INNOVATION CAPABILITIES OF SMALL BUSINESSES IN THE CITY OF JOHANNESBURG WITHIN THE AUTOMOTIVE RETAIL INDUSTRY

by

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DECLARATION

I declare that INNOVATION CAPABILITIES OF SMALL BUSINESSES IN THE CITY OF JOHANNESBURG WITHIN THE AUTOMOTIVE RETAIL INDUSTRY is my own work and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references.

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I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other higher education institution.

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DEDICATION

This dissertation is dedicated to my late parents, my dad, Mr Marcellino Paul Lupiya, and my mum, Mrs Sabina Chalikosa Lupiya. Dad and Mum, even though you are no longer with us, you will always be remembered and appreciated for the ethical way you lived your lives. In addition, your knowledge and integrity will always be recognised as your greatest characteristics by your family and friends. You have left this earthly abode, but you will always be profoundly missed and never forgotten. I love you, mum and dad, thank you for all you have done for me. Thank you, God, for blessing me with parents who worked so hard to achieve their goals, and who encouraged and motivated me to work towards my master's degree.

This master's journey was a difficult one considering the balancing act that was needed between family time, work, and research.

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ABSTRACT

The automotive industry is a crucial role player in terms of job creation and economic value. In South Africa, the automotive industry is one of the largest manufacturing industries and contributes significantly to gross domestic product. Small businesses play an instrumental role in most economies and contribute to the economy owing to their innovativeness and by creating value-adding products and services through their innovation capabilities. In an environment where business uncertainty is the norm, developing the innovation capabilities of the small business becomes increasingly important. Innovation is regarded as an important success factor in highly competitive small businesses. Hence, it was necessary to explore the relationship between innovation capabilities and innovation performance. The primary objective of the study was to explore the innovation capabilities (leadership, involvement, strategy, rewards and resources) of small businesses in the City of Johannesburg as they relate to innovation performance in the automotive retail industry.

The research followed a quantitative research method using a correlation exploratory research design. The target population comprised small business owners within the automotive retail industry situated in various regions of the City of Johannesburg. Convenience and snowball sampling techniques were used to identify respondents, and ultimately 300 respondents participated in the study. Descriptive statistics were used to describe the biographical and background information of respondents, including their attitudes and opinions relating to innovation capabilities. Tests performed as part of the inferential statistics included correlation analysis, regression analysis, factor analysis, exploratory factor analysis, as well as moderation analysis. The relationship between the innovation capabilities of small business owners and their innovation performance was therefore established.

The study recommends that small business owners should consider their management approach to innovation capabilities and develop the necessary dynamic capabilities in their business to implement innovation capabilities. Hence, to foster innovation capabilities, small business owners should have an active management approach based on a long-term managerial orientation and an innovative culture. The government should foster a climate favourable to small businesses and provide development support initiatives that recognise the limited capacity for innovation of small business owners in the automotive retail industry.

Keywords: automotive retail industry, innovation capabilities, innovation performance, barriers to innovation, small business, innovation activities, Johannesburg, creativity

ISISHWANKATHELO

Ushishino lwezithuthi lelona libalulekileyo ekudaleni imisebenzi kunye nexabiso lezoqoqosho. EMzantsi Afrika, ushishino lwezithuthi lolunye lawona mashishini amakhulu emveliso nanegalelo elikhulu kwimveliso epheleleyo yonyaka. Amashishini amancinci adlala indima ebalulekileyo kuninzi loqoqosho kwaye anegalelo kuqoqosho ngenxa yokuvelisa izinto ezintsha, nokudala iimveliso kunye neenkonzo ezinexabiso ngokusebenzisa izakhono zawo zokuvelisa izinto ezintsha. Kwimeko apho ukungaqiniseki kwezoshishino kuyinto eqhelekileyo, ukuphuhlisa izakhono zokuvelisa izinto ezintsha zoshishino oluncinci kubaluleke ngakumbi. Ukuvelisa izinto ezintsha kuthathwa njengempumelelo ebalulekileyo kumashishini amancinci akhuphisanayo kakhulu. Ngenxa yoko, bekuyimfuneko ukuphonononga ubudlelwane phakathi kwezakhono zokuvelisa izinto ezintsha kunye nokusebenza kwezinto ezintsha. Injongo ephambili yophando ibikukuphonononga izakhono zokuvelisa izinto ezintsha (ubunkokheli, ukubandakanyeka, isicwangciso, imivuzo, kunye nezibonelelo) zamashishini amancinci kwiSixeko saseRhawutini, nanjengoko zinxulumene nokusebenza kwezinto ezintsha kushishino lokuthengisa izithuthi.

Olu phando lulandele indlela yophando lweenkcukachamanani lusebenzisa uyilo lophando lokuhlola ukuhambelana (*correlation exploratory research design*). Abantu ekujoliswe kubo baquka abanini bamashishini amancinci kushishino lokuthengisa izithuthi olukwimimmandla eyahlukahlukeneyo yeSixeko saseRhawutini. Kusetyenziswe iindlela zovandlakanyo ezifana nokufumaneka okufanelekileyo nokulula nokufumaneka okunzima (*Convenience and snowball sampling techniques*) ukuchonga abaphenduli, kwaye ekugqibeleni ibe ngabaphenduli abangama300 abathe bathatha inxaxheba kuphando. Kusetyenziswe iinkcukachamanani ezichazayo (*descriptive statistics*) ukuchaza iinkcukacha zobomi kunye nemvelaphi yabaphenduli, kubandakanya iindlela ezithile zokucinga kunye nezimvo ezinxulumene nezakhono zokuvelisa izinto ezintsha. Kwenziwe uvavanyo njengenxalenye yeenkcukachamanani ephuma kuvandlakanyo oluncinci kodwa olumele iimpawu zabantu abaninzi (*inferential statistics*) luquke uhlalutyo lokuhambelana (*correlation analysis*), uhlalutyo lokulungelelanisa ngokwezibalo ukuba zeziphi kwezo ziguquguqukayo ezinempembelelo ngokwenene (*regression analysis*), uhlalutyo lokuqwalaselwa kwamaxabiso edatha ejongiweyo abonakaliswa njengemisebenzi yezizathu ezinokubakho ukuze kufunyanwe ukuba zeziphi ezibaluleke kakhulu (*factor analysis*), uhlalutyo lokufumana isakhiwo

esingaphantsi kwesethi enkulu yezinto eziguquguqukayo (*exploratory factor analysis*), kunye nohlalutyo lokumodareyitha (*moderation analysis*) noluyindlela yokujonga ukuba loo nto iguquguqukayo inayo impembelelo kummandla okanye kwicala lobudlelwane phakathi kokuguquguquka koko okuzimeleyo nakoko okuxhomekekileyo. Ngenxa yoko, kwasekwa ubudlelwane phakathi kwezakhono zokuvelisa izinto ezintsha zabanini bamashishini amancinci kunye nokusebenza kwabo ukuvelisa izinto ezintsha. Olu phando lucebisa ukuba abanini bamashishini amancinci kufuneka baqwalasele indlela yabo yolawulo kwizakhono zokuvelisa izinto ezintsha kunye nokuphuhlisa izakhono eziyimfuneko ezihlala zitshintsha kwishishini labo ukuphumeza izakhono zokuvelisa izinto ezintsha. Ngenxa yoko, abanini bamashishini amancinci kufuneka babe nendlela esebenzayo yolawulo esekelwe kuqhelaniso lolawulo lwexesha elide kunye nenkcubeko yokuvelisa izinto ezintsha ukukhuthaza ukuvelisa izakhono ezintsha. Urhulumente kufuneka akhuthaze indawo efanelekileyo kumashishini amancinci aze abonelele ngamanyathelo enkxaso yophuhliso aqaphela amandla okwenza umsebenzi alinganiselweyo okuphuculwa kwabanini bamashishini amancinci kushishino lokuthengisa izithuthi.

Amagama angundoqo: ushishino lokuthengisa izithuthi, izakhono zokuvelisa izinto ezintsha, ukusebenza kwezinto ezintsha, imiqobo kwizinto ezintsha, ishishini elincinci, imisebenzi yezinto ezintsha, eRhawutini, ubuchule bokudala/bokuyila

ISIFINQO

Imboni yezimoto ibambe iqhaza elibalulekile mayelana nokwakhiwa kwamathuba emisebenzi kanye nokubaluleka kwezomnotho. ENingizimu Afrika, imboni yezimoto ingenye yezimboni ezinkulu zokukhiqiza futhi inegalelo elibonakalayo emalini yomkhiqizo wasekhaya. Amabhizinisi amancane adlala indima ebalulekile eminothweni eminingi futhi abambe iqhaza emnothweni ngenxa yokusungula kwawo izinto ezintsha nangokudala imikhiqizo nezinsizakalo ezengeza inani ngamakhono awo okusungula. Esimweni lapho ukungaqiniseki kwebhizinisi kuyinto evamile, ukuthuthukisa amakhono amasha ebhizinisi elincane kubaluleka kakhulu. Ukuqamba okusha kuthathwa njengento ebalulekile yempumelelo emabhizinisini amancane ancintisana kakhulu. Ngakho-ke, kwakudingeka kuhlolwe ubudlelwano phakathi kwamakhono okuqamba kanye nokusebenza kokuqamba okusha. Inhlosongqangi yocwaningo kwakuwukuhlola amakhono okuqamba (ubuholi, ukuzibandakanya, isu, imiklomelo kanye nezinsiza) zamabhizinisi amancane eDolobheni laseGoli njengoba ehlobene nokusebenza kokusungula embonini yokudayisa izimoto.

Ucwaningo lulandele indlela yocwaningo lobuningi besebenzisa idizayini yocwaningo lokuhlola ukuhlobana. Isibalo sabantu okuhloswe ngaso sihlanganisa osomabhizinisi abancane embonini yokudayisa izimoto etholakala ezindaweni ezahlukene zeDolobha laseGoli. Kusetshenziswe amasu okusampula isinobholi ukuze kutholakale abaphendulile, futhi ekugcineni abaphendulile babe ngama-300 balabo ababambe iqhaza ocwaningweni. Izibalo ezichazayo zisetshenziswe ukuchaza ulwazi lomlando womuntu kanye nesizinda sabaphenduli, okuhlanganisa isimo sabo sengqondo nemibono ehlobene nekhono lokusungula izinto ezintsha. Ukuhlola okwenziwa njengengxenye yezibalo ezingasho lutho kuhlanganisa ukuhlaziywa kokuhlobana, ukuhlaziywa kokuhlehla, ukuhlaziya izici, ukuhlaziya isici sokuhlola, kanye nokuhlaziywa kokulinganisela. Ngakho-ke kwasungulwa ubudlelwano phakathi kwamakhono okuqamba abanikazi bamabhizinisi amancane kanye nokusebenza kwabo okusha.

Ucwaningo luncoma ukuthi abanikazi bamabhizinisi amancane bacabangele indlela yabo yokuphatha emandleni okusungula futhi bathuthukise amakhono aguqukayo adingekayo ebhizinisini labo ukuze basebenzise amakhono okuqamba. Ngakho-ke, ukuze kuthuthukiswe amakhono amasha, abanikazi bamabhizinisi amancane kufanele babe nendlela yokuphatha esebenzayo esekelwe ekuziphatheni kwesikhathi eside kokuphatha kanye nesiko lokusungula.

Uhulumeni kufanele agqugquzele isimo sezulu esivuna amabhizinisi amancane futhi ahlinzeke ngezinhlelo zokweseka intuthuko eziqaphela umthamo olinganiselwe wokusungula izinto ezintsha zabanikazi bamabhizinisi amancane embonini yokudayisa izimoto.

Amagama angukhiye: imboni yokudayisa izimoto, amakhono okusungula, ukusebenza okusha, izithiyo zokusungula izinto ezintsha, amabhizinisi amancane, imisebenzi yokusungula, iGoli, ubuciko

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Abbreviations

AGOA	African Growth and Opportunity Act
AIEC	Automotive Industry Export Council
ANOVA	Analysis of variance
APDP	Automotive Production Development Programme
ASEAN	Association of South-East Asian Nations
ASSAf	Academy of Science of South Africa
AU	African Union
Bar1 – Bar6	Barriers
BMC	Biomed Central
BMI	Business model innovation
BMW	Bayerische Motoren Werke
BNDES	Brazilian Development Bank
CAT	Computed axial tomography
CBD	Central business district
CEMS	College of Economic and Management Sciences
CFA	Confirmatory factor analysis
CSIR	Council for Scientific and Industrial Research
CTP	Converging technologies platform
DoI	Diffusion of innovation
DSI	Department of Science and Innovation
DST	Department of Science and Technology
dti	Department of Trade and Industry
DUT	Durban University of Technology
DV	Dependent variable
EARC	Eastern Africa Regional Resource Centre
EC	European Commission
EFA	Exploratory factor analysis
EPRC	Economic Policy Research Centre
EU	European Union
FIG	Figure
GBP	British pounds
GEI	Global Entrepreneurship Index

GIKES	Gauteng Innovation and Knowledge Economy Strategy
GPG	Gauteng Provincial Government
HEART	Health, Education, Advice and Resource Team
HR	Human resources
IC	Innovation capability
ICE	Internal combustion engine
ICIE	International Conference on Innovation and Entrepreneurship
IFC	International Financial Corporation
IFPMA	International Federation of Pharmaceutical Manufacturers & Associations
IIMB	Indian Institute of Management Bangalore
Iknow1–Iknow3	Innovation knowledge and effectiveness
ILDP	International Leadership Development Programme
Invov1-invov11	Involvement
IP1-IP5	Innovation performance
IPPR	Institute for Public Policy Research
ISBE	Institute for Small Business and Entrepreneurship
ITIF	Information Technology and Innovation Foundation
IV	Independent variable
KMO	Kaiser-Meyer-Olkin
LCV	Light commercial vehicle
Lead1-Lead5	Leadership
MDG	Millennium Development Goals
MIDP	Motor Industry Development Programme
MOU	Memorandum of understanding
MSMEs	Micro, small and medium enterprises
NAAMSA	National Association of Automobile Manufacturers of South Africa
NAMBIC	Namibia Business and Investment Climate
NDP	National Development Plan
NEPAD	New Partnership for Africa's Development
NRF	National Research Foundation
NSI	National System of Innovation
NSTIP	National Science, Technology and Innovation Plan

OE	Original equipment
OECD	Organisation for Economic Co-operation and Development
OEMs	Original equipment manufacturers
Open-IX	The Innovation Hub Open Innovation Solution Exchange
PAF	Principal axis factoring
PCA	Principal component analysis
Perp1-Perp6	Perceptions
Pol&Reg1-Pol&Reg4	Policies and regulations
P-Value	Probability value
RBV	Resource-based view
R&D	Research and development
RERC	Research Ethics Review Committee
Res1-Res6	Resources
Rewd1-Rewd5	Rewards
RWTH	Rheinisch-Westfalische Technische Hochschule
SAAM	South African Automotive Master Plan
SAIIE	South African Institute for Industrial Engineering
SANSA	National Space Strategy
SAS	Statistical analysis system
SASOL	South African Coal Oil and Gas Corporation
SBIR	Small Business Innovation Research
SESRIC	Statistical, Economic and Social Research and Training Centre for Islamic Countries
SIC	Standard Industrial Classification
SMEs	Small and medium enterprises
SMMEs	Small, medium and micro-Enterprises
SPSS	Statistical Package for the Social Sciences
SSA	Sub-Saharan Africa
STATS SA	Statistics South Africa
STI	Science, technology and innovation
Strat1-Strat6	Strategy
SWOT	Strengths, weaknesses, opportunities and threats
TEA	Total early-stage entrepreneurial activity

TQM	Total quality management
UK	United Kingdom
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Organisation
UNISA	University of South Africa
US	United States
USA	United States of America
WEF	World Economic Forum

CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION AND BACKGROUND

There is growing recognition that entrepreneurship in sub-Saharan Africa (SSA) is a way to enable financial independence and control over one's destiny. Furthermore, entrepreneurship is important for community development and improving people's quality of life (Madichie, Taura & Bolat, 2019:224). Small, medium, and micro enterprises (SMMEs) are a major source of growth, innovation and jobs (International Trade Centre (ITC), 2019) and, globally, small businesses contribute to job creation at higher rates than large businesses (Huber, Oberhofer & Pfaffermayr, 2017; Muiruti, 2017:37).

Innovative entrepreneurship is vital for developing economies (Irene, 2019:155) and digital entrepreneurship is seen as a powerful driver of local innovation and, in turn, of structural economic transformation and development (Ndemo & Weiss, 2017). Policymakers, corporations, development organisations, consultancies and the media perceive domestic digital economies as a significant source of economic transformation and revival (Ntale, Yamanaka & Nkurikiyimfura, 2013; Manyika, Cabral, Moodley, Moraje, Yeboah-Amankwah, Chui & Leke, 2013; Drouillard, Taverner, Williamson & Harris, 2014). According to Irene (2019:153), nearly half of the global population is connected to information communication technology (ICT) networks, and globalisation and digitalisation create great opportunities for businesses (Irene, 2019:155).

It is argued that small businesses can be as innovative as large businesses (Sonobe, Akoten & Otsuka, 2014:30; Lena, 2021:1007). Innovation has brought with it diversity, the pooling of resources and the exploitation of synergies (Lindegaard, 2011:77; Ramjugernath, 2015:3). Innovation capabilities are important to any business as they assist in achieving sustainable growth (Senge & Carstedt, 2013:35; McEvily, Eisenhardt & Prescott, 2015:90). As businesses innovate and reduce costs and turnaround times, small businesses become more sustainable (Bengt & Lundvall, 2012:298; Brevis & Vrba, 2014:28; Bărbulescu, Tecău, Munteanu & Constantin, 2021:1). The role of innovation and its importance as a driver of competitiveness, profitability and productivity is also well documented in the literature (McEvily *et al.,* 2015:90; Williams & Gurtoo, 2017:91; Eko, Setyadharmab & Rahayu, 2021:593).

Innovation leads to greater cost-efficiency and the provision of new products and services to meet customers' demands (Einspruch & Omachonu, 2010:1; Brevis & Vrba, 2014:28; Jayabalan, Dorasamy & Raman, 2021:2). Furthermore, innovation can be a source of innovative opportunities, comparative advantage, as well as access to markets through collaboration (Best, 2013:364; Lam, Nguyen, Le & Tran, 2021:2). The literature reveals that through the innovation capabilities of small businesses, benefits such as profitability, decreased time to market and increased longevity of the business should be possible (Bengt & Lundvall, 2013:80; Sonobe *et al*., 2014:3).

In South Africa, the unemployment rate was 33,9% in the second quarter of 2022 (Statistics South Africa, 2022), while small businesses contributed approximately 22% of all business turnover in the country in 2019 (Fin24, 2019). Small businesses are therefore important "wheels of the economy" to stimulate growth, and to add value to the country (Fin24, 2019). In South Africa, the automotive retail industry plays an instrumental role in South Africa's economy and is strategically placed mainly in the Gauteng, Eastern Cape, and KwaZulu-Natal provinces. South Africa's automotive retail industry contributed 4,9% to gross domestic product (GDP) in 2022, down from 6,4% in 2019 (Martin, 2022).

The current study was conducted with small business owners in the City of Johannesburg, Gauteng province. The City of Johannesburg is the economic powerhouse of the continent and of South Africa, contributing about 14% to South Africa's GDP and over 44% to the Gauteng economy. South Africa's growth trajectory is largely reliant on the developments in Johannesburg; consequently, Johannesburg acts as an important building block for other local economies (Profile: City of Johannesburg Metro, 2020).

Small businesses contribute significantly to South Africa's economic development by creating jobs, fostering creativity and promoting economic development. The researcher's interest was piqued by the fact that small businesses have limited innovation capabilities that prevent them from reaching their full potential. As a result, the researcher explored the innovation capabilities of small businesses in the City of Johannesburg, as related to their innovation performance.

1.2 PROBLEM STATEMENT

The problem to be addressed in this study is that small businesses have limited innovation capabilities (Berends, Jelinek, Reymen & Stultiens, 2014:616; Louw, Essmann, Du Preez &

Schutte, 2017:50; Fernandez-Esquinas, Van Oosttrom & Pinto, 2018:2). Limited research has been conducted on identifying the innovation capabilities that small businesses should use for the exploitation of innovation or on their impact on innovation performance (Blackburn, De Clercq & Heinonen, 2018:100; Hazem, Yunhong & Chen, 2020:961). The failure of small businesses to innovate leads to reduced competitiveness and eventually the demise of such businesses (Zott, Amit & Massa, 2011:58). Owing to their small size and resource limitations, they are often unable to innovate or make significant changes to enhance sustainable growth **(**Farsi & Toghraae, 2014:13).

According to Audretsch, Grilo and Thurik (2011:11), the driving force behind the emerging globalisation of any nation is innovation and technology. As much as innovation in small businesses has a large diversity of focus, much remains unknown about the driving forces of successful innovation in the small business (Brown, 2014b:150). Small businesses face challenges such as the ability to adapt rapidly to changing market demands, technological changes, and capacity constraints related to knowledge, innovation, and creativity (Yoshino & Taghizadeh-Hesary, 2016:7; Ong-Ming & Abdul, 2021:499). In Africa, the lack of basic infrastructure in the form of electricity and broadband internet access hinders scientific development and technological adaptation (Brar, Farley, Hawkins & Wagner, 2011:9; Mutonga, 2014:12). Hence, a study to evaluate the lack of innovation capabilities is imperative. The researcher fills this gap by exploring the innovation capabilities of small businesses within the automotive retail industry in the City of Johannesburg.

1.3 RESEARCH QUESTIONS

The study answered the following research questions:

- What are the innovation capabilities of small business owners?
- What barriers affect the innovation capabilities of small business owners?
- Is there a relationship between the innovation capabilities and the innovation performance of small businesses?
- Is there a significant relationship between knowledge effectiveness and the innovation performance of the small business?
- Is there a significant relationship between the barriers that affect small business owners' innovation capabilities and innovation performance?

- Is there a relationship between innovation activities and the innovation performance of the small business?

1.4 RESEARCH OBJECTIVES

This section presents the objectives of the study.

1.4.1 Primary objective

The primary objective of the study was to explore the innovation capabilities (leadership, involvement, strategy, rewards, and resources) of small businesses in the City of Johannesburg as they relate to innovation performance in the automotive retail industry.

1.4.2 Secondary objectives

The secondary objectives of the study were to

- investigate the innovation capabilities of small business owners
- investigate the barriers that affect small business owners' innovation capabilities
- determine whether there is a relationship between the innovation capabilities and the innovation performance of small businesses.
- determine if there is a significant relationship between knowledge effectiveness and the innovation performance of the small business.
- determine if there is a significant relationship between the barriers that affect small business owners' innovation capabilities and innovation performance.
- determine if there is a relationship between innovation activities and the innovation performance of the small business.

1.5 RESEARCH HYPOTHESES

To achieve the objectives of the study, the following research hypotheses were formulated:

H1: There is a relationship between innovation capabilities and the innovation performance of the small business.

H2: There is a relationship between knowledge effectiveness and the innovation performance of the small business.

H3: There is a relationship between public service conditions and the innovation performance of the small business.

H4: There is a relationship between the barriers that affect small business owners' innovation capabilities and innovation performance.

H5: There is a relationship between innovation activities and the innovation performance of the small business.

H6: There is a moderating effect of barriers on the relationship between innovation capabilities and innovation performance.

H7: There is a moderating effect of public service conditions on the relationship between innovation capabilities and innovation performance.

1.6 SIGNIFICANCE OF THE STUDY

The research explored the innovation capabilities of small businesses in the City of Johannesburg, as they relate to innovation performance in the automotive retail industry. The outcomes of the study will enhance the innovation performance of small business owners and give insight into their innovation capabilities. It will also contribute to the development of some important innovation capabilities.

Innovation is a critical determinant of small business performance (Brown & Eisenhardt, 2014:343), a finding that is supported by various empirical studies (Calantone & Cavusgil, 2015:515). Furthermore, Dickel and Schrape (2017) highlight that technological transformation is an inevitable part of economic progress and globalisation. This has led to the researcher's interest and motivation in conducting a study on the innovation capabilities of small business owners and the barriers affecting their innovation capabilities, as well as to establish the relationship between innovation capabilities and the innovation performance of small businesses. Improving small business owners' innovation capabilities will ensure the sustainability and economic growth of their businesses.

1.7 LITERATURE REVIEW

The literature review gives definitions of some key concepts, as well as an overview of the City of Johannesburg and the automotive retail industry, the economic contribution of small businesses, innovation and small businesses, innovation performance, and innovation capabilities and technology.

1.7.1 Definitions of concepts

Innovation

Innovation is the application of new ideas gained as a result of creativity, with innovation being a new product or service or a new way of doing something. Innovation is also defined as a specific function of entrepreneurship, in which a business, no matter how large or small, takes the initiative to innovate (Fadaee, 2014:4; Newbert, 2015:24; Stokes & Wilson, 2017:112; Bessant & Tidd, 2018a:39; Fernandez-Esquinas *et al*., 2018:39). As a result, policies encouraging innovation have become important topics at various levels of government; for example, the European Commission (EC) has made innovation policy a central component of its effort to improve the European economy (Trott, Hartmann, Van der Duin, Scholten & Ortt, 2016:10). Innovation can be classified as either internally focused on the business or externally focused outside the business. Internally focused innovation is a one-way process in which businesses sell off their ideas and other resources. By contrast, externally focused innovation is a two-way procedure in which businesses have an inbound process that brings in the ideas or other resources needed to develop their own business, and an outward process in which they sell their ideas and other resources (Lindegaard, 2011:76; Krause, Schutte & Du Preez, 2012:203; Almeida & Sequeira, 2019:160, 299).

Innovation capability

Innovation capability is defined as both a technological learning process on the part of the business, translated into technology development, and the operational capabilities and the managerial and transactional routines represented by management and transaction capabilities (Bengt & Lundvall, 2013:110; Stokes & Wilson, 2017:113; Almeida & Sequeira, 2019:160). In this study, innovation capability refers to the key underpinning organisational capabilities that can sustainably influence innovation in a business. It encompasses the overall ability of the small business owner to absorb, adapt and transform a given technology into specific management, operations and transaction routines that can lead a small business to innovation (Lawson & Samson, 2014:377; Ramli, Abu-Hassan & Arifin, 2016:14). Furthermore, innovation capability is the ability to consistently generate new ideas that, in turn, generate short- and long-term profits for a business that stem from the ability to connect insights, concepts and facts in novel (different) ways (Almeida & Sequeira, 2019:280).

Small business (enterprise)

"Small enterprise" refers to a separate and distinct business entity, together with its branches or subsidiaries, if any, including cooperative enterprises managed by one owner, carried on in any sector or subsector of the economy and classified as a micro, a small or a medium enterprise by satisfying the criteria (Table 1.1) (Department of Small Business Development, 2019:1).

In this study, small businesses are deemed to employ between 11 and 50 employees (full-time). The classification of the retail, motor trade and repair services, as stipulated by the Department of Small Business Development, is shown in Table 1.1 and this classification was followed in the study.

Table 1.1: Classification of the retail, motor trade and repair services

Sector or subsector in accordance with the Standard Industrial Classification (SIC)	Size or class of enterprise	Total full-time equivalent of paid employees
Retail, motor trade, and repair services sector *(Grouped as the Automotive Retail Industry)*	Micro	0–10
	Small	**11–50**
	Medium	51–250

Source: Department of Small Business Development (2019:2)

1.7.2 Overview: City of Johannesburg, and the automotive (retail) industry

Johannesburg is home to almost five million people, accounting for about 36% of the population of Gauteng province and 8% of the national population (AIEC, 2019:26). The province is home to most automotive providers in the country (Gauteng Provincial Government, 2017:9). For this study, small business owners came from the following areas in the City of Johannesburg: City Deep, Ivory Park, Johannesburg Central Business District (CBD), Kya Sand, Midrand, Northcliff, Parktown, Sandton and Southgate.

Automotive (retail) industry

The South African automotive industry plays an instrumental role in the country's economy (The Automotive Business Council (NAAMSA), 2021). In South Africa, the automotive industry is part of the manufacturing "basket" (formal classification) (Deloitte, 2022). According to Obermeyer (2022), the automotive industry is the largest of any manufacturing sector in South Africa and a key player in the country's industrialisation landscape. In 2020, the manufacturing of automotive parts comprised 2,8% and retail 2,1% (Morgan, 2021; International Trade Administration, 2021). Furthermore, the automotive industry employed

around 110 000 people directly (in 2018) in South Africa (Deloitte, 2022). Definitions of the automotive industry are as follows:

> The automotive industry, as defined in the South African Automotive Industry Code of Conduct and accredited by the Department of Trade and Industry (dti) in 2014, means importers, distributors, manufacturers, retailers, franchisors, franchisees, suppliers and intermediaries who import, distribute, produce, retail or supply passenger, recreational, agricultural, industrial or commercial vehicles, including passenger vehicles, trucks, motorcycles, quad cycles, or import, distribute, manufacture, retail or supply any completed components and/or accessories to such vehicles, and/or render a related repair or replacement service to consumers in respect of such vehicles and trailers, and anyone who modifies, converts or adapts vehicles (Motor Industry Ombudsman of South Africa, 2022).
>
> According to the International Trade Administration (2021), the South African automotive industry incorporates the manufacture, distribution, servicing and maintenance of motor vehicles and components. OEMs, official dealers and repair specialists work closely to provide maintenance and repair services.
>
> The automotive retail sector (also referred to as the independent aftermarket) is responsible for the manufacturing and sales of automotive replacement parts and accessories through independent retailers and repair shops directly to the consumer, rather than to the OEMs themselves. The aftermarket also re-manufactures, distributes, retails and installs motor vehicle parts and products other than the OEMs (International Trade Administration, 2021).
>
> According to Transparency Market Research (2018), the selling of new or used cars through local distribution, as well as automotive parts, is known as automotive retail.
>
> The automotive retail market can also be divided into OEMs, dealers and third-party service providers (Transparency Market Research, 2018). The term “automotive retail markets” means any entity or person that manufactures, sells, services or leases new or used automobiles, or new or used automobile parts and accessories, and any garage or service centre which services automobiles, light duty trucks, motorcycles, heavy equipment and machinery, or agricultural implements, equipment and machinery (Law Insider, 2022).

For this study, the focus was on retail, motor trade and repair services (as shown in Table 1.1) and small businesses operating in the City of Johannesburg. Martin (2022) confirms that with ongoing high rates of unemployment in South Africa, the development of the manufacturing industry will create employment opportunities across the automotive value chain. Furthermore, digitalisation will become a major trend in the automotive retail market. Automotive retail is likely to shift from product-driven to customer-centric in order to enhance consumer experience, and to adapt to consumer behaviour and expectations (Transparency Market Research, 2018).

Furthermore, for this study, the terms "automotive industry" and "automotive retail industry", and the terms "industry" and "sector", will be used interchangeably.

1.7.3 The economic contribution of small businesses

According to Khan and Mihaisi (2022:442), SMEs provide job opportunities for people on all levels of society, and they encourage entrepreneurship. SMEs are seen as a potentially efficient solution for establishing new businesses, boosting overall economic development and generating innovations in production processes (Khan & Mihaisi, 2022:443). SMEs are the source of employment and income for about 80% of the world's population (Muriithi, 2017:37). They generate approximately 60% of the total industrial output in China, 62% of employment in the United Kingdom (UK), and 79% of employment in Italy (Khan & Mihaisi, 2022:37, 443).

Small businesses, specifically, receive attention at the institutional level of nations and also for their contribution to employment (Buculescu, 2013:104; Eggers, Kraus, Hughes, Laraway & Snycerski, 2013:524; Filser & Eggers, 2014:55; Williams & Vorley, 2017:41; Abisuga-Oyekunle, Patra & Muchie, 2019:3). They make such contributions based on their innovativeness, and by creating value-adding products and services through their innovation capabilities (Chesbrough & Bogers, 2014:286; Brunswicker & Van Haverbeke, 2015:1241; Akinwale, 2018:1608). Small businesses are economically more efficient than larger businesses as they are more innovative. They also tend to be more flexible and to adapt easily to innovation and new production and management techniques (Bannock & Peacock, 2012:62; Newbert, 2015:27; Stokes & Wilson, 2017:112).

In South Africa, small businesses can play a critical role in reducing rising unemployment rates, specifically in the automotive retail industry (AIEC, 2019:37). Since the transition to

democracy in 1994, the South African government has made it a priority to upgrade the role of small businesses in order to increase their participation in the economy to improve economic growth. This, in turn, will increase competitiveness, the generation of employment and the redistribution of income (Ramukumba, 2014:20). The importance of SMMEs in South Africa is also reflected in the growth agenda of the National Development Plan (NDP). A top priority in Gauteng province and in South Africa is to revitalise the economy through small businesses (Makhura, 2015:1). However, to date, little research has been conducted on small businesses in South Africa, specifically in the automotive retail industry. Such research that has been undertaken includes Battle, Mbohwa, Mukhuba and Muyengwa's (2013:244) study, which focused on the barriers to SMME development in the South African motor body repair sector, and other studies which focused on the determinants of small business success across all industries.

1.7.4 Innovation and small businesses

Innovation development in small businesses is integrated into daily business activities such as customer collaboration and process optimisation, thus making it difficult to distinguish innovation development from other business activities (Hirsch-Kreinsen, 2012:88; Forsman, 2013:60; Williams & Gurtoo, 2017:91). According to Damanpour and Wischnevsky (2011:45), although the generation of radical innovations is prominent in small businesses, the adoption of innovations and the development of incremental innovations will be most prevalent in large established businesses. Forsman and Annala (2011:154) found that in micro and small businesses, the development of incremental innovations is more common than the development of radical innovations. De Jong and Marsili (2012:75) and Williams and Gurtoo (2017:91) examined innovation in small businesses with fewer than 100 employees and argued that the innovation of new products is more widespread in small businesses.

Regardless of the size, innovative businesses tend to have higher rates of profit, greater market value, better credit ratings and improved chances of survival in the market (Laursen & Pedersen, 2014:70; Newbert, 2015:26; Stokes & Wilson, 2017:112). Enkel and Gassmann (2013:95) argue that enriching knowledge base of small businesses by integrating suppliers, customers and external knowledge sources can increase their innovativeness. Innovation can also be a source of innovative opportunities (Best, 2013:55; Williams & Gurtoo, 2017:91).

