they do not take innovative ideas from any customer, there are customers that they trust and these are the customers whose innovative ideas they take. In some instances, customers would be in a group and they would make innovative suggestions together.

(iii) Communities of practice

About 24% (5 of 21) of the participants indicated that they make use of communities of practice to generate innovative ideas. Communities of practice are innovation-oriented gatherings that are constituted by the firm’s employees. These employees discuss business issues and formulate innovative ideas in the process. In the informal micro-enterprises’ context, the participants indicated that the frequency of the gatherings ranges from once per week to once in two months.

(iv) Coopetition

About 14% (3 of 21) of the participants indicated that they cooperate with other small businesses, their competitors for the generation of innovative ideas. Although this rarely happens, it seems that few informal micro-enterprises often engage in coopetition.

c) Evaluation and selection of innovative ideas

Participants were asked to indicate how they evaluate and select innovative ideas. The following themes were extracted from the analysis of their responses.

(i) Customers' priorities

About 67% (14 of 21) of the participants indicated that they evaluate and select innovative ideas based on customers' priorities. Innovative ideas that are more important to the customers are selected and implemented whereas innovative ideas that are less important are discarded or packed for later. This suggests that, when innovative ideas are evaluated and selected, there is less consideration of costs relating to the production of the innovation and benefits that will be accrued from the innovation for business owners. Among others, Participant 10 said the following, "innovative ideas are ranked on the basis of the number of customers who suggested the idea or who indicated that they love the idea. Therefore, the higher the number of customers endorsing the idea, the higher the likelihood of that idea being selected for implementation". Furthermore, Participant 8 said the following, "I look around in the township to determine what will sell the most, the idea that has the potential to sell more is the one that I select for implementation".

(ii) Customers' affordability

About 24% (5 of 21) of the participants indicated that they evaluate and select innovative ideas based on customers' affordability. In other words, they consider the potential customers' ability to purchase the innovation. Among others, Participant 21 said the following, "Customers around here have limited disposable income. Thus, I consider their ability to afford potential innovations before introducing them".

d) Transformation

Participants were asked to indicate how they transform the selected innovative idea (s) into products or services. The following themes were extracted from the analysis of their responses.

(i) Internal resources

About 90% (19 of 21) of the participants indicated that they use internal resources (i.e., human resources, financial resources, equipment, and so forth) to transform innovative

ideas into innovations. This suggests that open innovation hardly takes place in the informal sector. Accordingly, among others, Participant 5 said the following, “After selecting the idea I worked on how the new service should look like and operate. Following this, I saved profits until I had enough money to transform the innovative idea. When there was no adequate equipment, I purchased the needed equipment using my savings”.

(ii) Coopetition

About 14% (3 of 21) of the participants indicated that they cooperate with other small businesses, their competitors to transform innovative ideas into innovations. The participants further indicated that this mostly happens when the selected innovative idea is not in line with the business’s offerings, and outside expertise and equipment are required to implement it. Sometimes when the firm does not have sufficient funds, funds required for innovation are raised through stokvel. In this study, we referred to this as metamorphosis stokvel, which refers to the raising of funds by informal micro-enterprises’ owners for innovation purposes.

Among others, Participant 16 said the following, “I partner with my competitors when I do not have sufficient resources internally to implement an innovative idea. However, it is often difficult to find another small business that is willing to work with you. It is often every man for himself in the townships”.

e) Testing

Participants were asked to indicate how they test prototypes to determine if they are fit for purpose. The following themes were extracted from the analysis of their responses.

(i) Internal testing by employees

About 38% (8 of 21) of the participants indicated that they test prototypes internally to determine if they are fit for purpose. A prototype is assigned to one or two employees; these employees would use the prototype for a certain period, make an observation on how it works, and take some notes for discussion. Post the analysis period, if the prototype is deemed fit for purpose, it is then passed on to later innovation phases. The prototypes that fail the test are referred back to the transformation phase.

(ii) External testing by customers

About 33% (7 of 21) of the respondents indicated that they test prototypes externally to determine if they are fit for purpose. Accordingly, in this regard, prototypes are offered to customers as samples for free for them to test and provide feedback to the firm.

Unfortunately, there is no standard timeframe that customers are given to test the prototypes. Customers provide feedback as and when they are ready or when they are asked about their experience by the firm. Based on the responses received, the firm makes a determination of whether or not the prototype is fit for purpose. A prototype that is fit for purpose is passed on to later innovation phases, whereas a prototype that fails the test is referred back to the transformation phase.

f) Marketing

Participants were asked to indicate how they market their innovations to potential customers. The following themes were extracted from the analysis of their responses.

(i) On the shop display

About 48% (10 of 21) of the participants indicated that they place innovations on the shop display (including shop posters) to market them to potential customers. The participants explained that as customers walk into their premises they further try to sell the innovations to them even if they entered their premises looking for something else. We asked a follow-up question to determine if this marketing strategy is effective, and the participants indicated that it works to a certain extent. In terms of the percentages, by far this is the most utilised marketing strategy among informal micro-enterprises.

(ii) Word of mouth

About 43% (9 of 21) of the participants indicated that they rely on word of mouth to market their innovations to potential customers. We were interested in knowing how this works. Thus, the participants indicated that the spoken communication referred to here happens internally and externally. Internally, employees tell customers about innovations as they come to their premises and also explain to them how the innovations can benefit them. This is done also during the initial stages of the innovation before it can even be displayed on the shop.

Word of mouth also happens externally when customers go around telling other potential customers about the innovation and how it changed their lives. Among others, Participant 20 said the following, “I was surprised by a visit from people who stay approximately 30 km away from here. They came to my shop looking for a traditional beer that I invented. So when I asked them how they knew about it, they said there is a word on the street that you make traditional beer that brings a man on his knees after taking just two cups”.

(iii) Social media

About 29% (6 of 21) of the participants indicated that they use social media platforms such as WhatsApp, Facebook, Twitter and Instagram to market their innovations. The participants indicated that social media is affordable and can reach targetted customers within a very short period.

g) Introduction of innovations in the market

In addition to marketing, participants were asked to indicate if they use any technique to make the innovations more appealing to customers during the launch phase. Two techniques stood out from the analysis. Participants indicated that they offer free samples to customers whereas other participants indicated that they place the innovation on promotion to attract customers.

4.3.8 Existing innovation models/frameworks

Participants were asked to indicate if they made use of the existing innovation models/frameworks as a guide to engage in innovation activities. Participants were further asked to indicate if they found the models they used suitable for informal micro-enterprises' context, and to make suggestions for improvement in case they found the models they used unsuitable or lacking.

About 95% (20 of 21) of the participants indicated that they did not use any of the existing innovation models/frameworks as a guide to engage in innovation activities. Some of the participants have not seen any of the existing models, whereas some of the participants have seen some of the existing innovation models. Those who have seen some of the existing innovations models indicated that they found them complex and irrelevant, hence, they could not use them.

At least 1 participant made use of some of the existing innovation models as a guide to engage in innovation activities. This participant explained that he constantly had to drastically modify the model (s) to suit his business context. Subsequently, he suggested that the existing innovation model (s) should be modified to suit the informal micro-enterprises' context.

4.3.9 Creative innovation framework features

Since the study sought to design a creative innovation framework for informal micro-enterprises in the townships of the Gauteng Province, participants were asked to indicate what they would like to see as features of the designed creative innovation framework. 33% (7 of 21) of the participants indicated that they would like the framework to guide

them on how to acquire knowledge and information about the existing problems in the market. 24% (5 of 21) of the participants suggested that the framework should guide them on how to obtain funding and equipment that would be required for innovation purposes. 24% (5 of 21) of the participants emphasised that the framework should guide them on how to market innovations and how to grow their businesses. Lastly, 19% (4 of 21) of the participants highlighted that the framework should guide them on how to carry out all basic innovation stages.

4.4 Integration of quantitative and qualitative findings and discussion

We compared quantitative and qualitative data and findings for similarities and differences to draw coherent conclusions that ultimately informed the designed creative innovation framework that is presented in Section 4.5. The comparison is presented below with discussion and conclusions under the surveyed topics. We decided to tabulate the quantitative and qualitative findings to allow for easy comparison and integration. Prior mixed methods studies mostly presented this section in sentences and paragraphs thereby making it difficult for the reader to easily identify similarities and differences between quantitative and qualitative findings.

Table 4.27: Integration of quantitative and qualitative results

Surveyed item	**Quantitative results**	**Qualitative findings**	**Integrated findings**
Funding	• Own funding • Friends and family	• Own funding • Friends and family	• Own funding • Friends and family
Innovation fostering factors	• Owners and employees visionaries • Employees are encouraged to formulate new ideas • Risks and mistakes are tolerated • Changes are embraced	• Curiosity • Knowledge	• Curiosity • Knowledge • Owners and employees visionaries • Employees are encouraged to formulate new ideas • Risks and mistakes are

	• Firms are diverse		tolerated • Changes are embraced • Firms are diverse
Innovation limiting factors	• Lack of financial resources • Lack of technological resources	• Customers' affordability of innovations • Lack of financial resources • Lack of equipment • Lack of sufficient security	• Customers' affordability of innovations • Lack of sufficient security • Lack of financial resources • Lack of equipment and technological resources
Information and knowledge	Not tested quantitatively due to limited literature on this at the time of the literature review	• Credible customers' assemblies • Social media and news platforms • Coopetition	• Credible customers' assemblies • Social media and news platforms • Coopetition
Generation of innovation ideas mechanisms	• Ingenuity • Customers • Communities of practice	• Ingenuity • Credible customers' assemblies • Communities of practice • Coopetition	• Ingenuity • Credible customers' assemblies • Coopetition • Communities of practice
Evaluation of innovation ideas	Not tested quantitatively due to limited literature on this at the time of the literature review	• Customers' priorities • Customers' affordability	• Customers' priorities • Customers' affordability

Transformation	• Internal resources	• Internal resources • Coopetition	• Internal resources • Coopetition
Testing	Not tested quantitatively due to limited literature on this at the time of the literature review	• Internal testing by employees • External testing by customers	• Internal testing by employees • External testing by customers
Marketing	• Word of mouth • Internet-based sites • Social media	• On the shop display • Word of mouth • Social media	• On the shop display • Word of mouth • Social media • Internet-based sites
Intellectual property rights	• Trade secrets	• Keep it a secret	• Trade secrets
Introduction	Not tested quantitatively due to limited literature on this at the time of the literature review	• Offering free samples • Promotions	• Offering free samples • Promotions
Existing innovation models/frameworks	• The majority do not make use of the existing innovation models • Those who used the models also deemed them unsuitable for informal micro-enterprises'	• The majority do not make use of the existing innovation models • Those who used the models indicated that they should be modified to suit informal micro-	• The majority do not make use of the existing innovation models • Those who used the models indicated that they should be modified to suit informal micro-

	context	enterprises' context	enterprises' context
Creative innovation framework features	• All basic innovation stages must be featured on the creative innovation framework	• Knowledge and information sources • Funding options • Equipment access • Marketing strategies • All basic innovation stages must be featured on the creative innovation framework	• All basic innovation stages must be featured on the creative innovation framework • Knowledge and information • Funding options • Equipment access • Marketing

Source: Primary data

4.4.1 Funding

Both quantitative and qualitative analysis revealed that informal micro-enterprises use own funding and funds from friends and family to establish their businesses. Since own funding cannot just be available, during the qualitative phase, we sought clarity on how it was obtained and participants indicated that they all worked for someone else before establishing their own businesses. Savings from previous employment were used to establish businesses. Other informal micro-enterprises were established using funds received from friends and family. In some instances, the friends and family referred to here were aware that funds were being sought to establish a business, whereas in other instances they were providing funds for a certain purpose and these funds were saved and used to establish businesses. The study also revealed that funding is a resource factor that is crucial for innovation activity.

The aforementioned findings are partially in line with the findings of previous studies, as Fu, Mohnen and Zanello (2018), as well as De Beer and Armstrong (2015), explained that well-accepted sources of funding for the informal sector are, own revenue, family, and informal loans, among others. In this study, own funding, friends and family stood out as

the most common sources of funding. In both quantitative and qualitative phases, informal loan was not mentioned as a source of funding. The participants indicated that they do not like loans as they often cripple informal micro-enterprises.

This study further revealed how own funding and funds from friends and family were obtained. Previous related studies did not clearly explain this.

Guiding question:

What is the contemporary innovation orientation of informal micro-enterprises in the townships of Gauteng Province?

Innovation orientation of a firm is defined by the presence or absence of innovation fostering and limiting factors in the firm's micro, market and macro environment.

4.4.2 Innovation fostering factors

The analysis of the quantitative phase revealed that owners and employees of informal micro-enterprises are visionaries. Meaning they have a vision of how their firms should look like in the future 5 years. Employees are encouraged to formulate new ideas, risks and mistakes are tolerated, changes are embraced and informal micro-enterprises are diverse. Furthermore, in terms of the factor analysis results, the innovation fostering factors identified can further be classified as management and attitude factors, suggesting that informal micro-enterprises are managed in such a manner that fosters innovation and attitudes of owners and employees of informal micro-enterprises favour innovation activities. The analysis of the qualitative phase revealed that curiosity and knowledge foster innovation among informal micro-enterprises.

The explanation for the difference between the findings of the quantitative and the qualitative phases could be that factors tested during the quantitative phase were based on the existing literature. Whereas, during the qualitative phase, participants were asked to express their views about what fosters innovation in their businesses without being provided a hint of what the literature says about what fosters innovation among businesses.

The existing literature lacked evidence on what fosters innovation among informal micro-enterprises. The focus has mostly been on innovation limiting factors among informal micro-enterprises, hence some authors concluded that the informal sector is not a viable environment for innovation. Thus, the innovation fostering factors that were tested during the quantitative phase were mostly identified from studies conducted in the formal sector.

The qualitative phase revealed curiosity as a major innovation fostering factor among informal micro-enterprises. This finding is not in line with the existing literature, meaning previous studies conducted in both formal and informal sectors did not identify curiosity as an innovation fostering factor.

While R&D drives innovation in the formal sector, the finding suggests that, on the contrary, curiosity drives innovation in the informal sector. It is imperative to point out that, curiosity differs from research or R&D. For instance, research is systematic or structured and people do not pretend when they conduct research due to ethical principles associated with research. On the other hand, curiosity is quite the opposite as explained in Section 4.3.6 of this study.

4.4.3 Innovation limiting factors

Lack of financial and technological resources were revealed as innovation limiting factors during the quantitative phase of the study. Accordingly, the two limiting factors have been classified as a resource factor. Moreover, the factor analysis results revealed that lack of innovation-related cooperation between informal micro-enterprises and other role players in the national innovation system such as the government, universities, and large enterprises is a major open innovation limiting factor. During the qualitative phase, participants pointed out that their innovation activities are limited by customers' affordability of innovations, lack of sufficient security, lack of finance and equipment.

Lack of equipment is closely related to lack of technological resources. Thus, lack of finance and equipment were identified as innovation limiting factors in both the quantitative and qualitative phases. Customers' affordability of innovations and lack of sufficient security were identified as innovation limiting factors during the qualitative phase only.

Overall factors that limit innovation activities among informal micro-enterprises are customers' affordability of innovations, lack of sufficient security, lack of cooperation, lack of finance and equipment. The first two findings are not in line with the existing literature, whereas the last three findings are in line with the existing literature.