The literature has shown that small businesses tend to be labour-intensive and utilise low levels of innovation and innovation capabilities. Innovation and innovation capabilities as a strategy

is conducive to the expansion of the small business and is also consistent with employment and income distribution objectives, while at the same time allowing for sustained productivity increases through improvements in innovation (International Leadership Development Programme (ILDP), 2014:14; OECD, 2018:7, 15). Small businesses also play an important role in technological change. They have many advantages as sources of innovation as they are quick to adopt new and high-risk initiatives, they facilitate structures that value ideas and originality, and have a better capacity to reap substantial rewards from market share in small niche markets (Isom & Jarczyk, 2014:9; Newbert, 2015:30).

Innovation is an essential activity for small businesses to undertake to remain competitive and sustainable (Newbert, 2015:25; Williams & Gurtoo, 2017:91; Williams & Vorley, 2017:65). In principle, small businesses need to be engaged in a process of continuous innovation as this process is likely to result in the innovation of new products or services. Innovation in small businesses should not only be limited to products or services, but should also be extended to other areas such as marketing, supply chains, labour processes and management techniques (Cooke & Morgan, 1991; Williams & Vorley, 2017:65, 115). Therefore, in an increasingly volatile and competitive global environment, it is crucial to identify creative techniques for products, services, distribution channels, relationships, reputation, image and price in order to differentiate and retain players in the automotive industry.

The pace at which automotive technology is advancing implies that the innovation of today is the norm of tomorrow, and OEMs can no longer be market leaders simply by differentiating themselves based on recent technology developments (Fulthorpe, 2015:11; AIEC, 2019:36). The four automotive megatrends, namely mobility, autonomous driving, digitisation and electrification, will continue to shape the automotive industry's future and will also have an impact on the supply industry (Kuhnert, Sturmer & Koster, 2017:6; AIEC, 2019:36).

1.7.5 Innovation performance

Innovation is important if a small business wants to grow (Burns, 2011:76; Bessant & Tidd, 2018a:11). Various authors have confirmed that innovation impacts the performance of the small business (Rosenbusch, Brinkmann & Bausch, 2011:441; Tribble, Drnevich & Ha, 2015:44; Benlamri & Sparer, 2017:664) as there is a strong correlation between innovation and performance (Gronum, Verreynne & Kastelle, 2012:257). The strong linkage between innovation and technological capability and the importance of innovation to the small business indicate that technological capability is particularly important to such businesses. Small

businesses have a more focused technological capability than larger businesses, and this focus has a positive effect on innovation in the sense that there are limited distractions and greater capability in a smaller technological area (Tribble *et al*., 2015:37).

Various factors are used to enhance small business performance. These include networking, making use of regional centres, proper planning and the development of business strategies. Small business owners could therefore manage innovation effectively and efficiently by optimising their organisational structures (Best, 2013:113; Fernandez-Esquinas *et al.,* 2018:105). In addition, customers can be an important source of innovation for the small business.

According to Crema, Verbano and Venturini (2013:70), the main motivations for the adoption of innovation by small businesses to ensure performance are, firstly, to keep up with market developments and meeting customer demand; secondly, to develop products more quickly and effectively; thirdly, to incorporate technologies and new knowledge in current products; and lastly, to improve the innovation process and the corporate brand reputation of the small business. Thus, as Hackler (2013:239) claims, in the innovation process, small business owners assemble technology and knowledge, which amplify business performance and economic growth.

1.7.6 Innovation capabilities and technology

Innovation and technological advances pose great challenges to the small business. Technology is used as a driver of innovation in small businesses, influencing their performance (Tribble *et al.*, 2015:41). It should be noted, however, that technological capability increases technology, which leads to greater innovation and strengthening of absorptive capacity (Newbert, 2015:37). Despite the progress of innovation and technology, many small businesses are unfamiliar with these. They are often unaware of innovation and technology and, even if they are aware, technology specifically may not be available, may be unaffordable, or may not be suited to local conditions (Cant & Wiid, 2013:75).

The ability of a business to innovate can be defined as its innovation capability (Saunila, Pekkola & Ukko, 2014:237). The ability to transform knowledge and ideas into new products, processes and systems for the benefit of the business and its stakeholders is another way to define innovation capability. It is a critical factor in fostering an innovative business culture and the characteristics of internal promoting activities, as well as understanding and responding

appropriately to the external environment (Adom, Boateng & Gnankob, 2019:258). The existence of a strong link between technological capability and innovation, as well as the importance of innovation to small businesses, suggests that technological capability may be especially important for small businesses. The owner of a small business has a great influence on its technological capability. It is believed that small businesses will have more focused technological capabilities than large businesses; because there will be less distraction and greater capability in a smaller technological area, this focus will have a positive effect on innovation (Newbert, 2015:37).

Furthermore, the technology used in small businesses increases their capacity to meet customer demands and to keep up with competitors (Van de Vrande, De Jong, Vanhaverbeke & De Rochemont, 2009:423). Various authors support this view and state that technology is a key competitive factor for small businesses. This finding resonates with small businesses where the application of technology has improved production efficiency and reduced costs (Kang, Gwon, Kim & Cho, 2013:80; Newbert, 2015:37).

There is, however, limited take-up of the technical and managerial training available to small businesses (Farsi & Toghraae, 2014:11; OECD, 2017b:14). Various authors have confirmed that small business owners with high levels of education and training are more likely to be successful (King & McGrath, 2012:115; Farsi & Toghraae, 2014:10; International Financial Corporation (IFC), 2014:17). A study of small businesses conducted in Ghana revealed that even though their owners are well educated most of them lack technical and vocational training (Dunbar, 2013:34). This is critical for small business innovation and growth (Dunbar, 2013:31).

In South Africa, many small business owners are not well equipped in terms of education and skills (Urban & Naidoo, 2015:146). They lack managerial training and experience, and the typical small business owner develops his/her approach to management through a process of trial and error. As a result, their management style is likely to be more intuitive than analytical. Hence, they may not be well equipped to carry out managerial routines for the business (King & McGrath, 2012:115; Farsi & Toghraae, 2014:11).

Education and training, as well as technology institutions, should assist in improving the innovative capabilities of small businesses (Information Technology and Innovation Foundation (ITIF), 2011:12; OECD, 2017b:45). Herr and Nettekoven (2017:9) state that

management courses could offer some solutions to small-scale business development. It can therefore be argued that small businesses in the automotive retail industry must have the necessary innovative capabilities and skills to enhance their growth and sustainability.

1.8 RESEARCH METHODOLOGY

Various research approaches exist, the use of which depends on the nature and objectives of the study being undertaken. Whenever conducting research, one is faced with a choice of using either a qualitative or quantitative research method. In this study, quantitative research was used as it enabled the researcher to gather and measure information on targeted variables in a systematic way, making it possible to answer relevant questions and evaluate outcomes. According to Brown (2014a:125), research is about collecting relevant data and extracting that data to support an argument or to draw a valid conclusion. This section presents the research methodology used to answer the research questions and to attain the objectives of the study.

1.8.1 Research approach and design

Research methodology entails the overall approach taken to the research process, from the theoretical underpinning to the collection and analysis of data (Creswell, 2014a:1; Ahmed, Opoku & Aziz, 2016:13). In this study, a quantitative research approach was used and a positivist philosophy was adopted. Positivism emphasises a strictly scientific empirical method aimed at producing pure data and facts free of human interpretation or bias (Neuman, 2014:97; Saunders, Lewis & Thornhill, 2019:144). In this study, positivism is concerned with accepting the research questions posed, as well as the hypotheses proposed, within the context of a small business in the automotive retail industry.

A research approach constitutes new knowledge that enhances one's understanding of a topic or an issue. The research design is the overall strategy that is used to integrate different components of the study coherently and logically (Cooper & Schindler, 2014:125). This integration ensures that the research problem is addressed effectively (Saunders, Lewis & Thornhill, 2012:680; Devlin, 2018:72). It is also a blueprint for conducting a study in a way that allows maximum control to be exercised over the factors that could interfere with the validity of the research results. It further relates to the researcher's plan for obtaining answers to the research questions leading the study (Polit & Hungler, 1999:155; Saunders *et al*., 2012:680). In addition, it is also a plan for how research respondents are selected (Welman & Kruger, 2001:46; Saunders *et al*., 2012:680). For this study, a correlation exploratory research

design was used as it makes it possible to establish whether one variable is associated with another (Devlin, 2018:74). A correlation research design describes any possible linear relationship between the variables involved in the research without attributing the effect of one variable to another (Devlin, 2018:76). This is a very valuable technique as it indicates whether variables have something in common and, if they do, the two can be correlated (Salkind, 2012:203; Devlin, 2018:190).

According to Leedy and Ormrod (2015:92) and Cooper and Schindler (2014:124), the research design is the plenary plan that leads to the provision of answers to the research objectives.

1.8.2 Population

A population is a group of persons, elements or both with common characteristics that are defined by the investigator (DePoy & Gitlin, 2020:384). Schutt (2017:243) defines "population" as the entire set of individuals or other entities to which study findings are to be generalised. Researchers gather information from a sample because of the difficulty of studying the entire population (Creswell, 2014b:74). In this study, the target population comprised small business owners operating in the automotive retail industry within the City of Johannesburg. The real population size of small businesses operating in the City of Johannesburg, and specifically in the automotive retail industry was not known, and no record could be found in the literature of such data on small businesses in this area and this field of study.

1.8.3 Sampling size and sampling procedure

A sample is a group of cases (participants, events or records) consisting of a portion of the target population, carefully selected to represent that population (Schindler, 2019:587). Sampling is the process of selecting a representative part of a population; a sample is thus a subset of that population (Salkind, 2012:95). The unit of analysis is the entity that is being analysed in the study and could be individuals, groups or subgroups; for example, males and females, health, rural or urban (Salkind, 2012:106). In this study, the small business was the unit of analysis, and the sample constituted all small businesses operating in the City of Johannesburg and specifically in the automotive retail industry.

Sampling methods can be categorised into probability sampling and non-probability sampling. For this study, non-probability sampling was used as the selection process was not formal and knowledge of the population was limited; hence, the probability of selecting any given unit of

the population could not be determined (Rea & Parker, 2014:177; Greener & Martelli, 2018:71).

Both a convenient and a purposive sampling technique were used for this study, as it focused on achieving the best data within a short time and at low cost (Rea & Parker, 2014:199). Convenience sampling is the boundary-setting action process that involves the enrolment of available subjects as they enter the study until the desired sample size is reached; also known as accidental sampling, opportunistic sampling or volunteer sampling (DePoy & Gitlin, 2020:378). Purposive sampling refers to the deliberate selection of individuals by the researcher based on certain predefined criteria; also known as judgemental sampling (DePoy & Gitlin, 2020:385). Inclusion criteria are the characteristics that the respondents should have to be included in the study, while exclusion criteria are those undesirable characteristics that disqualify prospective respondents from inclusion in the study (Rea & Parker, 2014:199).

To be included in the study, the small business had to have the following characteristics:

- Must be within the automotive retail industry.
- Must fall within the definition of small businesses as presented in Table 1.1.
- Must be operating within the City of Johannesburg.

The sample was selected using a purposive sampling technique in terms of which a representative sample was randomly selected from each small business operating in the area. A convenience sampling method was used in conjunction with snowballing as this gave potential respondents an equal and independent chance of being selected (Salkind, 2012:102). A convenience sample constitutes respondents gathered through their mere availability and accessibility to the researcher (Devlin, 2018:60). Snowballing happens when initial respondents in the research invite other individuals to participate and these, in turn, invite other respondents (Devlin, 2018:60). As indicated in section 1.8.2, the population size of small businesses operating in the City of Johannesburg and the automotive retail industry was not known, and no record could be found in the literature with such data on small businesses in this area and field of study.

To calculate the sample size, the researcher used Bartlett, Kotrlik and Higgins's (2001:47) formula. This formula is used in cases where the sample size is unknown. Using standard parameters for the margin of error and confidence level, and an appropriate standard deviation

with a population of assumed normality (Bartlett *et al.,* 2001:43), the sample size was calculated as follows:

The margin of error for this study was set at 5%, the level of confidence at 90%, and the standard deviation at 0,5%. This sample size was deemed sufficient for the generalisation of findings at a 90% level Z-score = 1,844.

Sample size = (Z-score) ^{2} x standard deviation (1- standard deviation) ÷ (margin of error)^2

Sample size = $(1,844)^2$ x (0,5) (0,5) ÷ $(0,05)^2$ = 340 respondents. For this study, the sample size therefore comprised 340 respondents.

Despite initially undertaking to complete the questionnaire, some respondents indicated, during follow-ups made by the researcher and the fieldworkers, that they were no longer interested in completing the questionnaire. Therefore, for the study, 280 questionnaires were fully completed, and an additional twenty questionnaires were partially completed.

1.8.4 Data collection and the research instrument

As indicated, a quantitative research method was used for this study. Quantitative research is the process that helps one to gather and systematically measure information on specific variables, which then enables one to answer relevant questions and evaluate outcomes (Trochim, 2006:1; Saunders *et al*., 2012:161). Quantitative research also refers to the precise count of some behaviour, knowledge, opinion or attitude (Schindler, 2019:586). The instrument used for data collection was a questionnaire. A questionnaire is defined by Salkind (2012:147) as a paper-and-pencil set of structured and focused questions used for gathering data from respondents. Questionnaires have been identified as one of the primary sources for collecting data in any research work (Salkind, 2012:148).

The contact details of small business owners were obtained from the internet and were available in the public domain. The researcher searched for the following keywords on the internet, namely, “small business”, “automotive retail industry” and “Johannesburg”. No gatekeeper was used in the study.

The researcher and two field workers hand-delivered the questionnaires to the respondents. The researcher used a map to identify the different areas (north, south, east, and west) of the City of Johannesburg. The small business owners (respondents) emanated from the following areas:

City Deep, Ivory Park, Johannesburg CBD, Kya Sand, Midrand, Northcliff, Parktown, Sandton, and Southgate.

The researcher and the fieldworkers waited at the business locations (premises) of respondents for them to complete the questionnaires. In some instances, respondents asked for the questionnaires to be collected the following day or at a later stage, but then some were no longer interested in the study, or in completing the questionnaire. A total of 300 questionnaires were collected; 280 questionnaires were fully completed, and 20 questionnaires were partially completed. The two fieldworkers were trained by the researcher on their approach and interaction with the respondents (business owners), and the researcher also worked through the questionnaire with the fieldworkers to clarify uncertain items.

The questionnaire was designed in such a way that it was easily understood, and that the data obtained from the results represented the correct measure of what the researcher intended to achieve. A covering letter and a letter of consent accompanied the questionnaire. The questionnaire (Appendix B) was tailored in terms of a five-point Likert scale for some sections of the questionnaire. This ensured that respondents had a wide choice of options from which to choose the one that best supported their opinion (Likert, 1932:55). The objective of the study was discussed with the respondents to create a common understanding of its purpose, and to encourage respondents to provide objective answers.

The questionnaire was pre-tested in a pilot study to determine whether the instructions were clear and easy to follow (Neuman, 2014:48). Five small business owners were conveniently selected for the pilot study, two field workers and the two supervisors and the statistician were also involved in the pilot study (total of 10). Subsequently, some questions were rephrased, the flow of the questions and sections was revised, and one open-ended question was added to the questionnaire. The responses received from the pre-testing were excluded from the final study sample.

1.8.5 Data analysis

Both descriptive and inferential statistics were conducted. Data was analysed by focusing on statistical frequencies, measurement of central tendency, measures of variability and measures of shape, considering the different types of measurement scale used during data collection (Cooper & Schindler, 2014:21). The constructs investigated in this study were innovation capabilities, being independent variables, and innovation performance, being the dependent

variable. An independent variable is a variable that is varied during research, while the dependent variable reflects the effect of the independent variable in the research (Devlin, 2018:79).

The tests performed as part of the inferential statistics included correlation analysis, regression analysis, factor analysis, exploratory factor analysis (EFA) and moderation analysis. Correlation analysis was done to determine the extent to which the constructs in the study and innovation performance fluctuated together. Regression analysis was performed to identify and evaluate the relationships between the innovation capability constructs and innovation performance. Factor analysis was performed to establish correlations between the constructs, while EFA was used for data reduction and to reveal relationships among several items. Moderation analysis was used to measure and test the different effects of the independent variable as a function of moderation.

The researcher captured the data in Excel format. With the support of the statistician, the data was exported to the Statistical Package for the Social Sciences (SPSS), version 25. Data arising from the questionnaires was analysed and interpreted by the researcher and in consultation with the statistician. The research findings are reported in chapter five of the study.

1.8.6 Validity and reliability

Validity and reliability are the first lines of defence against any inaccurate conclusions (Salkind, 2012:235). Validity is concerned with whether the findings are really about what they appear to be about (Saunders *et al.,* 2012:159; Devlin, 2018:72). According to Salkind (2012:123), validity can be expressed in three different ways, namely (i) validity is about results and not actual tests; (ii) validity as assessed within the framework where the test takes place; and (iii) validity as being difficult to quantify as it can range from low to high (Saunders *et al*., 2012:112).

Validity can be measured in different ways, such as concurrent validity, predictive validity, construct validity, face validity and content validity. Concurrent validity refers to validity that relies on a pre-existing and previously accepted measure to validate the indicator of a construct. Predictive validity measurement is based on the occurrence of a future event or behaviour that is logically consistent in order to verify the indicator of a construct. Construct validity assesses the relationship between the calculation and the underlying theory. Face validity is a type of measurement validity in which an indicator makes sense as a measure of a construct in the

judgement of others, especially in the scientific community (Neuman, 2014:2015). Content validity refers to whether or not the operationalisation includes all-important aspects of the concept of interest (Besen-Cassino & Cassino, 2018:29). According to Schutt (2017:56), content validity establishes that the measure covers the full range of the concept's meaning. To determine that range of meaning, the researcher may solicit the opinions of experts and review literature that identifies the different aspects, or dimensions, of the concept. For this study, content validity was used because the questionnaire covered the full content and concepts, of the specific constructs that were evaluated.

The questionnaire in this study was tested for content validity using a pilot study with 10 respondents and the researcher ensured that the questions were objective, simple, brief and understandable. The verification of validity ensured that the accuracy of the measurement instrument (questionnaire) was guaranteed.

Reliability is the consistency with which a measuring instrument gives a certain result when the aspect being examined has not changed (Leedy & Ormrod, 2019:131; Devlin, 2018:138). To ensure that the data collected would give consistent results when applied by a different researcher, this study used a Cronbach's alpha to test for the reliability of the quantitative data collected through a self-administered questionnaire. Cronbach's alpha is a specific measure of internal consistency that reflects the degree to which the items in a scale correlate with each other on the scale (Devlin, 2018:139). The questionnaire was therefore tested for validity, reliability, clarity, comprehensiveness, acceptability and user-friendliness (Rea & Parker, 2014:37). To ensure that the results and findings of the study were consistent, the reliability of this study was tested and verified. Confirmation of the reliability of the study validated the effectiveness of the measurements.

1.9 DELIMITATIONS AND ASSUMPTIONS

The delimitations and assumptions of the study are presented in the following sections.

1.9.1 Delimitations

According to Enslin (2021:315), delimitations result from the very specific and definite choices researchers make when they decide on the scope of a particular research study. All the decisions that the researcher makes during the different steps in the research process determine, to some degree, the delimitations of the research study.

For this study, the researcher specifically limited the research to small businesses operating in the City of Johannesburg and confined to the automotive retail industry.

1.9.2 Assumptions

The decision on what kind of information to collect depends on various assumptions. Assumptions determine the chain of decisions that follows in the process of research and range from broad assumptions (beliefs) to narrow assumptions (actions) (Davis, 2021:10–11). The following assumptions applied to the study:

- Small business owners in the automotive retail industry were willing to participate in the study.
- The contributions and opinions presented by small business owners were measurable and valuable sources of data.
- As the study was conducted in English, it was assumed that respondents were literate and would be familiar with the terminology used in the questionnaire.
- Respondents had a basic knowledge of the automotive retail industry.
- Small business owners in the automotive retail industry would be able to rate themselves in terms of the innovation capabilities that affected their innovation performance and the performance of the small business.

1.10 LIMITATIONS

Enslin (2021:314) states that limitations are described as constraints or limits in the research study that are out of the researcher's control such as time, financial resources, access to information and so on. The following limitations were encountered during the study:

- A limitation applied with regard to the geographical area from which the respondents were selected. This selection was conducted only in certain areas of the City of Johannesburg.
- Some small business owners were unwilling to participate in the study.
- There was the possibility that the outcome of the findings of the study might not be easily transferable to other industries and provinces, as the study focused only on one industry (automotive retail industry) and one city (City of Johannesburg).

- The researcher was also constrained by budget limitations; hence, only certain areas of the City of Johannesburg were covered.
- Twenty questionnaires were not fully completed by the respondents, and only 300 questionnaires were returned by the respondents.

1.11 ETHICAL CONSIDERATIONS

Ethical clearance for the study was obtained from the Department of Business Management, College of Economic and Management Sciences at the University of South Africa (UNISA) (Appendix A). The Code of Ethics that governs research at UNISA was used as a guideline for addressing ethical considerations (UNISA, 2016). Prior to the study, the researcher informed respondents of its purpose and requirements (in the questionnaire covering letter). Each respondent received a letter of consent to complete before completing the questionnaire. Respondents' identity was not disclosed, thus addressing the issue of protecting respondents' privacy. Respondents' participation was also voluntary.

The researcher reported the findings completely and honestly, without prejudice or misrepresenting anyone. In addition, high standards in the research were maintained by focusing on implementing proper referencing of sources and acknowledgment of sources of information. Furthermore, the statistician and the two fieldworkers signed confidentiality agreements. As confirmed with the Research Ethics and Integrity Advisor of the College of Economic and Management Sciences (CEMS) at UNISA, data was collected through a self-completed questionnaire (research instrument) that was hand-delivered to and collected from small business owners in the City of Johannesburg by the researcher and two fieldworkers. No gatekeepers' letters were required as the contact details of small business owners were available in the public domain; hence, no professional body or databases were used to obtain these contact details.

1.12 CHAPTER OUTLINE

An outline of the chapters is presented below.

Chapter one: Introduction and background to the study

This chapter introduced the study and provided the problem statement, research questions, objectives, research hypotheses and the significance of the study. A brief literature review was presented. This was followed by a discussion of the research methodology, and the chapter

concluded with the delimitations, assumptions, limitations, and ethical considerations of the study.

Chapter two: Innovation: an overview

Chapter two gives international, African and South African perspectives on innovation, as well as on innovation and the economy. The relationship between innovation and governments is provided, while business-level innovation capability theories, innovation models and innovation types are also discussed. The chapter highlights the link between innovation and creativity, and discusses innovation adoption and diffusion, innovation capabilities and innovation performance.

Chapter three: Overview of the automotive industry

Chapter three gives an international and South African overview of the automotive retail industry. The chapter also discusses the performance of the South African automotive industry in terms of exports and imports. The final section of this chapter highlights the barriers that are faced by the automotive industry and by the small business.

Chapter four: Research methodology

Chapter four presents the research process, problem statement, research questions, objectives and the research hypotheses for the study. The research design, the research environment and data collection design are presented. This is followed by the data preparation, processing and analysis. The chapter concludes with the ethical considerations of the study.

Chapter five: Research results and findings

Chapter five presents the research results and findings of the study. Descriptive statistics support the biographical and background information of respondents, as well as the responses relating to the innovation capabilities of small business owners. This is followed by the inferential statistics used in the study.

Chapter six: Conclusion and recommendations

This chapter gives an overview of the literature study and revisits the research objectives and research hypotheses. The significance of the study is presented and the implications for theory and practice are highlighted. Limitations of the study, recommendations and further research areas are also presented.

1.13 CONCLUSION

This chapter provided an introduction and background to the overall study. The problem statement was presented, followed by the research questions, research objectives and the research hypotheses. The literature review highlighted the concepts of innovation, innovation capability and small business. Furthermore, an overview was provided on the City of Johannesburg and the automotive (retail) industry, the economic contribution of small businesses, innovation and small businesses, innovation performance, and innovation capabilities and technology. In the discussion on the research methodology, the research approach and design, the population and sampling used in the study, sampling size and sampling procedure, data collection and research instrument, data analysis, and the validity and reliability of the study were described. The delimitations, assumptions and limitations of the study were also presented, and the chapter concluded with the ethical considerations applied to the study.

The next chapter is the first of two literature chapters and gives an overview of innovation.

CHAPTER TWO

INNOVATION: AN OVERVIEW

2.1 INTRODUCTION

This chapter gives an international, African and South African perspective on innovation. Innovation and the economy, innovation and the government, and business-level innovation capability theories are also discussed. This is followed by presenting the various innovation models and include business model innovation, the technology innovation model, the marketing innovation model and the non-linear innovation capability-based model. Furthermore, the chapter gives an overview of the various types of innovation, and includes the open, process, business (model), product and service, and additional types of innovation. Innovation and creativity, the adoption and diffusion of innovation, innovation capabilities and innovation performance are also explored in this chapter.

2.2 PERSPECTIVES ON INNOVATION

The following sections present an overview of innovation from an international, African and South African perspective.

2.2.1 International perspective

The changing nature of the world economy, which has become more knowledge based, has necessitated businesses to be innovative in order to maintain growth and development, as well as achieve socioeconomic goals (Matekenya & Moyo, 2022:452). The ability of businesses to introduce new innovative products to the market faster than their competitors is perhaps their most distinct competitive advantage. This becomes obvious by the significant market share innovative businesses gain while increasing profitability (Cegarra-Navarra, Reverte, Gómez-Melero & Wensley, 2016). Research has shown that businesses that are constantly innovating generally double their profits compared to others; therefore, innovation constitutes the foundation and driver of competitiveness worldwide (Carayannis, Samara & Bakouros, 2014). Furthermore, innovation is taken as being a synonym for the successful production, assimilation and exploitation of novelty in the economic and social spheres. Innovation also represents the successful exploitation of ideas that are new to an adopting organisation (business), turning them into profitable products, processes and/or services (Boukis, 2016).

It was found that the European Union (EU) has for many years been concerned with how to strengthen its innovative capability (Karlsson, Johansson & Stough, 2012:16). However, Europe still lacks an integrated R&D and innovation strategy with proper instruments to achieve its innovative capability objectives. In Europe, there is a gap between greater rates of academic performance based on publicly financed R&D and comparatively small concentrations of academic contributions to European productivity efficiency and competitiveness (Karlsson *et al*., 2012:12). This has been described as the European paradox (Trott *et al*., 2016:181). This paradox refers to the inadequate investment of expertise in the automotive retail industry and poses a barrier to improvement in European competitiveness and development (Trott *et al*., 2016:182).

According to the World Economic Forum (WEF, 2017b:4), North America, Europe, China, Japan and South Korea are leading the way in technology adoption. Technologies have a higher return on investment in countries with high labour costs, as producers are more motivated to search out and experiment with technologies that improve employee productivity. A total of 70% of the 250 000 industrial robots sold in 2015 went to five countries, namely, Germany, Japan, South Korea and the United States (US), together with China, a notable exception as a low-wage economy, which also made significant investments (WEF, 2017b:4). It was found that Indonesia, as the second-largest producer of automobiles in Association of South-East Asian Nations (ASEAN) (after Thailand) and who introduced the first hybrid cars in 2009, marked an innovative step in the development of electric vehicles in Indonesia (The Association of Indonesia Automotive Industries, 2020:14).

Countries differ in both the level and the rate of increase in the resources devoted by businesses to innovative activities. Finland and Canada, for example, are both economies that rely heavily on natural resources. Finland's R&D expenditures have increased rapidly as a share of GDP, while Canada's increased only slightly (Bessant & Tidd, 2018a:73). Furthermore, in Russia, space-launches, aviation and lasers remain relatively small niche markets. Russia experiences an absence of significant innovations despite the strong national emphasis on investment and training in science and technology (Bessant & Tidd, 2018a:79). It was also revealed that Kazakhstan and South Africa share a mixture of rich resource endowments, relatively young populations, large potential domestic markets and a technological base which provides them with a platform for growing and building innovation capabilities to play on the wider global stage (Bessant & Tidd, 2018a:85).

Small businesses contribute to many international inventions that are used daily (i.e. zippers, helicopters, computers, instant cameras, fibre-optic examining equipment, optical scanners etc.). Small businesses innovate by introducing new technology and markets, developing new products and nurturing new ideas – actions that larger businesses need to compete with, thereby requiring larger businesses to change (Hatten, 2016:13). Bessant and Tidd (2018a:67–68) state that innovation and enterprises are central to the development and growth of many economies. Macroeconomic issues are important and national systems of innovation, including formal policy, institutions and governance, have a profound influence on the degree and direction of innovation and enterprises, and in various countries and regions.

2.2.2 African perspective

From an African perspective, innovation refers to the creation of artifacts to improve the human condition (Mavhunga, 2017:151). These artifacts may be tangible, such as devices, products and services, or they are sometimes intangible such as philosophical concepts or processes. Africa has a history of three types of innovation, namely incidental, institutional and strategic innovations. The realm of astronomy, medicine and even hunting are examples of incidental innovation (Mavhunga, 2017:152).

An example of institutional innovation is the making of high-grade carbon steel by the Haya people of Tanzania as far back as 2000 years ago (Mavhunga, 2017:154). Strategic innovation can be seen from how an old city-state like Zimbabwe in precolonial Africa was governed. These examples underscore that Africa has a long and broad history of innovation (Mavhunga, 2017:153). However, innovation is most likely to be effective and sustained if it builds upon and leverages domestic capacity within Africa. In this manner, science, technology and innovation (STI) will most likely contribute to growth, socioeconomic development and competitiveness (UN, 2018:69). Various collaborative efforts have been initiated at both the African Union (AU) (AU comprises all African countries) level and the regional level to support, promote and apply STI as a development tool (Mugabe, 2009:169). However, the challenge is how to link STI to poverty reduction, job creation, sustainable living and improved citizen well-being (New Partnership for Africa's Development (NEPAD), 2014:3).

The challenges of knowledge production in Africa entail focusing on how African structures, practices and concepts were informalised, while the inbound European ones were formalised. Informalised knowledge is information that has not been externalised or captured. This information is made up of items such as rules of thumb or tricks of the trade and in the past

was generally verbal. On the other hand, formalised knowledge constitutes information made explicit and codified, and is associated with semantic meaning. This has particularly been the case with metalworking, pottery, beer brewing, agriculture, commercial caravans and hunting, for which methods of information and knowledge (science) and means (technology) and invention (creativity) were used (Mavhunga, 2017:37). The making of the spear and the social role among East Africa's Maasai-speaking people are central to the concept of material culture-related innovation (Mavhunga, 2017:32). Innovation is also reflected in the Egyptian process of mummification, namely the embalmment of a dead body. The uncontested origins of this contemporary science can be found in the ancient Egyptian myths (Mavhunga, 2017:37).

It was found that in Nigeria, technological entrepreneurship enables both demand-driven innovation (penetration of mobile-enabled products and services) and technology-driven innovation (proliferation of mobile-enabled services and products). An interesting characteristic of technological entrepreneurship in Nigeria is its ability to survive without substantial external investments. In addition to investments, enablers of technological entrepreneurship include technological knowledge (generic and specialist skills), networks (extended business and institutional networks), talent (to create innovative solutions) and culture (better services and development opportunities). In terms of barriers in Nigeria, the following are experienced: technological infrastructure (advancements and internet penetration rates, connectivity), funding (largely foreign sources of funding limit the freedom of SMEs) and corruption (Bolat, 2019:82–83).

In Uganda, science and technology plans are designed to strengthen and interconnect various elements of its economy to achieve development goals through the National Science, Technology and Innovation Plan (NSTIP) (Brar *et al*., 2011:4). Several small businesses in the transport, logistics and manufacturing sectors have upgraded to ICT as a form of innovation. These small businesses experience various benefits, ranging from enhanced competitiveness and efficiency, and the pairing of related processes that were not previously linked. Ugandan small businesses that have adopted ICT innovation systems have experienced improvements in the efficiency of their services that derive, in part, from faster turnaround times (Brar *et al*., 2011:8; Mutonga, 2014:18). However, these benefits from using technology to enhance business productivity are not spread evenly across businesses and industries. For most small businesses and institutions in the automotive retail industry, the scarce internet availability is hardly sufficient to draw global partners to work with. Small businesses are disadvantaged in

terms of access to technology because they are not as able as larger businesses to afford to apply a value chain approach to their business processes (Brar *et al.,* 2011:4; Madina, Kiiza & Shinyekwa, 2018:43). Improving the productivity and competitiveness of the agro-industrial processing sector in Uganda requires the successful application of technology and innovation, the deepening of skills, the reorientation of different institutions, improved communication, links between key stakeholders, and improved use and dissemination of knowledge in the automotive retail industry (Brar *et al*., 2011:42; Mutambi, 2011:37; Madina, Kiiza & Shinyekwa, 2018:4).

According to Ahmad, Bhatt and Acton (2019:34), structural problems in developing countries (i.e. access to finance, unavailability of science and technology infrastructure, government corruption and lack of skilled labour) make innovation difficult; however, it provides a fertile ground for innovation to take place.

2.2.3 South African perspective

In South Africa, businesses, regardless of size or industry, implement innovation to maintain competitive advantage, to maintain more effective product development management and to meet consumer needs (Shurrab & El Bouassami, 2013:5; Almeida & Sequeira, 2019:299). Innovation plays a significant role in the South African economy, as it stimulates total early-stage entrepreneurial activity (TEA) through the commercialisation of ideas (Mohalajeng & Kroon, 2016:100).

The South African government has turned to innovation and the development of SMEs to raise GDP per capita income. However, South Africa's low level of innovation activity in the early stages of start-up limits economic development and job creation in the country (Mohalajeng & Kroon, 2016:107). A reason for the low innovation activity is that, while there have been policy pronouncements at a macro level, there has been very little follow-up at the meso-level (the study of groups, communities and institutions), as well as disinterest from the micro-level (Mohalajeng & Kroon, 2016:102). The meso-level is made up of government and private agencies, as well as intermediaries who serve to translate government policy into tangible benefits for the micro-level, i.e. entrepreneurs and SMMEs. Meso-level contributors include science parks and incubators. While most of these meso players have concentrated on traditional incubation services, there is an interest in using innovation such as open innovation to stimulate entrepreneurship (Cunningham, Cunningham & Ekenberg, 2016:2).

The Innovation Hub (science park) in Pretoria, Gauteng province, uses open innovation as one of the methods to implement the Gauteng Innovation and Knowledge Economy Strategy (GIKES). One of the aims of the open innovation strategy is to stimulate innovation and successful commercialisation. The Innovation Hub Open Innovation Solution Exchange (referred to as Open-IX) is a web-based platform and presents an opportunity to investigate the bridging or crossing from invention to commercialisation (Mohalajeng & Kroon, 2016:3).

Some of South Africa's most innovative inventions include the Computed Axial Tomography Scan (or CAT Scan) created by Allan Cormack and Godfrey Hounsfield in 1970 (Bhattacharyya, 2016:448; Tan & Poole, 2020:1); extracting oil from coal which led to the South African Coal Oil and Gas Corporation (SASOL) in 1950; the first heart transplant by Dr Chris Barnard in 1967; the automated pool cleaner (Kreepy Krauly) by Ferdinand Chauvier in 1974; Pratley's Putty (Pratley's glue) by George Pratley during the 1960s; the speed gun (speedball) invented by Henri Johnson in 1992 which measures the speed and angles of speeding objects, such as cricket and tennis balls; Q20 invented by Mr Robinson in 1950, a water repellent that keeps rust at bay and make it easy to release rusted or seized nuts and bolts; computerised ticketing introduced by Percy Tucker in 1971 (computerised, centralised ticket booking system); and economical solar power devised by Professor Vivian Alberts in 2005 (solar power technology that used a metallic film instead of silicon-based solar photovoltaic cells) (Starling, 2020).

Despite its importance, innovation remains a challenge globally, including South Africa (Matekenya & Moyo, 2022:452). In realising the continued challenges of financial access for SMMEs, the Minister of the Department of Small Business Development announced the creation of a Small Business Innovation Fund designed to provide loans and grants for SMMEs in South Africa with high growth potential (Bowmaker-Falconer & Herrington, 2020). One of the objectives of the Fund is to encourage SMME innovation and growth which are crucial for strengthening competitive advantages (Matekenya & Moyo, 2022:454).

According to Lukhele and Soumonni (2020), South Africa has identified innovation as a crucial determinant of growth and development; thus, policy frameworks have been developed to encourage both the public and private sectors to put innovation at the forefront. In 1996, South Africa adopted the National System of Innovation (NSI), which includes Doing, Using and Interacting (DUI) and Science, Technology and Innovation (STI), for the purpose of addressing the innovation challenge faced by both small and large businesses and also strengthening South

African technological capabilities. Owing to the changing nature of the world economy, an updated White Paper on Science, Technology and Innovation was adopted in 2019 (Matekenya & Moyo, 2022:453). Despite these initiatives, the innovation levels of SMMEs remain inadequate to contribute to the growth and development of SMMEs (Furawo & Scheepers, 2018).

Makarona and Kavoura (2019) emphasise that innovation and the use of new technologies are the key to business survival in today's competitive business environment. Innovation does not always mean complicated and costly processes (Masouras, 2019). New technologies will always continue to emerge, such as cloud computing, communication platforms, data analytics, big data, automation, robotics, artificial intelligence, machine learning, virtual reality and even 3D printing, and they will offer new opportunities for the small business (Ulas, 2019). According to Chigbu and Nekhwevha (2021), global competition in the automotive industry job market demands the continuous development and transformation of manufacturing processes, making the industry the world's most extensive robotics installation. Therefore, the industry relies heavily on innovation to adapt to an ever-changing business environment and to stay competitive in the motor world. Matekenya and Moyo (2022:457) state that technological innovation has a significant effect on firm performance owing to the capital-intensive nature of the automotive industry.

2.3 INNOVATION AND THE ECONOMY

Innovation plays a critical role in national economic development as a source of competitive advantage (Linan & Fernandez-Serrano, 2014:685; Matejovsky, Mohapatra & Steiner, 2014:611; Williams & Gurtoo, 2017:91). Innovation, as a driver of an economy, determines the prospects of the economy and sets the pace for economic growth by creating employment opportunities, spurring innovation, facilitating effective and creative ways of utilising resources, expanding and extending economic boundaries, and ultimately, improving social welfare and growth (Driga, Lafuente & Vaillant, 2009:72; Thornton, Ribeiro-Soriano & Urbano, 2011:107; Johnson, Freeman & Staudenmaier, 2015:155; Wennekers, Stel, Carree & Thurik, 2018:169).

Technological change and innovation are the main drivers of economic growth through new production processes and new products and services that drive such growth and development. There is growing evidence that knowledge, innovation and ongoing technological change are

strong determinants of differentials in productivity and growth, as well as a country's ability to benefit from globalisation (Haller & Siedschlag, 2011:3775; Helpman & Grossman, 2016:37).

Despite the benefits that innovation offers economic growth, there is concern about the type of innovation that small businesses need to promote (Lesakova, 2014:77). The contributions of various types of innovation in small businesses vary from economy to economy (Valliere & Peterson, 2009:459). In economies such as the US, the EU and Japan, significant early innovation activities are stronger than in transition or efficiency-driven economies. Significant R&D investments, strong technological environments, and the economic standards of robust innovation-driven economies enable them to create high-impact innovators (Van Vuuren & Alemayehu, 2018:140). As a result, these countries have a multitude of high-impact technical innovators in comparison to necessity-dominated economies. This therefore creates a formidable foundation for new innovators to contribute significantly to the economic development of their country (Van Vuuren & Alemayehu, 2018:170; Wennekers *et al.,* 2018:168).

Most small businesses have limited physical resources, therefore expansion opportunities will eventually run out of technological innovation (Mazzucato, 2014:851; Miruka & Zonge, 2014:143; Bushe, 2019:12; Grosse & Meyer, 2019:504). Only by generating new and better ways to use the limited resources of the small business can growth be sustained (Haanaes, Michael, Jurgens & Rangan, 2013). Together with productivity and economic growth, the pace of technological innovation has been greatly accelerated in modern times, as the basic economic resources in small businesses are no longer physical and capital assets, but more intangible information and knowledge resources (Derun, 2013:1822; Williams & Gurtoo, 2017:534; Grosse & Meyer, 2019:505).

To achieve better economic results, new knowledge or innovation is increasingly being applied by small businesses. This process of development can be described as the use of information to produce new knowledge (Drucker, 1993:190; Du Toit, 2019:2). While the knowledge base of a small business has become essential as a source of competitive advantage, innovation has become essential to ensuring that the competitive advantage is sustained. It is therefore imperative that existing knowledge is used creatively, and that new knowledge is more effectively acquired, integrated and processed. The innovative application of understanding is increasingly opening new possibilities for small businesses, but imitation also generates

possibilities for rivals at the cost of the initial innovators, thus creating a vibrant competitive system (Davis, 2014:129).

The advent of the information economy has further accelerated the pace of change, resulting in dramatically shorter life cycles of both technologies and products. Innovation drives change and creates profits; thus, continuous innovation guarantees value creation for individuals and small businesses in society in the areas of high-technology value creation. Small businesses need to incorporate strategies based on ideas, perceptions and knowledge of trends. In today's globally competitive climate, small businesses need leadership with a focus on overall value-creation processes. On the one hand, value creation is understood as something, directly and indirectly, related to innovation, performance and results, while on the other hand, value creation in the industrial economy relies on economies of scale, logistics and organisational processes. New technology enables small businesses to produce, communicate, organise, distribute and consume in several ways, resulting in new forms of cooperation (UN, 2020:40).

Small businesses are central to the economy of any nation, be it a developed or a developing economy. According to the World Bank (2018b), 600 million jobs are needed in the next 15 years to absorb a growing global workforce. Small businesses make such contributions to the economy using their innovativeness and by creating value-adding products/services through their innovation capabilities (Chesbrough & Bogers, 2014:286; Brunswicker & Van Haverbeke, 2015:1241; Akinwale, 2018:1608). The next section gives an overview of the South African economy and innovation.

2.3.1 The South African economy and innovation

South Africa's economy is unsustainable; therefore, the government should promote economic transformation, encourage labour-intensive growth and build a globally competitive economy. South Africa should also modernise network industries, lower entry barriers and foster small business growth (National Treasury, 2019:3). According to the World Bank (2018a), South Africa's economic growth has slowed, unemployment is on the rise and inequality remains high. The government should implement a series of reforms that can boost South Africa's growth in the short term as soon as possible. The government's conviction is that we need to mobilise all our resources and efforts in economic activities that will put the economy on a sustainable recovery trajectory (South African Government, 2020:2).

Science, technology and innovation (STI) have a key role to play in supporting economic reconstruction and recovery, as well as in improving service delivery. The national response has underlined the central role played by STI (South African Government, 2020:34). South Africa needs to invest in research, development and innovation (RDI) to address the social distress caused by the Covid-19 pandemic and the lockdowns implemented to slow the spread of the disease. The key sectors that will be supported are agriculture, mining and mineral beneficiation, and manufacturing. RDI will be leveraged to contribute to economic reconstruction and recovery in three areas, namely, firstly, RDI to revitalise and modernise existing industries/sectors; secondly, RDI that creates new sources of growth and stimulates R&D led industrial development; and thirdly, RDI in support of a capable and developmental state (South African Government, 2020:34). Furthermore, the government will increase investment in 3D printing, additive manufacturing and satellite manufacturing (South African Government, 2020:35).

The National Development Plan (NDP) has identified science, technology and innovation (STI) as primary drivers of economic growth, job creation and socioeconomic reform (Department of Science and Technology (DST), 2019:3). In deference to this, the DST has been renamed the Department of Science and Innovation (DSI). The department is furthering its ability to take advantage of rapid technological change to build a prosperous nation. The overall vision of the Converging Technologies Platform (CTP) is to combine the assets of the national system of innovation (NSI) to create an innovation "explosion" that will have a greater and increased socioeconomic impact for the benefit of all South Africans. The CTP (or smart technologies) uses large amounts of data to improve the user experience by generating more tailored and anticipatory results. However, such data has the potential to identify, locate, track and monitor an individual without the person's knowledge (DSI, 2018:204).

In December 2018, South Africa launched the continent's most advanced nanosatellite, the ZACube-2, into space (Official Guide to South Africa, 2019:205). The National Space Strategy (SANSA) aims to promote the peaceful use of space. Significant progress has been made in this regard in terms of considering the spin-off benefits of space exploration, ensuring that space is kept peaceful and demonstrating how activities relating to space can enrich daily life (SANSA, 2018:7). Meanwhile, the Biorefinery Innovation Programme aims to enhance the competitiveness of the sugar and forestry sectors, and hydrogen fuel cell technology holds the promise of boosting manufacturing capacity and competitiveness. A key component of this

strategy is to assist the forestry and sugar industries in improving the utilisation of forestry and sugar cane biomass, as well as the utilisation of algal biotechnologies (Parliamentary Monitoring Group, 2020:41).

The Academy of Science of South Africa (ASSAf) is the apex organisation for science and scholarship in South Africa, while the CSIR is a world-class African R&D organisation (ASSAf, 2021). Additionally, the National Research Foundation (NRF) is a non-profit organisation (NPO) that promotes and supports research across the spectrum of basic, applied and strategic research, with an appropriate mix of programmes and funding mechanisms aligned with national priorities. In this way, the NRF contributes to the improvement of the quality of life of all the people of the country. By developing technology and disseminating information, the Agricultural Research Council (ARC), on the other hand, conducts fundamental and applied research with partners to generate knowledge, develop human capital and foster agricultural innovation (Official Guide to South Africa, 2019:209).

2.4 INNOVATION AND GOVERNMENTS

Governments play a significant role in mitigating the limitations of technological learning to recognise the advantages of operating in a worldwide market. This role includes specific public policies, especially those for industrial growth, encouraging learning to take place both in small businesses and within the wider innovation framework of a country (Adebowale, Diyamett, Lema & Oyelaran-Oyeyinka, 2014:102). However, the mere accumulation of physical technology as knowledge is not enough. One should be conscious that information and technology are not linear; hence, a fresh industrial growth paradigm is required. Such a paradigm will require a fresh outlook from the government (Adebowale *et al*., 2014:104; Diyamett & Musambya, 2014:58).

Governments should provide opportunities for technological conversion and sustainable development by setting clear norms and policy objectives, while being flexible in enabling small businesses to use multiple means to attain those objectives (Ashford, 2002:1417; Bossink, 2002:633). Furthermore, direct support for R&D and tax incentives for investment in sustainable technologies can generate a favourable business atmosphere which, in turn, can assist to encourage and maintain innovation in small businesses (Polzin, 2017:534). According to the WEF (2017b:9), strict and concentrated policies and regulations can stimulate important improvements in product and process technology. Furthermore, the role of public policy in encouraging and maintaining innovation through mediating factors, such as the small

business's readiness, ability and chance to change, as well as the present state of innovation, offers the opportunity to suggest propositions for investigating how government policies influence incremental and radical innovations (Diyamett & Musambya, 2014:2).

Governments also play an important role in encouraging and maintaining innovation, which means that innovation should continue to serve as a driver of the financial health of domestic economies, especially when it is actively and efficiently endorsed by government agencies (Link & Scott, 2010:600; Patanakul & Pinto, 2014:97). To generate employment and develop the economy, the South African government recognises that small businesses are the engines of job creation and economic growth. Inventors can, through their engagement, generate possibilities for new employment opportunities and economic growth (Malefane, 2013:1; Global Entrepreneurship Index (GEI), 2018; Mafundu & Mafini, 2019:2).

Most small businesses started as an original income-generating activity and grew to enter the formal economy. Owing to the contribution of small businesses to financial growth and job creation, the South African government pays attention to them. According to the South African government's Estimates of National Expenditure, R18,5 billion was budgeted for 2020/21 to support small businesses, including the development of the manufacturing and service sectors, and infrastructure investment (National Treasury, 2020:60). The government has also allocated R1,4 billion to help commercialise local innovation and fund small businesses in their start-up phase, which includes upgrading infrastructure to strengthen the research and innovation capabilities of the Council for Scientific and Industrial Research (CSIR) and the South African National Space Agency (National Treasury, 2020:60).

Figure 2.1 shows the connectivity between different stakeholders, namely the government, small businesses, and universities, in leveraging innovation capabilities.

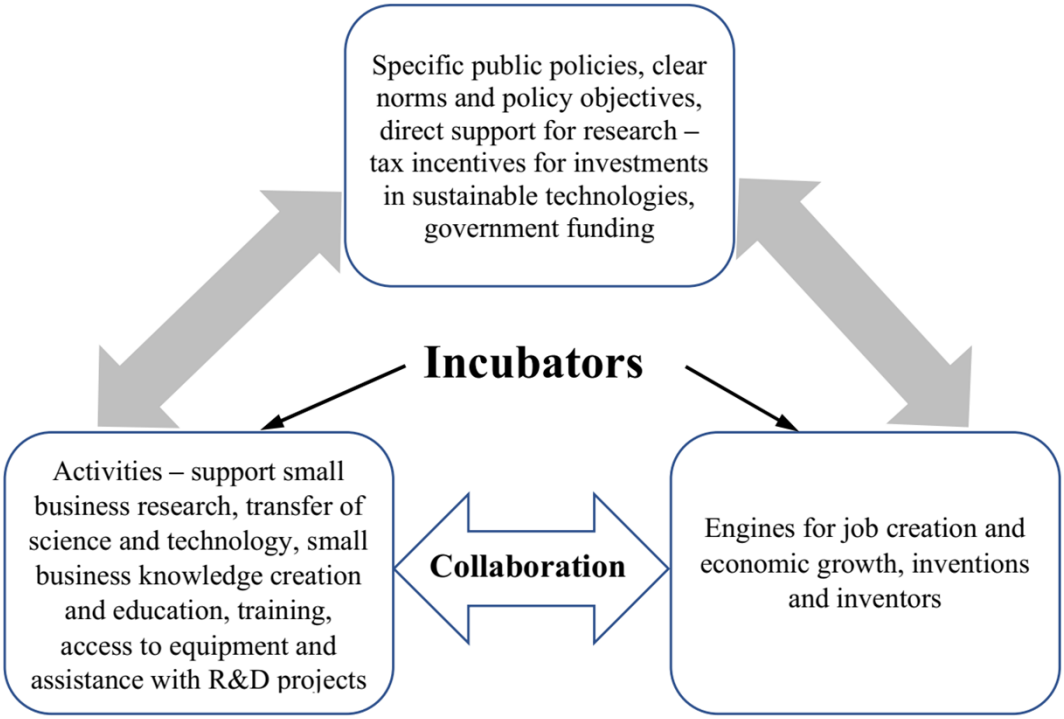


Figure 2.1: Collaboration between government, small businesses and universities
Source: Author's own compilation

Figure 2.1 demonstrates government collaboration with small businesses and universities. The role of government is to provide a secure business atmosphere appropriate for the conduct of business. The government needs to develop policies and tools to help small businesses, introduce policies that can promote changes in product and process technology and develop a plan for the allocation of resources to small businesses and universities (UN, 2021:106).

The role of small businesses in this partnership is to provide employment and stimulate economic growth; small businesses are the driving force behind job creation and economic growth. From time to time, small businesses come up with new inventions. The university is the custodian of all research-related activities; in this sense, the university supports the transfer of science and technology to small businesses and supports the creation of expertise, training, access to equipment and funding for the R&D projects of small businesses (UNCTAD, 2018:77).

2.5 BUSINESS-LEVEL INNOVATION CAPABILITY THEORIES

Two fundamental theories used to describe business-level innovation capability are the resource-based view (RBV) and the principle of dynamic capability. A diffusion perspective theory is also commonly used in the adoption of innovation studies. The RBV is the basis for

business growth and competitive advantage (Louw & Venter, 2013:470); for this reason, the literature has shown significant interest in understanding how businesses create, maintain and enhance their resources, and how they shape their competitive advantage from organisational learning (Peris-Ortiz, Ferreira & Merigo Lindahl, 2019:4).

The RBV is a strategic management tool that presents resources and capabilities as an essential source for obtaining a sustainable competitive advantage and, consequently, greater performance for small businesses (Peris-Ortiz *et al*., 2019:8). The RBV is anchored on Penrose's (1959:42) work, which introduced a new concept of the enterprise as the set of resources of an administrative unit. Resources and capabilities are long-lasting, implying that a resource-based strategy provides a longer-lasting version compared to the traditional perspective (Peris-Ortiz *et al*., 2019:5).

The principle of dynamic capability, on the other hand, seeks to understand how a small business develops resource exploitation capabilities (Changwei, Qiong, Yuan & Guang, 2019:7). The concept of dynamic capabilities revolves around core competencies, such as resources and strategies. At the core of the concept of dynamic capabilities is the organisation's ability to reconfigure its resources (Kulins, Leonardy & Weber, 2016:1438; Peris-Ortiz *et al*., 2019:25).

According to Winter (2003:991) and Peris-Ortiz *et al.* (2019:25), for a capability to be considered dynamic, the small business must be able to use it repeatedly and reliably. Dynamic capability can also integrate internal and external resources to promote the production of new products and services (Corallo, Lazoi, Secundo & Depaolis, 2016:479; Teece, 2018:49). Dynamic capabilities are the ability of the small business to integrate, construct and reconfigure internal and external skills to respond quickly to changing environments (Kulins *et al.,* 2016:1437). It enables the business to identify environmental opportunities and threats and respond effectively to environmental changes (Louw & Venter, 2013:260). Furthermore, dynamic capabilities, as part of the organisational processes, use resources to integrate, reconfigure, obtain or release resources that adapt or even create changes in the market (Corallo *et al*., 2016:480). Small businesses that own and exploit valuable and rare capabilities will therefore achieve a competitive advantage, and these advantages will manifest in better performance (Peris-Ortiz *et al*., 2019:5).

The diffusion perspective theory has two aspects that are widely used across the adoption of innovation studies, namely epidemic theory and probit theory. The epidemic theory of business innovation is influenced by available information on the benefits of a particular innovation (Geroski, 2000:603; Kiesling, Günther, Stummer & Wakolbinger, 2012:183). This theory implies that the adoption of innovation is communicable and that the speed of uptake increases progressively with every adoption. Probit theory, on the other hand, focuses on the characteristics of innovation adopters (i.e. size and age of a business and interaction with other members of the social system), also known as the determinants of or predictors for the adoption of innovation (Bishop, Shumway & Wandschneider, 2010:585; Nan, Zmud & Yetgin, 2014:52).

Furthermore, a small business's decision to adopt an innovation depends on various factors, such as the budget for innovation, leadership drive, the reward system to reward employees and the skills to adapt to new technology resulting from its circumstances (Bishop *et al*., 2010:585; Delre, Jager, Bijmolt & Janssen, 2010:267; Kassie, Jaleta, Shiferaw, Mmbando & Mekuria, 2013:525).

2.6 INNOVATION MODELS

There are different types of innovation models, including the business model innovation (BMI), the technology innovation model, the marketing innovation model and the non-linear innovation capability-based model. For this study, the non-linear innovation capability-based model was used. The reason for using this model is motivated by the following rationale: Firstly, the model provides a broader view of inputs to the innovation process as it goes beyond the traditional such as R&D; and secondly, the model has universal applicability to both product and process innovation-oriented industries (World Bank, 2012; 2018c:91; Institute for Public Policy Research (IPPR), 2013:325; Saunila & Ukko, 2014:32; Binder, Mair, Stummer & Kessler, 2016:340). Lastly, the non-linear innovation capability-based model fits the composition of South Africa's automotive industry setup because the model accommodates both product and service, and the South African automotive industry deals in both products and services.

The BMI, the technology innovation model, marketing innovation model and the non-linear innovation capability-based model are discussed in the following sections.

2.6.1 Business model innovation

The BMI is about the ability to rethink the current business within a small business context, to find new revenue streams and to maintain a competitive advantage. This can be done either by improving an existing business model or by looking for new ways to provide value (Bock, Opsahl, George & Gann, 2012:279; Ricciardi, Zardini & Rossignoli, 2016:5490; Velu, 2017:603). The BMI differs from product and process innovation in that it emphasises the re-design of organisational structure, operation mode and business process (Bock *et al*., 2012) and it promotes identifying and adopting novel opportunity portfolios (Teece, 2018). Furthermore, it crosses organisational boundaries and provides a comprehensive way to explain how a small business operates (Zott & Amit, 2008). Thus, the BMI is a valid construct for explaining competitive advantage and plays an important role in business performance improvement (Bock *et al*., 2012; Velu, 2017). Additionally, because the BMI is a holistic activity, it necessitates a wide range of organisational resources and capabilities to facilitate the reconfiguration of activities and organisational units, as well as their linkages and relationships (Zott *et al*., 2011). As a result, the BMI encourages small businesses to develop and improve their integrative capability (Teece, 2018).

2.6.2 Technology innovation model

Technological innovation is a part of the total innovation discipline. It focuses specifically on technology and how to embody it successfully in products, services and processes. Technology, as a body of knowledge, might thus be seen as a building block for technological innovation, serving as a cornerstone for research, design, development, manufacturing and marketing. For many small businesses, technology is a major player when seeking a competitive edge and increasing profit margins. Technological innovation means generating new ideas based on technology, capability or knowledge to produce a new solution to a real or perceived need and to develop this solution into a viable entity (Geldes, Felzensztein & Palacios-Fenech, 2017:55).

Technology innovation, and in particular 3D printing technology, has the potential to promote innovation, design and tool-creation capacity in developing countries, potentially improving livelihoods and contributing to economic empowerment; however, its deployment is usually limited to universities or specialist research centres (UNCTAD, 2018:35).

2.6.3 Marketing innovation model

For a small business to succeed, marketing innovation is claimed to be as important as product innovation, which makes sense, as there is no point in spending time and money on the business model and product development if no one can find it and benefit from it (Shan, Song & Ju, 2016:683). However, marketing innovation is not just about finding new unique channels and tactics to promote one's offering; it is also the ability to find new markets and create new value propositions that others are not able to (or do not want to) provide (Anning-Dorson, 2018:269). This can be done by launching one's model in new unconventional places, or by promoting one's existing offering in a way that it has not been promoted before (Martinez-Costa, Jimenez-Jimenez & Castro-del-Rosario, 2019:286).

2.6.4 Non-linear innovation capability-based model

The automotive industry includes SMEs that may lack the resources to innovate which are required for investing in the linear inputs of innovation (IPPR, 2013:327; Saunila & Ukko, 2014:40). The non-linear innovation capability-based model has gained popularity in innovation research, although it has some weaknesses. For example, the model does not provide the standard innovation capability constructs of non-linear inputs. The researcher has the flexibility to incorporate the industry's dynamics as he/she wishes (Saunila & Ukko, 2014:45). The non-linear innovation capability-based model can only provide a framework since it is difficult for small businesses to measure the degree to which each construct of non-linear input of innovation capability contributes to the overall innovativeness of the small business before the development of such constructs (Mazzucato, 2014).

Figure 2.2 illustrates the interrelationship between the BMI, the non-linear innovation capability-based model, the technology innovation model and the marketing innovation model.

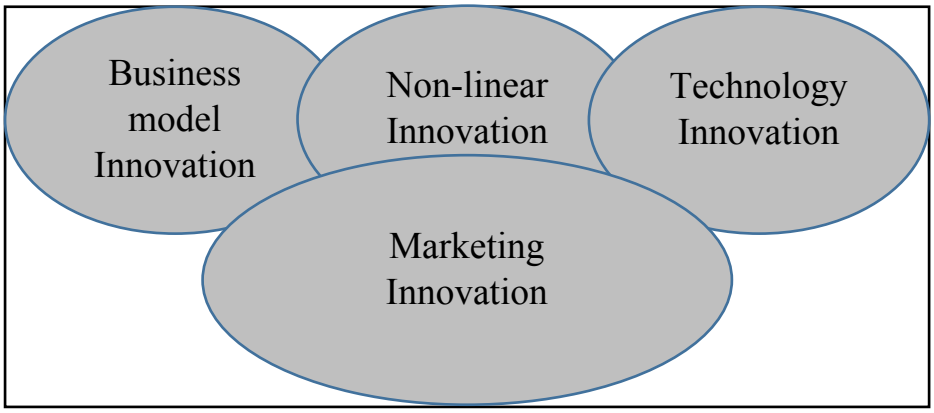


Figure 2.2: Inter-relationship between innovation models
Source: Adapted from Wanberg and Breiby (2011:56)

As shown in Figure 2.2, BMI is about discovering new revenue and retaining a competitive edge (Changwei *et al*., 2019:541). Technology innovation requires the implementation of knowledge to find solutions to the business problem (Rahimi, Rostami, Shad & Vafaei, 2017:3). Marketing innovation is about encouraging small business offerings as well as discovering new markets (Burns, 2016:42). There are no clear standards in the implementation of a non-linear innovation strategy. In Figure 2.2, the non-linear innovation capability-based model overlaps with the other three developments since they share some of the constructs of each innovation. The non-linear innovation capability-based model simply provides a framework and small business owners are free to decide on whether to incorporate the constructs of interest (Saunila & Ukko, 2014:35).

2.7 TYPES OF INNOVATION

According to Hisrich and Ramadani (2017:45), there are various types of innovation based on the uniqueness of an idea. Unique innovations often establish the platform on which future innovations in an area are developed. The types of innovation are discussed in the following sections.

2.7.1 Open innovation

Open innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation and to expand markets for the external use of innovation (Bessant & Tidd, 2018a:301). Open innovation assumes that the small business can use external ideas, as well as internal ideas and internal and external paths to markets, as they look to advance their technology (Karlsson *et al*., 2012:242; Krause & Schutte, 2015:163; Bogers, Zobel, Afuah, Almirall, Brunswicker & Dahlander, 2016:3; Mohalajeng & Kroon, 2016:107). An open innovation process also combines internal and external ideas with architectures and systems (Park & Yoon, 2013:206; Krause & Schutte, 2015:163; Almeida & Sequeira, 2019:178).

The success of open innovation in small businesses lies in the following aspects being embedded in the business environment: climate for innovation, partnership capacity and internal processes. Open innovation is also used to connect the various role players within small businesses to leverage their innovation capabilities (Piller & Diener, 2013:6). The literature confirms that open innovation in small businesses is deemed to be a successful approach in achieving sustained high growth with low innovation costs (Cillo, Rialti, Bertoldi & Ciampi, 2019:1061).

2.7.2 Process innovation

Process innovation is the application of new methods and techniques to produce goods and services (Trott *et al*., 2016:127; Stokes & Wilson, 2017:116; Bessant & Tidd, 2018b:39). The purpose of process innovation is to create efficiency in the production process and the delivery of goods and services (Achtenhagen & Brundin, 2017:154). Much as process innovation may result in improved quality of goods and services, it does not necessarily result in new products and services (NRF, 2014; OECD, 2018:15; UN, 2018:93).

Process innovation is also a conceptual and operational map for moving new product and service projects from idea to launch, while serving as a blueprint for managing a new product development process to improve effectiveness and efficiency in the small business. Four widely accepted factors that contribute to new product success include innovation, time, quality and expense. Speed to market refers to the time between idea generation and new product launch (Lin, 2018:181). Product quality refers to customers' perceptions of superiority relative to competing alternatives, while development expense is the level of resources required for a project to advance from concept creation to a commercial product (Achtenhagen & Brundin, 2017:155; Lin, 2018:182).

2.7.3 Business model innovation

BMI is a method by which a small business builds and uses its resources to offer its customers better value and to make money (Afuah & Tucci, 2001:10; Zott *et al*., 2011:1019; Changwei *et al*., 2019:541). BMI can result in superior value creation and may replace the old way of doing things to become the standard for the competition (Morris, Allen & Schindehutte, 2005:726). Therefore, BMI is crucial to business performance for the role it plays in value creation and value capturing (Ricciardi *et al*., 2016:5487). BMI also enables small businesses to change fundamentally the ways they organise and transact both within and across the business and industry boundaries (Zott *et al*., 2011:1020; Corallo *et al*., 2016:478).

As a holistic innovation for value creation and value capturing, BMI differs from product and process innovation, as it emphasises the redesign of organisational structure, operation mode and business process (Zott *et al*., 2011:1025; Bock *et al*., 2012:305). BMI promotes identifying and adopting novel opportunity portfolios (Teece, 2018:40). Moreover, it spans the business's organisational boundaries and supplies a comprehensive way to explain how a small business does business (Zott & Amit, 2008:26). Thus, BMI is a valid construct for explaining

competitive advantage and plays a crucial role in improving small business performance (Bock *et al*., 2012:279; Velu, 2017:605). Furthermore, as a holistic activity, the implementation of BMI requires various organisational resources and capabilities to facilitate the reconfiguration of activities and organisational units, as well as their linkages and relationships (Zott *et al*., 2011:1027). Accordingly, BMI encourages the business to build and enhance an integrative capability (Teece, 2018:44).

2.7.4 Product and service innovation

Product and service innovation is the introduction of new goods and services to meet the needs of the market (Essmann, 2009:15; Trott *et al*., 2016:225; Bessant & Tidd, 2018a:39; Lin, 2018:182). Such innovations are reflected in new products or services on the market and to the benefit of customers. When customers perceive new value from products and services, the innovation of the business model can stimulate their desire to purchase such new products and services, which improves business performance (Velu, 2017:603).

Products and services are regarded as new when they differ significantly in their characteristics or intended uses from the products and services previously produced by the business (OECD, 2005:48; Achtenhagen & Brundin, 2017:157). Product innovation is typically explicit, and its outputs are relatively tangible, certain and measurable, suggesting that innovation management and product innovation are quite different, but with a clear alignment between the two (Lin, 2018:183). Product innovation is also referred to as the outputs of innovation or front-end innovation (Trott *et al*., 2016:226). From a strategic perspective, the market position of a small business is determined by the innovation of new products well attuned to the voice of customers, with perceived technical superiority, developed within a budget and launched ahead of the competition (Trott *et al*., 2016:217; Achtenhagen & Brundin, 2017:153; Lin, 2018:177).

Product innovation serves the market demand and directly affects business performance (McNally, Akdeniz & Calantone, 2011:63; Lin, 2018:180). It is important for an increase in business profits and makes it easier to manage the product portfolio, which is fundamental for the competitiveness of the small business (Lin, 2018:179). Product innovation is also a powerful factor behind the differences in business performance, with small businesses that innovate outperforming their less innovative competitors (Rubera & Kirca, 2017:741; Lin, 2018:181). Furthermore, product innovation enables the business to better satisfy market demand and produce direct benefits; therefore, it is even more appreciated as a key component

of sustainable growth for most small businesses in today's competitive marketplace (Williams & Gurtoo, 2017:91; Lin, 2018:182).

2.7.5 Additional types of innovation

Incremental innovation can best be described as the process of exploring and improving radical products and involves the systematic expansion of a product or service into newer or larger markets (Kuratko, 2017:444). Innovations that require minimal adjustment are referred to as incremental innovations, while those requiring major adjustments are radical innovations such as social networking, mobile computing, cloud storage, online dating and green technologies (Kuratko, 2017:67; Williams & Gurtoo, 2017:92).

Both types of innovation require vision and support, as well as an effort on the part of the management of the business to develop and educate employees about innovation (Kuratko, 2017:67). Reformulating a product to encourage consumer compliance with product use, or increasing a product's shelf-life and stability, are examples of incremental innovation. This type of incremental innovation only has an impact on products that have already been approved by regulatory bodies. Regardless of whether an existing product is improved, incremental innovation may involve many of the same R&D trial inputs (International Federation of Pharmaceutical Manufacturers and Associations (IFPMA), 2016:8). The main differentiator between the two is that incremental innovation is about adjusting to current structures without altering the functional characteristics, while radical innovation creates radical changes in business, capabilities or markets (Xu, Chen, Shou & Liu, 2012; Kuratko, 2017:67; Williams & Gurtoo, 2017:92).

Incremental innovation is recognised as small variations or improvements in existing products or processes, whereas radical innovation encompasses new products or processes that make the prevailing ones obsolete. It goes without saying that radical innovations meet emerging needs and markets, while incremental innovations try to meet existing needs and current markets with greater efficiency and superior value propositions to consumers (Vercher, 2022:3).