This study revealed that there are more innovation fostering than limiting factors among informal micro-enterprises. Thus, the informal sector environment is favourable to innovation activities, there is just a need for proper guidance to enable both radical and incremental innovations to take place. This is contrary to the findings of other innovation related studies that concluded that the informal sector environment does not favour innovation activities. This conclusion was mostly based on the lack of adequate resources

required for innovation purposes. A lack of several innovation fostering factors surely cannot be a justifiable basis for deeming the informal sector unfavourable for innovation activities. Thus, what becomes imperative is to determine mechanisms through which the identified innovation limiting factors can beaddressed. We know now what does not work in the informal sector, thus new or less understood mechanisms have to be explored.

Guiding question:

How do informal micro-enterprises in the townships of Gauteng Province engage in radical and incremental innovation?

4.4.4 Information and knowledge

Unfortunately, the existing literature could not elighten us of innovation-related information and knowledge gathering tools. Subsequently, the subject matter hereto could not be tested quantitatively. Accordingly, the subject matter was only tested qualitatively. The analysis of the qualitative data revealed that information and knowledge required for innovation activities are gathered through credible customers' assemblies, coopetition, social media and news platforms.

Credible customers' assemblies refer to groups of reliable customers who provide informal micro-enterprises with credible information and knowledge required to trigger innovation activities. For instance, information and knowledge about existing problems in the market and how an informal micro-enterprise can resolve such problems to cater for the needs of customers. For innovation to be considered a success, it must have led to the growth of a firm and must have made a substantial positive contribution to people's lives. Thus, the involvement of a customer in an innovation process that can eventually benefit the customer lays a firm foundation for the later innovation activities. Such a practice is also a major contributory factor to innovation success.

Coopetition in this regard refers to a group of informal micro-enterprises' owners who regularly convene to share innovation-related information and knowledge. These business people share information about current issues affecting their businesses and those that do not necessarily affect their businesses but present opportunities for their businesses.

Lastly, analysis of the qualitative data revealed that social media platforms such as WhatsApp, Facebook, Twitter and Instagram, as well as news platforms such as television, radio, magazines, and newspapers are used to gather information and knowledge for innovation purposes. While the aforementioned information platforms are affordable and accessible, some of them, in particular social media have proven to be

capable of spreading fake news at times. Thus, informal micro-enterprises have to validate the information they obtain from social media before applying it in innovation activities.

4.4.5 Generation of innovative ideas

The analysis of the quantitative phase revealed that informal micro-enterprises rely on ingenuity, customers and communities of practice to generate innovative ideas. Moreover, the factor analysis results revealed customers as a crucial factor in both the early and late phases of the innovation process. The analysis of the qualitative phase revealed that informal micro-enterprises rely on credible customers' assemblies, coopetition, ingenuity and communities of practice to generate innovative ideas. Customers, ingenuity, and communities of practice were identified in both phases. Whereas, coopetition was only identified in the qualitative phase.

Customers provide innovative ideas to informal micro-enterprises voluntarily when they interact with owners and employees. Sometimes, owners and employees of informal micro-enterprises interact with small groups of customers to get consolidated innovative ideas. During the qualitative phase, participants pointed out that it is not all customers whose creative ideas are considered, only creative ideas from credible customers are considered for innovation purposes. Some customers are considered credible due to trust earned over a certain period, often years.

Ingenuity, also known as creative thinking, is highly relied on as an innovative ideas generation mechanism by informal micro-enterprises. Most of the creative ideas are formulated in bed before falling asleep. In this regard, the creative thinker would start by meditating to enable deep thinking, following this, reflect on the day's events, identify problems and come up with a creative or novel idea to solve the problem. Where no problems are identified, creative or novel ideas necessary to attract more customers, grow the firm, or improve processes are formulated. Creative thinking also happens during the day at work. In this regard, some events would trigger creative thinking.

Innovative ideas are also generated through communities of practice and coopetition. Communities of practice refers to a group of people who regularly meet to brainstorm to generate innovative ideas. In the informal micro-enterprises context, the frequency of these meetings ranges from once per week to once in two months. On the other hand, coopetition refers to a group of informal micro-enterprises owners who regularly convene to brainstorm and formulate innovative ideas.

The existing literature revealed that the ability of informal micro-enterprises to innovate highly depends on the creativity of the owner (Mendi and Mudida, 2018). This is not entirely true as this study revealed that both owners and employees of informal micro-enterprises engage in creative thinking and innovation activities. Furthermore, creative thinking is not the only source of innovative ideas, credible customers' assemblies, communities of practice and coopetition are other commonly used innovative ideas generation mechanisms.

4.4.6 Evaluation of innovative ideas

There was limited literature on how all forms of firms (formal and informal) evaluate and select innovative ideas. Before this study, there were only two known factors that firms consider when evaluating and selecting innovative ideas and these factors are costs and benefits (Barbieri and Alvares, 2016). Due to the limited availability of literature, the subject matter hereto could not be tested quantitatively. Thus, this phenomenon was only tested during the qualitative phase.

The analysis of the qualitative phase revealed that customers' priorities and customers' affordability are the factors that informal micro-enterprises consider when evaluating and selecting innovative ideas. Formulated innovative ideas are ranked in terms of their importance to the customer, and the ideas that are more important and mostly endorsed by customers are the ones that are selected for further processing. Innovative ideas are also selected based on the ability of potential customers to afford the subsequent innovation(s). Thus, innovative ideas that will lead to innovations that customers can afford are selected.

The aforementioned procedure is contrary to the existing literature, which revealed that large enterprises and formal businesses evaluate and select innovative ideas based on costs and benefits (Barbieri and Alvares, 2016). Informal micro-enterprises seem to be mostly concerned about satisfying the customer, whereas large enterprises and other formal businesses are mostly concerned about creating wealth for the stockholders.

While the aforementioned procedure makes sense (put the customer first), it has the potential to limit radical innovations. Thus, informal micro-enterprises face a challenge to innovate in such a manner that their innovations will be affordable to the customers that they serve while remaining competitive simultaneously.

4.4.7 Transformation

The analysis of the quantitative phase revealed that informal micro-enterprises use internal resources to conceptualise a scope for the transformation of innovative ideas into innovations, and also to transform such innovative ideas into the actual innovations. The analysis of the qualitative phase also revealed that informal micro-enterprises use internal resources to conceptualise a scope for the transformation of innovative ideas into innovations, and also to transform such innovative ideas into the actual innovations. Furthermore, the analysis of the qualitative phase revealed that informal micro-enterprises also cooperate with their competitors (in particular other small businesses) for scoping, design and transformation of innovative ideas into actual innovations.

During the qualitative phase, we sought clarity on how this works, and participants explained that they save profits to fund innovations. Firms that are at least more than 3 years old were found to be capable of saving profits that are utilised to fund innovations. It was further revealed that internal equipment is used for innovation development, and where equipment is not available internally and cannot be purchased due to insufficient funds, the firms then partner with other small businesses for innovation development. In this study, we referred to the financial assistance that happens through coopetition as metamorphosis stokvel.

Notwithstanding the above, coopetition rarely happens among informal micro-enterprises. The small percentage of participants who cooperate with other small businesses (their competitors) for innovation development is evident to this. Accordingly, it was pointed out that when it comes to innovation development, it is every man for himself in the informal sector. However, informal micro-enterprises must put aside their differences and engage in coopetition (which can also be referred to as open innovation) more often as this can enable them to engage in radical innovation more often as radical innovations may require expertise and equipment that may not be available internally. As far as it can be reasonably determined, before this study, the existing literature had no information about how informal micro-enterprises transform innovative ideas into innovations.

4.4.8 Testing

There was limited literature on how informal micro-enterprises and other small businesses test prototypes before they can be launched as final products or services in the market.Literature on how unfit prototypes are refined into desired innovations was also scarce. Subsequently, the subject matter hereto could not be tested quantitatively.

The analysis of the qualitative phase revealed that internal testing is performed by employees and external testing is performed by customers. The tests are performed to determine if the innovation (be it a product, service, process, marketing strategy, etc.) is fit for purpose. Internally, a prototype is given to employees to observe if it is fit for purpose over a certain period. Externally, prototypes are offered to credible customers in the form of samples. These customers then utilise the sample over a certain period and provide feedback to the firm. Prototypes that pass the test are further launched, whereas, prototypes that fail the test are referred back for improvement and later launched.

4.4.9 Intellectual property rights

The analysis of the quantitative phase revealed that informal micro-enterprises keep trade secrets as a mechanism to protect their innovations. , the subject matter hereto was not tested qualitatively as it was considered sufficiently addressed during the quantitative phase.

Overall, informal micro-enterprises do not apply for patent rights, copyrights, and industrial design rights, among others, to protect their innovations. The findings suggest that informal micro-enterprises rarely protect their innovations as a small proportion of informal micro-enterprises even have trade secrets. Informal micro-enterprises failure to protect their innovations could be because they engage in incremental innovation rather than radical innovation.

The aforementioned findings are partially in line with the existing literature as Charmes, Gault and Wunsch-Vincent (2016) argued that firms in the informal sector do not protect their innovations. Perhaps the authors' argument was based on the fact that they do not formally protect their innovations, as this study revealed that some of them have trade secrets, which in most cases do not have to be formally applied for.

4.4.10 Marketing

Marketing is one of the integral aspects of the innovation process. The analysis of the quantitative phase revealed that informal micro-enterprises market their innovations through word of mouth, internet-based sites and social media. The analysis of the qualitative phase revealed that informal micro-enterprises market their innovations through on the shop display (including shop posters), word of mouth and social media. Word of mouth and social media were identified in both phases. Internet-based sites were only identified in the quantitative phase and on the shop display was only identified in the qualitative phase.

On the shop display is the most utilised marketing strategy among informal micro-enterprises. While this marketing strategy is believed to be effective, its ability to reach a wider market is limited. If a potential customer does not walk or drive past the business or enter the business premises, the potential customer would not know about the innovation. Hypothetically the innovation could be appealing to some people who are situated very far from the business premises, but since it is not marketed to them, they will not buy it.

Word of mouth, social media and internet-based sites are also utilised to market innovations. Word of mouth happens both internally when customers come to the shop and externally when information is propagated from one customer to the other or from business employees and owners to members of the community. Social media and internet-based free sites are also used due to their affordability and their ability to reach a wider audience instantly. Concerning social media, highly educated respondents consider WhatsApp groups to be less useful compared to other social media platforms. Whereas less educated respondents consider WhatsApp groups to be as useful as other social media platforms.

For innovation diffusion to be successful which ultimately leads to the success of the innovation, there has to be intense marketing of an innovation before and upon launch in the market. Thus, a combination of all the aforementioned marketing strategies can be effective to reach a wider market. Relying on one marketing strategy can be detrimental to an informal micro-enterprise.

4.4.11 Introduction of innovations in the market

There was limited literature on what happens when informal micro-enterprises and formal small businesses introduce or launch innovations. Subsequently, the subject matter hereto could not be tested quantitatively. The analysis of the qualitative phase revealed that, at the launch, informal micro-enterprises place innovations on promotion and also offer free samples to potential customers to make the innovations more appealing to potential customers.

Guiding question:

To what extent do informal micro-enterprises in the townships of Gauteng Province use the existing innovation models/frameworks as a guide to engage in radical and incremental innovation?

4.4.12 Existing innovation models/frameworks

The analysis of the quantitative phase revealed that a substantial proportion of informal micro-enterprises do not make use of the existing innovation models/frameworks as a guide to engage in innovation activities. Nonetheless, a small proportion of informal micro-enterprises did make use of the existing innovation models/frameworks as a guide to engage in innovation activities. Unfortunately, the few who made use of the existing innovation models/frameworks deemed them unsuitable for informal micro-enterprises' context.

Similarly, the analysis of the qualitative phase revealed the same aforementioned results. Fortunately, during the qualitative phase, we could search further by asking follow-up questions. Accordingly, participants who do not make use of the existing innovation models/frameworks were asked why, and those who have at least seen one or two models before indicated that they found them complex and irrelevant. Hence they could not use them. One participant who practically applied the existing innovation models/frameworks indicated that he constantly had to drastically modify them and this made the whole experience a bit frustrating.

In light of the above, there is a need for a tailor-made innovation solution that takes into account the informal micro-enterprises' context.

Guiding question:

What should a creative innovation framework that will guide informal micro-enterprises in the townships to engage in radical and incremental innovation with little or no investment in research and development, no financial and non-financial support from the government, and no collaboration networks with large enterprises and universities look like?

4.4.13 Creative innovation framework features

The analysis of the quantitative and the qualitative phases revealed that owners and employees of informal micro-enterprises would like to see all basic innovation phases as features of the tailored creative innovation framework. The basic innovation phases are, discovery, scoping, designing, developing, scaling up and launching. In this study, we have referred to discovery as the generation of innovative ideas. We referred to scoping as the evaluation and selection of innovative ideas. We referred to designing and developing as transformation. We referred to scaling up as testing and launching as the introduction. The rationale for this is simplicity, the study was conducted with the subjects

of investigation and what the literature revealed about them in perspective. Thus, terms that are easy to interpret and understand had to be used.

While owners and employees of informal micro-enterprises indicated that they would like to see all basic innovation phases as features of the creative innovation framework, it is crucial to point out that the Spearman's rank rho test revealed that in the innovation transformation phase, informal micro-enterprises that have been in business for more than 5 years will not require as much guidance as informal micro-enterprises that have been in business for a shorter period. Moreover, the T-Test between two independent variables revealed that while employees require guidance to generate innovative ideas, the owners require it more. The T-Test further revealed that while employees require guidance to effectively evaluate innovative ideas, owners require it more.

The analysis also revealed that the evaluation and selection of innovative ideas and testing phases are innovation quality assurance phases, whereas the other phases can be referred to as the innovation management phases.

Over and above the innovation phases that are mentioned above, participants indicated that they would like to be guided on how to access knowledge and information required to engage in innovation activities. They indicated that they would like to be guided on how to access additional funding and equipment for innovation purposes. And lastly, participants indicated that they would like the creative innovation framework to guide them on how to effectively market their innovations. With these requirements in perspective, we designed a tailored creative innovation framework and it is presented in the following section.

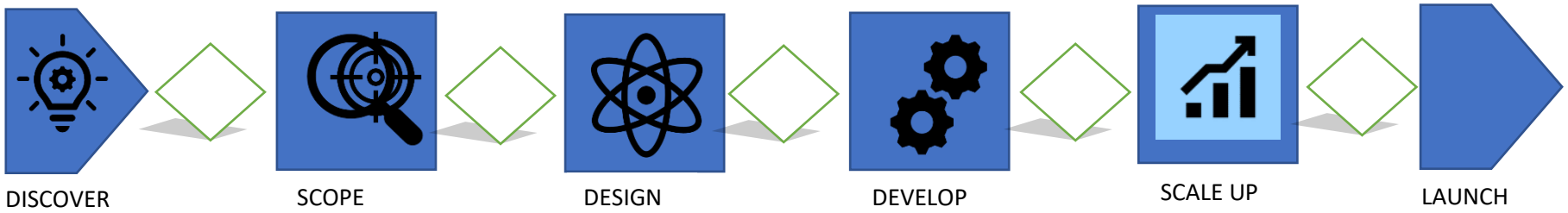
4.5 Creative innovation framework

In light of the integrated findings of the study, we designed a creative innovation framework for informal micro-enterprises in the townships of Gauteng Province. The look and the feel of the designed creative innovation framework resemble the innovation value chain of informal micro-enterprises. The study revealed that the processes that take place in the innovation value chain of informal micro-enterprises vary from those of large enterprises and formal small businesses. Thus, the framework is tailor-made for informal micro-enterprises context. Nonetheless, large enterprises and formal small businesses that wish to engage in innovation activities without formal R&D investment, financial and non-financial support from the government, as well as innovation collaboration networks with other large enterprises may also adopt the framework to engage in innovation activities.