The particularities that distinguish radical innovations from incremental innovations are the market needs that they address, their impact in the technological space, the type of knowledge they use, the adoption period, the strategy followed and the risk they pose for the business (Vercher, 2022:3). In addition, radical innovation also involves the creation and singular recombination of new knowledge to achieve new outcomes (Colombo, Von Krogh, Rossi-

Lamastra & Stephan, 2017:394). Knowledge here refers to an understanding of information and the ability to use it for different purposes (OECD/Eurostat, 2018:46; Vercher, 2022:3). Furthermore, incremental innovations imply cognitive efforts that enhance the current understanding of information for new or similar purposes; these tend to reinforce prevailing knowledge. Hence, adopting new knowledge as part of radical innovations requires long adoption periods and such major changes usually encounter considerable opposition (Colombo *et al.,* 2017).

Additional types of innovation include incidental, institutional and strategic innovation. Incidental innovation is an unintentional discovery or invention by an individual or group. Institutional innovation arises from organised research sponsored or conducted by private businesses, academic institutions and the government. Strategic innovation consists of planned, systematic efforts coordinated by the government and is aimed at achieving well-defined national goals such as human and economic development. It can also be a leveraging complement to a nation's incidental and institutional innovations (Mavhunga, 2017:151).

According to Maldonado, Madrid, Martinez and Aguilera (2009), another type of innovation is management innovation, which causes the set of novelties and changes to be introduced in the organisational structure of the business and in areas such as commercialisation, financing and organisation. Antonites (2019:3) differentiates modular from architectural innovation. In the case of modular innovation, the system used stays more or less the same, but the components of such a system change or improve. In other words, the component technology changes, but the configuration of the technology remains intact over time. Architectural innovation refers to the inverse of modular innovation. The configuration or system changes but the components stay the same. In other words, the current components are combined in an innovative way.

2.8 INNOVATION AND CREATIVITY

Innovation is the application of new ideas gleaned from creativity, whereas innovation can be a new product or service or a new way of doing something (Fadaee, 2014:4; Lussier, Corman & Kimball, 2015:68; Bessant & Tidd, 2018a:7; Nieman & Nieuwenhuizen, 2018:77; Almeida & Sequeira, 2019:299). Innovation can be classified either as internally business-focused or externally business-focused. Internally focused innovation is a one-way process in which small businesses sell their ideas and other resources to other businesses, while externally focused innovation is a two-way process in which small businesses have an inbound process that brings

ideas or other resources needed to develop their own business (Lindegaard, 2011:76; Krause *et al*., 2012:203). It should however be noted that, Innovation and creativity are fundamental aspects of entrepreneurship (Ahmad *et al*., 2019:20).

Innovation can therefore be considered as a fundamental capability for any business, particularly small businesses, which require efficient and effective use of their existing resources and the different capabilities of all their staff to add value to their products and services (Bessant & Tidd, 2018a:7). The process of innovation enables one to explore something different based on the concept of problem-solving and, additionally, on the product of a particular process of thought. The result is also new and forms the foundation of the innovation process. In the literature, innovation is therefore considered to be the most commonly used capacity for small businesses to gain more and better competitive advantages and to achieve greater business performance (Saunila, 2014:164; Hilman & Kaliappen, 2015:104).

Creativity refers to the ability to make sense of the world in new ways, to discover hidden patterns and make connections between seemingly unrelated phenomena. This is done for the purpose of generating solutions to problems, which is the focus of the creative individual. If one possesses the experience, skill and talent to use one's imagination to create newness and solve problems, one is being creative (Ahmad *et al*., 2019). Creativity is also the application of an individual's ideas and curiosity to discover something new. In this context, creativity is based on the simple 4P model (the creative person, the process, the PRESS (environment), and the product) (Bessant & Tidd, 2018a:31). Furthermore, creativity is a thought catalyst that includes components such as planning, incubation, illumination and verification (Lussier *et al*., 2015:71; Bessant & Tidd, 2018b:130; Antonites, 2020:227).

There are three components of successful creativity in small businesses, namely expertise, motivation and creative thinking skills. Expertise creativity encompasses what an individual knows and can do, which includes the intellectual space that he/she uses to explore and solve problems (Bessant & Tidd, 2018a:133). Motivation creativity can be either extrinsic or intrinsic; extrinsic is the desire to achieve business rewards, while intrinsic refers to the passion and interest of a person to do something (Kuratko, Morris & Covin, 2011:215). Creative thinking refers to the specific ways that individuals approach problems and solutions, and the techniques they use for looking at a problem differently and seeking insights from other fields of endeavour (Bessant & Tidd, 2018a:124). Small business managers should influence all three

components of creativity while emphasising managerial practices that result in employees being challenged (Kuratko *et al*., 2011:216; Bessant & Tidd, 2018a:267). Creativity, as a process, can be summarised as in Figure 2.3.

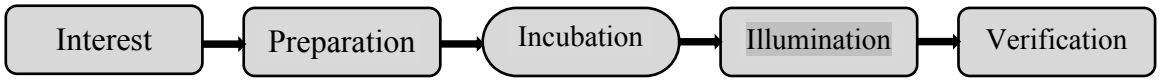


Figure 2.3: Stages of creativity
Source: Antonites (2020:9)

Figure 2.3 demonstrates the stages in the creative process. As much as imagination begins with an idea, ideas do not emerge in an intellectual void. To come up with new ideas, the brain must be supplied with resources to work with. For this to happen, some interest in the subject matter must be developed; thus, in this analysis, the first stage in the creative process is the cultivation of interest. The second stage in the process includes the preparation of information and resources, the identification of sources of inspiration, and the development of knowledge about the project or the issue at hand. This is also an internal process (thinking deeply about creating and engaging ideas), as well as an external process (going out into the world to gather the necessary data, resources, materials and expertise). The next stage will be incubation, which will include ideas and knowledge gained in stage two. As ideas simmer, work deepens and new relations are made (Lussier *et al*., 2015:71; Wallas, 2015:342; Antonites, 2020:227). Attention is taken away from the problem during this period of germination and helps the mind to relax. The next step is enlightenment, through which ideas emerge from the deeper layers of the mind. After illumination, the verification stage of the words is written down, the vision is committed to images and the business plan is created. The ideas and observations as emerged in stage three are also fleshed out (Stokes & Wilson, 2017:118; Bessant & Tidd, 2018b:129; Antonites, 2020:9).

Antonites (2019:86) proposes that entrepreneurs should use their creative and innovative skills to overcome obstacles that are faced by their businesses by applying the following: fluency (striving to have many ideas), flexibility (focusing on different types of idea), elaboration (concentrating on adding details), originality (striving for uniqueness), openness (resisting instant answers), a combination of ideas and facts (combining ideas) and a future orientation (going into the future, looking back from the future).

A creative mindset requires making connections between things that others miss. One of the Apple founders, Steve Jobs, believed in this notion. Furthermore, the creative mindset uses

"reasoning from first principle", which is the process of taking existing concepts and theories and asking fundamental questions to design and fill gaps. The founder of Tesla, Elon Musk, is an example of someone who uses this principle to create new concepts (Ahmad *et al*., 2019:25). It should be kept in mind that creativity is somewhat different to innovation. Creativity produces an original or unusual solution to a problem, while innovation is the implementation of the creative solution that creates new commercial value. Thus, creativity becomes the first necessary step in innovation (Ahmad *et al*., 2019:20).

2.9 INNOVATION ADOPTION AND DIFFUSION

According to Lin (2018:24), there are four main views used to study the adoption of an innovation, namely the condition view, the effectiveness view, the process view and the diffusion view. The condition view is focused on what conditions give rise to the emergence and diffusion of management innovation concerning an institution, culture, rationality and human resources (Lin, 2018:25). Proponents of an effective view attempt to explore ways in which to improve the performance of management innovation, which gives insights into how organisational learning affects management innovation and production and the performance of small businesses (Lin, 2018:26). The process view focuses on sequential phases through which innovation in management takes place.

Diffusion, on the other hand, means spreading innovation among small businesses, providing a broader view of all aspects of adoption (i.e., innovation, channels of communication, new management ideas or methods, time and social system). Each of these views is focused on individual adoption elements (Vega, Chiasson & Brown, 2011; Lin, 2018:28). Innovation adoption is the ability to use new ideas from outside the small business and to adapt those ideas to change the business management system in terms of its components; this is a marked departure from the traditional principles, processes and practices of management (Lin, 2018:15). Innovation adoption also deals with the generation and implementation of management practices, processes, structures or techniques that are new to the business and should be aimed at advancing business goals (Lin, 2018:16).

The adoption of innovation cannot be fully understood by focusing on a single element of adoption; for this reason, this research study has accepted and adopted the diffusion view of innovation which emphasises the process of innovation diffusion. Innovation diffusion focuses on how to deliver new management ideas or methods (Lin, 2018:28). Diffusion is divided into two main aspects, namely management fashion and management diffusion. Management

fashion refers to the management techniques or innovations; for example, management by objective, total quality management (TQM) and a flatter structure. Management diffusion is about understanding how the interaction between supply and demand leads to the emergence of management innovation, which provides an abundance of insights into the formation and diffusion of management innovation (Lin, 2018:28).

The diffusion of innovation (DoI) theory was developed by Everett Rogers in the 1960s to explain the uptake of innovation by farmers. The theory has since been adapted to businesses and its applicability has been confirmed through the empirical evidence of both old and new studies (Koirala, Oost & Windt, 2018:570). Although the DoI theory is a comprehensive approach, its practical application is complex. Empirical studies using this theory have therefore resorted to leaning more on one of the models at the expense of the other. One of the main weaknesses of the DoI theory lies in its assumption that all innovations need to be adopted (Rogers, 2003:20). This weakness is reflected in the adoption of an innovation-decision model, where the decision path is whether to adopt the innovation now or to defer instead of whether to adopt (Hall, 2006).

The diffusion of innovation is defined as the process by which an innovation is communicated through certain channels over time among employees. These channels can be many channels through which information is transmitted, all the way from interpersonal communication channels to mass media (Mahajan, Muller & Bass, 2019:25). Diffusion theory seeks to identify the factors that influence the rate at which an innovation is adopted. The process by which innovations are adopted and used by consumers, or in the case of process innovations by other businesses, is referred to as innovation diffusion (Utterback, 2017:667).

Diffusion is also the process by which innovations spread and become popular. A popular and widely used innovation is perceived to have a rapid rate of diffusion, whereas one that takes longer to catch on is perceived to have a slower rate of diffusion; thus, diffusion is the rate at which innovations are adopted (Tidd & Bessant, 2018a:100). Small businesses may adopt innovations for the following reasons: firstly, to reduce costs; secondly, to increase market share; thirdly, to enter new markets; and finally, to increase product quality (OECD, 2005; 2017a:4). In this study, an adoption approach to innovation was applied to the constructs measured, namely leadership, involvement, strategy, rewards and resources.

2.10 INNOVATION CAPABILITIES

Innovation capabilities are both the technological and learning process of the business translated into technology development and the operation's capabilities, as well as the managerial and transactional routines represented by management and the transaction capabilities (Bengt & Lundvall, 2013:110). In this study, innovation capability refers to the key underpinning organisational capabilities that can sustainably influence innovation within a small business. These encompass the overall ability of the small business owner to absorb, adapt and transform a given technology into specific management, operational and transaction routines that can lead a small business to innovation (Lawson & Samson, 2014:377). Figure 2.4 presents the relationship between integrative capability, BMI, leadership, strategy and the performance of the small business.

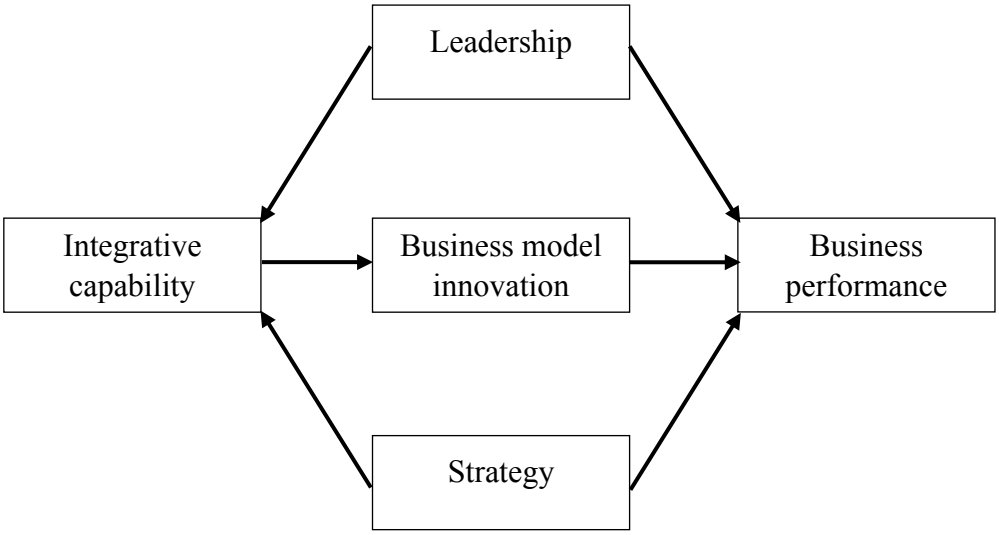


Figure 2.4: Integrative capability model
Source: Changwei *et al*. (2019:5)

As shown in Figure 2.4, BMI positively mediates the relationship between integrative capability and business performance. The mediating effect of BMI suggests that small business owners should pay more attention to BMI to improve business performance and should recognise that the role of BMI differs across various business strategies. Also, strategy positively moderates the relationship between BMI and business performance, while leadership and strategy have a significant negative moderating effect.

Integrative capability is another form of innovation capability; that is, an ability that constantly reconfigures small business resources and capabilities to capture market opportunities. It improves the efficiency of business management and results in superior performance (Helfat

& Campo-Rembado, 2016:249; Teece, 2018:40). Integrative capability is also a multidimensional concept (Liao, Kickul & Ma, 2009:263) and includes capabilities such as opportunity recognition (Vandor & Nikolaus, 2016:388), partner selection (Mindruta, Moeen & Agarwal, 2016:206), resource match (Eisenhardt & Martin, 2000:1106) and risk control (Das & Teng, 2016:252; Kerr, 2016:331).

As a specific and concrete representation of dynamic capability, integrative capability emphasises the coordination and reconfiguration of these capabilities (Changwei *et al*., 2019:5). Therefore, it can strengthen the small business's ability to scan the external environment, recognise business opportunities, manage resource stock and align resources and capabilities. Furthermore, it can meet the need for capability configuration and is critical for improving business performance (Helfat & Campo-Rembado, 2016:250). As an important dynamic capability, it contributes to sensing, transferring and modifying internal and external resources and capabilities into the small business's capability configuration (Liao *et al*., 2009:265; Teece, 2013; Helfat & Campo-Rembado, 2016:253). Moreover, it can integrate fragmented knowledge across boundaries within the small business as a potential source of competitive advantage, while enhancing small business performance (Changwei *et al*., 2019:5).

In the automotive retail industry, small businesses develop their absorption capacity by engaging in fundamental behavioural activities (innovation-generating skills). These activities may include leadership, involvement, strategy, reward systems and resources for innovation. The activities are also constructs investigated by the researcher within the automotive retail industry and are discussed in the following sections.

2.10.1 Leadership

Leadership needs to create an enabling environment that values novelty; only then can innovative ideas be put into practice. Small businesses need to create organisational environments that encourage creative practices that produce innovation skills, such as strategy, leadership, involvement, resources, and rewards, learning, rewarding innovation schemes and governance that will lead to innovation (Neely & Hii, 2012:47; Johannisson, 2017:368; Furawo & Scheepers, 2018:38). Leadership directs the small business development operations through management. It should, however, be noted that leadership is about inspiring, while management is about planning. Leadership directs small business development operations through the management responsible for developing the strategic direction for the business.

This means the vision must be communicated to all and must be accepted by individuals (Thompson & Martin, 2010:402; Jyoti & Dev, 2015:78; Li, Zhao & Begley, 2015:1149).

The leadership should ensure the effective execution of the policy on innovation, while also being accountable for driving the strategies of the small business (Louw & Venter, 2013:443). This effective execution of policy on innovation is achieved through the most suitable management, allocation of resources, motivation, reward schemes, policies, rules, systems and organisational structure (OECD, 2013:158; 2014:20).

The development and implementation of innovation in the automotive retail industry depends on leadership capacity. As a result, the competitive advantage of a small business is determined by both its innovation potential and the acceptance of innovation.

2.10.2 Involvement

People's involvement is critical as it shows how small businesses are committed to the advancement of new knowledge, which is the basis of the skills that deliver innovation (Purcarea, Benavides Espinosa & Apetrei, 2013:109). Workers who are empowered in terms of skills upgrade and education underpin the atmosphere and environment of business, while the appreciation of and investment in individuals are one of the best ways to cultivate an open culture of innovation (Louw & Venter, 2013:465). Therefore, employees need to be empowered through skills development, including literacy, numeracy and basic academic skills, together with basic financial and entrepreneurial skills and, increasingly, basic digital and even coding skills. Internet access is also critical. This should be supplemented with logical thinking, problem-solving, decision-making, empathy and emotional intelligence, communication, persuasion and negotiation skills, networking and teamwork, and the capacity to adapt and learn new abilities; above all, internet access should be made available (UN, 2018:14).

Small business owners should understand that workers can have distinct visions of the future and strive to incorporate these views in the direction of their innovation progress and development. Much as research capacity is essential to the exploitation of new technologies, generic and fundamental skills to complement new technologies are also needed (UN, 2018:14).

2.10.3 Strategy

An innovation strategy is a clear and well-defined innovation approach through which an innovation culture is developed and nurtured by the small business. For the efficient leadership of innovation, the connection between strategy and innovation is crucial. The strategy should be aligned with the setup of small business assets, items, procedures and systems tailored to resolve small business environmental uncertainty (Achtenhagen & Brundin, 2017:155). Small businesses should also decide what tasks they should conduct and in which markets. For effective growth, a clear articulation of a common vision and a strong expression of strategic direction are required. An innovative approach is important to focus organisational attention. Overall, small businesses that take a strategic lead in seeking to create the future are more innovative than those that protect the past (Achtenhagen & Brundin, 2017:156).

Bessant and Tidd (2018a:497) state that innovation needs clear strategies and direction, plus the commitment of resources, to make the innovation happen. Innovation is about taking risks and going into new and sometimes completely unexplored spaces. Innovation needs to have a degree of courage, steering the business away from what everyone else is doing or what has always been done. Successful entrepreneurs and innovating businesses should therefore use a range of structures, tools and techniques to help them create, articulate, communicate and deploy a clear strategy.

2.10.4 Reward systems

Reward systems are a powerful motivator of behaviour and, therefore, the key to successful innovative activity. As a result, individuals who pursue innovative opportunities should be given explicit forms of recognition. The recognition, which could take the form of bonuses, awards, salary advances and promotions, should be directly related to the innovative efforts of the staff (Kuratko, 2017:381). There is a significant difference in the entrepreneurial aspects of reward systems used by highly innovative small businesses as opposed to less innovative small businesses. Highly innovative small businesses have developed an incentive system that encourages creative behaviour, including the dual-ladder system, recommendation systems, public recognition and financial incentives. A powerful employer brand that includes both instrumental and symbolic elements should include rewards, salary, benefits, career progression and opportunities for added value (Badr Eidin Aboul-Ela, 2016:157; Kuratko, 2017:69; Kucharska, 2020:92).

Small business owners need to be mindful of the influence of incentive schemes on their behaviour. An improperly focused system encourages people to act in potentially unintended ways. For example, individual rewards tend to increase the generation of ideas and radical innovations, while group rewards tend to increase the implementation of ideas and incremental innovations. Also, it has been found that without explicit support to the contrary, small business owners are likely to take less risky action and focus on developing incremental variations of existing products. This approach will not stimulate the radical innovation required to create new markets and alter the basis of competition (Lawson & Samson, 2001:393). As a result, incentive programmes are a good behavioural motivator and a key aspect for innovative operations. Highly innovative small businesses have well-constructed incentive programmes that promote inventive behaviour, including schemes such as government recognition and economic bonuses relative to small businesses low in innovation (Louw & Venter, 2013:125). Therefore, reward schemes are a strong behavioural motivator and thus a key to a creative operation.

2.10.5 Resources

Small businesses should mobilise sufficient funds to achieve innovation in the automotive retail industry. Innovative businesses can leverage, combine and recombine expertise and resources into markets, techniques and goods, although few businesses have mastered the skill and the art. Effective resource management helps boost the number of innovation projects and increases the probability that innovation will be stimulated. Accordingly, small businesses that successfully handle innovation gain expertise and learn to sustain further improvements (Ye & Kankanhalli, 2013:80).

When a small business has a strong dynamic capacity, the acquisition, integration, and restoration of resources will be excellent, resulting in the creation of new technologies and the promotion of the growth of the business model. A single small business may not have sufficient resources to innovate its business model; thus, cooperation with other small businesses becomes an inevitable option for gaining a lot of resources. However, small businesses have limited resources and their capacity to cope with risks is poor, which means that the risks arising from disruptive projects by the small business may be higher than those for larger ones, and thus the potential risk may reduce the ability of small businesses to invest valuable and limited resources in innovation (Changwei *et al*., 2019:4).

2.11 INNOVATION PERFORMANCE

Innovation performance is the tendency of a small business to introduce novelty into the product and production process, support new ideas and explore a creative solution to complex issues (Raghuvanshi & Garg, 2018:279; Almeida & Sequeira, 2019:178). In terms of the above conceptions, one may argue that innovation performance comprises the introduction of new products, searching out unique working methods and techniques, exploring new ideas to solve complex issues, identifying performance gaps, mobilising support for innovative ideas and transforming innovative ideas into useful applications (Yeoh & Mahmood, 2013:15; Makhdoom & Asim, 2019:89). Innovation is critical for the survival of small businesses, with various authors arguing that innovation has an impact on their output (Rosenbusch *et al*., 2011:441; Tribble *et al*., 2015:44; Raghuvanshi & Garg, 2018:299).

Small businesses have a more focused technological capability than larger businesses, and this has a positive effect on innovation performance in the sense that there are limited distractions in a smaller technological area (Tribble *et al*., 2015:37). According to Best (2013:113), the following factors are used to enhance small business performance: innovation, networking, making use of regional centres, proper planning and the development of business strategies. Small business owners could therefore manage innovation performance effectively and efficiently by optimising their organisational structures. Thus, as Hackler (2013:239) argues, small business owners assemble technology and knowledge in the innovation process, which amplifies innovation performance and economic growth.

One of the keys to propelling the South African economy to new heights is innovation. Despite encouraging trends, South Africa's innovation performance has been relatively flat since 1996. Research suggests that small businesses must constantly innovate and be ready to adapt to changes in the marketplace by improving their learning capability to survive and surpass competition (Taneja, Pryor & Hayek, 2016:45).

Small businesses should establish processes and encourage the cultivation of ideas to achieve an effective innovation performance. The innovation capabilities of small businesses lead to producing higher innovation performance results. Furthermore, improving the types of innovation in small businesses has an impact on their innovation performance. This has implications for businesses that have to focus on developing an innovation culture in their organisations and select business strategies based on innovation (Nguyen, 2019:9728).

2.12 CONCLUSION

This chapter gave international, African and South African perspectives on innovation. Innovation and the economy were discussed, including the relationship between innovation and the government. An overview was provided on business-level innovation capability theories and innovation models, namely the BMI, the technology innovation model, the marketing innovation model and the non-linear innovation capability-based model. The various types of innovation were also explored, namely open, process, business model, product and service, and additional types of innovation were highlighted. This was followed by a discussion on innovation and creativity, and innovation adoption and diffusion. The chapter also explored various innovation capabilities, such as leadership, involvement, strategies, reward systems and resources. The chapter concluded with a discussion on innovation performance.

The next chapter presents the second literature chapter and gives an overview of the automotive industry.

CHAPTER THREE

OVERVIEW OF THE AUTOMOTIVE INDUSTRY

3.1 INTRODUCTION

This chapter gives an overview of the automotive industry from an international and a South African perspective. The chapter also discusses the contribution of South Africa's automotive industry to GDP and employment. In addition, the sales of passenger and commercial vehicles are highlighted and an overview is given of the export and import potential of the industry. The chapter concludes with some of the challenges that are faced by the automotive industry and by small businesses.

3.2 AUTOMOTIVE INDUSTRY: AN OVERVIEW

The following sections give an international and South African overview of the automotive industry. An overview is also provided of the export and import potential of this industry.

3.2.1 International overview

In the global arena, the automotive retail industry is a crucial role player in terms of economic value and job creation (Komarasamy & Hoque, 2015:975; Badenhorst-Weiss & Tolmay, 2016:2). The industry can be classified into the following regions: North America, Latin America, Europe, Asia Pacific, and Middle East and Africa. Asia Pacific is likely to emerge as a leading market for automotive retail. The rise in sales of new vehicles in China is a major factor driving the automotive retail market in Asia Pacific. Along with China, India, Japan and South Korea are leading automotive hubs in the region (Transparency Market Research, 2018).

In 2018, China topped the list of vehicle production with 27,8 million units, followed by the US with the production of 11,3 million units, and Japan with the production of 9,7 million units (AIEC, 2019:68). Production declined in 2018 in most of the world's largest vehicle producing economies, including Germany, Canada, South Korea, Spain, the UK and Iran, but major growth has been recorded in Thailand, Indonesia, Brazil and India (AIEC, 2019:75).

Thailand houses a South-East Asian production hub of the two major automotive giants, namely, Honda and Toyota, making the country the largest automotive producer among the ASEAN countries and the sixth largest in the world (United Nations Industrial Organisation (UNIDO), 2020:24). Thailand is also the world's second-largest pick-up truck market after the

USA (Warr & Kohpaiboon, 2017:10). In Thailand, the government launched the first Automotive Master Plan (2002–2006) in 2002, focusing on the production of one-ton pick-up trucks as the first product champion, with increased R&D investment and more value-added content (Chollacoop, 2020:239). The second Automotive Master Plan (2007–2011) prioritised eco-car manufacturing as the second product champion. Later, the third Automotive Master Plan (2012–2016) aimed to enhance the competitiveness of the automotive industry by developing appropriate technologies to accommodate the trends of green technology, clean, economical and safe technologies (Thailand Automotive Institute, 2012:9; Chollacoop, 2020:239). The focus for the fourth Automotive Master Plan (2016–2021) is described simply as vision – various competitive advantages to promote Thailand's automotive industry from an Asian production base (Thailand Automotive Institute, 2012:71).

In Thailand, the government introduced an industrial policy that contributes to automotive development; this policy is regularly adjusted to meet changes in the internal and external environments. Given the global trend of moving towards digital and green automotive solutions, Thailand’s policy iteration focuses on promoting green vehicles. Subsequent incentive schemes have also been established to support their green automotive industry base, such as tax breaks. The comprehensive and targeted policy reforms and the up-skilling of the local labour force have proven strong drivers for Thailand’s automotive industry (Deloitte, 2022).

In the UK, the automotive sector generates 135 000 direct jobs and contributes some 10 billion British pounds (GBP) in value added to the economy. They also produce more than one million cars and more than two million engines per year (OECD, 2020:156). It is argued that government funding for low carbon investments in improving vehicle efficiency in OECD countries could result in the creation of more than three million jobs that rely on small business automotive manufacturing (Gouldson, Sudmant, Khreis & Papargyropoulou, 2018:4).

Brazil has the largest automotive market in South America; however, owing to the broader economic crisis, the Brazilian Development Bank (BNDES) has limited financing for new vehicle purchases (Aamodt, 2015:7; Sturgeon, Chagas & Barnes, 2016:31). In the domestic market, over 5 000 models from 87 different car brands were sold in 2015 (Sturgeon *et al*., 2016:31). The position of the Brazilian market is beneficial when it comes to exports to other countries in Latin America (Quadros & Consoni, 2009). The vehicles produced in Brazil are specialised into small, low-cost vehicles, called "popular cars". This is beneficial for the

Brazilian consumers owing to their low purchasing power compared to other nations (Aamodt, 2015:12).

In Africa, vehicle production declined by a massive 35,3% (from 1,11 million units in 2019 to 720 156 units in 2020). Africa's market share comprised 0,93% of global vehicle production in 2020. South Africa (with 447 218 units) accounted for 62,1% of Africa's total vehicle production, while Morocco with 248 430 units and Egypt with 23 754 units accounted for the balance in 2020. Regarding passenger car production, South Africa, at 238 216 units in 2020, surpassed Morocco's passenger car production of 221 299 units. The estimated vehicle production in Africa was in the order of 52,5 million units, while the motorisation rate was at 45 vehicles per 1 000 persons in 2020 (AIEC, 2021:53).

In Ghana, several vehicle assembly plants that were established after independence in 1957 closed or were privatised owing to poor management and dependence on state funds for survival. As of 2014, nearly all the vehicles used in Ghana are imported, with vehicles that are between five- and ten-years old constituting about 70% of the imports. In the informal sector, artisans with low levels of technological skill but high ingenuity can carry out automotive industry activities such as the fabrication of heavy-duty truck buckets and articulated truck trailers, as well as the production of forged spare parts (Akayeti, Sackey & Dzebre, 2015:181). The Ghana Automobile Development Policy aims to make Ghana a fully integrated and competitive industrial hub for West African automotive manufacturing. The policy also aims to create high-skilled jobs in automobile assembly and component and part manufacturing. It also provides enticing and generous tax breaks to businesses that locate assembly plants in Ghana. Volkswagen, for example, signed a Memorandum of Understanding (MOU) with the Ghanaian government in 2019 to establish an assembly plant in the country (Monaco, Otoo, Tulu, Omondi & Kudzai, 2020:2).

The African automotive industry markets are vastly different, and time and effort are required to understand local conditions. It is therefore important to develop targeted product strategies per country (or even per city) and to establish local and international partnerships to overcome current barriers in the automotive industry. However, there are also some opportunities, and progress has been made with some African countries revising and/or developing their automotive policies (Deloitte, 2022).

3.2.2 South African overview

In South Africa, the automotive industry offers consumers a choice of 49 passenger car brands and 3 716 model derivatives (AIEC, 2018:14). It affords car buyers the widest choice of market–size ratio anywhere in the world. A close correlation exists between domestic new vehicle sales and the overall performance of the economy, as well as business and consumer confidence levels (AIEC, 2018:15; 2019:14). However, production at all major OEMs was stopped temporarily during the Level 5 lockdown during the Covid-19 pandemic (between 26 March and 30 April 2020) (Webb, 2021:10).

Although the automotive industry is a major role player in the country, it is still regarded as relatively small in the global automotive arena (AIEC, 2020:7; Webb, 2021:10). This industry is one of the most visible sectors attracting foreign capital. Hence, the South African government is actively involved in supporting the automotive industry through various initiatives such as the Automotive Production and Development Programme (APDP) (AIEC, 2016:87; 2020:109). Through the APDP, the government hopes to double industry production and employment, and to increase average local content of cars made in South Africa (Webb, 2021:10).

Furthermore, South Africa's latest automotive policy, the South African Automotive Masterplan (SAAM), will deepen local value chains and embed the industry in the domestic economy. Meaningful localisation, at its core, forms part of value beyond compliance, supports innovation and productivity, and aligns economic performance with social progress; thus, driving inclusive growth (Deloitte, 2022; Obermeyer, 2022). Under the SAAM 2021–2035, the objective is to produce 1% of global vehicle production (or 1,4 million vehicles per annum) in South Africa by 2035, which will substantially improve the country's status and global vehicle production ranking (International Trade Administration, 2021).

Table 3.1 shows the contribution of the automotive industry to GDP and employment between 2014 and 2020.

Table 3.1: Automotive industry contribution to GDP and employment, 2014 to 2020

Year	Output - vehicle and component production %	GDP - automotive contribution %	Employment – automotive industry
2014	30,2	7,2	82 790
2015	33,5	7,5	82 100
2016	33,0	7,4	82 000
2017	30,1	6,9	80 000
2018	29,9	6,8	80 000
2019	27,6	6,4	80 000
2020	18,7	4,9	76 800

Source: AIEC (2021:6)

As shown in Table 3.1, between 2014 and 2015, the automotive industry contribution to GDP rose by 0,3% from the previous year, with GDP growth increasing from 7,2% to 7,5% in 2015. For the same period, jobs decreased by 690, from 82 790 employees in the previous year to 82 100 in the following year. There was a gradual decline in GDP between 2015 and 2020 and a gradual decline in jobs between 2014 and 2017, which stabilised by 2018 and declined again by 2020 (AIEC, 2021:6).

Owing to low GDP growth and pressure on consumers' disposable income as well as the crippling effects of the Covid-19 pandemic, South African new vehicle sales retreated into negative territory in 2020. Nonetheless, the South African truck market provided some resilience with year-on-year sales declining by 18,8% (AIEC, 2021:17; Webb, 2021:10). The lowest point in new vehicle sales history occurred in April 2020 (lockdown period); however, sales have gradually increased since that low point (Webb, 2021:10).

Table 3.2 shows the sales of passenger cars and commercial vehicles between 2016 and 2020.

Table 3.2: Sales of passenger cars and commercial vehicles, 2016 to 2020

Year	Passenger cars	Light commercial vehicles	Medium/heavy commercial vehicles and buses	Total new vehicle sales
2016	361 265	159 316	26 971	547 552
2017	368 114	163 317	26 273	557 704
2018	365 247	159 525	27 455	552 227
2019	355 379	153 221	28 012	536 612
2020	246 541	110 912	22 753	380 206

Source: AIEC (2021:16)

Table 3.2 indicates a parallel comparative market between passenger cars and commercial vehicles. Between 2016 and 2017, there was an increase in demand for passenger cars followed by a steady decrease in demand between 2017 and 2020. On the other hand, for light commercial vehicles for the period 2016 to 2017 there was an increase in demand, followed by a steady decrease between 2017 and 2020. Regarding medium and heavy commercial vehicles, there was a decline in demand for the period 2016 to 2017, followed by an increase in demand for the period 2018 to 2019, and then a decrease in demand for 2020.

3.2.3 South Africa and exports

The South African automotive industry relies on economies of scale through increased global competitiveness, and exports are therefore crucial to its growth (AIEC, 2015:16, 2021:6). As an export-oriented industry, South Africa must ensure that it maintains its global competitiveness as it transitions from the internal combustion engine (ICE) era to electro-mobility solutions and technologies (Webb, 2021:10). In addition, the implementation of the African Growth and Opportunity (AGOA) Act No. 106 of 2000 and regional integration on the African continent are promising to advance the industry's acceptability and its ability to deal with the larger export numbers of vehicles and components to 147 international markets (AIEC, 2016:35; Webb, 2021:10).

Between 2018 and 2019, the total automotive export value fell by R26 billion (or 12,9%), from R201,7 billion in 2019 to R175,7 billion in 2020. Vehicle exports fell by 115 804 units to 271 288 units in 2020, down from a record 387 092 vehicles exported in 2019, and export value fell by R26,8 billion, from R148,0 billion in 2019 to R121,2 billion in 2020 (AIEC, 2021:6; Webb, 2021:10).

The Covid-19 pandemic in 2020 and 2021 and the country's lockdown restrictions will have a lasting impact on South Africa's automotive industry (International Trade Administration, 2021). Much of the South African automotive industry's recovery will depend on the recovery of its main trading partners, considering that well over 60% of the country's vehicle production is exported (International Trade Administration, 2021). A recovery to pre-Covid-19 pandemic levels will depend on the economic climate of the industry's main trading partners (Webb, 2021:10).

Table 3.3 gives a comparison of new vehicle sales and exports for 2020 versus 2021.

Table 3.3: New vehicle sales and export comparison, 2020 versus 2021

2020	New vehicle sales	Exports	2021	New vehicle sales	Exports
January	40 413	16 303	January	34 784	22 771
February	43 296	32 143	February	37 521	29 582
March	33 546	28 889	March	44 217	40 026
April	574	901	April	35 779	26 522
May	12 874	11 901	May	38 337	25 463
June	31 867	18 796	June	*	*

Note: * Not available
Source: NAAMSA (2021:10)

As shown in Table 3.3, between January 2020 and January 2021, new vehicle sales decreased by 5 629, while exports increased by 6 468. Between February 2020 and February 2021, new vehicle sales fell by 5 775 and exports fell by 2 561. However, between March 2020 and March 2021, there was a 10 671 increase in new vehicle sales and 11 137 increase in exports. Between April 2020/2021 and May 2020/2021, there was also an increase in both new vehicle sales and exports.

Africa remains a priority focus for the South African automotive industry, and the continent accounted for R31,9 billion (or 15,8%) of South Africa's total automotive exports of R201,7 billion in 2019. Automotive exports to Africa increased by R206,4 million (or 0,7%), from the R31,69 billion exported in 2018 to the R31,9 billion exported in 2019 (AIEC, 2020:51).

Africa was also the largest export location for South African produced commercial passenger vehicles between 2015 and 2018, a period during which the industry had to shift structurally under the Motor Industry Development Programme (MIDP) (AIEC, 2018:55). This meant it had to be structurally changed to the Automotive Production Development Programme (APDP) version which encouraged increased local content in South African built vehicles, while reducing dependence on imported components (AIEC, 2019:100).

Table 3.4 shows the South African vehicle exports to major regions between 2015 and 2019.

Table 3.4: South African vehicle exports to major regions between 2015 and 2019

Region	2015	2016	2017	2018	2019	% Change 2018/2019
Europe	173 883	196 727	190 503	233 772	285 599	+22,2
Asia	34 929	46 665	52 827	50 277	39 879	-20,7
Africa	41 431	21 505	21 847	23 988	23 415	-2,4
Australasia	22 946	22 735	25 125	22 767	17 350	-23,8
North America	53 606	52 024	43 393	13 037	13 540	+3,9
South America	6 554	4 750	3 588	5 787	6 093	+5,3
Central America	496	410	812	1 511	1 249	-17,3
Total	333 845	344 816	338 095	351 139	387 125	+10,2

Source: AIEC (2020:21)

Table 3.4 shows that between 2018 and 2019, exports to Europe increased by 22,2%, while exports to Asia decreased by 20,7%. Exports to Africa fell by 2,4% in 2018/2019, Australasia fell by 23,8%, while North America and South America increased by 3,9% and 5,3%, respectively. Exports to Central America fell by 17,3% during the same period (AIEC, 2020:21).

While new vehicle sales declined slightly in 2019, the industry excelled on the export side. The export value of vehicles and automotive components amounted to a record R201,7 billion in 2019, equal to 15,5% of South Africa's total "basket" of exports (AIEC, 2020:82). However, it should be noted that the main export market for South African manufactured automotive and automotive components in 2020 was the EU, while Africa remained in the second position (Zhuwakinyu, 2021:34).

Various authors have confirmed that technology is indeed a driving force for growth for developing countries, as the GDP is closely dependent on the extent of openness to trade or trade liberalisation, and the exports of goods and services (Tang, 2018; Tang, Shaw & Holden, 2019). There will also be an increase in investment by automotive manufacturers in automotive production facilities, such as the production and export of hybrid electric vehicles (Martin, 2022).

3.2.4 South Africa and imports

Imports of automotive products into South Africa are determined by the APDP's success, domestic market demand and currency movements. Imports of original equipment (OE)

components by South Africa's seven OEMs (BMW (Bayerische Motoren Werke), Ford, Isuzu, Mercedes-Benz, Nissan, Toyota and Volkswagen) increased to R106,8 billion in 2019 (AIEC, 2020:104). OE components are components or systems that are directly supplied to national or international OEMs and have globally recognised brands. The benefits can be used to offset import duties on vehicles and eligible automotive components (AIEC, 2020:74).

The top five countries of origin (in order of import value) for vehicles and automotive component imports into South Africa include Germany, Thailand, Japan, China and the USA. The countries of origin for vehicles and automotive components imported into South Africa generally reflect the global linkages with the head offices of parent companies. The notable exceptions among the top countries of origin in 2020 were Thailand, where over 80% of imports comprised OE components for light commercial vehicles, and China, where over 70% of the imports comprised aftermarket parts (International Trade Administration, 2021).

Furthermore, imports (of parts) from traditional markets such as Germany, the USA and the UK have declined over recent years, while imports from China have increased, indicating South Africa’s dominant influence and cost competitiveness in the global automotive environment (International Trade Administration, 2021).

The 203 570 new light vehicles (passenger cars and light commercial vehicles) imported into South Africa in 2020 came from 24 different countries. These imports fell by 87 084 units (or 30%), from 290 654 units in 2019 to 203 570 units in 2020 (AIEC, 2021:25).

India was the top country of origin in terms of volume for passenger cars and light commercial vehicles (LCVs) imported into South Africa in 2020, with 87 953 vehicles, accounting for 43,2% of total light vehicles imported. The importation of several global brands has established India as a production hub for entry-level and small vehicles, and most vehicles imported from India fit into these categories. In 2020, the Volkswagen Polo (Vivo) was the only vehicle in these segments that was manufactured in South Africa. In 2020, in volume terms, India was the leading country of origin for vehicles imported into South Africa, followed by Japan, Germany and South Korea. India was also the main country of origin in terms of import rand value, closely followed by Germany, where imports included premium brands such as Audi, BMW, Mercedes-Benz and Porsche (AIEC, 2021:24).

Manufacturing continues to play an important role in the South African economy, and when identifying opportunities to manufacture goods that can compete with imports, it is critical to

identify focus areas and where jobs can be created sustainably. However, for any localisation to be successful, suppliers should be competitive against their global peers (AIEC, 2021:5).

3.3 THE AUTOMOTIVE INDUSTRY AND SMALL BUSINESS BARRIERS

The Covid-19 pandemic (2020–2021) obstructed production, supply, air transport and global demand, as well as isolating countries, thus affecting all sectors of the economy (Bouzahar & Necira, 2022:175). Some 8.8% of global working hours were lost in 2020, equivalent to 255 million full-time jobs (Committee for the Coordination of Statistical Activities, 2021:20). Unemployment is an important macroeconomic indicator and has a profound social dimension. It is reflected in high poverty rates and results in problems that arise from the deterioration in the financial situation of individuals and families (Trading Economics, 2022). The pandemic has demonstrated the agile role of government in the battle for recovery and its role in building long-term resilience (Committee for the Coordination of Statistical Activities, 2021:23).

A key aspect of the automotive industry is the level of global integration within global market or global value chains. This integration occurs through the business's production and management systems through which the business provides the service (Monaco, Otoo, Omondi, Isala & Godfrey, 2017:34). Following South Africa's re-entry into the global economy (1994), multinational automakers reinvested in domestic assembly plants and existing suppliers (Maharaj, Chisoro & Karodia, 2016:4). The industry's structure and ownership profile changed dramatically in a matter of years. As part of the global automotive industry, local plants compete for new model production with international sister plants (Maharaj *et al*., 2016:4).

Globally, there is a symbiotic relationship between the automotive industry and governments: the automotive industry depends on government incentives to improve viability, while governments support the automotive industry to spur economic development. The automotive industry often relies on this support, with net profit margins relatively low (Deloitte, 2022). Furthermore, governments around the world are actively trying to promote their countries by attracting automotive investment through policy and promoting measures in recognition of the benefits that automotive investment produces in terms of economic growth, development and technology transfer. Such benefits include artificial intelligence, predictive vehicle technology, advanced motor control, self-driving technology and digital factories (NAAMSA, 2015). One way for governments to advance trade is through trade agreements, which positively benefit trade among member countries by lowering trade tariffs as well as non-tariff barriers

(Hayakawa, Ito & Kimura, 2016:317; Lamprecht & Tolmay, 2017:1). The removal of trade barriers through trade arrangements such as AGOA, as well as regional integration on the African continent, will mitigate challenges between countries (Hayakawa *et al*., 2016:1; Lamprecht & Tolmay, 2017:1).

The Covid-19 pandemic supply chain disruptions highlighted South Africa's (and other countries') reliance on imports, with prices and lead times rising as a result of the pandemic. As the automotive industry has been hard hit by the pandemic, challenges were faced at all stages of the value chain, and profitability, supply, demand and sales were completely disrupted (AIEC, 2021:113). Another challenge is intense global competition, which has significantly intensified since 2008 owing to the worldwide economic recession (Komarasamy & Hoque, 2015:975).

The South African automotive industry faces strong global competition from other developing nations, as well as fluctuating market demand, rising customer requirements, cost reductions, increases in output and quality, as well as the need for increasing organisational efficiencies and driving innovativeness into its products (Naude, 2013:408; Komarasamy & Hoque, 2015:996; Lamprecht & Tolmay, 2017:1). The automotive industry will change faster in the next ten years than it has in the previous 100 years. For over a century, the industry has relied on mechanically controlled vehicles that run on petrol or diesel. Vehicles of the future will be interconnected, electronically controlled and powered by a variety of energy sources (NAAMSA, 2021:11).

Various authors have confirmed that globalisation, the Fourth Industrial Revolution, the Covid-19 pandemic, economic, political and technological advancements, and increased competition are changing the face of the automotive industry (Maharaj *et al*., 2016:2; Davies & Vincent, 2020:5). In Africa, specifically, the advent of the Fourth Industrial Revolution and the consequent growth in technologies, characterised by technological inventions and applications and innovations, are transforming economic sectors, enabling new modes of work, production and consumption, which are triggering broader societal changes (Hanson & Tang, 2020).

The Fourth Industrial Revolution and associated rise in digitisation and innovations are therefore a double-edged sword, with immense opportunities and challenges (Lee, Yun, Pyka, Won, Kodama, Schiuma *et al*., 2018). The Fourth Industrial Revolution also poses challenges that are related to the possibility of greater inequality, particularly in its potential to disrupt

labour markets. The emerging landscape has heralded the introduction of new production processes in manufacturing (and services), a predominance of digital products over physical products (e.g., media), and the evolution of a sharing economy (Lee *et al*., 2018; Hanson & Puplampu, 2018). Furthermore, the greater spatiotemporal flexibility brought about by the Fourth Industrial Revolution, digitisation and the rise in innovations is not only bringing locations of production and sales closer together but also driving major changes in the design of future value and supply chains (WEF, 2017a:4).

South Africa is weak in terms of mobile broadband penetration owing to affordability issues. South African businesses tend to imitate the digital strategies of large industrial nations, which prevent them from contextualising digital strategies to their own industrial reality; as a result, they often fail to customise their offerings to meet rapidly changing customer expectations. Businesses in South Africa therefore need to generate the improvements that will enable them to leapfrog to digital leadership, reinvent their operating models completely, and rethink production and value chains (Irene, 2019:151). Furthermore, a more digitally inclusive world can be created by improving access to technologies by empowering people with the skills needed to cope with and thrive in the age of (digital) transformation, and by fostering employment, entrepreneurship, financing and leadership in the digital era. However, this can only be achieved by formulating the right policies (Irene, 2019:165). The next section highlights the small business barriers.

3.3.1 Small business barriers

The literature revealed that small businesses that want to market new technologies do so through licensing, consulting, cooperative engineering and joint ventures, as well as through direct sales to customers (Hemert, Nijkamp & Masurel, 2013:33; Trott *et al*., 2016:230). An innovation only becomes helpful when it is marketed, resulting in a lucrative return on investment. Many small businesses form alliances with bigger businesses as they lack the funds necessary to fully market their innovations (Knockaert, Vandenbroucke & Huyghe, 2013:96; Trott *et al*., 2016:235). Such cooperation, however, often focuses on business technology capacity through R&D exchange, and then on operations such as advertising that are critical for effective marketing (Kim, Lee, Park & Oh, 2011:563; Knockaert *et al.,* 2013:85). Kotey, Mazzarol, Clark, Foley and Mckeown (2014:25) argue that most small businesses in the automotive retail industry are more focused on product innovations than the wider scale of market development prevalent in bigger businesses.

The government should assist in the creation of a favourable environment that embraces and encourages small business innovation activities. In South Africa, the government has taken meaningful steps in supporting small businesses; however, there remains profound ignorance in the small business sector regarding government initiatives to support innovations (Urban & Naidoo, 2012:147; IFC, 2018:86). In the automotive industry, government processes often lead to unintended administrative burdens. This is especially damaging for small businesses with limited administrative capacity; for example, VAT administration can be cumbersome, resulting in wasted resources, and refunds are often slow, resulting in cash flow difficulties. This also applies to incentive schemes, with some small businesses finding incentive programmes difficult to access and finding the process to be slow (Deloitte, 2022).

Small local suppliers in the South African automotive industry need transparency and adeptness from OEMs for business planning and forecasting. Current and potential small suppliers often do not understand the opportunities available in the automotive industry, exacerbating the difficulties in identifying opportunities, and planning. This also relates to current processes, where some payment terms are lengthy, creating cash flow challenges for the small business. This is exacerbated by the naturally low profit margins of the automotive industry for small businesses (Deloitte, 2022).

Furthermore, the skills in the automotive industry are often widely spread which frequently leads to a "blanket approach" in incubation programmes. Skills training should cater for individual business needs. Some suppliers need to acquire better technology – giving small local suppliers the opportunity to leapfrog to the next level of productivity. Additionally, continuous business development is crucial for long-term success, and the lack thereof is partly noted from the failure of past incubation programmes. Traditionally, the focus was on organisational programmes, which often disregard the specific needs of SMMEs and their operating environment (Deloitte, 2022).

Barriers experienced by SMEs during the Covid-19 pandemic include a reduction in labour supply, large decreases in capacity utilisation, and interruptions in supply chains (Coibion, Gorodnichenko & Webner, 2020). On the demand side, the circular flow of income has been interrupted by both the cessation of payment wages and lower demand for consumption and investment. Furthermore, negative elements such as the fear of contagion, heightened uncertainty, lower incomes, reduction in consumption and banking credit contraction have

provoked dramatic movements in financial markets (Baker, Farrokhnia, Meyer, Pagel & Yannelis, 2020; Jahanshahi, Dinani, Madavani, Li & Zhang, 2020).

The presence of market linkage enables SMEs to supply their produce and acquire inputs in the commercial value chain; however, the vertical linkage between SMEs and large enterprises is very limited (Mohammed & Beshir, 2019). The high cost of raw materials is a challenge (Seifu, 2017) and many enterprises (in SSA) are occasional enterprises and function for a limited period of the year (Naude & Nagler, 2016). According to Bouwman, Nikou and Reuver (2019), the digital development of SMEs requires that they re-think and innovate their business models; however, they have limited time and resources to incorporate new strategies and innovative new business models. Without innovation or digitalisation, businesses will find it difficult to adapt to the changing environment.

Many entrepreneurs and business owners in South Africa seldom find innovation and technology experts that understand their business needs, and when they do find and hire an expert, the advice may not be beneficial in enhancing their understanding of the most effective technology and the best way of integrating ICT into their businesses (Irene, 2019:169). Small businesses also experience challenges with the legal and regulatory environment, access to markets and appropriate technology, affordable business premises (Maharaj *et al*., 2016:2), acquisition of skills, managerial expertise, quality business infrastructure, more challenging clients and shorter product life cycles (Naude & Badenhorst-Weiss, 2011:71; Badenhorst-Weiss & Tolmay, 2015:3).

A wide variety of tailor-made products and innovations, adapted to changing customer needs, will be key ingredients for small business success in today's competitive business environment (AIEC, 2019:16). When small business owners become proponents of progressive thinking and creativity, an innovation culture is created (Inauen & Schenker-Wicki, 2012:214; Taneja *et al*., 2016:49).

3.4 CONCLUSION

This chapter gave an overview of the automotive industry from an international and a South African perspective. The contribution of the automotive industry to GDP in South Africa was highlighted, including employment. An overview was also provided of the sales of passenger and commercial vehicles in South Africa. Furthermore, South Africa's automotive export and

import potential was discussed. The final section of the chapter gave some of the barriers for the automotive industry and small businesses.

The next chapter presents the research methodology used in this study.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 INTRODUCTION

This chapter introduces the research process, problem statement, research questions, research objectives and research hypotheses of the study. It explains the research design, describing the degree of research question crystallisation, data collection method, control of variables and the topical scope of the study. This is followed by a discussion on the research environment and includes the perceptual awareness of respondents, sample design, population and sampling, and the response rate. The section on data collection discusses the collection of the data, the design of the questionnaire, the pilot study, as well as validity and reliability. The data preparation and processing and analysis section describes the descriptive statistics, the data analysis of the inferential statistics, and the data analysis programmes and software. The final section of this chapter presents the ethical considerations of the study.

4.2 THE RESEARCH PROCESS

The research process is a multistage process that allows for a structured and organised approach to the project to ensure that the phases of the study are consistent (Tustin, Ligthelm, Martins & Van Wyk, 2005:75; Saunders *et al*., 2012:12). The research process also provides a summary of the various methods and processes for data collection and analysis (Babbie, 2016:113-114). Figure 4.1 provides a graphical explanation of the research process. The first step in this process is the identification of the research topic to be addressed, followed by the development of the research objectives, the identification of the research design, the identification of the information types and sources, the development of the sample plan, and the design of the research instrument, the collection, coding and capturing of the data, the analysis of the data, as well as the presentation of the research findings for future research.

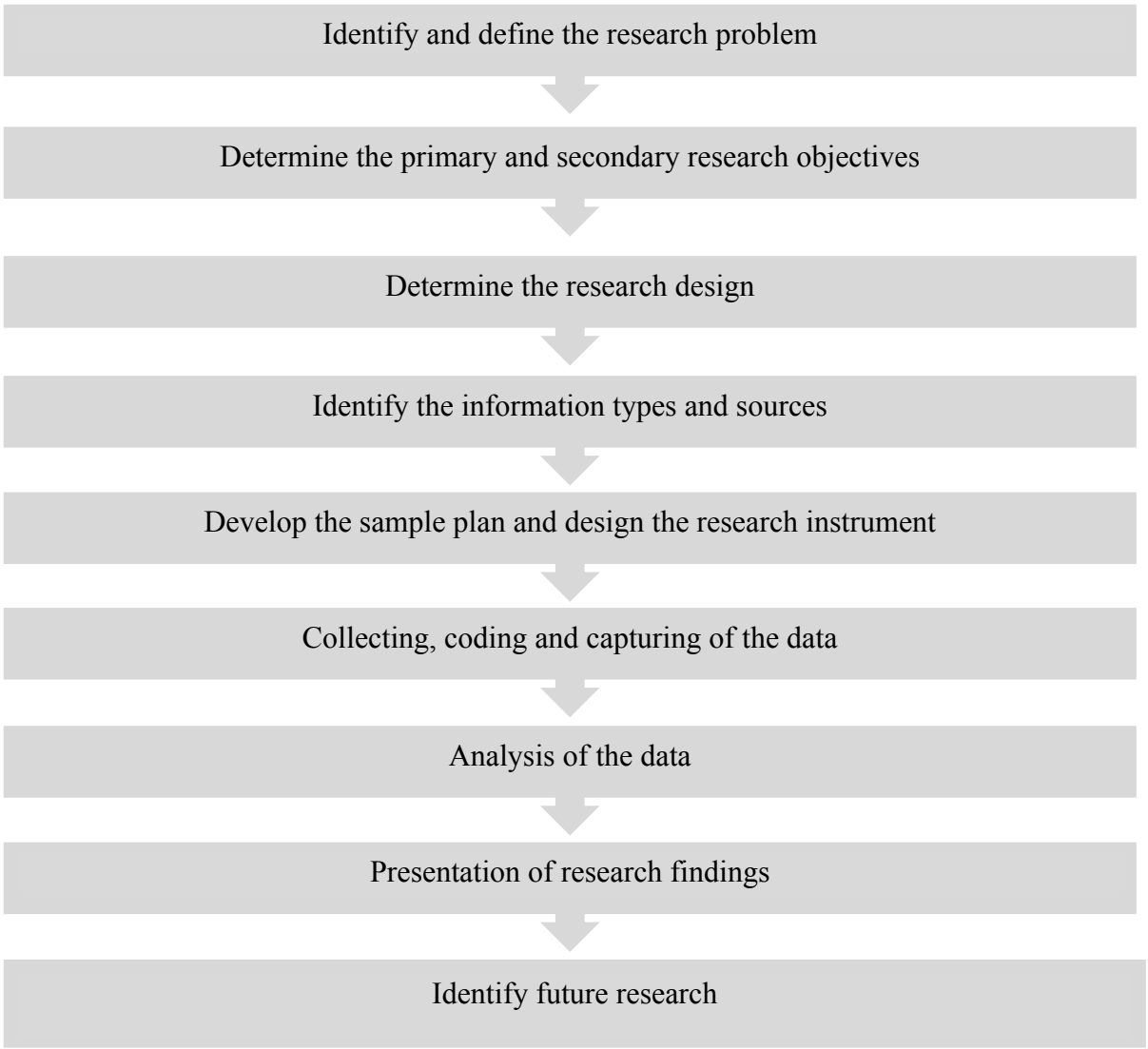


Figure 4.1: Research process
Source: Saunders *et al.* (2019:130)

4.3 PROBLEM STATEMENT

The problem to be addressed in this study is that small businesses have limited innovation capabilities (Berends *et al*., 2014:616; Louw *et al*., 2017:50; Fernandez-Esquinas *et al*., 2018:2). Limited research has been conducted on identifying the innovation capabilities that small businesses should use for the exploitation of innovation or their impact on innovation performance (Blackburn *et al*., 2018:100; Hazem *et al*., 2020:961). The failure of small businesses to innovate leads to reduced competitiveness and eventually the demise of such businesses (Zott *et al*., 2011:58). Owing to their small size and resource limitations, they are often unable to innovate or make significant changes to enhance sustainable growth **(**Farsi & Toghraae, 2014:13).

According to Audretsch *et al*. (2011:11), the driving force behind the emerging globalisation of any nation is innovation and technology. As much as innovation in small businesses has a large diversity of focus, much remains unknown about the driving forces of successful innovation in the small business (Brown, 2014b:150). Small businesses face challenges such as the ability to adapt rapidly to changing market demands and technological changes, as well as the capacity constraints related to knowledge, innovation and creativity (Yoshino & Taghizadeh-Hesary, 2016:7; Ong-Ming & Abdul, 2021:499). In Africa, the lack of basic infrastructure in the form of electricity and broadband internet access hinders scientific development and technological adaptation (Brar *et al*., 2011:9; Mutonga, 2014:12). Hence, a study to evaluate the lack of innovation capabilities is imperative. The researcher fills this gap by exploring the innovation capabilities of small businesses within the automotive retail industry in the City of Johannesburg.

4.4 RESEARCH QUESTIONS

The research questions of the study were formulated as follows:

- What are the innovation capabilities of small business owners?
- What barriers affect the innovation capabilities of small business owners?
- Is there a relationship between the innovation capabilities and the innovation performance of small businesses?
- Is there a significant relationship between knowledge effectiveness and the innovation performance of the small business?
- Is there a significant relationship between the barriers that affect small business owners' innovation capabilities and innovation performance?
- Is there a relationship between innovation activities and the innovation performance of the small business?

4.5 OBJECTIVES OF THE STUDY

The following primary and secondary objectives were formulated for the study:

4.5.1 Primary objective

The primary objective of the study was to explore the innovation capabilities (leadership, involvement, strategy, rewards, and resources) of small businesses in the City of Johannesburg as they relate to innovation performance in the automotive retail industry.

4.5.2 Secondary objectives

To achieve the primary objective of the study, the following secondary objectives were formulated:

- investigate the innovation capabilities of small business owners
- investigate the barriers that affect small business owners' innovation capabilities
- determine whether there is a relationship between the innovation capabilities and the innovation performance of small businesses.
- determine if there is a significant relationship between knowledge effectiveness and the innovation performance of the small business.
- determine if there is a significant relationship between the barriers that affect small business owners' innovation capabilities and innovation performance.
- determine if there is a relationship between innovation activities and the innovation performance of the small business.

4.6 RESEARCH HYPOTHESES

DePoy and Gitlin (2020:380) define a hypothesis as a testable statement that indicates what the researcher expects to find, based on theory and level of knowledge in the literature. According to Schindler (2019:582), a hypothesis is an unsubstantiated assumption about the relationship between concepts and constructs: it drives the research and is a tentative descriptive statement that describes the relationship between two or more variables, formulated for significance testing. The research hypotheses for the study were as follows:

H1: There is a relationship between innovation capabilities and the innovation performance of the small business.

H2: There is a relationship between knowledge effectiveness and the innovation performance of the small business.

H3: There is a relationship between public service conditions and the innovation performance of the small business.

H4: There is a relationship between the barriers that affect small business owners' innovation capabilities and innovation performance.

H5: There is a relationship between innovation activities and the innovation performance of the small business.

H6: There is a moderating effect of barriers on the relationship between innovation capabilities and innovation performance.

H7: There is a moderating effect of public service conditions on the relationship between innovation capabilities and innovation performance.

4.7 RESEARCH DESIGN

Research is about collecting relevant data and using it to support an argument or to draw a valid conclusion (Brown, 2014:125; Leedy & Ormrod, 2015:20). Research is also defined as any action taken by a person to systematically gather data to ultimately increase knowledge (Saunders *et al*., 2012:5; Greener & Martelli, 2018:10). The research methodology is the overall approach to the research process, from the conceptual underpinning to data collection and evaluation (Saunders *et al*., 2012:4; Creswell, 2014a:1; Ahmed *et al*., 2016:13).

A research design is a blueprint for conducting a study in a way that allows maximum control to be exercised over the factors that could interfere with the validity of the research results. A research design further relates to the researcher's plan for obtaining answers to the research questions leading the study (Polit & Hungler, 1999:155; Saunders *et al*., 2012:680; Bertram & Christiansen, 2014:40). A research design also contains a plan for how research respondents are selected (Welman & Kruger, 2001:46; Saunders *et al*., 2012:680; Jensen & Laurie, 2016:4).

A correlation exploratory research design was used as a means of enabling the researcher to determine whether one variable was associated with another (Devlin, 2018:74). This design was used to describe any possible linear relationship between the variables involved in the research, without attributing the effect of one variable to the other (Devlin, 2018:76). This was a very useful strategy because it had the potential to demonstrate that the following variables, namely leadership, involvement, strategy, rewards and resources, had something in common, and if they did, the two could be compared (Devlin, 2018:190).

There are different research approaches, depending on the nature and objectives of the study being undertaken. When conducting research, one is faced with a choice of either using a qualitative or a quantitative research method. A quantitative research approach was used for this study and a positivist philosophy was adopted. In general, quantitative research is

associated with positivism. Positivism emphasises a strictly scientific empirical method for producing pure data and facts that are free of human interpretation or bias. Hence, positivism is concerned with accepting the research questions posed, as well as the hypotheses proposed (Neuman, 2014:102), in the context of a small business in the automotive retail industry.

Quantitative research is a process that helps one to systematically gather and measure information on specific variables, allowing one to answer relevant questions and evaluate results (Trochim, 2006:1; Bertram & Christiansen, 2014:138; Creswell, Ebersohn, Eloff, Ferreira, Ivankova, Jansen *et al*., 2015:145). In this study, the specific variables were leadership, involvement, strategy, rewards and resources. Furthermore, quantitative research was used to measure the correlation between innovation capabilities and the innovation performance of small businesses in the City of Johannesburg within the automotive retail industry. The following sections discuss the degree of research question crystallisation, control of variables and the topical scope.

4.7.1 Degree of research question crystallisation

Cooper and Schindler (2014:126) state that a study may be viewed as either exploratory or formal. Exploratory studies tend toward loose structures, with the objective of discovering future research tasks. The purpose of exploration is to develop research questions or hypotheses for further research. A formal study begins where exploration ends; in other words, it begins with a research question or hypothesis and involves precise procedures and data sources (Adams & Lawrence, 2019:599). This study can be viewed as a formal research design, as it tested the hypotheses of the study.

4.7.2 Control of variables

There is a crucial distinction in quantitative analysis between the variables that the researcher thinks might be causing or predicting an outcome (independent variable) and the variables that he/she thinks are an outcome or effect (dependent variable). The researcher must be able to identify the different types of data in order to use the statistical analysis that corresponds with the type(s) of the data (Jensen & Laurie, 2016:295). The types of quantitative data are discussed below:

Nominal scales

A nominal scale is the lowest, least precise level of measurement, for which there is a difference in type only among the categories of a variable. A nominal level of measurement is also known

as a categorical variable, comprising categories that cannot be rank ordered. Data collected on variables may be divided into two or more groups of nominal scales, which are mutually exclusive and collectively exhaustive. Nominal level measurement also indicates that a difference exists among categories such as gender (male or female) (Gerber & Hall, 2017:35). A number or a letter is assigned to specific objects as labels for identification or classification (Greener & Martelli, 2018:81). In this study, most of the responses from section A were measured with nominal scales. In particular, demographic variables such as gender, age group, ethnic group, nationality of the owner, highest level of education, type of industry and location of the business were measured with a nominal scale.

Ordinal scales

The ordinal scale is a level measurement that identifies differences among variable attributes and rank categories such as low, medium or high (Gerber & Hall, 2017:35). Ordinal scales contain the characteristics of the nominal scale plus the indication of the order (Cooper & Schindler, 2014:252; Greener & Martelli, 2018:81). The ordinal scale also arranges objects according to their magnitude in an ordered relationship; for example, 1 = poor, 2 = average, and 3 = excellent. An ordinal scale was used for the questions on innovation capabilities in section B of the questionnaire, innovation performance in section C of the questionnaire, innovation activities in section D of the questionnaire, and public service conditions in section E of the questionnaire.

Interval scales

Interval scales have the power of nominal and ordinal data, plus one additional strength: they integrate the principle of interval equality, i.e., the scaled distance from 1 to 2 is equal to the distance from 2 to 3 (Cooper & Schindler, 2014:253; Greener & Martelli, 2018:82). Interval scales are similar to ordinal scales. In interval scales, zero does not mean a specific characteristic. Although none of the questions in the questionnaire constituted an interval, when these item scores are added together to form a scale score the score can be seen as an interval, such as the factor scores used in this study.

Ratio scales

Ratio-level measurements are the highest, most precise level of measurement; variable attributes can be rank-ordered, the distance between them is precisely measured and there is an absolute zero. Typical representations of ratio scales are physical measures of height, weight and length. This feature makes it possible to state relationships. In most practical situations,

the distinction between interval and ratio levels makes little difference (Creswell *et al.,* 2015:148). Although none of the questions in the questionnaire constituted a ratio, when these item scores are added together to form a scale score the score can be seen as a ratio, such as the factor scores used in this study.

4.7.3 Topical scope

Statistical studies are designed for breadth rather than depth. They therefore attempt to capture the characteristics of the population by drawing inferences based on the characteristics of the sample (Cooper & Schindler, 2014:127). This study made use of statistical methods to obtain the opinions of small business owners operating in the automotive retail industry Thus, the respondents' opinions obtained were considered to constitute breadth and not depth. The generalisation of the results is based on the relativity of the sample and the validity of the design. Furthermore, the study emphasised a complete contextual analysis of data and its interrelationships. The emphasis on data offers useful insights into problem-solving, assessment and strategy.

4.8 THE RESEARCH ENVIRONMENT

This study was conducted under natural field conditions or actual environmental conditions, as respondents completed the questionnaires which were hand-delivered to them at their business premises. In the context of this study, an effective research environment has been defined as one which supports the behaviours and practices that are expected in research environments, as well as supporting research of high quality. The research environment should be assessed in terms of its "vitality" and "sustainability". A research environment must be underpinned by a culture of integrity, based on good governance and best practice. Every business must have a clear strategic environmental plan that supports research with clearly defined objectives (University of Sheffield, 2021:1). The following sections discuss the respondents' perceptual awareness, population, sample size, sample and sampling method, sample error, and the response rate.

4.8.1 Respondents' perceptual awareness

According to Cooper and Schindler (2014:129), respondents' perceptual awareness influences the outcomes of research studies in many ways. Their perceptions therefore serve as a reminder for the researcher to examine the validity of the study and to quantify the research results. In this study, the respondents' perceptual awareness refers to their knowledge of a disguised study

being conducted. As a result, the small business owner's perceptual knowledge may have reduced the usefulness of the research design and, consequently, may have influenced the results of this research. If small business owners believe that something out of the ordinary was happening they may behave less naturally.