The existing literature revealed that formal R&D is costly and firms do not always get a return on investment. Thus, since firms do not always get a return on R&D investment, the designed creative innovation framework offers a valuable alternative.

The design of the creative innovation framework was also guided by Robert Cooper's Stage-Gate model. A typical Stage-Gate process is made up of the following stages:

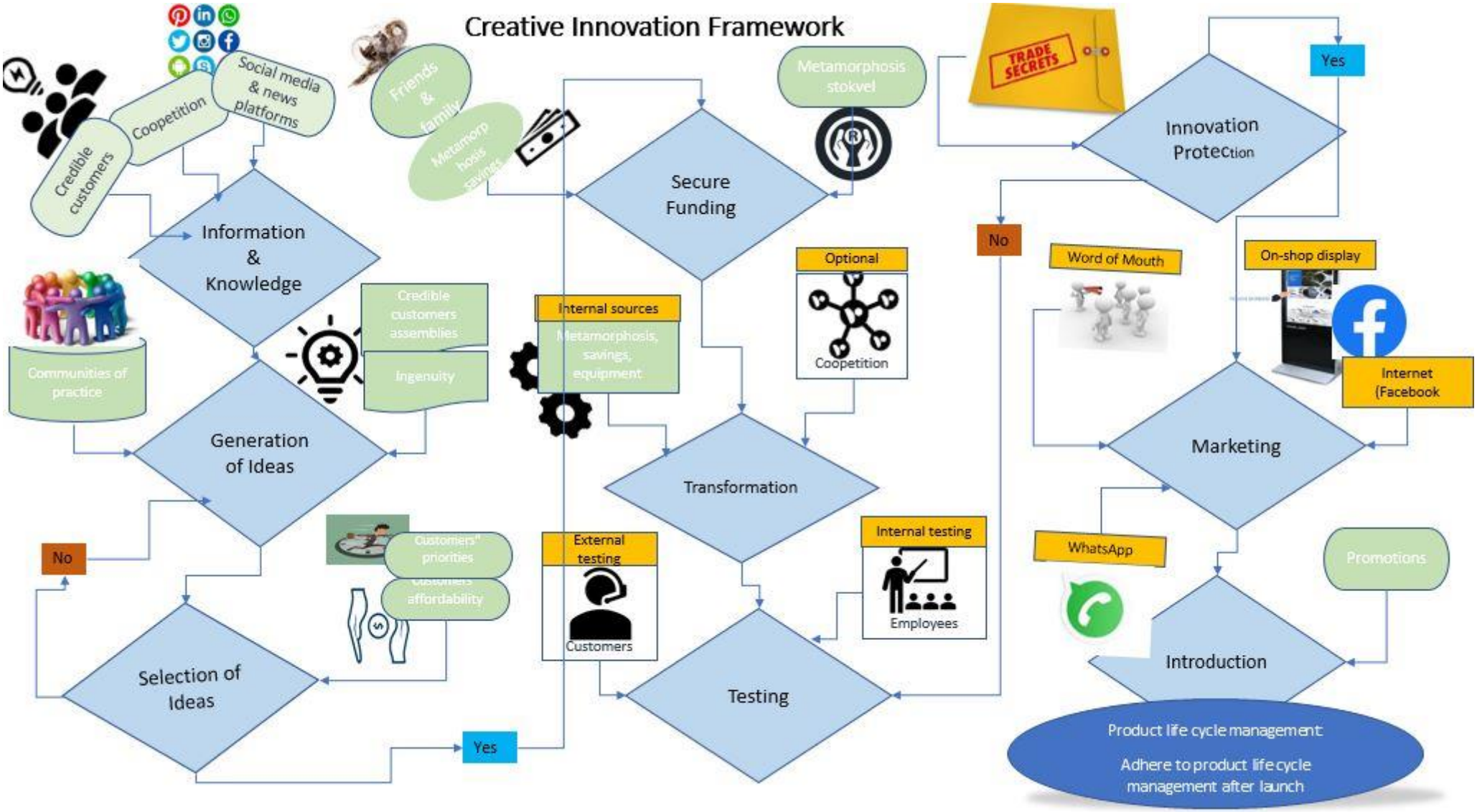
Figure 4.10: Stage gate model



Source: Stage-Gate International (2018)

Accordingly, after taking into consideration the integrated findings of this study, and insights from Robert Cooper's stage-gate model, the tailored creative innovation framework was designed and it is depicted below as follows. We described the provisions of the framework in Section 5.5.

Figure 4.11: Creative innovation framework



4.6 Validation of the creative innovation framework

We used expert validation to validate the tailored creative innovation framework. Accordingly, three(3) innovation experts were identified based on their practical knowledge (experience) of the innovation process. Furthermore, to some extent, the identified experts displayed knowledge of small businesses' innovation activities. A set of questions on the tailored creative innovation framework was formulated. The questions aimed to assess the feasibility of using the identified innovation activity mechanisms to execute innovation activities in each identified innovation phase. The questions were then shared with the identified innovation experts together with the framework and a brief explanation of how the framework is supposed to work. Following this, the experts were asked to test the framework based on their experience and answer the questions accordingly. We used thematic and constant comparison method to analyse the responses. Themes were extracted and interpreted.

Accordingly, according to the innovation experts, credible customers, coopetition, social media and various news platforms are viable sources of information and knowledge that informal micro-enterprises can use to trigger innovation activity. Nonetheless, one of the experts pointed out that caution has to be exercised when processing data from the aforementioned platforms as the reliability of the data sources and integrity thereof varies considerably.

In the innovative ideas generation phase, innovation experts endorsed communities of practice, ingenuity and credible customers' assemblies as viable mechanisms through which informal micro-enterprises can generate innovative ideas. Moreover, one of the innovation experts explained that firms such as Consumer Council and Corporate Innovation Labs are good examples of how effective utilisation of some of the aforementioned mechanisms can lead to the generation and execution of innovative ideas.

The innovation experts indicated that customers' priorities and buying power must be considered when evaluating and selecting innovative ideas. One of the experts indicated that product specifications must be aligned to customer needs and priorities. Thus, the consideration of buying power should not compromise this alignment. Another expert explained that the most crucial consideration when buying and selling a product is recognising a gap in the market and a market in the gap.

The innovation experts endorsed metamorphosis stokvel (crowdfunding), metamorphosis savings and capital from friends and family as viable sources of funding that informal

micro-enterprises can use to transform innovative ideas into innovations. Moreover, one of the experts explained that stokvels are already being used as lending platforms for personal and business use. In light of the risks and costs associated with research and development and intellectual property protection, stokvels may be better positioned for funding products or services that are ready for the market.

In the innovation transformation phase (development), the experts indicated that internal resources such as metamorphosis savings and equipment and external cooperation in the form of coopetition are viable mechanisms that informal micro-enterprises can use for scoping, designing and transformation of innovative ideas into prototypes and final products or services. Moreover, one of the experts explained that due to risks associated with innovation activities, coopetition and participation of various stakeholders is key.

The innovation experts indicated that testing of prototypes internally by employees and externally by customers could be viable mechanisms through which informal micro-enterprises can determine if prototypes are fit for purpose. One of the experts explained that this is a crucial step, particularly the combination of internal and external parties to test and survey the proof of concept. This iteration process is key before taking out the product to the market. Another expert explained that the testing activity through the identified mechanisms can work with caution, as testing requires a considerable size of credible analysis. Testing for customer acceptability is different from micro bio and chemical analyses. Thus, employees are best placed to carry out micro bio and chemical analyses.

In the innovation protection phase, the experts endorsed trade secrets as a viable mechanism through which informal micro-enterprises can protect their innovations. Moreover, one of the experts explained that a trade secret has the advantage of time as compared to a patent.

The innovation experts endorsed word of mouth, on the shop display and social media as viable mechanisms through which informal micro-enterprises can market their innovations. One of the experts explained that in the absence of statistics, word of mouth and social media seem to be the dominant marketing options for the informal sector. However, another expert explained that social media marketing (to those who have access) and word of mouth and on the shop display (to those who do not have access to or limited internet) are necessary to inform the market about the product of the business. A closely related success story is what has been called the Meghan Effect of Her Royal Highness,

The Duchess of Sussex, Meghan Markle, and how the brands that she has worn and supported and been tagged on social media have translated to record-breaking sales and increase in new customers. The brands referred to here are Pichulik, UK British Vogue, Strathberry, and Outland Denim, to mention a few.

In the introduction phase, experts indicated that promotions are necessary to encourage the diffusion of innovations. However, this must be done with due consideration based on lessons learnt from large businesses in the formal sector. And lastly, the innovation experts explained that adhering to product life cycle management principles -post-launch is necessary for the sustainability of the innovation.

4.7 Summary

In this chapter, we presented the analysis of the quantitative and the qualitative phases, presented the integrated findings and coherent discussion. Based on the consolidated findings and guidance received from the Stage-Gate Model, we designed a creative innovation framework for informal micro-enterprises. Moreover, we also presented the results of the expert validation exercise.

The study's consolidated findings suggest that the informal sector is neither temporary nor transitional but permanent and that informal micro-enterprises innovate in ways that are different from large enterprises and formal small businesses. Subsequently, there is a need for tailor-made solutions in the informal sector. In the following final chapter, we revisit the study's objectives to determine if they were addressed, we present the study's contributions, recommendations for future research and conclusion.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

In the previous chapter, we presented the analysis of the quantitative and qualitative phases, the findings, integrated the findings, and provided a consolidated discussion. In this final chapter, we revisit the research objectives to determine if we were able to meet them, we revisit the research design to determine if it was appropriate for the study, and briefly describe the designed creative innovation framework. We explain the study's contributions, limitations of the study, provide recommendations for future research, and conclude the study.

5.2 Primary objectives revisited

In the following sub-sections, we present the research objectives that guided the study and provide an indication of whether the study was able to achieve these objectives:

5.2.1 Objective one: To understand the contemporary innovation orientation of informal micro-enterprises in the townships of Gauteng Province.

Innovation orientation of a firm is defined by the presence or absence of innovation fostering and limiting factors in that firm's micro, macro, and market environment. Previous innovation studies conducted in South Africa and other countries identified innovation fostering and limiting factors in large enterprises and formal small businesses. Notably, studies conducted in the informal sector mostly focused on the identification of challenges that constrain innovation activity among informal micro-enterprises. Based on the challenges identified, these studies concluded that the informal sector is not favourable to innovation activities. It was only a study by Agwa-Ejon and Mbohwa (2015) that managed to identify at least two innovation fostering factors among informal micro-enterprises, thereby raising some hope about the potential of firms in the informal sector to engage in innovation activities. Unfortunately, the study referred to here was only conducted in the Baragwana area in Soweto focusing on firms clustered in one location, thereby making it difficult to generalise its findings. Furthermore, while the study also pointed out innovation limiting factors among informal micro-enterprises, it did not propose alternative means through which the identified innovation limiting factors could be addressed.

In light of the above, we sought to understand the contemporary innovation orientation of informal micro-enterprises in detail by studying informal micro-enterprises from several

townships in the Gauteng Province. Although little is known about informal micro-enterprises' innovation fostering factors, as previous studies paid little attention to the identification of these factors, the aim was to identify both innovation fostering and limiting factors that are currently in that space. Make a comparison of the two to determine the contemporary innovation orientation of informal micro-enterprises and where possible propose alternative means through which the identified innovation limiting factors can be addressed. We believed that this initiative will aid to turn threats into opportunities, thereby making the informal sector conducive to innovation activities.

Consolidated findings from both the quantitative and qualitative phases revealed that the following are innovation fostering factors among informal micro-enterprises: curiosity, knowledge acquired both formally and informally (it was interesting to discover that more than 30% of the respondents had qualifications from universities and colleges), owners and employees of informal micro-enterprises are visionaries. Vision motivates one to move forward and it is considered as an innovation trigger. Employees of informal micro-enterprises are encouraged to formulate new ideas and risks and mistakes are tolerated. Innovation activities are risky and susceptible to errors, thus, for a firm to be innovative, it must be willing to take risks and accept and learn from mistakes as they occur. Informal micro-enterprises embrace changes and they are diverse. Diversity stimulates creativity, and creativity is one of the initial stages of an innovation process.

Consolidated findings from both the quantitative and qualitative phases further revealed that the following are innovation limiting factors among informal micro-enterprises: Customers' affordability of innovations, lack of sufficient security, lack of financial resources, lack of equipment and technological resources. While lack of finance was not identified as a major innovation limiting factor, it is imperative to point out that it remains as one of the innovation limiting factors among informal micro-enterprises mostly because informal micro-enterprises have limited external sources of funding. For instance, due to their informality, they cannot be considered for government grants and other forms of financial support from the government.

Overall, the study revealed that contemporarily, there are about seven innovation fostering factors among informal micro-enterprises, whereas there are about five innovation limiting factors. There are more innovation fostering factors than limiting factors. Thus, we strongly believe that the informal sector is a favourable environment for innovation activities to take place. Our finding is contrary to the conclusions of the previous related studies.

Furthermore, as depicted in the designed creative innovation framework, we addressed the limitation of financial resources by proposing alternative means of funding innovations in the informal sector, such as metamorphosis stokvel, savings, a loan from friends and family. Metamorphosis stokvel as a source of innovation funding is a new term conceptualised in this study based on the findings of the study. We explained what it means in Section 4.3.7(d).

We also addressed the limitation of equipment and technological resources by proposing alternative means of innovation development, such as coopetition. Unfortunately, the other two identified innovation limiting factors (i.e., customers' affordability of innovations and lack of sufficient security) require studies of their own and we could not propose solutions to them within the scope of this study.

Overall, the study was able to address the first objective.

5.2.2 Objective two: To understand how informal micro-enterprises in the townships of Gauteng Province engage in radical and incremental innovation.

Previous innovation studies conducted in the informal sector mostly focused on the identification and measurement of innovations that took place in that space. Subsequently, they paid little attention to the establishment of an understanding of innovation activities that take place throughout the informal micro-enterprises' innovation value chain. Thus, this study had to establish an understanding of the process that is followed to produce radical and incremental innovations among informal micro-enterprises. This understanding was necessary for the development of a tailored creative innovation framework, and the described activities.

Consolidated findings from both the quantitative and qualitative phases revealed that the following are the stages and activities that informal micro-enterprises go through to produce radical and incremental innovations.

a) Information and knowledge:

For a firm to be able to initiate an innovation process, it has to be well conversant with its micro, macro, and market environment. For instance, for problem-based innovations, the firm has to be conversant with the existing problems in the aforementioned environments. Knowledge about whether or not there have been attempts to resolve such problems by competitors or other role players is also crucial.