4.8.2 Population

A population is an aggregate or totality of all the objects, subjects or members that conform to a set of specifications that the researcher is interested in studying (Polit & Hungler, 1999:37; Saunders *et al*., 2012:145; Creswell *et al.,* 2015:147; Greener & Martelli, 2018:71). Researchers gather information from a sample because of the difficulty of studying the entire population (Creswell, 2014a:74). In this study, the target population comprised small business owners operating in the automotive retail industry in the City of Johannesburg. As indicated in section 1.8.2 (chapter 1), the real population size of small businesses operating in the City of Johannesburg and specifically in the automotive retail industry was unknown, nor was the total population (all small business owners in the automotive retail industry in South Africa) available or accessible. In addition, no literature record of such data on small businesses in this area and field of study could be found.

4.8.3 Sample size

To calculate the sample size, the researcher used the formula by Bartlett *et al*. (2001:47). This formula is used in cases where the population size is unknown. Using standard parameters for the margin of error and confidence level, and an appropriate standard deviation with a population of assumed normality (Bartlett *et al.,* 2001:43), the sample size was calculated as follows:

The margin of error for this study was set at 5%, the level of confidence at 90%, and the standard deviation at 0,5. This sample size was sufficient for the generalisation of findings at a 90% level Z-score = 1,844. The necessary and sufficient sample size for this study was calculated as follows (Bartlett *et al.,* 2001:43):

Sample size = $(\text{Z-score})^2$ x standard deviation (1- standard deviation) ÷ $(\text{margin of error})^2$

Sample size = $(1, 844)^2$ x (0,5) (0,5) ÷ $(0,05)^2$ = 340 respondents

The construct validity of the research questionnaire had to be investigated using an exploratory factor analysis (EFA). A general rule of thumb is to have at least 300 cases for factor analysis

or a subject-to-item ratio of at least 1 to 5 (Parker & Griffin, 2011:60). However, other sources such as Mills, Culbertson and Fullagar (2012:520) suggest 150 for EFA and 200 for confirmatory factor analysis (CFA). Hence, it was decided to use a sample size of 300 (based on the response rate), which falls within these recommendations.

4.8.4 Sample and sampling method

A sample is a group of elements selected from a larger population that provides the basis for sampling and is an important feature of any empirical study in which the goal is to make inferences about a population from a sample (Saunders *et al*., 2012:146; Bryman & Bell, 2015:302; Schutt, 2017:63). Sampling is the process of selecting a representative part of a population, that is, a sample or a subset of that population (Salkind, 2012:95; Johnson & Christensen, 2014:343; Al Kindy, Shahi & Jusoh, 2016:896). The unit of analysis is the entity that is being analysed in the study and could be individuals, groups or subgroups; for example, males and females, healthy, unhealthy, rural or urban (Creswell, 2014b:173; Al Kindy *et al*., 2016:895). In this study, the unit of analysis consisted of small businesses operating in the City of Johannesburg in the automotive retail industry.

Sampling methods can be categorised into probability sampling and non-probability sampling. For this study, non-probability sampling was used where the selection process was not standardised and the population information was limited; thus, the likelihood of selecting any given population unit could not be calculated (Rea & Parker, 2014:177). The choice of non-probability sampling was based on the fact that it was a less complicated and more economical method.

Both convenience and purposive sampling techniques were used for the analysis, as they focus on the achievement of the best data within a short timeframe at a lower cost than other methods and provided a sample appropriate to the study (Salkind, 2012:102; Rea & Parker, 2014:199). A convenience sample constitutes respondents gathered through their mere availability and accessibility to the researcher (Devlin, 2018:60). A homogeneous purposeful sampling technique was used to select the sample for this study, as the focus of the research was on selected cases of a specific subgroup (Vasileiou, Barnett, Thorpe & Young, 2018:3). This non-probability survey was expanded by snowballing and referral strategies, as additional respondents were found from information given by selected and willing respondents (Saunders *et al*., 2012:682; Devlin, 2018:60).

Purposive sampling is applicable when a researcher carefully selects respondents based on the purpose of the study with the expectation that each respondent will provide unique and rich information that will add value to the study (Rea & Parker, 2014:200; Vasileiou *et al*., 2018:18:148). The small businesses had the following characteristics to be included in the study:

- Must be within the automotive retail industry
- Must fall within the definition of small businesses (Table 1.1)
- Must be operating within the City of Johannesburg.

4.8.5 Sample error

Sampling error is the deviation between what is in the sample data and an ideal population parameter (Neuman, 2014:256; Greener & Martelli, 2018:71). In this study, the bias of selecting respondents based on specific characteristics was avoided and, in this way, potential sampling error was minimised. The sampling error consists of the differences between the sample and the population that are due solely to the specific units that have been selected; the larger the sampling error, the less representative the sample (Jensen & Laurie, 2016:106; Schutt, 2017:65).

There are two basic causes of an error in sampling. One of them is chance; that is, a mistake that just happens and which may result in unusual choices. Unusual units do exist in a population and there is always a possibility that an abnormally large number of them will be chosen. To reduce this possibility, follow-ups were done with small business owners who had not responded. The second cause of sampling error is sampling bias (Jensen & Laurie, 2016:109). Sampling bias is a tendency to favour the selection of units with specific characteristics. To reduce the possibility of this happening, no preference was given in the selection of units with specific characteristics. Sampling bias is usually the result of a poor sampling plan. Most noticeable is the bias of non-response when, for some reason, some units have no chance of appearing in the sample (Greener & Martelli, 2018:74).

4.8.6 Response rate

The response rate is the percentage of respondents that complete a survey, usually calculated by the number of respondents divided by the invited number. Jensen and Laurie (2016:101) and Devlin (2018:282) confirm that the response rate is the percentage that the researcher invites to complete the questionnaire that does so. Of the 340 questionnaires distributed to the

respondents, a total of 300 questionnaires were returned; 280 questionnaires were fully completed and 20 questionnaires were only partially completed. This resulted in a response rate of 82,35% for the study.

4.9 DATA COLLECTION DESIGN

The following sections discuss the data collection, questionnaire design, pilot study, administration of the questionnaires, and validity and reliability.

4.9.1 Data collection

The data was collected by the researcher with the assistance of two fieldworkers. Questionnaires were hand-delivered to respondents (small business owners) in the automotive retail industry in the following areas of the City of Johannesburg: Midrand (29), Kya Sand (15), Sandton (23), Woodmead (26), Randburg (17), Johannesburg CBD (42), City Deep (27), Southgate (25), Rosebank (27), Parktown (31), Northcliff (23), and Ivory Park (15). These areas were selected from the northern, eastern, southern and western sides of the City of Johannesburg. A map of the City was used to identify the areas.

The purpose of the research was outlined in a covering letter accompanying the questionnaire. Personal information such as names, identity numbers and contact numbers were not solicited, to eliminate confidentiality issues. The questionnaire was completed in approximately twenty minutes and returned to the researcher and the fieldworkers. Some respondents requested the researcher and fieldworkers to collect the questionnaires the following day, or at a later stage. However, some respondents failed to complete the questionnaires or did not want to participate in the study.

4.9.2 Questionnaire design

Table 4.1 presents an outline of the research instrument (questionnaire) used in this study.

Researchers use questionnaires to obtain information about the thoughts, feelings, attitudes, beliefs, values, participation, personality and behavioural intentions of respondents. Self-completed questionnaires are more convenient for respondents because they can be completed when they want and at the speed they want to do so (Malhotra, 2010:225). A structured questionnaire was used, as all questions were pre-formulated, structured and controlled.

Table 4.1: Questionnaire outline

Section of the questionnaire	Number of closed ended questions	Number of Likert-type scale questions
Section A: Biographical and background information	13 questions: Gender Age group Ethnic group Nationality Highest level of education Type of industry Area of business Location Form of business Number of years in business operation Number of full-time employees Number of part-time employees Reason for starting the business	
Section B: Innovation capabilities		5 questions: Leadership 11 questions: Involvement 6 questions: Strategy 5 questions: Rewards 6 questions: Resources
Section C: Innovation performance		5 questions: Innovation performance
Section D: Innovation activities	1 question: Forms of innovation 1 question: How many innovations introduced 1 question: How do you perceive the status of your business	6 questions: Barriers 6 questions: Perceptions 3 questions: Innovation knowledge and effectiveness
Section E: Public service conditions		4 questions: Policies and regulations
	1 open ended question	

Source: Author's own compilation

As shown in Table 4.1, the questionnaire comprised closed-ended questions and a single open-ended question. Closed-ended questions are characterised by the need for a respondent to choose from several options (Neuman, 2014:331). The benefits of closed-ended questions are that they are easy to handle and complete (Jensen & Laurie 2016:142; Adams & Lawrence, 2019:74). Open-ended questions allow the researcher to probe more deeply into issues of interest being raised, and issues not previously thought of when planning the study may be explored, thus providing valuable new insights into the problem (Neuman, 2014:333; Greener & Martelli, 2018:98).

Likert-type scale questions were also used in the questionnaire. The Likert scale is a variation of the overall rating scale and consists of statements that indicate either a favourable or

unfavourable attitude towards the research subject (Tustin *et al*., 2005:408; Neuman, 2014:394). Likert-scale questions require respondents to demonstrate their level of agreement with a statement. By allowing respondents to select one option and assign a numerical ranking to it, Likert-scale questions help to calculate the degree to which they were motivated to implement innovation capabilities within a small business. A scale of 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly agree was used in the study.

4.9.3 Pilot study

A pilot study was conducted two weeks before the start of data collection. Five small business owners in the automotive retail industry and in the City of Johannesburg, the two supervisors, two fieldworkers and the statistician participated in the pilot study. The small business owners were conveniently selected. The pilot study was done to ensure that the instructions were clear and easy to follow, to determine how appropriate, understandable and practical the instrument was, to address any problems before the main study, and to check the time required to complete the questionnaire (Saunders *et al*., 2012:677–678; Neuman, 2014:48). Some questions were rephrased, and the flow of sections and questions were revised. Responses from the pilot study were excluded from the final sample.

4.9.4 Administration of the questionnaire

The questionnaire was designed in such a way that it was easily understood, and the data obtained constituted the right representation of what the researcher intended to achieve. The objective of the study was discussed with the respondents to establish a common understanding of the purpose of the study and to enable respondents to provide accurate answers.

A total of 340 questionnaires were distributed by the researcher and two fieldworkers, and 300 questionnaires were returned. Some 280 questionnaires were fully completed, while 20 questionnaires were only partially completed. The hard copies of the completed questionnaires were hand-delivered to the statistician to assist with the analysis of the data. The data was then captured by the statistician in Excel and exported to the SPSS version 25.

4.9.5 Validity and reliability

Validity and reliability were the most important criteria for the evaluation of the study as well as being the first lines of defence against any incorrect conclusions (Salkind, 2012:235; Bryman & Bell, 2015:49).

4.9.5.1 Validity

Validity refers to the extent to which an investigator's findings are accurate or reflect the underlying purpose of the study (DePoy & Gitlin, 2020:387). Validity also means ensuring that the research instrument measures what it is intended to measure (Saunders, Lewis & Thornhill, 2009:150).

According to Salkind (2012:123), validity can be interpreted in two different ways: (a) validity is based on results and not actual tests; and (b) validity is measured within the context of the test. Validity can be measured in different ways, including content validity, concurrent validity, predictive validity, construct validity and face validity (Creswell *et al*., 2016:238; Malhotra, Nunan & Birks, 2017:362). Content validity refers to the degree to which the questionnaire covers the full content of the specific construct to be evaluated. To ensure the validity of the instrument, the researcher typically submits a preliminary version for comment to experts in the field (Creswell *et al.,* 2015:217). Concurrent validity measurement refers to validity that relies on a pre-existing and already accepted measure to verify the indicator of a construct. Predictive validity measurement is validity that relies on the occurrence of a future event or behaviour that is logically consistent to verify the indicator of a construct. Construct validity measures the relationship between the calculation and the underlying theory. If a test has construct validity, one would expect to see a reasonable correlation with tests measuring related areas (Leedy & Ormrod, 2019:129). Face validity is a type of measurement validity in which an indicator makes sense as a measure of a construct in the judgement of others, especially in the scientific community (Neuman, 2014:2015).

In this study, content validity was used because the questionnaire covered the full content of the specific constructs to be evaluated. The questionnaires in this study were tested for content validity using a pilot study with ten respondents. The researcher ensured that the questions were objective, simple, brief and understandable. Their comments subsequently led to minor adjustments to the questionnaire.

Internal validity was ensured through a literature review and the piloting of the questionnaire with a conveniently selected sample, which enabled the refinement of the research instrument. The internal validity of the research design refers to the approximate validity, which indicates that the relationship between two variables is causal (cause or result) or not causal (informal) (Johnson & Christensen, 2014:281; Adams & Lawrence, 2019:90). Internal validity is also referred to as causal validity, as it relates to the establishment of reliable evidence of cause and

effect. External validity (or generalisation of validity), on the other hand, was important for the generalisation of research findings to other contexts (Johnson & Christensen, 2014:305; Adams & Lawrence, 2019:91).

4.9.5.2 Reliability

Reliability is dependent on the assumption that the researcher will find similar findings after repeating the test (Adams & Lawrence, 2019:89). Reliability is also a quality criterion that refers to the extent to which the measure is used (Jensen & Laurie, 2016:143). Additionally, reliability is the accuracy with which the measurement instrument gives a certain result when the dimension being evaluated has not changed (Saunders *et al*., 2012:112; Devlin, 2018:138; Leedy & Ormrod, 2019:91). To ensure that the data collected produced consistent results when implemented by a specific researcher, this study used Cronbach's alpha to test the internal consistency of each item of the quantitative data collected using the questionnaire. Cronbach's alpha is a specific measure of internal consistency that represents the degree to which each object in a scale corresponds to the others (Devlin, 2018:139). The questionnaire was tested for accuracy, reliability, transparency, completeness, acceptability and user-friendliness (Saunders *et al*., 2012:677; Rea & Parker, 2014:37).

4.10 DATA PREPARATION, PROCESSING AND ANALYSIS

Gerber and Hall (2017:36) refer to data verification as the process of ensuring clean, reliable and useful data. Routines, sometimes referred to as "validation law", verify that data is accurate and meaningful. Data analysis refers to the process of editing and reducing accumulated data to a manageable size, developing summaries, looking for patterns and applying statistical techniques (Schindler, 2019:579). Data from the questionnaires was analysed and interpreted by the researcher with the assistance of a statistician.

The following sections describes the descriptive statistics, the data analysis of the inferential statistics, data analysis programmes and data analysis software.

4.10.1 Descriptive statistics

Descriptive statistics are the part of statistics that deals with statistical methods that are used to meaningfully organise, describe and summarise data (Creswell *et al*., 2016:204). They also refer to statistics used to describe the distribution of and relationship between variables (Schutt, 2017:240). In this study, the researcher used descriptive statistics to numerically describe the mean, standard deviation, kurtosis and skewness (Saunders, Lewis & Thornhill, 2016:527).

The mean is described as a measure of central tendency (Schutt, 2017:179), while the standard deviation, kurtosis and skewness measure the shape and distribution of the scores (Schutt, 2017:178). Liphadzi (2015:72) explains that descriptive statistics are used to present quantitative descriptions in a manageable form. Responses are analysed either as percentages if the sample is large, or as actual numbers if the sample is small (Yokwana, 2015:53). Descriptive statistics also describe what the data is showing as well as providing the researcher with a snapshot of what the data looks like (Liphadzi, 2015:72).

4.10.2 Data analysis of inferential statistics

The constructs investigated in this study were innovation capabilities, which are independent variables, and innovation performance, which is the dependent variable. An independent variable is a variable that is varied during research, while the dependent variable reflects the effect of the independent variable (Devlin, 2018:79). The tests performed as part of the inferential statistics included correlation analysis, regression analysis, factor analysis, EFA, and moderation analysis. Correlation and linear regression were used to establish a relationship between the constructs and test the hypotheses, while EFA was used to identify the underlying factors within the data set.

Inferential statistics are the type of statistics used to draw conclusions about population parameters based on findings from a sample (DePoy & Gitlin, 2020:381). Schindler (2019:582) states that inferential statistics include the estimation of population values and the testing of statistical hypotheses. According to Van Zyl (2014:177), inferential statistics are used to infer a finding concerning the population from which the sample was drawn, based on the characteristics of the sample. With inferential statistics, these calculations allow the researcher to infer from a sample something about the population. Such statistics also use likelihood data to determine how likely the outcome might have happened by chance.

According to Kara (2017:176), descriptive statistics such as the mean can also be used as inferential statistics when they allow the researcher to infer something about the population. Jensen and Laurie (2016:105) note that information statements are established in quantitative research using inferential statistics. The aim is to establish statistical patterns and associations between variables at the population level using the data obtained in the survey. Inferential statistics often use the probability theory developed in the fields of mathematics and statistics to test theories and to construct quantitative models that show the probability that information statements are correct. Statistical significance and the confidence intervals within which a

population parameter probably lies are both derived from inferential statistics (Jensen & Laurie, 2016:106). As a consequence, the function of inferential statistics is to generalise from a sample (i.e. a smaller group chosen from the population) to a greater population (e.g. country or community) with a quantifiable probability of error (Cohen, Cohen, West & Aiken, 2003:41).

4.10.3 Data analysis programs

This section presents an overview on the data analysis programmes applied in this study, which include Pearson's correlation analysis, regression analysis, analysis of variance (ANOVA), moderation analysis, factor analysis, Cronbach's alpha, Kaiser-Meyer-Olkin's (KMO) measure of sampling adequacy and Bartlett's test of sphericity.

Pearson's correlation analysis

Correlation analysis is a statistical measure that shows the extent to which two or more constructs fluctuate together; a positive correlation indicates the extent to which those variables increase or decrease in parallel, whereas a negative correlation indicates the extent to which one variable increase as the other decreases (Zaid, 2015:4). In this study, the pairwise relationships between innovation performance and innovation capabilities were determined using Pearson's correlation analysis (Maltby, Williams, McGarry & Day, 2010:59; Creswell *et al.*, 2016:264). Pearson's correlation was used to determine both the magnitude and the significance of the association between the two variables. The coefficient of correlation ranges from -1 to +1. A correlation coefficient of 0 means that there is no relationship whatsoever between the variables under investigation, while correlation values between 0 and 0,1 suggest a poor relationship, 0,1–0,3 mild, 0,3–0,5 moderate, 0,5–0,8 high, 0,8–0,9 very strong, and a correlation value of 1 represents a perfect correlation between the variables (Gogtay & Thatte, 2017:79; Greener & Martelli, 2018:89).

Regression analysis

Regression analysis is a statistical technique commonly used in identifying and evaluating relationships between a dependent variable and one or more independent variables, which are also called predictor variables (Greener & Martelli, 2018:145). Regression analysis, which is also an analysis of a predictive relationship, applies to situations that involve a mathematical expression that can be derived from examining relationships between independent and dependent variables and can be used for predictive analysis (Creswell *et al*., 2016:269).

Linear regression analysis estimates the linear equation coefficients involving one or more independent variables that best predict the value of the dependent variables (Zaid, 2015:8). The effect of innovation performance on the variables of innovation capabilities, such as leadership, involvement, strategy, reward systems and resources, was assessed using multiple linear regression. Multiple linear regression is a statistical tool used to develop a self-weighting estimating equation (that predicts the values of a dependent variable from the values of independent variables), controls confounding variables to better evaluate the contribution of other variables, and tests and explains a causal theory (Cooper & Schindler, 2014:688).

Analysis of variance (ANOVA)

ANOVA is a test for several independent samples that compares two or more groups of cases for one variable. The independent variables compared in this study were leadership, involvement, strategy, rewards and resources. ANOVA was used to check whether the variables had different average scores. Analysis of variance is utilised when there are more than two independent variables that need to be assessed by a single quantitative measure (Creswell *et al.,* 2016:255). In particular, it checks whether the groups have different average scores. This methodology would be suitable if, for example, the study was to examine whether or not four different cultural groups differ in their attitude towards a certain political problem, calculated as a total score for five-point Likert-scale items. ANOVA is appropriate in the following cases: the quantitative variable is distributed in each population and the spread (variance) of the variable is the same in all populations (Bhana, 2018: 230; Greener & Martelli, 2018:95).

ANOVA makes use of an F-test to detect significant differences. Two important values produced by an ANOVA are the test statistic (F-value) and the probability value (p-value). These two values are generally reported by researchers when they discuss the outcome of an ANOVA (Bhana, 2018:233; Greener & Martelli, 2018:95).

Moderation analysis

A moderator is a variable that specifies the conditions under which a specific predictor is related to an outcome. When a dependent variable (DV) and an independent variable (IV) are related, the moderator explains it. The introduction of a moderating variable alters the direction or magnitude of the relationship between two variables, implying an interaction effect (University of Sheffield, 2013:1). The main objective of moderation analysis is to "measure and test the differential effect of the independent variable on the dependent variable as a

function of the moderator" (Baron & Kenny, 1986:1174). The steps involved in analysing a moderating effect differ depending on the statistical package and the method used (Memona, Cheahb, Ramayah, Ting, Chuah & Cham, 2019:7).

Regardless of the statistical package used, there are general guidelines that should be followed when analysing and reporting moderation analysis. The general guidelines involve three key points: Firstly, the research should focus on the significance of the moderating effect (Z). To clarify, it is possible that a moderator variable (M) may or may not have an effect on the dependent variable (Y). Thus, the decision as to whether there is any moderating effect should be made based on a significant relationship between the moderating effect (Z) and the dependent variable (Y). Secondly, researchers must calculate and report the effect size (f^2), and how much it contributes to R^2 as a function of the moderator. Lastly, researchers must execute and report a simple slope plot for the visual inspection of the direction and strength of the moderating effect. Finally, the researchers should "return to theory when interpreting the results and explain them from a theoretical viewpoint". In other words, they should put more emphasis on the substantive meaning of such results in terms of the theoretical understanding of the phenomenon under investigation rather than the statistical significance (Memon *et al*., 2019:7).

Factor analysis

Factor analysis is a technique used to discover correlations between variables to decide whether an underlying combination of the original variables will summarise and optimise the original set (Bradley, 2010:334; Devlin, 2018:256). The technique aims to identify the fundamental patterns and factors underlying the relationship by grouping the variables and reducing them to a small number of factors (Hatcher & O'Rourke, 2014:50). As Creswell *et al.* (2016:242) confirm, factor analysis determines which items belong together – respond in the same way and measure the same factors. Reducing large numbers of factors to smaller sets of factors and examining the relationship between them is one of the most important features of factor analysis. Yong and Pearce (2013:80) highlight that the classification of factors is useful for dividing factors into meaningful categories.

EFA is typically used in the early stages of data reduction to reveal relationships among several items (Devlin, 2018:257). In this study, EFA was used early in the process of scale development, as data reduction was used to uncover relationships in the set of items and establish construct validation (Devlin, 2018:257). The factors in factor analysis result from the

transformation of a set of variables into a new set of composite variables; these factors are linear and not correlated.

Malhotra (2010:739) defines EFA as a process for identifying the underlying dimensions or factors that explain the correlations between a set of variables. Before using EFA analysis, it is necessary to check whether the data collected is appropriate for the EFA. In this study, an EFA was conducted and the main component was analysed. Principal axis factoring (PAF) was used as the extraction method for the factor and varimax rotation as the rotation method. PAF is a technique for reducing the dimensionality of such datasets, increasing interpretability while minimising information loss. It accomplishes this by generating new uncorrelated variables that gradually maximise variance. Varimax rotation was applied to minimise the number of variables that had high loadings on any factor, to improve the degree to which the factors correlated and to make the interpretation easier. Essentially, the main component analysis is performed to create a more manageable number of variables from a larger set (Malhotra, 2010:746; Cooper & Schindler, 2014:657).

Cronbach's alpha

The reliability of the questionnaire was examined using Cronbach's alpha, which provides a simple way to measure whether or not a score is reliable. It is used on the assumption that there are multiple items measuring the same underlying construct, such as in a study of innovation capabilities where there are a few questions asking different things which, when combined, could be said to measure overall innovation capability. Cronbach's alpha is a measure of internal consistency and is also considered to be a measure of scale reliability (Saunders *et al*., 2016:451; Shrestha, 2021:5).

Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy

The KMO test is a measure that is intended to measure the suitability of data for factor analysis; in other words, it tests the adequacy of the sample size. The test measures sampling adequacy for each variable in the model, as well as for the complete model (Shrestha, 2021:6).

Bartlett's test of sphericity

The null hypothesis, H0, was tested using Bartlett's test of sphericity. The variables were orthogonal, indicating that the original correlation matrix was an identity matrix, in turn indicating that the variables were unrelated and thus unsuitable for structure detection. Bartlett's test was highly significant at $p < 0{,}001$, indicating that there were significant

correlations between at least some of the variables in the correlation matrix. The significant value $p < 0,05$ indicated that a factor analysis might be worthwhile for the data set. In this study, the Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity were used to assess the factorability of the data (Shrestha, 2021:6).

4.10.4 Data analysis software

A statistician assisted the researcher with the data analysis process. The collected data was captured by the statistician and coded before being exported to IBM SPSS software version 25.

4.11 ETHICAL CONSIDERATIONS OF THE STUDY

Ethical approval for the planned study was received from the Research Ethics Review Committee (RERC), Department of Business Management, College of Economic and Management Sciences (CEMS) at the University of South Africa (UNISA) and an ethical clearance certificate was issued (Appendix A). The UNISA Policy on Research Ethics (2016) was strictly adhered to. It is important to conduct fair and ethical research in order not to overstep the rules laid down by this policy, which would result in the violation of the rights of the respondents. The researcher informed the respondents about the intention and requirements of the study (with a covering letter accompanying the questionnaire). Respondents also received a letter of consent to be completed before the questionnaire was completed and returned to the researcher or fieldworkers.

The identity of respondents was not disclosed and respondents' participation in the study was voluntary. A confidentiality agreement was signed by the statistician and the two fieldworkers and the risk category for this study was classified as low risk. This was done to ensure that the researcher recognised the research ethics process and did not contravene the ethical norms laid down by the University for conducting the research. The researcher reported the findings completely and honestly, without prejudice or misrepresenting anyone. As verified by the Research Ethics and Integrity Advisor of CEMS (UNISA), no gatekeeper letters were required. No professional body or databases were used for this study to collect the contact details from small business owners operating in the automotive retail industry in the City of Johannesburg.

4.12 CONCLUSION

This chapter presented the research process, problem statement, research questions, objectives and research hypotheses of the study. The research design was discussed and included the

degree of research question crystallisation, the control of variables and the topical scope. The research environment section discussed respondents' perceptual awareness, population and sampling, sample error and the response rate. The data collection design section described the data collection, questionnaire design, the pilot study, and validity and reliability. The data preparation, processing and analysis section discussed the descriptive and inferential statistics, the data analysis programmes, data analysis software and the ethical considerations of the study.

The next chapter presents the research results and findings of the study.

CHAPTER FIVE

RESEARCH RESULTS AND FINDINGS

5.1 INTRODUCTION

This chapter presents the research results and findings of the study. The chapter commences by presenting the descriptive statistics that describe the biographical and background information of the respondents. The chapter also presents the results relating to innovation capabilities, namely leadership, involvement, strategy, rewards and resources. This is followed by the results regarding innovation performance. Innovation activities include the barriers to innovation in the business, the perceptions of being innovative, the forms of innovation, the number of innovations introduced in the business in the last two years and the status of the business regarding the use of innovation. Innovation knowledge and effectiveness, and the public service conditions, which include policies and regulation, are then discussed, and the opportunities and barriers as highlighted by the respondents are also presented. The discussion on the inferential statistics includes a discussion on the EFA, and factor analysis using PCA for the barriers to innovation and perceptions. Descriptive statistics of the results pertaining to the constructs are outlined, followed by the Pearson correlation analysis and a discussion of the research hypotheses.

5.2 BIOGRAPHICAL AND BACKGROUND INFORMATION

Section A of the questionnaire sought to obtain the biographical and background information of the respondents. It included items related to respondents' gender, age and ethnic group, the nationality of the owner, the highest level of education, the type of industry, the area of business, the location of the business, the form of business, number of years in business operation, number of full- and part-time employees, and reasons for starting the business. Respondents' biographical and background information is summarised in Table 5.1.

Table 5.1: Biographical and background information of respondents

Gender	**Frequency**	**Percentage**
Male	171	57,0
Female	129	43,0
Total	**300**	**100,0**
Age group	**Frequency**	**Percentage**
Between 18–29	51	17,0
Between 30–39	81	27,0
Between 40–49	91	30,3
Between 50–59	55	18,4
Between 60–65	22	7,3
Total	**300**	**100,0**
Ethnic group	**Frequency**	**Percentage**
Black	152	50,7
White	34	11,3
Indian	64	21,3
Coloured	50	16,7
Total	**300**	**100,0**
Nationality of the owner	**Frequency**	**Percentage**
South African citizen	284	94,7
Foreign citizen	16	5,3
Other – country of origin:		
Zambia	1	
Zimbabwe	3	
Mozambique	4	
Malawi	2	
Nigeria	2	
Ghana	4	
Total	**300**	**100,0**
Highest level of education	**Frequency**	**Percentage**
Below Grade 12	1	0,3
Grade 12	31	10,3
Certificate	81	27,0
Diploma	95	31,7
Degree	77	25,7
Postgraduate qualifications (honours, masters or doctorate)	15	5,0
Total	**300**	**100,0**
Type of industry	**Frequency**	**Percentage**
Automotive retail sector/industry	33	11,0
Manufacturing sector	41	13,7
After-sales sector	56	18,7
Retail motor trade	48	16,0
Repair services	64	21,3
Automotive fuel	58	19,3
Total	**300**	**100,0**

Table 5.1: Biographical and background information of respondents (continued)

Area of business – City of Johannesburg	**Frequency**	**Percentage**
North	44	14,7
East	66	22,0
South	94	31,3
West	81	27,0
Other (Rabie Ridge)	15	5,0
Total	**300**	**100,0**
Location of the business	**Frequency**	**Percentage**
Taxi rank/train or bus station	59	19,7
Industrial area/site	101	33,7
Private home	42	14,0
Shopping centre	94	31,3
Other (Petrol station)	4	1,3
Total	**300**	**100,0**
Form of business	**Frequency**	**Percentage**
Sole ownership	89	30,1
Partnership	98	33,1
Close corporation	109	36,8
Total	**296**	**100**
Number of incomplete questionnaires	4	
Number of years in business operation	**Frequency**	**Percentage**
Less than 1 year	21	7,0
Between 1–2 years	64	21,3
Between 3–5 years	101	33,7
More than 5 years	114	38,0
Total	**300**	**100,0**
Number of full-time employees	**Frequency**	**Percentage**
None	28	9,3
Between 1–5	83	27,7
Between 6–20	148	49,4
Between 21–50	40	13,3
Number of incomplete questionnaires	1	0.3
Total	**300**	**100**
Number of part-time employees	**Frequency**	**Percentage**
None	153	51,0
Between 1–5	109	36,3
Between 6–20	30	10,1
Between 21–50	6	2,0
Number of incomplete questionnaires	2	0.6
Total	**300**	**100**

Table 5.1: Biographical and background information of respondents (continued)

Reasons for starting the business*	N	Percentage
To use my skills	96	32
To create employment	80	26
To increase my personal income	120	40
Was unemployed	38	12
Identified opportunity	195	65

Source: Author's own compilation
*Respondents could select more than one option (Question 13: Reason for starting the business).

As presented in Table 5.1, most (the modal category) of the respondents were males (57%), most were between the ages of 40 and 49 years (30,3%), most were black (50,7%), and most were South African citizens (94,7%). A diploma was the highest academic qualification that most respondents chose (31,7%) and most respondents were in the repair services industry (sector) (21,3%). Most respondents indicated the City of Johannesburg south as the area of business operation (33,3%) and an industrial area (site) was the preferred business location (33,7% %). The close corporation was the most preferred form of ownership (36,8%; N = 296) and most respondents had been operating as a business for more than five years (38%). Most of the respondents had between six and 20 full-time employees (49,5%), with no part-time employees (51,3%). Most of the respondents stated the identification of an opportunity as the reason for starting the business (65%).

5.3 INNOVATION CAPABILITIES

Section B of the questionnaire focused on the innovation capabilities of respondents and comprised five areas, namely leadership (question 14), involvement (question 15), strategy (question 16), rewards (question 17) and resources (question 18). The responses to the statements for each of these items are presented in the following sections.

5.3.1 Leadership

The section on leadership (question 14) comprised five statements and the results are presented in the following section.

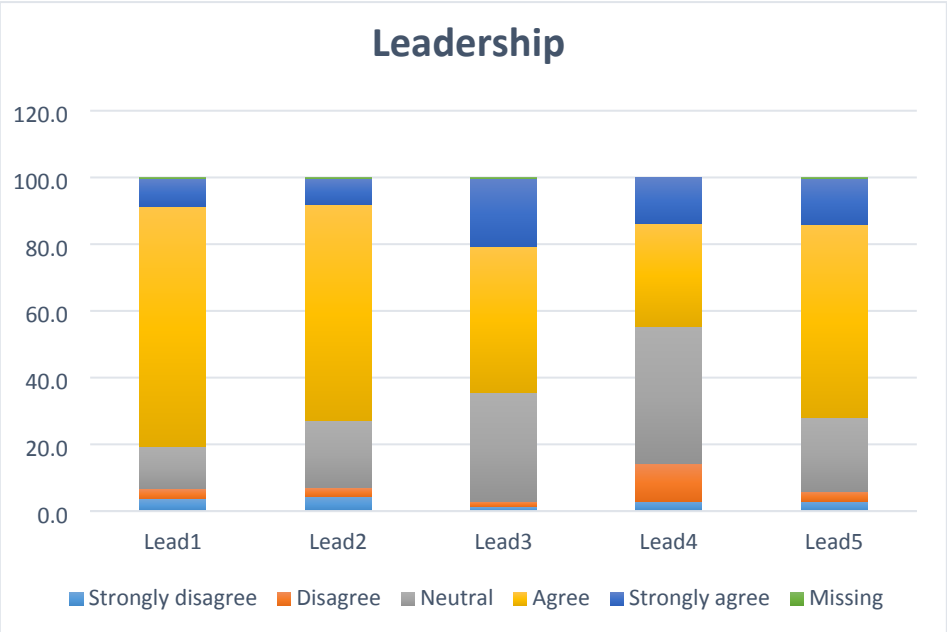


Figure 5.1: Leadership

As shown in Figure 5.1, the majority (64% or more) agreed or strongly agreed that management (leadership) provides facilitation in innovation (Lead1), management promotes technical and managerial training (Lead2), innovation is a priority for the management of the business (Lead3) and management provides guidance and support for innovation (Lead5). However, less than half (44,7%) of the respondents agreed or strongly agreed that management is willing to take risks in innovation (Lead4). In fact, 44,7% is the actual percentage of respondents (business owners) who agreed that management was willing to take risks in innovation.