As explained in Section 4.4.4, the integrated results from both the quantitative and the qualitative phases revealed that informal micro-enterprises acquire information and knowledge required to trigger innovation activities through credible customers' assemblies, coopetition, social media and news platforms. Credible customers' assemblies as a source of innovation-related information and knowledge is a new term conceptualised in this study based on the findings of the study. We explained what it means in Section 4.3.7.

b) Generation of innovative ideas:

The generation of innovative ideas is a crucial aspect of the innovation process. In well-established firms, novel innovative ideas are often generated through R&D. R&D investment has proven costly and firms do not always get a return on investment due to innovation failures, such as poor innovation diffusion and other causes.

Since little is known about how informal micro-enterprises generate innovative ideas, we had to determine how these firms generate innovative ideas. Consolidated findings from both the quantitative and the qualitative phases revealed that informal micro-enterprises use several mechanisms to generate innovative ideas. They rely on ingenuity, credible customers' assemblies, coopetition and communities of practice for the generation of innovative ideas. There is a huge reliance on ingenuity and credible customers' assemblies and as pointed out in Section 4.3.7(b), ingenuity happens both at night just after meditating before going to bed and during the day when certain events inspire creative thinking. Innovative ideas are also mostly generated through interactions with groups of credible customers, in this regard, the current practice is not structured. Nonetheless, to enhance the effectiveness of credible customers' assemblies as an innovative ideas generation mechanism, the interactions between informal micro-enterprises and groups of credible customers should be structured, planned, and executed accordingly.

c) Evaluation of innovative ideas:

The previous innovation stage has proven to be capable of leading to the formulation of several innovative ideas. Due to the need to only implement an innovative idea if it is feasible, when the chances of it being successful are high and also due to the scarcity of resources, it is imperative to subject formulated innovative ideas to an intense evaluation and selection process.

Consolidated findings from both the quantitative and the qualitative phases revealed that informal micro-enterprises evaluate and select innovative ideas based on customers'

priorities and customers' affordability of potential innovations. Informal micro-enterprises believe that if an innovative idea is more crucial to the customer and the customer can afford the subsequent innovation, then chances of it being successful are high. Innovative ideas that rank low in terms of customers' priorities and affordability are either discarded or parked for later innovation activity. This innovation evaluation and selection process is contrary to that of large enterprises and some other formal small businesses, as the existing literature revealed that they evaluate and select innovative ideas based on costs and benefits to the firm (Barbieri and Alvares, 2016).

In the informal micro-enterprises' context, the focus is on the customer which is a good approach. Nonetheless, selecting innovative ideas based on customers' affordability might have its disadvantages as it may limit radical innovations. Radical innovations have proven to be costly and expensive but they have substantial rewards.

d) Transformation:

The aforementioned innovation activity is followed by transformation, which in other studies is referred to as the innovation development phase. At this phase, comprehensive scoping and designing for the selected innovative idea(s) takes place and the innovative idea(s) is then transformed into a prototype.

Consolidated findings from both the quantitative and the qualitative phases revealed that internal resources and coopetition are commonly utilised mechanisms to transform innovative ideas into innovations. The most innovative informal micro-enterprises are at least more than three (3) years old. Thus, at this age, they can save profits and use savings to fund innovations. If certain equipment required for transformation is not available internally, they use savings to purchase it. However, if the savings are not sufficient to purchase the required equipment, they then collaborate with their competitors or other small businesses for transformation (coopetition). With regard to coopetition, metamorphosis stokvel also plays a key role to fund innovations. The findings suggest that coopetition can be an effective mechanism to transform novel innovative ideas into radical innovations in the informal sector.

While coopetition emerged as a theme, participants who embarked on it pointed out that it is difficult to find competitors who are willing to collaborate, as it is often every man for himself in the informal sector.

e) Testing:

Post the transformation phase, prototypes are tested to determine if they are fit for purpose. Consolidated findings from the quantitative and the qualitative phases revealed that prototypes are tested internally by employees and externally by credible customers.

Accordingly, a prototype is assigned to an employee or employees to use for a certain period, the common period identified ranged from two months to six months. As the employee uses the prototype, the employee must document the experience. The documented experience is then evaluated in the firm and prototypes that are not fit for purpose are referred back to the transformation phase. Whereas prototypes that are fit for purpose are later launched. Externally, a credible customer(s) is assigned a prototype and they should also document the experience. Unfortunately, there is no standard period assigned to customers for assessment. Thus, feedback relating to the performance of the prototype can be provided to the firm at any time. Accordingly, the credible customer(s) discuss the experience with the firm and the prototypes that are not fit for purpose are referred back to the transformation phase whereas prototypes that are fit for purpose are later launched.

f) Intellectual Property rights:

Another crucial aspect of an innovation process is the protection of innovations to leverage such innovations by obtaining exclusive rights to manufacture and sell them.

Unfortunately, the consolidated findings of the quantitative and the qualitative phases revealed that informal micro-enterprises often do not formally protect their innovations, as the majority indicated that they do not apply for patent rights, copyrights, and other formal forms of protection. However, they have trade secrets that are not necessarily formally documented.

The explanation for this could be that they often engage in incremental innovations, which may not have to be protected. Another explanation could be the lack of knowledge about formal innovation protection mechanisms. For instance, during our interactions with the participants, some did not know what patent rights are, we had to explain to them what patent rights are before they could provide us with an indication of whether or not they have patent rights for their innovations. Moreover, the patent rights application process has proven to be complex and to some extent expensive.

g) Marketing:

Marketing is a major aspect of an innovation process, even among informal micro-enterprises. Consolidated findings from the quantitative and the qualitative phases revealed that informal micro-enterprises market their innovations through on the shop display (including shop posters), word of mouth, social media, and internet-based sites. On the shop display, word of mouth and social media are mostly used.

On the shop display is easy to execute but its ability to reach a wider market segment is questionable. Word of mouth is a classic marketing strategy for the informal sector and it has been said to work effectively, whereas the ease of access to social media has made wider marketing more affordable to most informal micro-enterprises.

For innovations to be successful, it is imperative to intensively market them before the launch, during the launch, and post the launch so that a wide pool of potential customers can be reached. The usage of one marketing strategy is not good enough. Thus, a combination of all the aforementioned marketing strategies can enable informal micro-enterprises to reach a wider pool of potential customers.

h) Launch:

Innovations that are fit for purpose are launched or introduced in the market. At this stage, consolidated findings from the quantitative and the qualitative phases revealed that informal micro-enterprises place innovations on promotion and also offer customers free samples to make innovations more appealing to customers. The intense marketing of the innovations also continues at this stage.

In light of the aforementioned innovation processes and activities, the study was able to establish an understanding of how informal micro-enterprises engage in radical and incremental innovation throughout all relevant innovation phases.

5.2.3 Objective three: To determine the extent to which informal micro-enterprises in the townships of Gauteng Province use the existing innovation models/frameworks as a guide to engage in radical and incremental innovation.

a) Existing innovation models/frameworks

The review of the existing literature revealed that the existing innovation models were mostly designed by innovation authors in developed economies for well-established firms (Section 2.26.2 has details in this regard). These authors emphasised that for firms to engage in innovation activities, there has to be an investment in R&D, human and

structural capital. The human capital referred to here must have been acquired through what has been referred to as STEM disciplines.

The aforementioned views depict innovation as a complex phenomenon that is only suitable for well-established firms with highly qualified and skilled personnel. The existing literature further revealed that owners and employees of informal micro-enterprises are less skilled and lack formal education. This led to the curiosity of whether or not they utilise the existing innovation models as a guide to engage in radical and incremental innovation. Whether they found such innovation models useful and if not, what can be changed to make them more useful. We believed that insights about what could be changed on the existing innovation models would assist us to design a creative innovation framework that is not only tailored for informal micro-enterprises context but also user-friendly. We did not wish to design a framework that will just be like a book that no one reads because the intended readers do not find it useful.

Unfortunately, the consolidated findings of the quantitative and qualitative phases revealed that the majority of informal micro-enterprises do not make use of the existing innovation models as a guide to engage in radical and incremental innovation. The few informal micro-enterprises that made use of the existing innovation models indicated that these models should be drastically modified to suit informal micro-enterprises' context. Moreover, the other few owners and employees of informal micro-enterprises who had at least seen one or two existing innovation models indicated that they found them complex.

The aforementioned findings suggest that informal micro-enterprises hardly make use of the existing innovation models as a guide to engage in radical and incremental innovation and in their view, the existing innovation models are not suitable for informal micro-enterprises' context. The issue of complexity, on the other hand, suggests that informal micro-enterprises desire innovation models that are easy to understand, something that is easy to understand can be deemed as user-friendly.

The study was able to address the third objective.

5.2.4 Objective four: To determine how a creative innovation framework that will guide informal micro-enterprises in the townships to engage in radical and incremental innovation with little or no investment in research and development; no financial and non-financial support from the government; and no collaboration networks with large enterprises and universities should look like.

5.3 Creative innovation framework features

Since the study sought to design a tailored creative innovation framework that reflects informal micro-enterprises' innovation activities, it was imperative to solicit the views of owners and employees of informal micro-enterprises on what should be the characteristics of this framework.

Consolidated findings from the quantitative and the qualitative phases revealed that owners and employees of informal micro-enterprises would like to see all basic innovation stages as features of the creative innovation framework. Owners and employees of informal micro-enterprises further indicated that they would also like to see knowledge, information, funding sources and marketing strategies as features of the creative innovation framework.

In light of the above, it can be concluded that the study was able to address the fourth objective.

5.4 Research design

The study adopted the sequential explanatory mixed-methods research and pragmatism research philosophy. Accordingly, the quantitative phase was followed by the qualitative phase. Moreover, following the principles of pragmatism research philosophy, we adopted several research instruments to study the research problem at length to establish an in-depth understanding and formulate well-informed solutions.

The rationale for adopting mixed-methods research was sampling, illustration, and completeness. Accordingly, post the analysis of the quantitative data, we were able to sample the most appropriate participants for the qualitative phase (i.e., participants who met the interview criteria). Following the analysis of the quantitative data, some results required further explanation and the qualitative phase assisted us to address this. For instance, during the quantitative phase, the majority of the respondents indicated that they used their funds to start their businesses. Since nobody can just wake up with own funds, it became necessary to determine how the own funding was obtained and this was clarified during the interview. Some aspects of the study just could not be tested during the quantitative phase due to the limited availability of literature. For instance, it was difficult to determine how informal micro-enterprises evaluate and select innovative ideas on a Likert scale type of questions, as the literature had only two known factors that firms consider when evaluating and selecting innovative ideas. Statisticians often argue that to effectively test a phenomenon on a Likert scale type of questions, you need a minimum of five

factors. Thus, to ensure completeness of data, a determination of how informal micro-enterprises evaluate and select innovative ideas had to be made during the qualitative phase. If the study adopted one methodology, it would have been impossible to comprehensively address the research problem.

5.4.1 Quantitative phase

During the quantitative phase, data were collected through a questionnaire that was developed specifically for this study. Before developing the questionnaire, we considered the main research questions and the existing literature. Based on this, the questionnaire was developed. The questionnaire was divided into five sections. The first section solicited responses relating to business background, second section, innovation orientation, third section, innovation activities, fourth section, existing innovation models/frameworks, and lastly, the fifth section solicited responses relating to creative innovation framework features. Cronbach's alpha (α) reliability coefficient was performed to test the reliability of the questionnaire.

In South Africa, unfortunately, there is no database of informal micro-enterprises that engaged in innovation activity between January 2016 and December 2018. There is not even a database of informal micro-enterprises in the townships, presumably because they opt to remain informal and to some extent invisible. Thus, there was no sampling frame. Accordingly, convenience sampling was utilised to sample respondents for the quantitative phase. We physically visited four townships across the Gauteng Province, randomly approached 400 micro-enterprises, and asked them to partake in the study.

Some respondents preferred to be left with the questionnaire, whereas others requested us to be present when they were answering the questionnaire. As the questionnaires were distributed, basic details of the micro-enterprises approached were recorded in a diary, details such as the name of the business, business address or location, and contact details. Some respondents were comfortable providing their contact details, whereas others were not. Overall, the crucial details required to identify the business were the business name and address. These details were required in case the business is later sampled for the qualitative phase.

About 207 respondents provided completed questionnaires. The data thereof were checked for completeness, coded, and captured on the SPSS v25. The captured data were analysed through descriptive statistics, correlation analysis and factor analysis. The results were interpreted and discussed accordingly.

5.4.2 Qualitative phase

The aforementioned phase was followed by the qualitative phase. In this phase, the pre-formulated interview questions were refined in light of the analysis of the quantitative data. Purposive sampling was applied to sample participants for the interviews. Participants who met the interview criteria (explained in Section 3.6) were sampled from the 207 respondents.

The recorded addresses were used to locate participants for interviews. Interviews were then conducted and recorded accordingly. In this phase, human mental activity was allowed to take its course and it made major contributions during face-to-face interviews by stimulating deep thinking from participants through follow up questions. Qualitative data were analysed through thematic and constant comparison methodology. Human mental activity further played a major role in the interpretation of the analysis. The following themes emerged from the analysis of the qualitative data:

Informal micro-enterprises that are at least four (4) years old are capable of innovating without R&D investment, financial and non-financial support from the government, as well as innovation collaboration networks with large enterprises and universities. Informal micro-enterprises were established using own funding and funds obtained from friends and family. Concerning innovation orientation, the study revealed that curiosity and knowledge acquired through both formal and informal learning drive innovation among informal micro-enterprises. Whereas, customers' affordability of innovations, lack of sufficient security, lack of funding, and equipment emerged as major innovation limiting factors among informal micro-enterprises.

In relation to innovation activities, the study revealed that informal micro-enterprises use credible customers' assemblies, coopetition, social media, and news platforms to gather information and knowledge required to engage in innovation activities. They rely on ingenuity, credible customers' assemblies, coopetition, and communities of practice for the generation of innovative ideas. Customers' priorities and customers' affordability of innovation are the two factors that are considered when evaluating and selecting innovation ideas.

The study also revealed that internal resources and coopetition are mechanisms used to transform selected innovative idea(s) into innovations. Prototypes are tested internally by employees and externally by customers. Innovations that are fit for purpose are protected through trade secrets. Informal micro-enterprises then use on the shop display, word of mouth, and social media to market their innovations. The study further revealed that the

majority of informal micro-enterprises do not use existing innovation models/frameworks as a guide to engage in radical and incremental innovation. The few who have used the existing innovation models/frameworks or have at least seen one or two existing models indicated that they did not find them useful and they think they are irrelevant to their context.

Lastly, concerning the features of the designed tailored creative innovation framework, participants indicated that the tailored creative innovation framework should include all basic innovation phases, and other features such as, guidance on how to acquire information and knowledge required for innovation, what funding options are available, how to access missing equipment and how to market innovations.

Following the principles of mixed methods research, we integrated the findings of the quantitative and qualitative phases to provide consolidated conclusions. The integration and discussion were presented in Chapter 4.

5.5 Creative innovation framework

Based on the consolidated findings of this study and guidance received from the Stage-Gate model, a tailored creative innovation framework was designed. The tailored creative innovation framework is constituted by 10 descriptive innovation phases. The first being information and knowledge, the second being the generation of ideas, the third being the evaluation and selection of ideas, and the fourth being the securing of funding. The fifth being transformation, the sixth being testing, the seventh being innovation protection, the eighth being marketing, the ninth being the introduction, and the tenth is the product life cycle management.

The creative innovation framework provides tailored guidance on how informal micro-enterprises can engage in radical and incremental innovation without formal R&D investment, financial and non-financial support from the government, as well as innovation collaboration networks with large enterprises and universities.

The first phase describes suitable mechanisms through which informal micro-enterprises can acquire knowledge and information required to engage in innovation activities. The second phase provides suitable and feasible innovative ideas generation mechanisms. The third phase indicates factors that informal micro-enterprises should consider when evaluating and selecting innovative ideas. The study revealed that this phase is one of the innovation quality assurance phases. The fourth phase indicates suitable sources of

funding that informal micro-enterprises can use to secure funds required to transform innovative ideas into innovations.

The fifth phase provides guidance on how informal micro-enterprises can transform selected innovative ideas into innovations. In this phase, we describe both internal and external innovation transformation mechanisms that have been revealed to be feasible in the informal micro-enterprises' context. The sixth phase provides guidance on how informal micro-enterprises can test prototypes. This phase is one of the innovation quality assurance phases. The seventh phase indicates mechanisms through which informal micro-enterprises can protect their innovations to leverage them. The eighth phase indicates affordable and effective marketing strategies that informal micro-enterprises can use to market their innovations to reach wider market segments.

The ninth phase highlights what informal micro-enterprises can do when launching innovations to make them more appealing to potential customers. Lastly, the tenth phase emphasises that informal micro-enterprises should adhere to product life cycle management principles to ensure innovation success.

5.6 Research contribution

5.6.1 Theoretical and methodological contributions

The informal sector is a salient feature of most developing countries and it has been identified as an under-researched area. Before this study, the informal sector was considered unfavourable to innovation activities. This was due to informal micro-enterprises' perceived failure to invest in R&D, lack of human and structural capital, lack of support from the government, and lack of collaboration networks with large enterprises and universities. Having acknowledged the role that innovation plays in transforming firms from survivalists to sustainable well-established businesses that grow the economy and create sustainable jobs, it was crucial to develop alternative means through which informal micro-enterprises can engage in innovation activities.

Furthermore, while the existing literature deemed the informal sector unfavourable to innovation activities, the existing literature also acknowledged that there is evidence of innovations that took place in the informal sector. Moreover, these innovations have been more incremental than radical. Nonetheless, the existing literature focused more on identifying and measuring these innovations than establishing an understanding of how these innovations were created throughout the innovation value chain.

Having recognised the aforementioned gaps in the literature, this study established an in-depth comprehensive understanding of the innovation activities that take place throughout the informal micro-enterprises' innovation value chain. Moreover, based on the integrated findings of this study, we designed a creative innovation framework that can serve as a guide for informal micro-enterprises to engage in radical and incremental innovation with little or no investment in R&D, no financial and non-financial support from the government, as well as collaboration networks with large enterprises and universities. The designed creative innovation framework is not only tailored but it is also illustrative and contains graphics to enable users to interpret it at ease. The aforementioned are the main theoretical contributions of the study.

Concerning the methodological contribution, previous South African empirical studies relating to innovation activities of small businesses mostly adopted the qualitative research methodology (Dodourova and Bevis, 2014; Rose, Jones and Furneaux, 2016; Maphalla, Nieuwenhuizen and Roberts, 2012). Thus, the methodological contribution is the usage of the mixed-methods research in this study. The usage of the mixed-methods research is still an emerging practice. Thus, the manner in which it was applied in this study can provide future novice researchers who wish to adopt mixed-methods research with practical guidance on circumstances under which it can be applied and how it can be applied.

5.6.2 Empirical contributions

Previous empirical innovation value chain studies mostly focused on large enterprises and formal small businesses that operate in certain sectors of the economy such as Information Technology. This study extended the concept of innovation value chain to the informal sector to establish an understanding of how informal micro-enterprises engage in radical and incremental innovation throughout all basic innovation stages (referred to here as the value chain).

During the quantitative phase of the study, we also created an incomplete database of informal micro-enterprises in four townships of the Gauteng Province (i.e., Soweto, Katlehong, Vosloorus, and Soshanguve). This database is attached as Appendix E for potential use by other researchers.

5.6.3 Contributions to practice and policy

The tailored creative innovation framework was designed with the need for practical application in perspective. Thus, informal micro-enterprises can use the designed creative

innovation framework as a guide to engage in radical and incremental innovation. The framework provides an illustrative systematic guide on how to engage in innovation activities. To enable users to interpret the features of the framework at ease, we complemented most activities with graphics or pictures. As more informal micro-enterprises engage in innovation activities, more informal micro-enterprises will become sustainable and some of the sustainable businesses will choose to register to become formal. The registered micro-enterprises will increase the government's tax base.

Moreover, in terms of the South African National Development Plan (Vision 2030), South African small businesses are expected to create 90% of all new jobs by 2030. The tailored creative innovation framework was designed with the need for radical innovations in perspective. Thus, if widely adopted and effectively applied by informal micro-enterprises, they can produce radical innovations that lead to the establishment of new industries that create humongous jobs.

5.7 Limitations of the research

The study was limited by the limited availability of literature on innovation activities of informal micro-enterprises in South Africa and abroad. The study was also limited by the limited availability of literature on innovation activities of other forms of small businesses and large enterprises. Subsequently, other aspects of this study such as the gathering of information and knowledge required for innovation, evaluation and selection of innovative ideas, and testing of prototypes could not be tested quantitatively.

Moreover, the lack of databases or secondary and statistical data relating to innovation activities of informal micro-enterprises in South Africa also limited this study. If these data were available, this study would have had a sampling frame for the quantitative phase and the study could have captured the views of informal micro-enterprises who would not have been reached through site visits alone. The whole data collection process would have been easier and less tedious.

Lastly, the study's sample is constituted by informal micro-enterprises from four townships in the Gauteng Province. While the findings can be generalised to the entire province, the sample limited the probabilities of generalising the findings to the entire country, as the study could not capture the views of informal micro-enterprises in other provinces of the Republic of South Africa. The study's delimitations (Section 1.7) justify this.

5.8 Recommendations for future research

Due to many reasons, including but not limited to the study's limitations, delimitations, identification of phenomena that are not within the scope of a certain study, and a need for further research of certain phenomena, studies would have recommendations for future research. This study is no exception, the following are recommendations for future research:

1) The study revealed that customers' affordability of innovations is a major innovation-limiting factor among informal micro-enterprises. Thus, future studies should establish an understanding of how informal micro-enterprises can innovate in such a manner that their innovations (in particular, radical innovations) will be affordable to the customers that they serve while at the same time remaining competitive.

2) The study also revealed that there is a lack of adequate security in the informal sector and this has often limited informal micro-enterprises probabilities to introduce innovations. Subsequently, there is a need to determine appropriate security measures that can be introduced in the informal sector to enhance the safety of informal micro-enterprises.

3) Innovation is a risky endeavour and it is problematic for all forms of firms. Even well-established formal businesses with innovation directorates that are headed by innovation experts still find innovation risky and challenging. Thus, future studies should determine how informal micro-enterprises manage innovation-related risks to avoid innovation failures.

4) It was revealed that on the national innovation system (demand and supply), there is a poor transfer of innovation related-knowledge from universities to corporate. Thus, there has to be a determination of whether there is a relationship between poor innovation collaboration networks between universities and SMMEs and the little existence of radical innovations among SMMEs.

5) Due to the limited availability of literature on innovation activities of informal micro-enterprises and formal small businesses, we could not quantitatively determine how informal micro-enterprises gather information and knowledge required for innovation, how innovative ideas are evaluated and selected, and how prototypes are tested. Thus, future studies should test these phenomena quantitatively.

6) South Africa and other developing countries need to innovate more. This is because South Africa and other developing countries have high rates of unemployment, their economies are not growing at a rate higher than or at least equal to the population growth

rate, there is high inequality, there is a shortage of food and a substantial number of people live below the poverty line. Thus, future studies should determine how each form of innovation can be implemented in such a manner that it could enhance economic growth and job creation and not lead to job cuts and economic regression.

7) Future studies should determine measures that could be introduced to make the government's innovation-oriented financial and non-financial support initiatives accessible to the informal sector without formalising firms in the informal sector.

8) Family and friends was identified as a source of funding. Nonetheless, family and friends could also act as a huge impediment to the success and growth of a business. As such, the mechanism under which funds from family and friends should be used to fund innovation needs to be further explored.

9) Coopetition can support informal micro-enterprises to engage more in open innovation. Thus, there is a need to determine how informal micro-enterprises can foster coopetition relationships.

10) Although this study was able to establish an understanding of how the factors identified in the creative innovation framework work, there is a need to further explore how the identified factors can be fostered. Thus, future studies should determine how the factors identified in the creative innovation framework can be fostered. For instance, what are the methods and techniques through which informal micro-enterprises foster ingenuity and curiosity needs?

11) Lastly, although the study had a large sample, it was only conducted in the Gauteng Province and this limits the generalisability of the findings to the entire country. Thus, the study can be replicated in other provinces of the Republic of South Africa and most probably even other developing countries to determine similarities and differences on the innovation activities of informal micro-enterprises. This will not only build and expand knowledge but will also stimulate constructive academic debate.

5.9 Summary

This study established an understanding of innovation activities that take place throughout the informal micro-enterprises' innovation value chain and based on this understanding designed a tailored creative innovation framework. Innovation is classified as one of the emerging disciplines, thus unlike other disciplines such as education, the existing literature is not awash of theories that can explain or predict every aspect of innovation. Nonetheless, during the initial stages of this study one innovation theory and two schools

of thought were identified and guided the researchers. The theory referred to here is, Arrow's (1962) innovation management theory that hypothesised that small firms are more innovative than large firms as small firms are in a race to increase their market share. The consolidated findings of this study are in line with the identified theory, as among others, the study revealed that 82.6% of the respondents engaged in innovation activity between 01 January 2016 and 31 December 2018. This finding can be attributed to the presence of more innovation fostering factors than limiting factors among informal micro-enterprises.

The study also revealed that innovation activities of informal micro-enterprises differ from those of large enterprises and to some extent those of formal small businesses. Thus, the tailored creative innovation framework reflects innovation activities within the informal micro-enterprises' context. Nonetheless, the differences between informal micro-enterprises' innovation activities and the innovation activities of large enterprises and other small businesses do not necessarily suggest that formal small businesses and large enterprises may not find the designed creative innovation framework attractive.

The designed creative innovation framework can also be useful to formal small businesses and large enterprises that are seeking alternative ways of innovating. R&D investment is costly and firms do not always get a return on investment. Moreover, in the South African context, government financial and non-financial support initiatives are often inaccessible to many formal small and large businesses. There is also no smooth flow of knowledge from universities to corporate. In other words, on the national innovation system, there is currently no smooth flow of knowledge and information from the supply side to the demand side. Thus, in future, all forms of firms will look for more affordable mechanisms to engage in radical and incremental innovation.

The two schools of thought that also guided the study are the dualist and the legalist schools of thought. The consolidated findings of this study are contrary to the dualist school of thought but aligned with the legalist school of thought. As the surveyed informal micro-enterprises have existed for an average of four (4) years, with 47.80% of the firms being more than five (5) years old, 29% being three (3) to five (5) years old and 23.20% being one (1) to two (2) years old. This suggests that informal micro-enterprises choose to operate in the informal sector and the informal sector is neither temporary nor transitional but permanent. If the informal sector was temporary or transitional, the majority of the firms in the informal sector would be one (1) to two (2) years old.

Since the informal sector and its economic activities are neither temporary nor transitional but permanent, there is a need to develop initiatives to enable the informal sector to flourish. The government should reconsider its policies and revise them to ensure that firms in the informal sector are granted access to financial and non-financial support offered by the government. This could enhance the government's probabilities to tax the informal sector, as the offering of government's financial and non-financial support could make informal micro-enterprises to see a point in paying taxes. Furthermore, a flourishing informal sector could be a solution to Gauteng Province's and South African economic challenges.

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7: APPENDICES

Appendix A: Survey instrument

INTRODUCTION

We are carrying out a study that will design a creative innovation framework for informal micro-enterprises in the townships of Gauteng Province. Thank you for taking the time to fill in this questionnaire: it should only take 20 minutes of your time. Arrangements for the collection of the completed questionnaire will be discussed with you on the day of distribution.

SECTION ONE

Section 1A: Business Background

1. Gender? Tick one relevant box,

Male	
Female	

2. What is your highest level of education? Tick one relevant box,

No formal education	
Pre-school	
Primary education	
Secondary education	
Higher education	

3. What is your position in the business? Tick one relevant box,

Owner	
Employee	

4. What is (are) your market offering (s)? (e.g., goods: kota, alcohol; service: children day care, hair salon etc.)

5. How many employees are there in your business? (including the owner)

1-5 employees	
6-10 employees	
11-20 employees	
> 20 employees	

6. Is your business registered with the Companies and Intellectual Property Commission?

Yes	
No	

7. Are the employees in your business registered with labour organisations?

Yes	
No	

8a. How old is your business?

1-2 years	
3-5 years	
> 5 years	

8b. How old are you? Tick one relevant age group

15-24 years	
25-35 years	
35-45 years	
> 45 years	

9. How did you get the funding to start your business? Tick relevant box (s)

Own funds	
Loan	
Bank loan	
Friends and family	
Other (Specify)	

Section 1B: Government support

10a. Did you receive any form of financial support from Government between Jan 2016 and Dec 2018?

Yes	
No	

10b. If yes, in what form? Tick relevant box (s)

Grant	
Public venture capital	
Tax incentive	
Other (Specify)	

11a. Did you receive any form of non-financial support from Government between, 01 January 2016 and 31 December 2018?

Yes	
No	

11b. If yes, in what form? Tick relevant box (s)

State sponsored labs	
Training and development	
Other (Specify)	

Section 1C: Innovation

12a. Have you introduced the following between Jan 2016 and Dec 2018? Tick relevant box (s)

New product	
New service	
New process	
New marketing strategy	
New way of selling your product/service	

12b. If you introduced something new as indicated above, how would you classify it? Tick relevant box (s)

It was new to the world	
It was new to the country	
It was new to my business	

13. Have you introduced the following between Jan 2016 and Dec 2018? Tick relevant box (s)

Improved product	
Improved service	
Changes to your existing processes	

14. Please answer the following questions by ticking on the relevant box:

Item	Yes	No
Do you invest in research and development for innovation?		
Do you collaborate with large enterprises for innovation?		
Do you collaborate with Universities for innovation?		
Do you collaborate with your suppliers for innovation?		