The literature revealed that the leadership should create an enabling environment that values novelty, innovative ideas and creative practices to enhance the innovation skills of the small business (Johannisson, 2017:368; Furawo & Scheepers, 2018:38). Furthermore, the leadership should direct small business development operations through their management. It was also revealed that small businesses have many advantages as sources of innovation because they are quick to adopt new and high-risk initiatives as they facilitate structures that value ideas and originality, thus having improved capacity to reap substantial rewards from market share in small niche markets (Newbert, 2015:30).

5.3.2 Involvement

The section on involvement (question 15) comprised eleven statements and is presented in the following section.

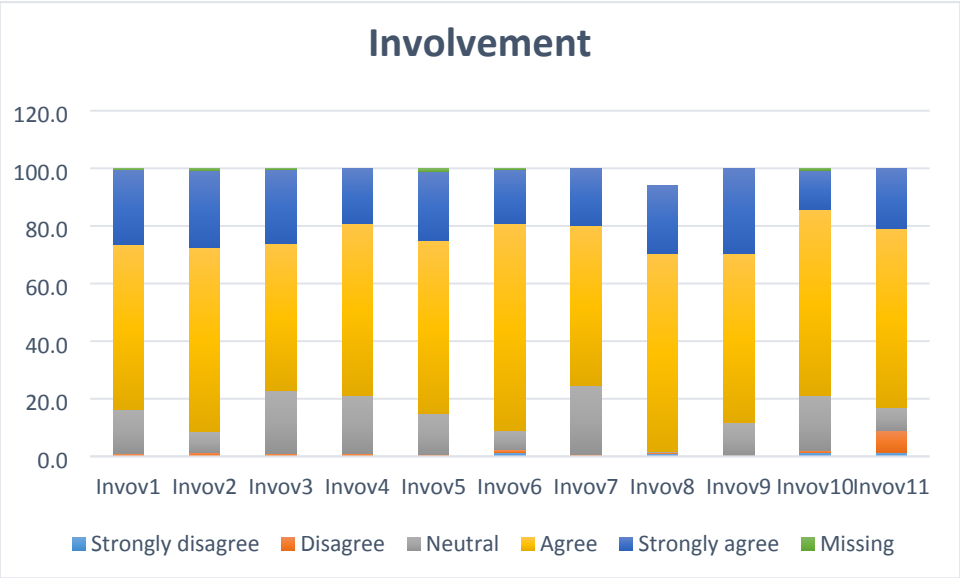


Figure 5.2: Involvement

As shown in Figure 5.2, at least three-quarters of the respondents (75,4% or more) agreed or strongly agreed that they encouraged the acquisition of new knowledge (Invov1), encouraged the transfer of knowledge (Invov2), encouraged participation in innovative projects (Invov3), committed to participate in innovative projects (Invov4), encouraged follow-up on innovative ideas (Invov5), provided education and training to enhance employees' skills (Invov6), encouraged employees to think creatively and to come up with innovative ideas about new developments (Invov7), encouraged staff to gain the necessary technical knowledge in this sector (Invov8), were prepared to accept external ideas for innovation (Invov9), actively collaborated with clients to come up with new ideas (Invov10) and shared important information on new technological developments among staff (Invov11).

Of concern is the large proportion of neutral responses for statement 7 (24%) (Encourage employees to think creatively and to come up with innovative ideas about new developments). No issues were raised by the respondents during the piloting of the research instrument (questionnaire) regarding a lack of understanding of the statement. It is therefore possible that the respondents (business owners) did not want to disagree or agree that they encouraged employees to think creatively and to come up with innovative ideas about new developments. The researcher proposes a follow-up study on involvement as an innovation capability, and to encourage employees to think creatively.

The literature has shown that employees who are empowered in terms of skills upgrade and education underpin the business environment in which they function. The appreciation of and investment in individuals cultivates an open culture of innovation in the business (Louw & Venter, 2013:465). Employees should be empowered through skills development. People's involvement is therefore critical as it shows that the small business is committed to the advancement of new knowledge, which forms the basis of the skills that deliver innovation in the business (Purcarea *et al*., 2013:109).

5.3.3 Strategy

The section on strategy (question 16) comprised of six statements and is presented in the following section.

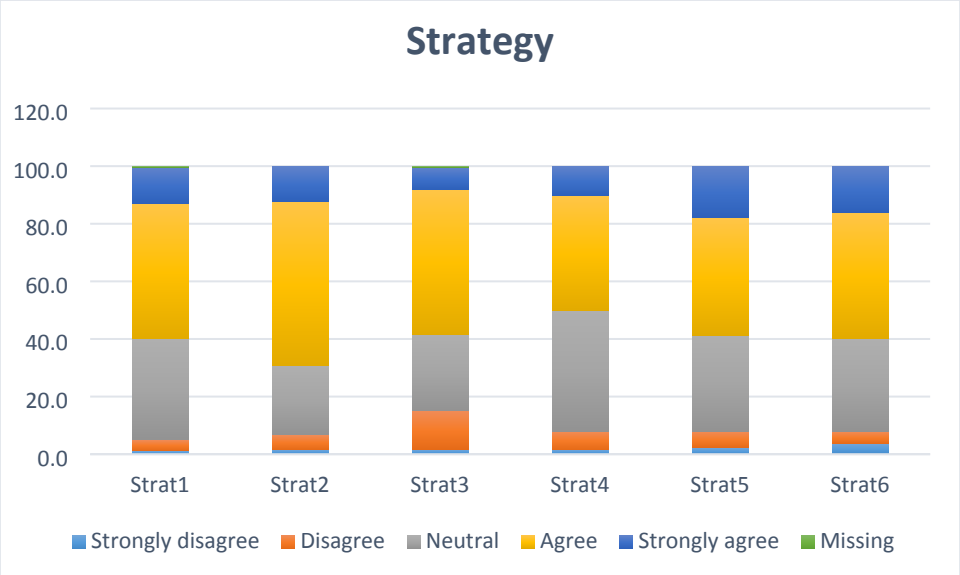


Figure 5.3: Strategy

As shown in Figure 5.3, half of the respondents or more (50% or more) agreed or strongly agreed that the business has a clear strategy for innovation (Strat1), the innovation strategy of the business is communicated to the staff (Strat2), the success criteria for the evaluation of the innovation strategy has been formulated (Strat3), innovation strategies are measured on a regular basis (Strat4), innovation targets are reviewed on a regular basis (Strat5) and training programmes support the innovation agenda of the business (Strat6).

Of concern is the large percentage of neutral responses for some statements, ranging between 24 and 35% (The innovation strategy of the business is communicated to the staff (24%), and

the business has a clear strategy for innovation (35%)). This could potentially indicate that respondents (business owners) preferred to stay "neutral" and did not want to disagree or agree with some of the statements. These were also not identified as a problem area by respondents during the pilot testing of the questionnaire. Follow-up research could therefore also be conducted on strategy as an innovation capability. Furthermore, 15% of the respondents disagreed or strongly disagreed that the success criteria for evaluating the innovation strategy had been formulated, signalling a definite gap with regard to this statement in the small businesses.

Achtenhagen and Brundin (2017:155) support the notion that the connection between strategy and innovation is crucial and the strategy should be aligned with the overall set-up of business procedures and systems to resolve environmental uncertainty. For effective growth, a strong expression of strategic direction is required. It was also revealed that small businesses that take a strategic lead are more innovative than those that protect the past (Achtenhagen & Brundin, 2017:156).

5.3.4 Rewards

The section on rewards (question 17) comprised five statements and is presented in the following section.

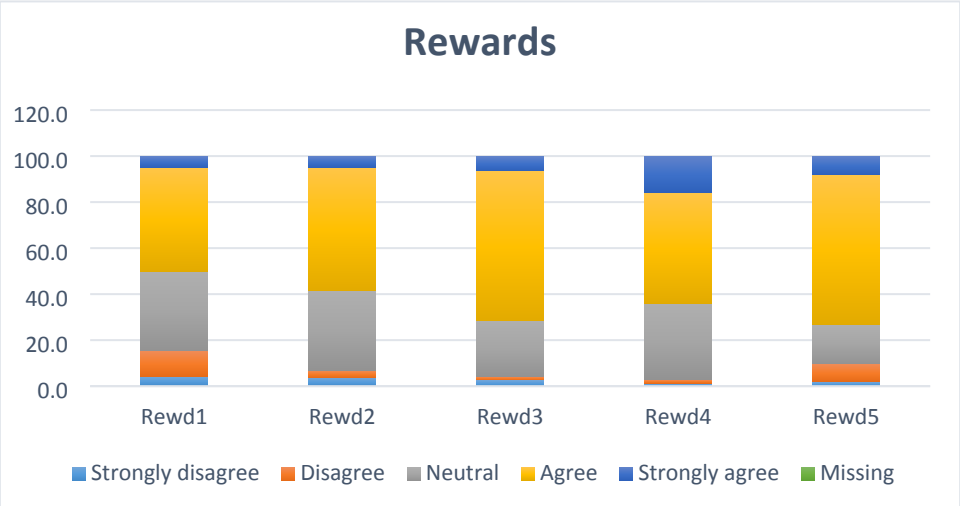


Figure 5.4: Rewards

Figure 5.4 shows that at least half (50% or more) of the respondents agreed or strongly agreed that innovation rewards and recognition systems are known by all staff (Rewd1), staff members contributing to innovation receive equitable rewards for their contributions (Rewd2),

staff members contributing to innovation are acknowledged by the business (Rewd3), alignment exists between the incentive system and the monetary value of innovation (Rewd4) and there is improvement with the existing reward system for innovative ideas by staff (Rewd5). The statement that there is improvement with the existing reward system for innovative ideas by staff had the highest percentage of agreement (73%).

A large percentage of neutral responses was also presented for these statements, ranging between 17,3 and 34,7% (Innovation rewards and recognition systems are known by all staff (17,3%), and there is improvement with the existing reward system for innovative ideas by staff (34,7%)). Furthermore, 15,3% disagreed with the statement that innovation rewards and recognition systems are known by all staff. The large number of neutral responses for some statements on rewards could indicate that respondents (business owners) do not know or preferred not to select disagree or agree, but to stay neutral. Additional research could be conducted on (innovation) rewards offered to employees by the small business owner.

The literature supported the belief that reward systems are a powerful motivator of behaviour and the key to successful innovative activity. Recognition could take the form of awards, salary advances, bonuses and promotions, and should be directly related to the innovative efforts of staff members (Kuratko, 2017:381). It was also found that individual rewards tend to increase the generation of ideas and radical innovations, while group rewards tend to increase the implementation of incremental innovations (Lawson & Samson, 2001:393).

5.3.5 Resources

The section on resources (question 18) comprised six statements and is presented in the following section.

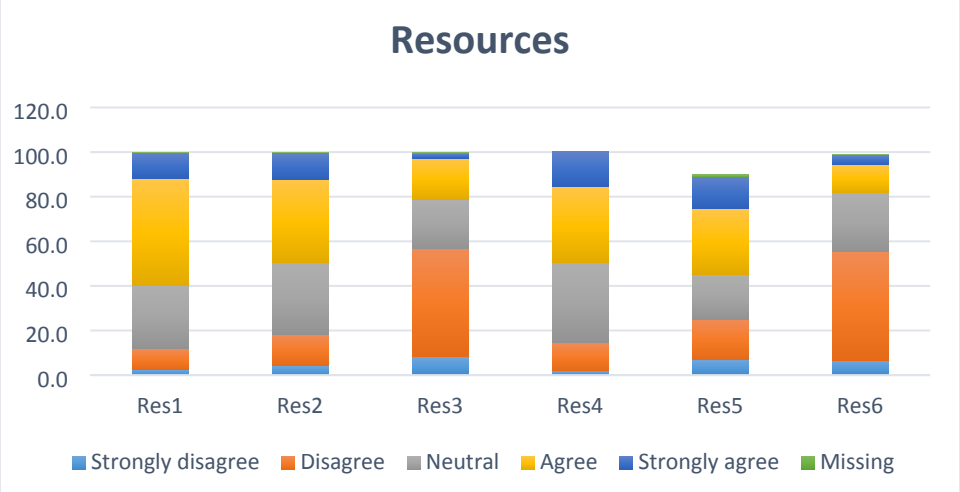


Figure 5.5: Resources

As shown in Figure 5.5, although the majority (59,7%) agreed or strongly agreed that technology (in the business) is up to date (Res1), less than half (49,7% or less) of the respondents agreed or strongly agreed that the business has sufficient resources to execute innovation (Res2), resources are a limiting factor for innovation (Res3), the technology development process in the business is effective (Res4), access to shared innovation resources such as experts, software and hardware (Res5), and innovation capabilities are limited (Res6). With regard to the statements that resources are a limiting factor for innovation, and innovation capabilities are limited, only 20,6% and 17% agreed and strongly agreed respectively, potentially indicating that they do not see these as limiting factors.

The literature has shown that small businesses should mobilise sufficient funds to achieve innovation. Effective resource management boosts the number of innovation projects and increases the probability that innovation will be stimulated (Ye & Kankanhalli, 2013:80). Cooperation with other small businesses will therefore become an inevitable option to gain additional resources (Changwei *et al*., 2019:4).

5.4 INNOVATION PERFORMANCE

Section C of the questionnaire (question 19) was on the innovation performance of respondents and comprised five statements, which are presented in the following section.

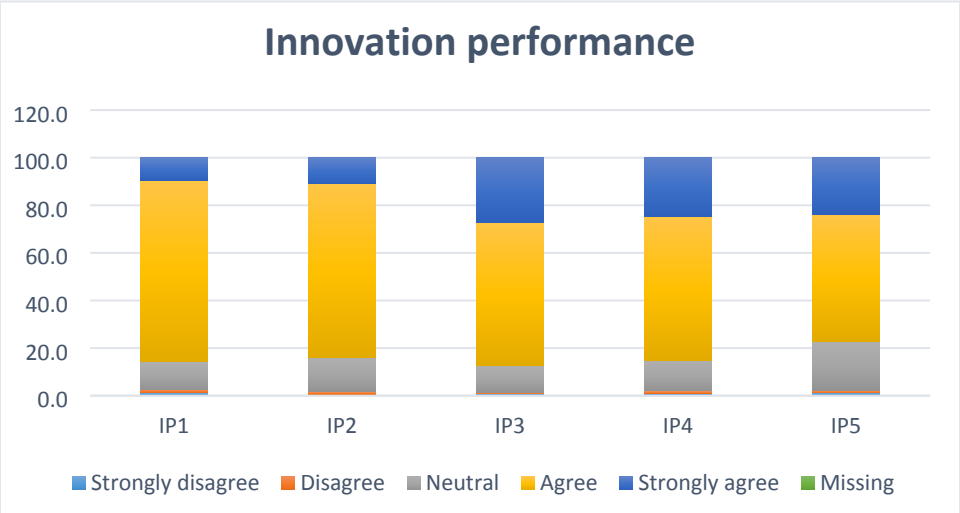


Figure 5.6: Innovation performance

As shown in Figure 5.6, the majority (77,4 % or more) agreed or strongly agreed that innovation performance has resulted in a positive effect on staff productivity (IP1), a positive effect on teamwork among staff (IP2), a positive effect on the integrity of the business (IP3), a positive

effect on the image of the business (IP4) and a positive effect on the efficiency of the business (IP5).

It was revealed that innovation performance identifies performance gaps, mobilises support for innovative ideas and transforms these ideas into useful applications (Makhdoom & Asim, 2019:89). Furthermore, as small businesses have a more focused technological capability than larger businesses, it has a positive effect on innovation performance as there are fewer distractions in a smaller technological area (Tribble *et al*., 2015:37). It was also revealed that small business owners assemble knowledge and technology in innovation processes, and these amplify innovation performance and economic growth (Hackler, 2013:239).

5.5 INNOVATION ACTIVITIES

Section D of the questionnaire was on the innovation activities of respondents. This section addressed the barriers to innovation in the business, perceptions of being innovative, forms of innovation, how many innovations had been introduced in the business in the last two years, how the status of the business was perceived regarding the use of innovation, and innovation knowledge and effectiveness. This information is presented in the following sections.

5.5.1 Barriers to innovation in the business

Six questions were asked regarding the barriers to innovation in the business (question 20). This information is presented in the following section.

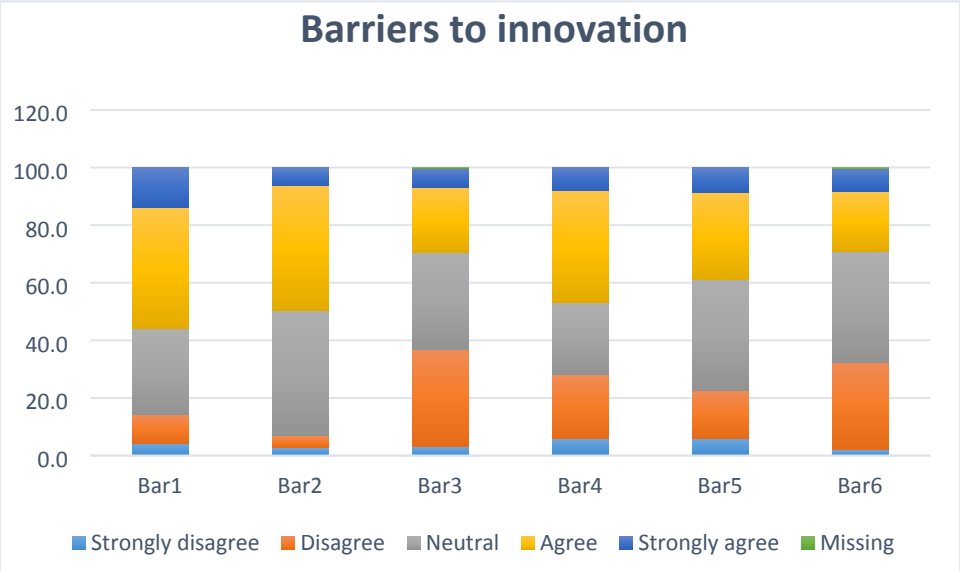


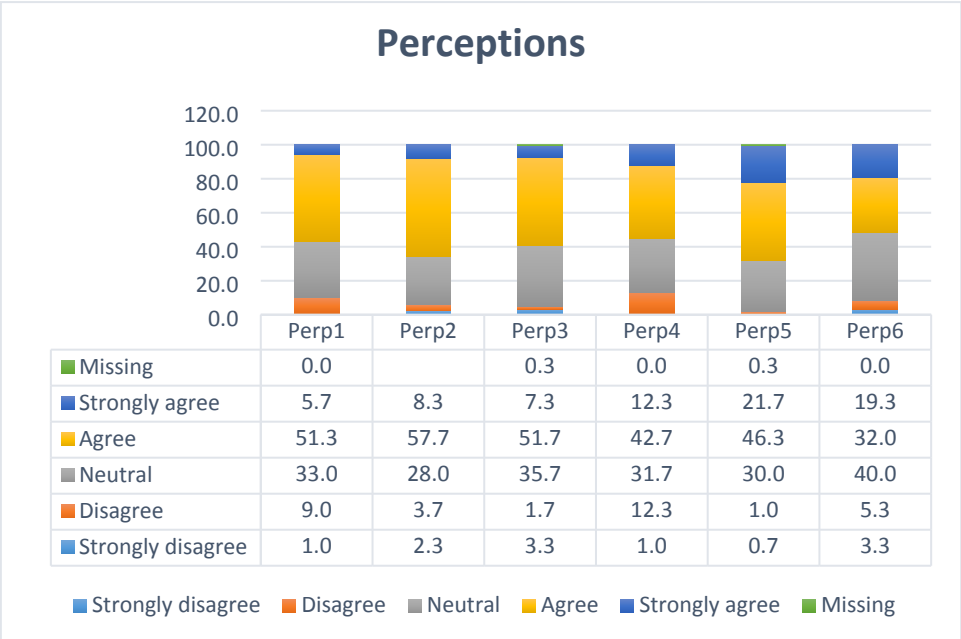
Figure 5.7: Barriers to innovation in the business

Figure 5.7 shows that the majority of respondents (56%) agreed or strongly agreed that there are sufficient resources available to keep up with the pace of technological innovation (Bar1). Less than half of the respondents (49,6 % or lower) agreed or strongly agreed there is alignment between organisational daily tasks, communication and innovation (Bar2), there is a lack of technological knowledge and skilled staff (Bar3), the budget makes provision for innovation (Bar4), there is sufficient investment in R&D (Bar5) and staff experience resistance to change regarding innovation (Bar6). For statements 1 (There are sufficient resources available to keep up with the pace of technological innovation), 2 (There is alignment between organisational daily tasks, communication and innovation), 4 (The budget makes provision for innovation), and 5 (There is sufficient investment in R&D), a majority agreement would indicate that these are not perceived as barriers, while for statements 3 (There is a lack of technological knowledge and skilled staff) and 6 (Staff experience resistance to change regarding innovation), agreement would indicate that these are perceived as barriers. Of great concern is the large percentage of neutral responses for these statements, ranging between 25 and 43,3%, which could be possibly due to a lack of knowledge or a hesitancy to admit the barriers.

As supported by the literature, improving access to technologies empowers small business owners with the skills needed to cope with, and thrive in, the age of transformation (Irene, 2019:165). It was found that skills training in the automotive industry should cater for individual business needs, as continuous business development is crucial to ensure the long-term success of the business (Deloitte, 2022). It was also found that the digital development of small businesses requires that they innovate their business models; however, they have limited resources and time to incorporate innovative new business models and new strategies (Bouwman *et al*., 2019).

5.5.2 Perceptions of being innovative

Six questions were asked regarding the perceptions of being innovative (question 21). This information is presented in the following section.



	Perp1	Perp2	Perp3	Perp4	Perp5	Perp6
Missing	0.0		0.3	0.0	0.3	0.0
Strongly agree	5.7	8.3	7.3	12.3	21.7	19.3
Agree	51.3	57.7	51.7	42.7	46.3	32.0
Neutral	33.0	28.0	35.7	31.7	30.0	40.0
Disagree	9.0	3.7	1.7	12.3	1.0	5.3
Strongly disagree	1.0	2.3	3.3	1.0	0.7	3.3

Figure 5.8: Perceptions of being innovative

Figure 5.8 shows that at least half (51,3% or more) agreed or strongly agreed that the business has systems in place for suggesting innovative ideas (Perp1), all staff are engaged in collecting innovative ideas (Perp2), feedback is provided to staff for innovative ideas received (Perp3), the business is highly innovative owing to its technological capability compared to other businesses in this sector (Perp4), innovation is an important factor for business success (Perp5) and the business is as innovative as large businesses owing to technical productivity (Perp6). However, 13,3% of the respondents disagreed or strongly disagreed that the business is highly innovative as a result of its technological capability compared to other businesses in this sector.

A high percentage (40%) of respondents indicated "neutral" with regard to the statement "The business is as innovative as large businesses owing to technical productivity", possibly because of their unwillingness to share their opinion or a lack of knowledge. Further research could also be conducted on the perceptions of being innovative, and businesses' technological capability compared to other businesses in the automotive industry.

Creativity and innovation are fundamental aspects of entrepreneurship. The literature has highlighted that creativity is ultimately the application of an individual's ideas and curiosity to discover something new (Bessant & Tidd, 2018a:31). The stages of creativity (Figure 2.3) emphasise the importance of ideas, imagination, interest and resources because the identification of sources of inspiration encourage the development of, creation of and engagement with ideas (Antonites, 2020:227). Entrepreneurs should therefore use their creative

and innovative skills to overcome barriers (obstacles) that are faced by the business. A combination of ideas and facts (combined ideas) and a future orientation are important steps to overcoming these barriers (Antonites, 2019:86). The literature also revealed that small businesses tend to utilise low levels of innovation and innovation capabilities, which are conducive to the expansion of the small business while at the same time allowing for sustained productivity increases through improvements in innovation (OECD, 2018:7).

5.5.3 Implementation of innovation

Table 5.2 shows the responses to questions 22 to 24 of the questionnaire, namely the forms of innovation, the number of innovations introduced in the business in the last two years and how respondents perceived the status of their business regarding the use of innovation. (Respondents could select more than one option on the "forms of innovation" – question 22.)

Table 5.2: Forms of innovation, number of innovations introduced, and status of the business regarding the use of innovation

Forms of innovation	**Number of responses**	**Percentage**
Product	205	68,3
Business model	129	43,0
Service	229	76,3
Process	80	26,7
Marketing	145	48,3
Technological	126	42,0
None	11	3,7
Number of innovations introduced in the business in the last two years	**Number of responses**	**Percentage**
None	31	10,5
1–3	182	61,5
4–6	56	18,9
7–9	23	7,8
10 and more	4	1,4
Total	**296**	
Incomplete questionnaires	4	-
How respondents perceived the status of the business regarding the use of innovation	**Number of responses**	**Percentage**
Adoption of innovation	161	53,7
Not involved in innovation	27	9
Radical innovation	37	12,3
Incremental innovation	75	25
Total	**300**	**100,00**

Source: Author's own compilation

Table 5.2 shows that the most popular forms of innovation selected by respondents were service (76,3%) and product innovations (68,3%). The least popular forms of innovation were process (26,7%) and technological (42,0%) innovations. Most respondents had introduced between one and three innovations in the business in the last two years (61,5%), and most selected the option "adoption of innovation" (53,7%) to indicate how they perceived the status of their business regarding the use of innovation.

The literature has shown that when customers acquire new value from services and products, business model innovation can stimulate their desire to purchase new services and products which improves business performance (Velu, 2017:603). Furthermore, product innovation is important for an increase in business profits and makes it easier to manage the product portfolio, which is fundamental for the competitiveness of the small business (Lin, 2018:179). It was also revealed that radical innovations meet emerging needs and markets, while incremental innovations try to meet existing needs and current markets with greater efficiency (superior value) propositions for consumers (Vercher, 2022:3). It was found that in small businesses, the development of incremental innovations is more common than the development of radical innovations (Forsman & Annala, 2011:154). Both radical and incremental innovations require vision and support, as well as an effort on the part of the management of the small business to develop and educate employees about innovation (Kuratko, 2017:67).

5.5.4 Innovation knowledge and effectiveness

Question 25 comprised three statements on innovation knowledge and effectiveness. This information is presented in the following section.

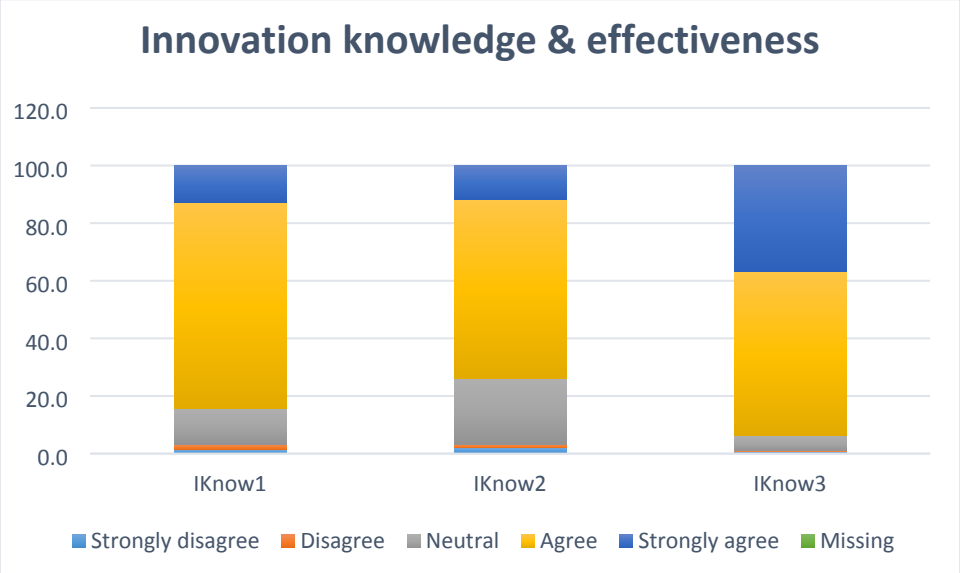


Figure 5.9: Innovation knowledge and effectiveness

As shown in Figure 5.9, almost three-quarters of the respondents (74% or higher) agreed or strongly agreed that they considered themselves knowledgeable on innovation (Iknow1), they considered their businesses knowledgeable on technological advances (Iknow2) and they considered innovation to be a viable method to improve the effectiveness of their businesses (Iknow3).

A concern is the high percentage of neutral responses to the statement: "I consider our business knowledgeable on technological advances" (22,7%), potentially indicating that the respondents were unwilling to share their opinion or possibly lacked knowledge in this regard. A further study could be conducted on the innovation knowledge and effectiveness of the small business and its technological advances.

The literature has shown that small businesses face technological changes as a challenge, as well as capacity constraints related to knowledge, innovation and creativity (Ong-Ming & Abdul, 2021:499). Small businesses should have the ability to transform knowledge and ideas into new products, services, processes and systems for the benefit of the business and its stakeholders (Adom *et al*., 2019:258). Hackler (2013:239) also maintains that small business owners should accumulate technology and knowledge, as it amplifies business performance and economic growth.

5.6 PUBLIC SERVICE CONDITIONS

Section E of the questionnaire enquired about the public service conditions for innovation. This information is presented in the following section.

5.6.1 Policies and regulation

Question 26 comprised four statements on policies and regulation. Responses in this regard are presented in the following paragraphs.

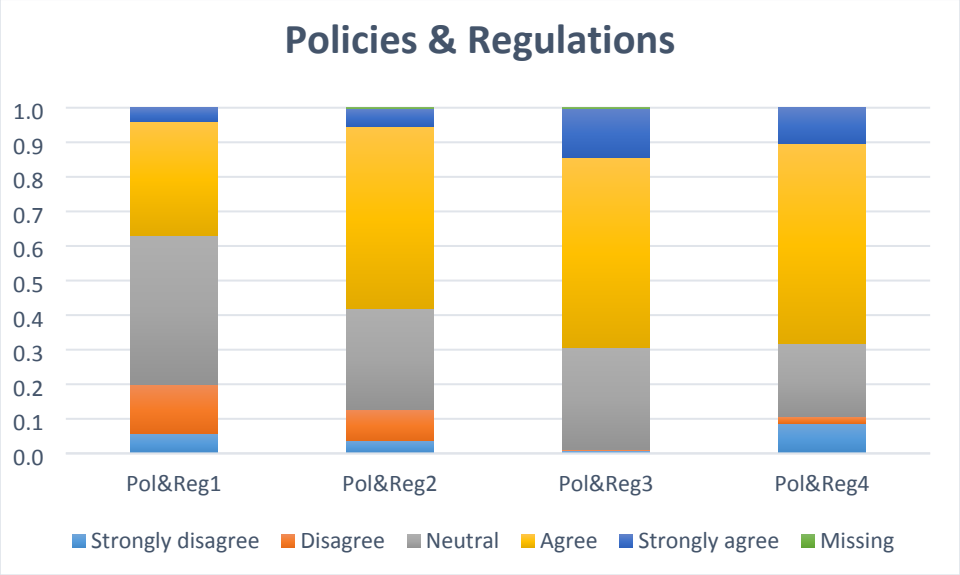


Figure 5.10: Policies and regulation

As shown in Figure 5.10, the majority (57,7% or more) of respondents agreed or strongly agreed that there are changes in government policies regarding innovation (Pol&Reg1), that innovation leads to the restructuring of their businesses (Pol&Reg2) and they have the autonomy to spend on innovation (Pol&Reg4). However, less than half (37%) of the respondents agreed or strongly agreed that new regulations have been imposed by the government regarding innovation (Pol&Reg1).

A high percentage (43%) of respondents indicated "neutral" regarding this statement ("New regulations are imposed by the government regarding innovation"), possibly owing to a lack of knowledge. Follow-up research could also be conducted on policies and regulation imposed by the government regarding innovation.

Governments play a significant role in mitigating the limitations of technological learning to recognise the advantages of operating in a worldwide market (Adebowale *et al.*, 2014:102). As supported by the literature, one reason for the low innovation activity in South Africa is that while there have been policy pronouncements at a macro level, there has been very little follow-up at the meso level (study of communities, institutions or groups), as well as disinterest from the micro level (Mohalajeng & Kroon, 2016:102). Governments should set clear norms and policy objectives for technology (Bossink, 2002:633). Focused policies and regulations stimulate important improvements in product and process technology (WEF, 2017b:9). Furthermore, governments promote their countries by attracting automotive investment

through policy and promoting measures in recognition of the benefits that automotive investment produces in terms of economic growth, development and technology transfer (NAAMSA, 2015). In addition, the advent of the Fourth Industrial Revolution and the growth in technologies has transformed economic sectors, enabling new modes of work, production and consumption, and triggering broader societal changes (Hanson & Tang, 2020). The government should therefore assist in the creation of a favourable environment that embraces and encourages small business innovation activities (IFC, 2018:86).

5.7 INNOVATION OPPORTUNITIES AND CHALLENGES

Question 27 was the only open-ended question which determined the opportunities and challenges experienced by the respondents. A summary of the responses is presented in the following subsections.

5.7.1 Opportunities

Seven respondents indicated there are limited opportunities for innovation, ten respondents referred to possible prospects in terms of innovation, commitment to innovation and opportunities with existing technology used in the business.

5.7.2 Challenges

Ninety-three of the respondents indicated a lack of funding as a challenge. Innovation requires resources and budgets for innovation are limited. Eight respondents referred to high labour and data input costs, electricity challenges, equipment and the collateral needed when applying for finance.

Fifty-six respondents indicated a lack of publicity. Ten respondents' lack of exposure related to participation in decision-making, the desire for personal development, expertise, skills in general and technical skills relating to innovation. Seven respondents referred to the reluctance of employees to embrace and adapt to innovation, and a lack of cooperation on the part of employees to participate in innovation and technological seminars.