SECTION TWO

Innovation orientation

To what extent would you agree or disagree with each of the following statements on a scale ranging from Strongly Agree = 5, Agree = 4, Neither agree nor disagree = 3, Disagree = 2, Strongly Disagree = 1. (*Please simply put a "circle" on a number representing your preferred answer. If you make a mistake, put an "X" across the circle and choose another answer.)*

2.1	**Innovation fostering factors**					
2.1.1	The owner of the business is visionary	1	2	3	4	5
2.1.2	Employees of the business are visionaries	1	2	3	4	5
2.1.3	The owner of the business encourages employees to formulate new ideas	1	2	3	4	5
2.1.4	Risks and mistakes are tolerated in the business	1	2	3	4	5
2.1.5	The business embraces changes	1	2	3	4	5
2.1.6	Funds, material and technological resources are adequately available	1	2	3	4	5
2.1.7	The business is made up of people of different age, gender, race, and qualifications	1	2	3	4	5
2.2.	**Factors that limit innovation within the business**					

2.2.1	Lack of knowledge, skills, competences and attitudes required for innovation	1	2	3	4	5
2.2.2	Lack of financial resources	1	2	3	4	5
2.2.3	Lack of technological resources	1	2	3	4	5
2.2.4	Fear of innovation	1	2	3	4	5
2.2.5	Comfortable with the current status quo	1	2	3	4	5

SECTION THREE

Innovation activity

To what extent would you agree or disagree with each of the following statements on a scale ranging from Strongly Agree = 5, Agree = 4, Neither agree nor disagree = 3, Disagree = 2, Strongly Disagree = 1. (*Please simply put a "circle" on a number representing your preferred answer. If you make a mistake, put an "X" across the circle and choose another answer.)*						
3.1	**Innovation ideas generation mechanisms**					
3.1.1	The business invests in research and development for innovation purposes	1	2	3	4	5
3.1.2	The business relies on ingenuity (creatively thinking) in order to formulate innovation ideas	1	2	3	4	5
3.1.3	Customers provide the business with innovation ideas	1	2	3	4	5
3.1.4	The business makes use of communities of practice to innovate	1	2	3	4	5
3.1.5	Other small businesses provide the business with innovation ideas	1	2	3	4	5
3.1.6	Large enterprises and universities provide the business with innovation ideas	1	2	3	4	5
3.2	**Innovation purpose**					
3.2.1	In order to survive	1	2	3	4	5
3.2.2	To increase market share	1	2	3	4	5
3.2.3	To enter new markets	1	2	3	4	5
3.2.4	To improve product range	1	2	3	4	5
3.2.5	To improve processes	1	2	3	4	5
3.2.6	In order to increase profits	1	2	3	4	5
3.3	**Transformation of ideas into innovations**					
3.3.1	Internal resources are used to transform ideas into innovations	1	2	3	4	5

3.3.2	Resources of other small businesses are used to transform ideas into innovations	1	2	3	4	5
3.3.3	Resources of large enterprises are used to transform ideas into innovations	1	2	3	4	5
3.3.4	Universities' resources are used to transform ideas into innovations	1	2	3	4	5
3.3.5	Government resources are used to transform ideas into innovations	1	2	3	4	5
3.4	**The following platforms are used to market innovations to customers**					
3.4.1	Formal advertisement on media platforms such as TV, Newspaper, Radio etc.	1	2	3	4	5
3.4.2	Word of mouth	1	2	3	4	5
3.4.3	Online (internet) advertisement	1	2	3	4	5
3.4.4	Usage of social media applications such as WhatsApp groups	1	2	3	4	5
3.4.5	Public speaking	1	2	3	4	5
3.5	**Intellectual Property Rights (mechanisms used to protect innovations)**					
3.5.1	Patent rights	1	2	3	4	5
3.5.2	Copyrights	1	2	3	4	5
3.5.3	Keep it a secret (Trade secrets)	1	2	3	4	5
3.5.4	Trade mark	1	2	3	4	5
3.5.5	Industrial design rights	1	2	3	4	5

SECTION FOUR

Innovation models/ frameworks

To what extent would you agree or disagree with each of the following statements on a scale ranging from Strongly Agree = 5, Agree = 4, Neither agree nor disagree = 3, Disagree = 2, Strongly Disagree = 1. (*Please simply put a "circle" on a number representing your preferred answer. If you make a mistake, put an "X" across the circle and choose another answer.)*

4.1	The business makes use of the existing innovation models / frameworks as a guide to innovate	1	2	3	4	5
4.2	Existing innovation models provide suitable guidance in innovation ideas generation process	1	2	3	4	5
4.3	Existing innovation models provide suitable guidance in ideas evaluation process	1	2	3	4	5
4.4	Existing innovation models provide suitable guidance in the development process	1	2	3	4	5
4.5	Existing innovation models provide suitable guidance in prototypes testing process	1	2	3	4	5
4.6	Existing innovation models provide suitable guidance in the innovation diffusion process	1	2	3	4	5
4.7	The existing innovation models are relevant to business context	1	2	3	4	5

SECTION FIVE

Creative innovation framework features

Rate the importance of the following attributes as possible features of a creative innovation framework on a scale ranging from Very important = 5, Important = 4, Moderately Important = 3, Of little Importance = 2, Unimportant = 1. (Please simply put a "circle" on a number representing your preferred answer. If you make a mistake, put an "X" across the circle and choose another answer.)

5.	**Creative innovation framework features**					
5.1	Provide guidance on appropriate sources of funding	1	2	3	4	5
5.2	Provide guidance on appropriate sources of knowledge / information	1	2	3	4	5
5.3	Provide guidance on how to generate innovation ideas	1	2	3	4	5
5.4	Provide guidance on how to evaluate innovation ideas	1	2	3	4	5
5.5	Provide guidance on how to transform ideas into products/ services that are sold in the market; Processes & marketing strategies that are implemented.	1	2	3	4	5

5.6	Provide guidance on how to test prototypes	1	2	3	4	5
5.7	Provide guidance on how to market innovations	1	2	3	4	5
5.8	Provide guidance on how to introduce innovations into the market	1	2	3	4	5

Other, please list other desired features or characteristics

Thank you for your co-operation in completing this questionnaire.

Appendix B: Letter of introduction and informed consent

Letter of Introduction and Informed Consent

NWU Business School

Creative innovation framework for informal micro-enterprises in the townships of Gauteng Province

Research conducted by:
Mr. L. Mulibana (31475175)
Cell: 0763016781

Date:

Dear Participant,

You are invited to participate in an academic research conducted by Lavhelesani Mulibana, Doctoral student from the School/Department (Economic and management Sciences) at the North- West University-(Mahikeng) Campus.

The purpose of the study is to design, a Creative innovation framework for informal micro-enterprises in the townships of Gauteng Province.

Please note the following:

- This is an anonymous study, as your name will not appear on the survey/interview schedule. The answers you give will be treated as strictly confidential as you cannot be identified in person based on the answers you give.
- Your participation in this study is very important to us. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences.
- Please answer the questions in the attached survey/interview schedule as completely and honestly as possible. This should not take more than 30 minutes of your time.
- The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our findings on request.
- Please contact my study leader, Prof. Ravinder Rena (ravinder.rena@nwu.ac.za) if you have any questions or comments regarding the study.

Please indicate that:

- You have read and understand the information provided above.
- You give your consent to participate in the study on a voluntary basis. (Please tick) **YES**

Date of consent:

Appendix C: Interview guide/questions

Research questions for the interview

Introduction

We are carrying out a study that will design a creative innovation framework for informal micro enterprises in the townships of Gauteng Province. Thank you for taking the time to participate in this interview session: it should only take 30 minutes of your time.

Firm background

1. Can you briefly tell me about your business, when did you start, how did you start it and what you sell?

2. How did you obtain funding to start your business?

Innovation orientation

3. In your own view, what are the factors that enable your business to engage in innovation activities?

4. In your own view, what are the factors that make it difficult for your business to engage in innovation activities?

Innovation activities

5. How do you obtain knowledge and information about existing problems in the market? (Narrate)

6. How do you generate innovation ideas? The following are possible follow up questions:

    - Creative thinking, how does it work (if applicable)
    - Communities of practice, how does it work (if applicable)
    - How are innovation ideas solicited from customers and other small businesses (if applicable)

7. Among the innovation ideas you would identify, how do you select the one (s) that you eventually implement?

8. How do you transform the selected innovation idea (s) into products or services? The following are possible follow up questions

- How are internal resources utilised? (if applicable)
- How are resources of other small businesses utilised? (if applicable)

9. How do you test prototypes to determine if they are fit for purpose?

10. How do you market new products or services to potential customers?

11. How do you introduce new products or services into the market? And in the case of new process or marketing strategy, how do you implement it?

Existing innovation models/frameworks

12. Do you use the existing innovation models as a guide to engage in innovation activities?

13. Are the existing innovation models suitable for informal micro-enterprises context? (if applicable)

14. Since the existing innovation models are not suitable for informal micro-enterprises' context, what can be changed to make them more relevant to informal micro-enterprises context? (if applicable)

Creative innovation framework features

15. What should be the characteristics of a creative innovation framework that can be used as a guide for informal micro-enterprises to engage in innovation activities?

Appendix D: Expert validation questions

The creative innovation framework is constituted by 10 innovation phases. One question was asked under each phase for expert validation. The questions are indicated below as follows:

Phase 1: Information and knowledge

In your view, could credible customers, coopetition, social media and various news platforms be viable sources of information and knowledge that informal micro-enterprises can use to trigger innovation activity?

Phase 2: Generation of innovation ideas

In your view, could communities of practice, ingenuity and credible customers' assemblies be viable mechanisms through which informal micro-enterprises can generate innovation ideas?

Phase 3: Evaluation and Selection of innovation ideas

In your view, could customers' priorities and customers' affordability (buying power) be viable considerations when informal micro-enterprises evaluate and select innovation ideas?

Phase 4: Funding

In your view, could metamorphosis stokvel (or just stokvel), metamorphosis savings and friends & family be viable sources of funding that informal micro-enterprises can use to transform innovation ideas into innovations?

Phase 5: Transformation/development

In your view, could internal resources (metamorphosis savings, equipment etc.) and coopetition be viable mechanisms that informal micro-enterprises can use for scoping, design and transformation of innovation ideas into prototypes?

Phase 6: Testing

In your view, could internal testing by employees and external testing by customers be viable mechanisms through which informal micro-enterprises can determine if prototypes are fit for purpose?

Phase 7: Innovation protection

In your view, could trade secrets be a viable mechanism through which informal micro-enterprises can protect their innovations?

Phase 8: Marketing

In your view, could word of mouth, on the shop display and social media be viable mechanisms through which informal micro-enterprises can market their innovations?

Phase 9: Introduction

In your view, could promotions be a viable contributory factor to the diffusion of informal micro-enterprises' innovations?

Phase 10: Product life cycle management

In your own view, is it necessary for informal micro-enterprises to adhere to product life cycle management principles post launch?

Appendix E: List of small businesses randomly approached

Soweto		
No.	**Business name and/or business address**	**Market offerings**
1	T.C Hair salon, Ntere and Mganklao Street, Winnie Ngwekazi Primary School area	Hair salon
2	Roby's place, Mokoka Street, Pimville Zone 5	Tavern, fast food and bed and breakfast
3	Y-not Park Shop, Vimbangwe Street, Pimville Zone 5	Tuck-shop, fast food, buy and braai
4	Vinny's Kitchen, Mathithibala Street, Pimville Zone 3	Soft drinks, fast food
5	Sarizi Street, Soweto	Fast food, soft drinks, buy and braai
6	Mario Wilson Fruit and Veg, Stadium road, Noordgesig, Orlando	Fruits and Vegetables
7	Horton and Sons, Stadium road, Noordgesig, Orlando	Tavern, Tuck-shop
8	Mike's Tavern, Noord eSig, Orlando	Tavern
9	Rony's general dealer, Noord eSig, Orlando	Tuck-shop, fast food, general dealer
10	Shoe repairs, Witsening Street, Noord eSig, Orlando	Shoe repairs
11	Sokkie's Driving School, Station road, Noord eSig, Orlando	Driving school services
12	Witsening Street, Noord eSig, Orlando	Tuck-shop, soft drinks
13	Happy Days Day Care Centre, Hermanus Street, Orlando East	Child day care services
14	Rainbow Kitchen, Mofutsanyane Street, Orlando East	Fast food, car wash
15	Aubrey Tuck-shop, Orlando East	Tuck-shop, tavern
16	Thembi's Day Care, Pitsonyane Street,	Child day care services

	Orlando West	
17	Pie's Kitchen, Nkabinde Street, Orlando West	Fast food, car wash
18	Kota, Nkabinde Street, Orlando West	Kota
19	CV Tronics, Nkabinde Street, Orlando West	TV repairs and sales
20	Fruit and Veg, Nkabinde Street, Orlando West	Fruits and vegetables
21	Msie Café Endawen, Nkabinde Street, Orlando West	Alcohol, Ice, fast food
22	LCM Pridehair, Ngiba Street, Orlando West	Hair salon
23	Golden Duck Day Care, Boikhoutso Zone 3, Meadowlands	Child day care services
24	La Familiar Hair Studio, Mabitsela Street, Zone 3, Orlando West	Hair salon
25	Moetapelo Driving School, Mabitsela Street, Zone 3, Orlando West	Driving School
26	Six Coach Confectionery, Mabitsela Street, Zone 3, Orlando West	Muffins, Cakes, Scones
27	Sister B Tuckshop, Orlando West	Tuck-shop
28	K&K Soweto Bakery and Coffee Shop, Khumalo Street, Hector Peterson memorial, Orlando West	Bakery
29	Vovivo's Place – Home of Champions, Khumalo Street, Hector Peterson memorial, Orlando West	Alcohol
30	Nandi tuck-shop, Orlando West	Tuck-shop
31	One Sell Community Shop, Khumalo Street, Hector Peterson memorial, Orlando West	Tuck-shop
32	Kota Shop, Vilakazi Street, Orlando West	Kota
33	African Art Shop, Khumalo Street, Hector Peterson memorial, Orlando West	Handcraft, Art

34	Art vendor, Khumalo Street, Hector Peterson memorial, Orlando West	Handcraft, Art
35	BM Palas Restaurant, Meoma Street, Orlando West	Fast food
36	777 Hair Salon, Phiri Street, Orlando West	Hair Salon
37	Fruit and Veg, Phiri Street, Orlando West	Fruits and Vegetables
38	Mathebula Tito Kota, Vilakazi Street, Orlando West	Kota
39	Snacks Shop, Vilakazi Street, Orlando West	Snacks, Sweets, Smoke
40	Phakiso Lefatle, Pioneer Street, Dube Village	Kota, fat cakes
41	W&L Trading, Pitsonyane Street, Orlando West	Burgers, Chips, Wors Rolls, Soft drinks
42	Themba Ndlovu, Mahalefela Road, Dube	Car Wash
43	Couches shop, Mahalefela Road, Dube	Couches
44	Mubangu Hair Salon, Mahalefela Road, Dube	Hair Salon
45	Bayipereki Trading, Mahalefela Road, Dube	Tyres sales and repairs, charge batteries, Bones sales
46	Thato Tuck-shop, Mahalefela Road, Dube	Tuck-shop
47	Street vendor, Khuvutlu Street, Mofolo Central	Kota, Fat cakes, Chips
48	Panyaza, Mamela Street, Mofolo Central	African beer
49	Alex hair salon, Mamela Street, Mofolo Central	Hair salon
50	Public Phones, Machaba drive, Mofolo Central	Public Phones
51	Darlings Cakes Delish, Machaba drive, Mofolo Central	Cakes
52	Lomondo Stores, Machaba drive, Mofolo Central	Eggs sales

53	Madam, Seriri Circle, Mofolo Central	Fat cakes, kota, chips
54	Diso Mohale Foods, Machaba drive, Mofolo drive	Kota, soft drinks, tobacco, sweets
55	Manakwa Driving School, Machaba drive, Mofolo drive	Driving School
56	Loraine Hair Salon, Zulu Drive, Mofolo Central	Hair Salon
57	Masakeng Bistro, Kinini Street, Mofolo Central	Restaurant, Alcohol
58	Dr Mamba Practice, Kinini Street, Mofolo Central	Surgery
59	Fashion Studio, Kinini Street, Mofolo Central	Fashion Studio
60	Thinathi Suppliers, Kinini Street, Mofolo Central	Packaging, Disposable cups
61	Mofolo Projects, Kinini Street, Mofolo Central	Glass sales
62	Mamorena's Corner, Ramarumo Street, Mofolo Central	Tuck-shop
63	Metsimaholo, Mdansi Street, Mofolo Central	Alcohol
64	Fez health Pharmacy, Machaba Street, Mofolo Street	Pharmacy
65	Real Sisters, Machaba Street, Mofolo Street	Perfumes, Decorations
66	MN Mabota, Machaba Street, Mofolo Street	Fruits and Vegetables
67	Tuck-shop - car sales, Machaba Street, Mofolo Street	Tuck-shop, car sales and repairs
68	Thetha Liquor Store, Machaba Street, Mofolo Central	Bottle Store, Butchery
69	Mphandas Inn Tavern, Tshabalala Street, Mofolo Village	Tavern
70	Jaygee Internet Café, Tshabalala Street,	Internet Café

	Mofolo Village	
71	Kenny Bottle Store, Tshabalala Street, Mofolo Village	Bottle Store
72	Bongani's Inn, Tshabalala Street, Mofolo Village	Tavern
73	MM Events, Machaba Drive, Mofolo Central	Events management
74	MMT Auto Paints, Machaba Drive, Mofolo Central	Paint production and sales
75	Esibindini Restaurant, Machaba Drive, Mofolo Central	Restaurant, fast food
76	Triple K Internet Café, Machaba Drive, Mofolo North	Internet Café
77	Mavuso Butchery, Machaba Drive, Mofolo North	Butchery
78	Hairitage Hair Salon, Machaba Drive, Mofolo North	Hair salon
79	Street Vendor, Machaba Drive, Mofolo North	Shoe repairs
80	Maluleke Tyre Fitness Centre, Ben Naude Drive, Diepkloof	Tyre sales and repairs
81	Antony, MJI Street, Orlando West Extension	Shoe repairs
82	Barber, MJI Street, Orlando West Extension	Barber
83	Ethekwini General Dealer, MJI Street, Orlando West Extension	General dealer
84	Elde Irma, Matamela Street, Old Dobson Ville	Barber
85	Africa Tuck-shop, Matamela Street, Old Dobson Ville	Tuck-shop
86	Charles Dry Cleaner, Malefo Street, Naledi	Dry Cleaner
87	Jill Delicious Food, Malefo Street, Naledi	Fast food

88	Casban Bule Liquor Express, Jub Jub Street, Ext 2, Protea Glen	Liquor store
89	Butcher, Jub Jub Street, Ext 2, Protea Glen	Butchery
90	Mawela Butchery, Masenoka Street, Ext 2, Protea Glen	Butchery
91	Save Land Express, Ext 2, Protea Glen	Tuck-shop
92	The High Chef Street Kitchen, Red Current Street, Ext 3, Protea Glen	Fast food
93	Refinement Spot Buy and Braai, Tshipo Street, Ext 14, Protea Glen	Kota
94	Ebenezev Hair Salon, Tshipo Street, Ext 12, Protea Glen	Hair salon
95	Ka-George Hardware, Tshipo Street, Ext 12, Protea Glen	Hardware
96	Little Angels Day Care and Pre-school, Tshipo Street, Ext 12, Protea Glen	Child Day Care Services
97	Four Ways Fruit and Veg, Tshipo Street, Ext 12, Protea Glen	Fruits and Vegetables
98	Hair Salon, Tshipo Street, Ext 12, Protea Glen	Hair Salon
99	Khorommbi Bottle Store, Tshipo Street, Ext 12, Protea Glen	Tavern, Kota, Soft drinks
100	Sphiwe, Tshipo Street, Ext 12, Protea Glen	Textile, Clothing and Footware
Katlehong		
101	Steel Face Welding and Fabrication, Yende Street, Thokoza Pola Park	Mobile Kitchens, Cupboards, Battler Gates and other creations
102	Alpheus Tyre, Yende Street, Thokoza Pola Park	Tyre sales and repairs
103	Ekuphumuleni Car wash, Yende Street, Thokoza Pola Park	Car wash
104	HWZ Corners, Yende Street, Thokoza	Energy drinks

	Pola Park	
105	Thindo Hair Salon, Yende Street, Thokoza Pola Park	Hair salon
106	Fast food corner, Yende Street, Thokoza Pola Park	Fast food, fruits and vegetables
107	TV Shop, Yende Street, Thokoza Pola Park	TV sales and repairs
108	Buy and Braai, Yende Street, Thokoza Pola Park	Buy and Braai, Soft Drinks
109	Micro-tech Computer Training Campus, Yende Street, Thokoza Pola Park	Computer literacy services, Internet Cafe
110	Mamaba Kitchen, Yende Drive, Thokoza	Fast food, buy and braai
111	Fruit and Veg, Lepelle Street, Thokoza	Fruits and vegetables
112	Galaxy Kota Café, Lepelle Street, Thokoza	Kota
113	Flamingo Active Car Wash, Yende Drive, Thokoza	Car Wash
114	Fast food, Yende Drive, Thokoza Pola Park	Fast food
115	TV Hospital, Yende Drive, Thokoza	TV repairs and second hand sales
116	Nicky Cutting and Design, Yende Drive, Thokoza	Textile and Clothing
117	Kota King, Yende Drive, Thokoza	Kota, fast food, alcohol
118	Cell Phones Repairs and Nails, Yende Drive, Thokoza	Cell phones repairs and Nails
119	Winnie Hair Salon, Yende Drive, Thokoza	Hair salon
120	Jesus Bless Me, Yende Drive, Thokoza	Welding and Carpentry
121	Langa Driving School, Khumalo Street, Thokoza	Driving School
122	Kota service, Khumalo Street, Thokoza	Kota, fast food
123	Sifiso Tavern, Khumalo Street, Thokoza	Tavern
124	Fixo Kitchen, Khumalo Street, Thokoza	Kota

125	Noneme, Khumalo Street, Thokoza	Fruits and vegetables
126	Salon Dan, Lepelle Street, Thokoza	Hair salon
127	Booyens Tavern, Khumalo Street, Thokoza	Tavern
128	Kasi Chicken, Khumalo Street, Thokoza	Fast food, kota
129	Snacks corner, Khumalo Street, Thokoza	Snacks, sweets and cigarettes
130	Batlokoa Growing in Excellence, Sekese Street, Thokoza	Child Day Care Services
131	Pharrell Day Care, Sentsenyane Street, Thokoza	Child Day Care Services
132	Rebecca's Inn, Sentsenyane Street, Thokoza	Tavern
133	Fast Food Delica, Sentsenyane Street, Thokoza	Fast food
134	Tshepiso Kota, Mapatane Street, Thokoza	Kota, fast food
135	Hair Salon, Sebutla Street, Thokoza	Hair salon
136	Roux Café, Packard Avenue, Eden Park, Katlehong	Tuck-shop
137	Lethabong Day Care, Kwanele South, Katlehong	Child day care services
138	Nhlanhla, Kwanele South, Katlehong	Biscuits, Scones
139	Street Vendor, Kwanele South, Katlehong	Snacks, Sweets
140	Panel Beating, Aluminum Windows and Doors, Kwanele South, Katlehong	Panel beating, aluminum windows and Doors
141	Mlungu Hair Salon, Kwanele South, Katlehong	Hair salon
142	Kwanele Park Joint, Kwanele South, Katlehong	Tavern
143	Nolso Kota, Kwanele South, Katlehong	Burgers, kota
144	Umkhombandlela Day Care, Kwanele South, Katlehong	Child day care services
145	Kasi Fast Food, Kwanele South,	Fast food

	Katlehong	
146	Mputlane's Inn, Kwanele South, Katlehong	Tavern
147	Hair Salon, Kwanele South, Katlehong	Hair salon
148	Hair Salon, Kwanele South, Katlehong	Hair salon
149	New Look Hair Salon, Khumalo Street, Thokoza	Hair salon
150	BP Batteries, Khumalo Street, Thokoza	Car battery sales
151	Beauty Lodge, Khumalo Street, Thokoza	Fast food, car wash
152	Busy Dladla, Jabavu Street, Thokoza Ext 2	Fast food
153	Pretty Angels Day Care, Kakudi Street, Thokoza Ext 2	Child Day Care Services
154	Tom Quick Tyre Fix, Khumalo Street, Thokoza	Tyre sales and repairs
155	Frans Mechanic, Khumalo Street, Thokoza	Car Mechanic
156	Sky Green Cell Phones Repairs, Thokoza Unit F	Cell phone repairs
157	PS Cell Phone Repairs, Thokoza Unit F	Cell phone repairs
158	Fast Food, Thokoza Unit F	Fast food
159	Mercy Hair Salon, Thokoza Unit F	Hair salon
160	Bunny Chow, Tshepo Street, Thokoza Unit F	Kota, fast food
161	KK Cosmetics, Tshepo Street, Thokoza Unit F	Cosmetics
162	Liquor sales, Tshepo Street, Thokoza Unit F	Tavern
163	Santos Hardware, Tshepo Street, Thokoza Unit F	Hardware
164	TR General Dealer, Tshepo Street, Thokoza Unit F	Groceries, kota
165	Carlo's Hair Salon, Kagiso Street, Thokoza Unit F	Hair salon

166	Tumi's Inn, Bhejane Street, Thokoza Unit F	Tavern
167	X Women Beauty, Manelo Street, Thokoza Unit F	Beauty therapist
168	Maletsatsi Burgers, Dikole Street, Section Dikole, Katlehong	Burgers
169	Phoka's Inn, Ramokohopi West, Katlehong	Tavern
170	Phiritona Ribs and Chips, Ramokohopi West, Katlehong	Fast food, snacks
171	Snacks shop, Mosoeu Street, Ramokohopi West, Katlehong	Snacks and soft drinks
172	Expression Hair Salon, Mosoeu Street, Ramokohopi West, Katlehong	Hair salon
173	Moshate Ya Moshate Premium, Ramokohopi West, Katlehong	Tavern
174	Hair Salon, Mosoeu Street, Ramokohopi West, Katlehong	Hair salon
175	Trinity House Rasta Man, Dikone Section, Katlehong	Vegetarians meals
176	Spruit Lock and Key, Mngudi Section, Katlehong	Car security services, keys and locks sales
177	Build Forever Construction and Projects, Radebe Section, Katlehong	Steel structures and other building structures
178	Nikiwe's Tuck-shop, Sontonga Road, Katlehong South	Tuck-shop
179	Jonny, Sontonga Road, Katlehong South	Sewing
180	Mona Pantshi Tuck-shop, Sontonga Road, Katlehong South	Tuck-shop
181	Mbuso Fruit and Veg, Sontonga Road, Katlehong South	Fruits and vegetables
182	Sibusiso Electrical, Sontonga Road, Katlehong South	Electrical appliances and services
183	Hardware Cash, Sontonga Road,	Hardware

	Katlehong South	
184	Burger City, Sontonga Road, Katlehong South	Burgers and kota
185	Elenge Traders, Sontonga Road, Katlehong South	Lottery services
186	Lesego, Sontonga Road, Katlehong South	Catering services
187	Mohammad Hardware, Sontonga Road, Katlehong South	Hardware
188	My Kitchen, Hlongwane Street, Katlehong South	Fast food, soft drinks
189	Special Hardware, Hlongwane Street, Katlehong South	Hardware
190	Special Furniture and Electrical, Khumalo Street, Katlehong	Furniture and electrical appliances
191	Kota Land, Hlongwane Street, Katlehong South	Kota, burgers
192	Welcome Whole Sale, Hlongwane Street, Katlehong South	Whole sale
193	Lethu's Fast Food, Hlongwane Street, Katlehong South	Fast food
194	Twin Sisters, Hlongwane Street, Katlehong South	Hair salon
195	Cell Phones Repairs, Sontonga Road, Katlehong South	Cell phones repairs
196	Magret, Maphala Street, Thokoza Gardens	Maize meal, accessories sales
197	Domuza Hairsalon, Mshoeshoe Road, Katlehong	Hair salon
198	Smart Kitchen, Lebea Street, Katlehong	Fast food
199	Davey's Fast Food and Butchery, Lebea Street, Katlehong	Fast food
200	Kasi Corner Tuck-shop, Lebea Street, Katlehong	Tuck-shop

Vosloorus		
201	Wholesale 100% Moringa, Taxi Rank Ko 9, Vosloorus	Moringa sales
202	Gumede Tuck-shop, Taxi Rank Ko 9, Vosloorus	Tuck-shop, kota, fat cakes
203	Bongo Hair Salon, Taxi Rank Ko 9, Vosloorus	Hair salon
204	Big Africa Supermarket, Taxi Rank Ko 9, Vosloorus	Supermarket
205	Fast Food, Taxi Rank Ko 9, Vosloorus	Fast food
206	Pam Soft and Free Hair Salon, Gwalagwala Street, Ext 3, Vosloorus	Hair salon
207	Steve Ratanang General Dealer, Mathemba Street, Ext 3, Vosloorus	Alcohol
208	Chicos Hair Salon, Gwalagwala Street, Ext 3, Vosloorus	Hair salon
209	Colours Educare Centre, Mapogo Street, Ext 3, Vosloorus	Child day care services
210	Bhuju Trading Enterprises, Mapogo Street, Ext 3, Vosloorus	Tyre sales and repairs
211	Car Wash, Mapogo Street, Ext 3, Vosloorus	Car wash
212	Luxury Glass and Aluminum, Mapogo Street, Ext 3, Vosloorus	Garage doors, aluminum gates
213	Mphumthando, Ikhethini Street, Ext 7, Vosloorus	Kota, burgers
214	Eluthandweni Maternity and Child Care, Ikhethini Street, Ext 7, Vosloorus	Reproductive health, wellness baby, deliveries
215	Tailor Shop, Ulondolo Street, Ext 7, Vosloorus	Textile, clothing and footware
216	Ngwanert Special Kota, Moagi Street, Enguni Section, Vosloorus	Special kota
217	Mkhize's Kitchen, Moagi Street, Enguni Section, Vosloorus	Kota

218	Kinda Care, Moagi Street, Enguni Section, Vosloorus	Child day care services
219	Sesfikile Hair Salon, Khoza Street, Vosloorus	Hair salon
220	France Hair salon, Khoza Street, Dindela Section, Vosloorus	Hair salon
221	Fix Liquor Store, Khoza Street, Rockville, Vosloorus	Tavern
222	Heritage Car Wash, Maubane Street, Vosloorus	Car wash
223	Heritage Café, Maubane Street, Vosloorus	Restaurant
224	Zanele Motor Spares, Khoza Street, Rockville, Vosloorus	Motor spares
225	Angie Hair Salon, Khoza Street, Ext 8, Vosloorus	Hair salon
226	Tuck-shop and Fast Food, Khoza Street, Ext 8, Vosloorus	Tuck-shop, fast food
227	Twin Hair Salon, Maubane Street, Ext 8 Vosloorus	Hair salon
228	Macufe, Nkobo Street, Ext 8, Rockville, Vosloorus	Kota, car wash
229	Hair Salon, Nkobo Street, Ext 8, Rockville, Vosloorus	Hair salon
230	Tuck-shop, Nkobo Street, Ext 8, Rockville, Vosloorus	Tuck-shop
231	Ma Oulady Fast Food, Roots Drive, Ext 8, Vosloorus	Kota
232	DK Salon, Roots Drive, Ext 8, Vosloorus	Hair salon, accessories sales
233	Pink Oak Beauty Bar, Roots Drive, Ext 8, Vosloorus	Hair salon, construction works
234	Zodwa, Roots Drive, Ext 8, Vosloorus	Kota, fast food
235	Ambitious Property Investments, Roots	Property sales

	Drive, Ext 8, Vosloorus	
236	MT Car Wash, Corner Roots and Moagi, Ext 8, Vosloorus	Car wash, soft drinks, snacks
237	Ekoneni, Moagi Street, Ext 8, Vosloorus	Bottle store
238	Bongani Hair Salon, Moagi Street, Ext 8, Vosloorus	Hair salon
239	Charles Kota Corner, Moagi Street, Ext 8, Vosloorus	Kota
240	Moabane Architectural Projects and Designs, Moagi Street, Ext 8, Vosloorus	Architectural services
241	Pertunia Moon Nursery, Mkekwane Road, Vosloorus	Child day care services
242	Erick Erick, Rest in Peace Street, Ext 2, Vosloorus	Kota, soft drinks, snacks and bread
243	Street Café, Moagi Street, Ext 2, Vosloorus	Kota
244	Ponny's Hair and Beauty Salon, Moagi Street, Ext 2, Vosloorus	Hair salon
245	Internet Porte, Moagi Street, Ext 2, Vosloorus	Internet café
246	Grocery Store, Moagi Street, Ext 2, Vosloorus	Groceries
247	Nkabinde Nduna Medical Surgery, Roots Drive, Ext 8, Vosloorus	Medical services
248	Matlapeng Car Wash, Mbatha Street, Vosloorus	Car wash
249	Stan Tuck-shop, Zakhe Street, Ext 2, Vosloorus	Tuck-shop
250	Ekasi Driving School, Roots Drive, Ext 7, Vosloorus	Driving School
251	Queen Hair Salon, Moagi Street, Ext 2, Vosloorus	Hair salon
252	Ausis Fast Food, Zekwa Street, Ext 2,Vosloorus	Kota

253	KBS Fast Food, Zembe Street, Ext 2, Vosloorus	Kota, fast food
254	Moss Refreshments, Mboneni Street, Ext 2, Vosloorus	Tavern
255	Ben 10 Hair Salon, Mboneni Street, Ext 2, Vosloorus	Hair salon
256	Patricia, Matsapa Street, Ext 3, Vosloorus	Hair salon
257	Lolo's Fast Foods, Mboneni Street, Ext 2, Vosloorus	Kota
258	Tailor and Internet Café, Roots Drive, Ext 2, Vosloorus	Internet Café, textile, clothing and footware
259	Miami Tavern, Maluleke Street, Ext 2, Vosloorus	Tavern
260	PRS Catering, Nyuza Street, Ext 14, Vosloorus	Catering services, cookies
261	Las Vegas Shisa Nyama, Ngoza Street, Ext 14, Vosloorus	Shisa Nyama
262	Emakoteni, Ngoza Street, Ext 14, Vosloorus	Kota, soft drinks
263	Ndazo Hair Salon, Ngoza Street, Ext 14, Vosloorus	Hair salon
264	Sibusiso Mhlaba, Ngoza Street, Ext 14, Vosloorus	Car wash
265	Moboko Tyre, Ngoza Street, Ext 14, Vosloorus	Tyre sales and repairs
266	Kota Inn, Moagi Street, Spruitview	Kota, groceries
267	Moagi Wings, Moagi Street, Spruitview	Fast food
268	Vuyiswa's Place, Moagi Street, Spruitview	Tavern
269	Ezee Tyre Clinic, Moagi Street, Spruitview	Tyre repairs
270	Dunywa, Moagi and Nombela, Paradise Park, Spruitview	Public phones, airtime, snacks
271	Rose Salon, Nombela Drive, Paradise Park, Spruitview	Hair salon

272	FQ Lounge, Nombela Drive, Paradise Park, Spruitview	Tavern
273	Mzi's Kota, Nombela Drive, Spruitview	Kota
274	Amazing Dreads, Nombela Drive, Spruitview, Vosloorus	Hair salon
275	Tattoo Shop, Nombela Drive, Spruitview	Tattoo services
276	Zingalore Car Wash, Nombela Drive, Spruitview, Vosloorus	Car wash
277	Kota and Braai, Nombela Drive, Ext 6, Spruitview/Vosloorus	Kota, buy and braai
278	Dr PP Malingwane, Moagi Street, Vosloorus	Surgery
279	Chicken Village, Moagi Street, Ext 1, Vosloorus	Fast food
280	Khensani Hair Salon, Nombela Drive, Ext 6, Spruitview, Vosloorus	Hair salon
281	Kota, Nombela Drive, Ext 6, Spruitview	Kota
282	Edwards Street Welding, Nombela Drive, Ext 6, Spruitview	Steel welding
283	Lerato M Real Estate, Nombela Drive, Ext 6, Spruitview	House sales
284	Garden Pub and Grill, Lefokotsane Street, Ext 30, Vosloorus/spruitview	Pub
285	Meshack Hair Salon, Lefokotsane Street, Ext 30, Vosloorus/spruitview	Hair salon
286	Fredy's Butchery, Lefokotsane Street, Ext 30, Vosloorus/spruitview	Butchery
287	Food Corner, Lefokotsane Street, Ext 30, Mfundo Park, Vosloorus	Fast food, traditional food
288	Nations Tuck-shop, Lelevakalo Street, Ext 9, Vosloorus	Tuck-shop, tavern
289	Cookies, Senoli Street, Ext 9, Vosloorus	Cookies
290	Sarah Hair Salon, Senoli Street, Ext 9, Vosloorus	Hair salon

291	Lehani Investments, Masinoke Street, Ext 9, Vosloorus	Internet café, ATM services
292	Dr NC Shaa, Masianoke Street, Marimba Gardens, Ext 4, Vosloorus	Surgery, Medical Practitioner
293	Ga-dikobo Guest House, Rantsoe Crescent, Vosloorus	Guest House
294	Celiwe Foods, Moagi Street, Ext 1, Vosloorus	Traditional food
295	Mbeza buy and braai, Moagi Street, Ext 1, Vosloorus	Buy and braai
296	Mkhize's Kitchen, Moagi Street, Ext 1, Vosloorus	Fast food
297	Mthi Shoe Wash, Moagi Street, Ext 1, Vosloorus	Shoe wash
298	Khamduze Hair Salon, Moagi Street, Ext 1, Vosloorus	Hair salon
299	Lock Smith, Moagi Street, Ext 1, Vosloorus	Lock smith
300	Jabulile Hair Salon, Moagi Street, Ext 1, Vosloorus	Hair salon
Soshanguve		
301	Car mechanic, Buffer Zone, Soshanguve South	Car spares' sales and repairs
302	Gladies Hair Salon, Buffer Zone, Soshanguve South	Hair salon, eggs sales
303	Takila's Tuck-shop, Nomonde Street, Block T, Soshanguve	Tuck-shop
304	My Place, Block T2, Buffer Zone, Soshanguve	Fast food
305	Bambino Liquor, Block T2, Buffer Zone, Soshanguve	Alcohol, soft drinks, red meat
306	Paul's Hair Salon, Nomonde Street, Block T, Soshanguve	Hair salon
307	Tosburg's Car Wash, Block T,	Car wash

	Soshanguve	
308	Mehlame Steel and Works, Block W, Soshanguve	Steel gates, Battler doors and windows
309	Mozumba General Dealer, Manganye Street, Block V, Soshanguve	General dealer
310	Green Shop, Block T, Soshanguve	Electricity, airtime, snacks
311	Mary's Hair Salon, Main Road, Block T, Soshanguve	Hair salon, Hair piece sales, soft drinks
312	Shaka Tavern, Block V, Soshanguve	Tavern, soft drinks, snacks
313	Dineo Day Care, Buffer Zone, Block T2, Soshanguve	Child day care services
314	Small's Lounge, Block V, Soshanguve	Alcohol, soft drinks, meat
315	Evans Motor Mechanic, Soutpan Road, Soshanguve	Car service, engine repairs, wheel alignment
316	Bionics Fitness Club, Block S, Soshanguve	Gym services, soft drinks
317	Minga's Tavern, Block T, Soshanguve	Tavern, soft drinks, snacks
318	Nkululeko Steel and Hardware, Boikhutsong, Soshanguve	Steel poles, zincs, steel fence
319	Mkhachane Bottle Store, Soutpan Road, Block KK, Soshanguve	Alcohol, soft drinks, snacks
320	Rethakgeyse Day Care Centre, Soutpan Road, Block KK, Soshanguve	Child day care services
321	Jane General Dealer, Block W, Soshanguve	General dealer
322	Nkuna Veg Market, Buffer Zone, Block T2, Soshanguve	Vegetables
323	Dabura Print Works, Block W, Soshanguve	Internet café
324	Club 7 General Dealer, Soutpan Road, Marikana, Soshanguve	General dealer
325	Ndaba Tavern, Main Road, Block KK,	Tavern, soft drinks,

	Soshanguve	snacks
326	Maleka Bricks, Mabopane Station, Block AA, Soshanguve	Building material
327	Fagute Fast Food, Block T, Soshanguve	Fast food
328	Vuka Motor Spares, Winterveld, Soshanguve	Car parts, car consumables
329	Makhetha Funeral Services, Soshanguve	Funeral services
330	Pozma Driving School, Block W, Soshanguve	Driving School
331	Road Side Swop Shop, Main Road, Block W, Soshanguve	Furniture
332	Awayangwenya Tuck-shop, Soutpan, Soshanguve	Tuck-shop
333	Shenkwe Supermarket, Soutpan, Soshanguve	Supermarket
334	Malatji General Dealer, Soutpan, Soshanguve	General dealer
335	Somis Car Wash, Soutpan, Soshanguve	Car wash, soft drinks, fast food
336	Phillips Fast Food, Soutpan, Soshanguve	Fast food
337	Road Side Puncture, Soutpan Road, Marikana, Soshanguve	Wheel balancing and alignment, tyre sales and repairs
338	Ivory Pub, Soutpan Road, Marikana, Soshanguve	Pub, soft drinks, red meat
339	Mokoena's Hard Ware, Soutpan Road, Soshanguve South	Hardware
340	Fido African Food, Block W, Soshanguve	Traditional food
341	Merifing Lounge, Buitekant Street, Block AA, Soshanguve	Alcohol, soft drinks, Chicken kwasa
342	Mpilo Fast Food, Block AA, Soshanguve North	Fast food
343	Jard Sons Motor Spares, Kwinda Street, Block HH, Soshanguve	Motor spares and consumables

344	Busy Corner Dry Clean, Block KK, Soshanguve,	Dry cleaning services
345	Muzi Motor Mechanic, Block G, Soshanguve	Wheel repairs, balancing and alignment, car consumables
346	Vinny's Pub, Block R&S, Soshanguve	Pub, alcohol, soft drinks
347	Mahammad Tuck-shop, Block S, Soshanguve	Tuck-shop
348	MJ Fruit and Veg, Block PP, Soshanguve	Fruits and vegetables
349	Matlala's Tavern, Nomonde Street, Block T, Soshanguve	Tavern
350	Sphiwe's Kitchen, Buffer Zone, Soshanguve	Fast food, buy and braai
351	Musa's Carpentry, Block PP Ext, Soshanguve	Wall units, Cupboards, Ceilings, doors
352	Kiddies Day Care, Block BB, Soshanguve	Child day care services
353	Nancy Day Care Centre, Block V, Soshanguve	Child day care services
354	Mahlangu Supermarket, Block V, Soshanguve	Supermarket
355	Tshwane Bakery, Boikhutsong, Soshanguve	Bread, cakes, biscuits
356	Lassy Panel Beaters, Block T, Soshanguve	Panel beating services, car body parts sales
357	Soutpan Sands, Main Road, Marikana, Soshanguve	Building material
358	Meso Store, Block T, Soshanguve	Small grocery items
359	Black Rock Tuck-shop, Block MM, Soshanguve	Tuck-shop
360	Mma Given's Tavern, Block T, Soshanguve	Tavern, soft drinks, snacks
361	Buy and Braai, Aubrey Matlala Road, Soshanguve North	Shisa Nyama
362	Snacks, Aubrey Matlala Road,	Snacks

	Soshanguve North	
363	Tuckshop, Baby's Breath Street, Soshanguve North	Tuckshop
364	Fast food, Baby's Breath Street, Soshanguve North	Fast food
365	Kota, Aubrey Matlala Road, Soshanguve North	Kota
366	Kota, Aubrey Matlala Road, Soshanguve North	Kota
367	Fast food, Aubrey Matlala Road, Soshanguve North	Fast food
368	Traditional beer, Umkaboti Street, Soshanguve North	Traditional beer
369	Groceries, Aubrey Matlala Road, Soshanguve North	Small grocery items
370	Shisa nyama, Bushveld Road, Soshanguve North	Buy and Braai
371	Hardware, Bushveld Road, Soshanguve North	Hardware
372	Tuckshop, Mpho Molema Street, Soshanguve North	Tuckshop
373	Kota, Mpho Molema Street, Soshanguve North	Kota
374	Fast food, Mpho Molema Street, Soshanguve North	Fast food
375	Groceries, Bushveld Road, Soshanguve North	Groceries
376	Gates, Bushveld Road, Soshanguve North	Steel gates
377	Carpentry, Faranani Street, Soshanguve North	Carpenter
378	Fast food, Pfukani Street, Soshanguve North	Fast food
379	Fruits and vegetables, Bushveld Road,	Fruits and vegetables

	Soshanguve North	
380	Liquor, Bokhutlo Street, Soshanguve North	Tavern
381	Hair Salon, Glossy Ibis Street, Soshanguve North	Hair Salon
382	Fast food, Nuus Street, Soshanguve North	Fast food
383	Hair Salon, Bothloki Street, Soshanguve North	Hair Salon
384	Health and beauty products, Bokhutlo Street, Soshanguve North	Health and beauty products
385	Shoes, Duvha Street, Soshanguve North	Home made leather shoes and related designs
386	B&B, Duvha Street, Soshanguve North	Bed and breakfast
387	Interior design, Soutpan Road, Soshanguve North	Interior designs
388	Perfumes, Soutpan Road, Soshanguve North	Perfumes
389	Panel beater, Soutpan Road, Soshanguve North	Panel beater
390	Hair Salon, Soutpan Road, Soshanguve North	Hair Salon
391	B&B, Soutpan Road, Soshanguve North	Bed and breakfast
392	Hair Salon, Kamogelo Street, Soshanguve North	Hair Salon
393	Hand bags and cosmetics, Ruth Malewa Road, Soshanguve North	Hand bags and cosmetics
394	Restaurant, JB Lekala Avenue, Soshanguve North	Restaurant
395	Tuckshop, Ruth Malewa Road, Soshanguve North	Tuckshop
396	Mechanic, Dithabaneng Street, Soshanguve North	Car spares sales

397	Mechanic, Ruth Malewa Road, Soshanguve North	Car mechanic
398	Estate agent, Ruth Malewa Road, Soshanguve North	Estate Agent
399	Fast food, Mpho Molema Street, Soshanguve North	Fast food
400	Internet café, Mpho Molema Street, Soshanguve North	Internet Café