Thirty-six respondents indicated the small size of the business as a challenge. Fifteen of these respondents were in the start-up phase and they felt that innovation was not important at this stage of business operation. Furthermore, ten respondents listed the highly competitive market and business climate as additional challenges.

Government regulation and a lack of experience in accessing government regulation were identified as challenges by 45 respondents, while affirmative action was identified as a challenge by 20 respondents, with 19 indicating Chinese products entering the South African market as another challenge.

5.8 INFERENTIAL STATISTICS

This section presents the reliability and validity of the constructs used in the study. EFA rather than confirmatory analysis was used, as the constructs were adapted and extended for use in this study.

5.8.1 Exploratory factor analysis

For this study, EFA was used, with principal axis factoring (PAF) as the factor extraction method and Promax as the rotation method to determine the dimensionality of each subsection. In the factor structures of the subsections, factors with eigenvalues greater than one (1) (Kaizer criterion) were accepted.

The Cronbach's alpha coefficient was used to determine the internal consistency (reliability) of each of the identified factors, with thresholds of 0,6 (satisfactory for exploratory research) and 0,7 for previously used instruments (Hinton, McMurray & Brownlow, 2004).

Dimension determination

Table 5.3 gives a summary of the EFA and Table 5.4 gives a summary of the EFA for section 5.8.1 (this section).

Table 5.3: Summary of the exploratory factor analysis

Factor	KMO and Bartlett's test (sig. value)	% Total variance explained	Factor loadings	Cronbach's alpha
Innovation capabilities	0,847 p < 0,001	73.5		
Leadership			**Factor 4**	**0,847**
Management provides guidance and support for innovation			0,638	
Management promotes technical and managerial training			0,642	
Management provides facilitation in innovation			0,654	
Provide education and training to enhance employees' skills			0,773	
People encouragement and innovation acceptance			**Factor 5**	**0,808**
Encourage the transfer of knowledge			0,540	
Encourage participation in innovative projects			0,921	
I am committed to participate in innovative projects			0,695	
I am prepared to accept external ideas for innovation			0,595	
People involvement			**Factor 3**	**0,827**
Encourage the acquisition of new knowledge			0,529	
Encourage the follow up on innovative ideas			0,588	
Encourage employees to think creatively and to come up with innovative ideas about new developments			0,953	
Encourage staff to gain the necessary technical knowledge in this sector			0,552	
Share important information on new technological developments among staff			0,614	
Management is willing to take risks in innovation			0,536	
Strategy			**Factor 1**	**0,905**
The business has a clear strategy for innovation			0,890	
The innovation strategy of the business is communicated to the staff			0,750	

Table 5.3: Summary of the exploratory factor analysis (continued)

People encouragement and innovation acceptance	**Factor 5**	**0,808**
The success criteria for the evaluation of the innovation strategy has been formulated	0,828	
Innovation strategies are measured on a regular basis	0,572	
Training programmes support the innovation agenda of the business	0,530	
Innovation targets are reviewed on a regular basis	0,607	
The technology development process in the business is effective	0,507	
I have access to shared innovation resources, such as experts, software, and hardware	0,598	
Rewards	**Factor 2**	**0,884**
Innovation rewards and recognition systems are known by all staff	0,992	
Staff members contributing to innovation receive equitable rewards for their contribution(s)	0,934	
Alignment exists between the incentive system and the monetary value of innovation	0,574	
Staff members contributing to innovation are acknowledged by the business	0,628	
There is improvement with the existing reward system for innovative ideas by staff	0,460	
Resources	**Factor 6**	**0,769**
The business has sufficient resources to execute innovation	0,628	
Technology in the business is up to date	0,786	
Resources are a limiting factor for innovation	0,549	

Source: Author's own compilation

Table 5.4: Summary of the exploratory factor analysis (for section 5.8.1)

Factor	KMO and Bartlett's test (sig. value)	% Total variance explained	Factor loadings	Cronbach's alpha
Innovation performance	0,712 p < 0,001	67,3	**Factor 1**	**0,874**
Has had a positive effect on staff productivity			0,803	
Has had a positive effect on teamwork among staff			0,716	
Has had in a positive effect on the integrity of the business			0,732	
Has had a positive effect on the image of the business			0,879	
Has had a positive effect on the efficiency of the business			0,710	
Innovation knowledge and effectiveness	0,542 p < 0,001	61,2	**Factor 1**	**0,830**
I consider myself knowledgeable on innovation			0,945	
I consider our business knowledgeable on technological advances			0,754	
I consider innovation to be a viable method to improve the effectiveness of our business			Did not load above 0,32 threshold	
Public service conditions	0,659 p < 0,001	56,1	**Factor 1**	**0,732**
New regulations are imposed by the government regarding innovation			0,490	
There are changes in government policies regarding innovation			0,854	
Innovation leads to the structuring of our business			0,486	
I have the autonomy to spend on innovation			0,747	

Source: Author's own compilation

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was above the recommended threshold of 0,5 (Kline, 1994; Tabachnick & Fidell, 2007; Hair, Anderson, Tatham & Black, 1998; George & Mallery, 2001) and Bartlett's test of sphericity was statistically significant ($p < 0,001$) for all the subsections (Field, 2013), indicating that it was appropriate to conduct EFA on the data.

The analysis shows that the PAF for the innovation capabilities construct extracted seven sub constructs (factors) with eigenvalues exceeding 1,0; the seven factors extracted are able to

explain 73,5% of the total variance. However, the seventh factor was discarded owing to a low Cronbach alpha (0,271). The analysis also confirmed the unidimensionality of innovation performance, innovation knowledge and effectiveness, as well as the wider public sector conditions for innovation, based on the eigenvalue criterion (eigenvalue greater than 1) (Malhotra *et al*., 2017:360). The Cronbach's alpha values were higher than the accepted threshold of 0,6 for exploratory research (Malhotra *et al*., 2017:360).

5.8.2 Factor analysis using principal component analysis (PCA) for barriers to innovation and perceptions

Owing to the fact that no estimation solution could be found with 2000 iterations of the PAF technique, it was decided to apply PCA with varimax rotation which uses total variance versus common variance. This was because the aim in the case of barriers to innovation and perceptions was mainly data reduction and not the detection of a latent variable.

Data adequacy test using KMO and Bartlett's test of sphericity

According to the results in Table 5.3, Bartlett's test of sphericity was statistically significant ($p < 0,001$) for both subsections, Barriers to innovation and Perceptions. The Kaiser-Meyer Olkin (KMO) sampling adequacy were 0,634 and 0,755, respectively, and exceeded the threshold value of 0,50.

The results of the factor analysis of barriers to innovation and perceptions are shown in Table 5.5 and Table 5.6, respectively. The PCA for the Barriers subsection explained 69,98% of the total variance and extracted two dimensions with an eigenvalue greater than one. However, the barrier 1 and barrier 6 items double loaded with a much larger loading (see table 5.5) on the first component, and it was decided to retain them, with component 1 Barrier item 3 loaded high on component 2. Thus, as a factor cannot consist of a single item, it was discarded from further analyses.

Table 5.5: Rotated component matrix for barriers to innovation

Rotated component matrix			
Barriers to Innovation	**Component**		**Cronbach's alpha**
	1	**2**	
Innovation_activities_Barriers_1 (i) There are sufficient resources available to keep up with the pace of technological innovation	0,758	-0,430	
Innovation_activities_Barriers_2 (ii) There is alignment between organisational daily tasks, communication and innovation	0,749		0,870
Innovation_activities_Barriers_3 (iii) There is a lack of technological knowledge and skilled staff		0,928	
Innovation_activities_Barriers_4 (iv) The budget makes provision for innovation	0,803		
Innovation_activities_Barriers_5 (v) There is sufficient investment in research and development (R&D)	0,884		
Innovation_activities_Barriers_6 (vi) Staff experience resistance to change regarding innovation	0,628	0,339	0,870

Source: Author's own compilation

It is worth noting that the data set had already reverse-scored the items that needed to be reverse-scored. It is also worth noting that in the instance of barriers, four of the five items were mentioned affirmatively (positively), therefore disagreement would imply barriers, while agreement would show they were not. In terms of perceptions, the PCA extracted two components with eigenvalues greater than one, and the total variance explained was 70,71%.

Table 5.6: Rotated component matrix for perceptions

Rotated component matrix			
Perception	**Component**		**Cronbach's alpha**
	1	**2**	
Innovation_activities_Perceptions_1 (i) The business has systems in place for suggesting innovative ideas	0,782		
Innovation_activities_Perceptions_2 (ii) All staff are engaged in collecting innovative ideas	0,904		
Innovation_activities_Perceptions_3 (iii) Feedback is provided to staff for innovative ideas received	0,764		0,793 (component 1)
Innovation_activities_Perceptions_4 (iv) The business is highly innovative owing to its technological capability compared to other businesses in this sector	0,592	0,490	0,731 (component 2)
Innovation_activities_Perceptions_5 (v) Innovation is an important factor for business success		0,836	
Innovation_activities_Perceptions_6 (vi) The business is as innovative as large businesses owing to technical productivity		0,895	0,731

Source: Author's own compilation

The results in Table 5.6 present the factor loadings for the six items that fall under two components labelled as component 1 and component 2. Component 1 was labelled as Level of innovation, while component 2 was labelled as Business innovativeness. The results indicate that three items belong to component 1 (items (i), (ii) and (iii); while items (v) and (vi) belong to component 2. Item (iv) was included in component 2 after studying its relationship with the items in both components.

The next section presents the results of the descriptive statistics of the identified constructs in the study.

5.9 DESCRIPTIVE STATISTICS OF CONSTRUCT RESULTS

The descriptive statistics as shown in Table 5.7 comprise innovation capabilities, innovation performance, innovation knowledge and effectiveness, public service conditions for innovation, as well as innovation activities variables.

> **Innovation capabilities**: In this study, capability refers to the key underpinning organisational capabilities that can sustainably influence innovation within an organisation (Ramli *et al.*, 2016:14).
>
> **Innovation activities**: innovation activities used in this study refer to the process of ideas flowing through a business, which are later converted to possible innovation (Ramli *et al*., 2016:15).

Table 5.7 presents the descriptive statistics of the results of the newly identified constructs.

Table 5.7: Descriptive statistics of construct results

Constructs	N	Mean	Median	Std. Dev.	Skewness	Kurtosis
Innovation capabilities						
Leadership	300	3,664	3,750	0,707	-1,530	3,690
People involvement	300	3,994	4,000	0,524	-0,614	1,380
People encouragement and innovation acceptance	300	4,080	4,000	0,530	-0,100	0,537
Strategy	300	3,550	3,500	0,701	-0,389	0,304
Rewards	300	3,607	3,800	0,665	-1,057	2,100
Resources	300	3,181	3,181	0,793	-0,283	0,005
Innovation performance						
Innovation performance	300	4,000	4,000	0,553	-1,697	6,483
Innovation knowledge and effectiveness						
Innovation knowledge and effectiveness	300	4,004	4,000	0,527	-1,396	7,024
Public service conditions						
Public service conditions	300	3,508	3,500	0,653	-0,610	0,526
Innovation activities						
Barriers	300	3,282	3,200	0,740	-0,116	-0,288
Level of innovation	300	3,584	3,667	0,656	-0,860	2,094
Business-innovativeness	300	3,668	3,667	0,711	0,160	-0,565

Source: Author's own compilation

According to Table 5.7, the mean values of innovation capabilities, except for resources, ranged from 3,55 to 4,08, indicating that respondents tend to agree and thus indicating a more positive attitude. The mean value of resources was 3,181, indicating either a neutral opinion or similar percentages of respondents that agree and disagree on these statements. Responses on the higher end of the scale indicate a higher level of innovation capabilities, while responses on the lower end of the scale indicate a lower level of innovation capabilities. The values of the standard deviation which indicates how far each item lies from the mean were small. All the capability constructs can be considered to be approximately normally distributed, with skewness values between 2 and +2 and kurtosis values between –7 and +7, as suggested by Hair, Black, Babin and Anderson (2010:77).

According to Table 5.7, the mean values for innovation activities ranged between 3,282 and 3,668, indicating that there is a slight tendency to agreement regarding the level of innovation (Mean = 3,58) and business innovation activities (Mean = 3,67), but regarding barriers this was 3,28, indicating either a neutral opinion or similar percentages of respondents that agree and disagree on these statements. The mean value for innovation knowledge and effectiveness was 4,004, indicating a tendency to agree. This implied a more positive attitude. Apart from that, the small standard deviation indicated that most respondents held similar views on innovation knowledge and effectiveness. The overall public sector conditions for innovation had a mean score of 3,508, indicating a slight tendency towards agreement. The small standard deviation also indicated that most respondents held similar views on the impact of wider public sector conditions for innovation. The assumption of normality can be assumed for these factors as the skewness values were in the range of -2 to +2, and the kurtosis values ranged from -0,565 to 7,024, falling within the -7 to +7 normality ranges recommended for these coefficients with the highest value just above 7 (Byrne, 2010:136; Komsta & Novomestky, 2015; Arnau, Bendayan, Blanca, Bono & Alarcon, 2017:555).

5.10 PEARSON CORRELATION ANALYSIS

Pearson correlation analysis, as discussed in chapter four (section 4.10.3), was used to determine the pairwise relationships between all the constructs identified in section 5.8.1. Pearson's correlation coefficient indicates the strength and direction of the relationship between two variables (Maltby *et al*., 2010:59; Awang, 2014:44; Glen, 2015:3; Creswell *et al*., 2016:264). The correlation coefficient ranges from -1 to +1. A correlation coefficient of 0 between two variables means that there is no relationship between the variables under

investigation. Correlation values between 0 and 0,1 indicate a weak relationship, 0,1– 0,3 modest, 0,3 – 0,5 moderate, 0,5 – 0,8 strong and 0,8 – 0,9 very strong, while a correlation value of 1 between variables represents a perfect correlation (Pallant, 2013:139; Zaid, 2015:30; Gogtay & Thatte, 2017:78-81; Senthilnathan, 2017).

Table 5.8 presents the correlation matrix of the constructs used in the study.

Table 5.8: Correlation matrix of the constructs

Variable	1	2	3	4	5	6	7	8	9	10	11
Leadership (1)											
PeopleInvolv (2)	,398**										
Encou-Accept (3)	,235**	,464**									
Strategy (4)	,615**	,361**	,061								
Rewards (5)	,451**	-0,003	-,042	,527**							
Resources (6)	,377**	,304**	-,012	,568**	,421**						
InnovPerf (7)	,323**	,454**	,311**	,490**	,428**	,364**					
KnowEffective (8)	,326**	,161**	,082	,551**	,555**	,405**	,485**				
Public service conditions (9)	,175**	-,069	-.254**	,421**	,485**	,355**	,272**	,393**			
Barriers (10)	,274**	,204**	-,068	,670**	,347**	,570**	.458**	.528**	,470**		
Level Innovation (11)	,626**	,319**	,096	,736**	,530**	,455**	,435**	,480**	.384**	,521**	
Bus Innov (12)	,203**	,329**	,097	,653**	,246**	,393**	,494**	,467**	,393**	,699**	,479**

Source: Author's own compilation
**denotes p < 0,01
Key: For the variables above, please see corresponding variable number

The correlation matrix presented in Table 5.8 shows the correlation between the dependent variable, innovation performance, and the independent variables, innovation capabilities (leadership, people involvement, encouragement - acceptance innovation, strategy, rewards, and resources), innovation knowledge and effectiveness, public service conditions for innovation, barriers, level of innovation and business innovativeness. The numeric value indicates the strength of the relationship, whereas the direction of the relationship is determined by whether the numeric is positive or negative (Pallant, 2010). Positive correlations show that an increase in one variable causes an increase in the other, whereas negative correlations show that an increase in one variable causes a decrease in the other (Pallant, 2010).

The independent variables in this study show a moderate positive correlation (between 0,272 and 0,494) with innovation performance. Table 5.8 indicates that there is a statistically

significant positive relationship between the six innovation capabilities' constructs and innovation performance. As a result, the more positively employees perceive the six capabilities provided by small business owners, the more committed and productive they become about the business, thus increasing and enhancing innovation performance.

Table 5.8 also shows that the variables innovation knowledge and effectiveness have a moderate positive correlation with innovation performance (0,485), which means that in the absence of innovation knowledge and effectiveness, innovation performance will tend to decrease. Because the correlation between public service conditions (0,272) and innovation performance was small but significant, the absence of public service conditions will tend to have no effect on innovation performance. Moderate but significant correlations were also found between innovation performance and other independent variables such as barriers (0,458), level of innovation (0,435) and business innovativeness (0,494).

The next section presents the research hypotheses used in the study.

5.11 RESEARCH HYPOTHESES

The following research hypotheses were set and tested for this study:

H1: There is a relationship between innovation capabilities and the innovation performance of the small business.

H2: There is a relationship between knowledge effectiveness and the innovation performance of the small business.

H3: There is a relationship between public service conditions and the innovation performance of the small business.

H4 There is a relationship between the barriers that affect small business owners' innovation capabilities and innovation performance.

H5: There is a relationship between innovation activities and the innovation performance of the small business.

H6: There is a moderating effect of barriers on the relationship between innovation capabilities and innovation performance.

H7: There is a moderating effect of public service conditions on the relationship between innovation capabilities and innovation performance.

5.11.1 Hypothesis testing using multiple regression analysis

The following research hypotheses that were formulated for the study are tested in this subsection, using multiple linear regression.

H1: There is a relationship between innovation capabilities and the innovation performance of the small business.

The research hypothesis H1 was tested by statistically testing the following sub-hypotheses for each of the dimensions of innovation capabilities.

H1a: There is a relationship between people involvement and the innovation performance of the small business.

H1b: There is a relationship between encouragement and acceptance of innovation and the innovation performance of the small business.

H1c: There is a relationship between rewards and the innovation performance of the small business.

H1d: There is a relationship between leadership and the innovation performance of the small business.

H1e: There is a relationship between resources and the innovation performance of the small business.

H1f: There is a relationship between strategy and the innovation performance of the small business.

H2: There is a relationship between knowledge effectiveness and the innovation performance of the small business.

H3: There is a relationship between public service conditions and the innovation performance of the small business.

H4: There is a relationship between the barriers that affect small business owners' innovation capabilities and innovation performance.

H5: There is a relationship between innovation activities and the innovation performance of the small business.

H5a: There is a relationship between the level of innovation and the innovation performance of the small business.

H5b: There is a relationship between business innovativeness and the innovation performance of the small business.

Assumptions of multiple linear regression

Linear multiple regression requires that (a) the observations must be independent, (b) a linear relationship exists between the predictors and the dependent variable, (c) no multicollinearity exists between the independent variables, (d) outliers must be investigated and deleted as they will influence estimation, (e) the residuals have to follow a normal distribution, and lastly, (f) there is an assumption that the variance is homogeneous.

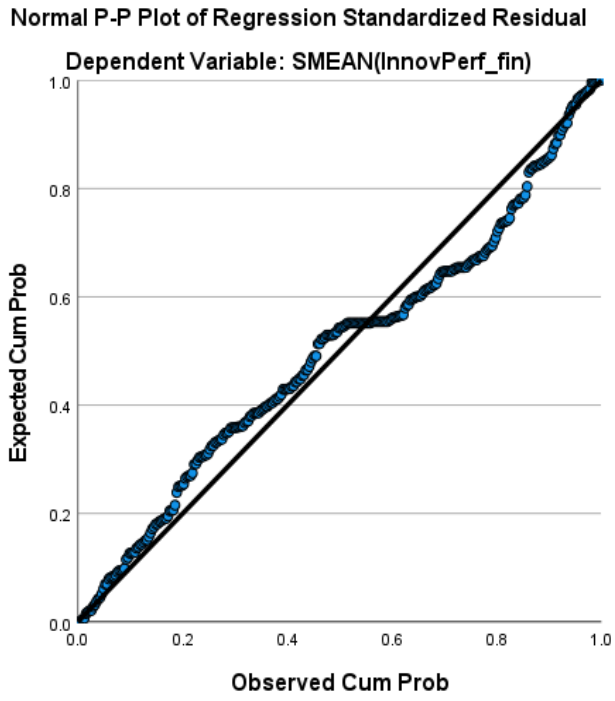


Figure 5.11: Normal P-P plot of regression standardised residual dependent variable

Regarding the independence of observations, all respondents were individuals and the survey measured their perceptions at one point in time (cross-sectional); therefore, the observations used in the regression are independent. The correlation matrix provided evidence of linear relationships between the independent variables and the dependent variable (refer to section 5.11). Regarding multicollinearity, all tolerance values were above 0,1; therefore, there was no evidence of multicollinearity between the independent variables. There was also no evidence of outliers, as skewness values across all items were between -2 and +2 (George & Mallery, 2010).

The normal P-P plot (Figure 5.11**)** shows that the assumption of normality can be assumed, as there were only slight deviations from the line. Furthermore, the scatterplot (Figure 5.12) between the standardised predicted value and the standardised residuals shows no obvious pattern in the distribution; therefore, homogeneity of variance was assumed.

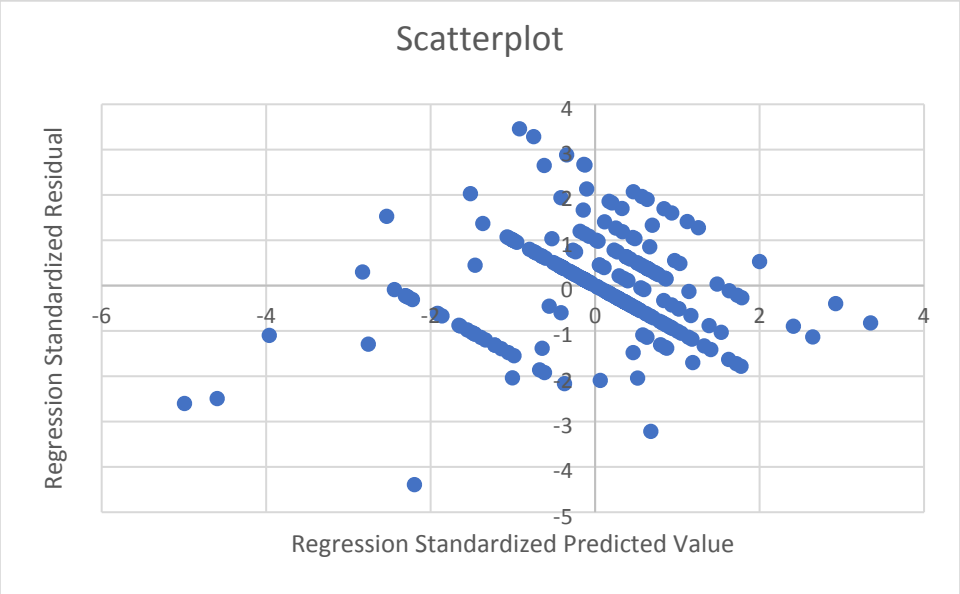


Figure 5.12: Scatterplot

In order to test the research hypotheses H1 to H5, this section presents the results of the multiple linear regression analysis used to determine the relationship between people involvement, rewards, strategy, resources, encouragement and acceptance of innovation, leadership, knowledge effectiveness, wider public condition for innovation, barriers, level of innovation and business innovativeness as independent variables to innovation performance (dependent variable) are shown in Table 5.9.

Table 5.9: Summary of the regression analysis

Model	Independent variables	Standardised coefficients (Beta)
1	(Constant)	
	Leadership	-0,091
	People involvement	0,320**
	Encouragement and acceptance of innovation	0,196**
	Strategy	-0,029
	Rewards	0,324**
	Resources	-0,037
	Knowledge effectiveness	0,121*
	Public service conditions	0,040
	Barriers	0,170*
	Level of innovation	0,005
	Business innovativeness	0,148*
Adjusted R^2	0,492	
F (p value)	27,35 (p < .001)	

*denotes p < 0,05 **denotes p < 0,01
Source: Author's own compilation

Results of original model indicated that:

(i) The R^2 value was moderate and showed that 49,2% (almost half) of the variation in the dependent variable, innovation performance, can be explained by the respective set of variables in the model.

(ii) The F test for regression was statistically significant (the beta coefficient differs significantly from zero – p value < 0,05).

(iii) The standardised beta values and associated statistical significance indicate that the following variables were statistically significant at the 1 or 5% level of significance, as indicated in the Table (5.9):

a. Innovation capabilities as in people involvement, encouragement and acceptance of innovation and rewards
b. Knowledge effectiveness
c. Barriers
d. Business innovativeness

Hypothesis **H1a** was supported, as a statistically significant moderate positive relationship (β = 0,320; p < 0,01) was found between people involvement and the innovation performance of the small business.

Hypothesis **H1b** was supported, as a weak statistically significant positive relationship (β = 0,196; p < 0,01) was found between encouragement and acceptance of innovation and the innovation performance of the small business.

Hypothesis **H1c** was supported, as a statistically significant moderate positive relationship (β = 0,324; p < 0,01) was found between rewards and the innovation performance of the small business.

Hypothesis **H2** was supported, as a weak statistically significant positive relationship (β = 0,121; p < 0,05) was found between knowledge effectiveness and the innovation performance of the small business.

Hypothesis **H4** was supported, as a weak statistically significant positive relationship (β = 0,170; p < 0,05) was found between the barriers that affect small business owners' innovation capabilities and the innovation performance of the small business.

Hypothesis **H5b** was supported, as a weak statistically significant positive relationship (β = 0,148; p < 0,05) was found between business innovativeness and the innovation performance of the small business.

Hypotheses **H1d**, **H1e**, **H1f**, **H3** and **H5a** were not supported, as the relationships did not indicate statistical significance.

People's involvement is critical to the advancement of new knowledge in small businesses and is the basis of the skills that deliver innovation. Reward systems are a powerful motivation of behaviour and are key to successful innovation activity; hence, workers who pursue innovation opportunities are given explicit forms of recognition. Motivated workers will be committed and dedicated to the cause of the business; hence, the degree of people involvement is bound to be high. It is for this reason that rewards and people involvement came out as strong predictors.

This study has looked at the relationship between the innovation capabilities and innovation performance of small businesses. The study established that capabilities such as leadership, strategy and resources were negatively related; while people involvement, encouragement and acceptance of innovation, as well as rewards, were weakly related.

5.11.2 Moderation analysis

Moderation analysis was conducted to test hypothesis 6.

H6: There is a moderating effect of barriers on the relationship between innovation capabilities and innovation performance.

To confirm the above hypothesis, sub-hypotheses were formulated as indicated below.

H6a: There is a moderating effect of barriers on the relationship between leadership and innovation performance.

To investigate the moderating effect of barriers on the relationship between leadership and innovation performance, a moderator analysis was performed using the process macro of Hayes in SPSS V28. The outcome variable for analysis was innovation performance, while the predictor variable for the analysis was leadership and the moderator variable evaluated for the analysis was barriers. The interaction between leadership and barriers was found to be statistically significant [F (1,296) = 13,3420; $p < 0,01$], 95% CI [-0,3014, -0,0903)]. Barriers thus have a moderating effect on the relationship between leadership and innovation performance. H6a was thus supported.

The conditional effect of leadership on innovation performance shows corresponding results. For the moderator, the values for barriers, at one standard deviation below the mean, at the mean and at a one standard deviation above the mean, showed that for the lower barrier level the effect is statistically significant (effect = 0,2427, 95% CI (0,1540; 0,3314), $p < 0,01$]. For the mean barrier level, the effect is statistically significant (effect = 0,978, 95%; CI (0,0107, 0,1849), $p < 0,01$). However, for the high barrier level the effect is not statistically significant (effect = -0,0471; 95% CI (-0,1867, 0,0926), $p > 0,05$).

The moderation graph (Figure 5.13) indicates the effect on innovation performance as leadership values increase for each of the levels of barriers (1 standard deviation below the mean, the mean level, one standard deviation above the mean). The graph revealed that as leadership increases, the mean value of innovation performance decreases slightly for the high barrier value but increases slightly for the mean barrier value and increases more sharply for the low barrier value.

Figure 5.13 shows the moderation effect of barriers on the relationship between leadership and innovation performance.

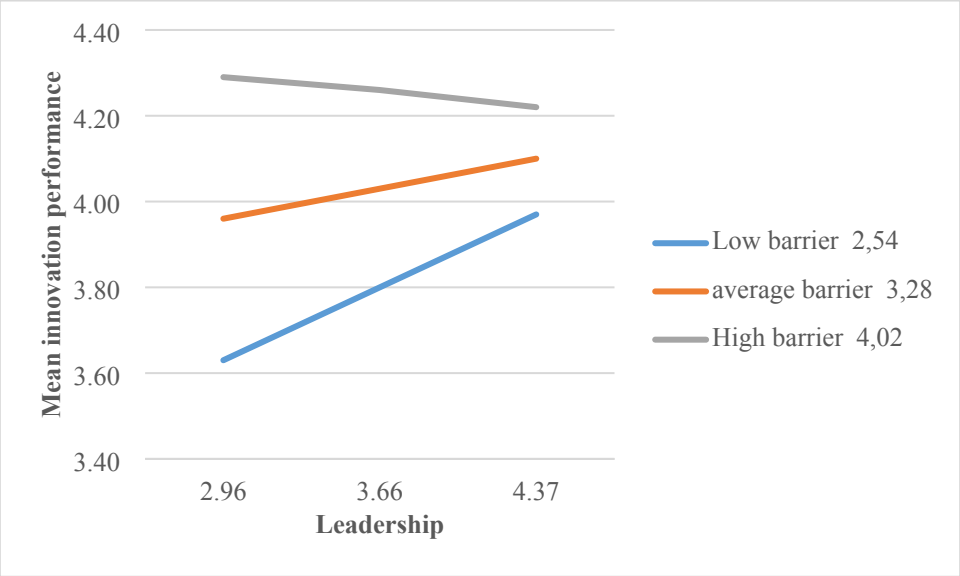


Figure 5.13: Moderation effect of barriers on the relationship between leadership and innovation performance

H6b: There is a moderating effect of barriers on the relationship between people involvement and innovation performance.

The outcome variable for analysis was innovation performance, the predictor variable for the analysis was people involvement and the moderator variable evaluated for the analysis was barriers. The interaction between people involvement and barriers was found to be statistically significant [F (1,296) = 15,6855; $p < 0,01$], 95% CI [-0,4277, -0,1437)]. Barriers thus have a moderating effect on the relationship between people involvement and innovation performance. H6b was thus supported.

The conditional effect of people involvement on innovation performance for the barriers at one standard deviation below the mean, at the mean and one standard deviation above the mean values showed corresponding results. For the moderator, barriers, at a value one standard deviation below the mean, at the mean and at a level one standard deviation above the mean, values showed that for the lower barrier level, the effect is statistically significant (effect = 0,4930, 95% CI (0,3847, 0,6014); $p < 0,01$].

For the mean barrier level, the effect is statistically significant (effect = 0,2817, 95%; CI (0,1690, 0,3944), p < 0,01). However, for the high barrier level, the effect is not statistically significant (effect = 0,0703, 95%; CI (-0,1187, 0,2594), p > 0,05). The moderation graph (Figure 5.14) indicates the effect on innovation performance, as people involvement values increase for each of the levels of barriers (1 standard deviation below the mean, the mean level, one standard deviation above the mean). The graph revealed that as people involvement increases, the mean value of innovation performance increases but with different slopes. Of interest is that for high values of barriers, the line is almost constant across the people involvement values.

Figure 5.14 shows the moderation effect of barriers on the relationship between people involvement and innovation performance.

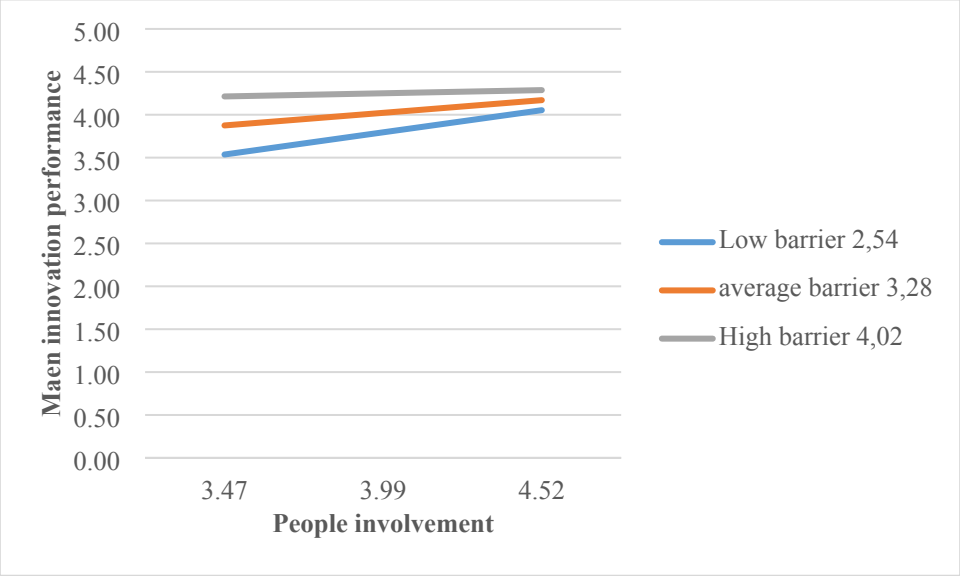


Figure 5.14: Moderation effect of barriers on the relationship between people involvement and innovation performance

H6c: There is a moderating effect of barriers on the relationship between encouragement and acceptance of innovation with innovation performance.

The outcome variable evaluated for analysis was innovation performance, the predictor variable was encouragement and acceptance of innovation and the moderator variable was barriers. The interaction between encouragement and acceptance of innovation with barriers was found to be statistically significant [F (1,296) = 17,1387; p < 0, 01], 95% CI [-0,3989, -

0,1418)]. Barriers thus have a moderating effect on the relationship between encouragement and acceptance of innovation with innovation performance. H6c was thus supported.

The conditional effect of encouragement and acceptance of innovation on innovation performance, for the barriers at one standard deviation below the mean, at the mean and one standard deviation above the mean values, showed corresponding results. For the moderator, barriers, at a value one standard deviation below the mean, at the mean and at a level one standard deviation above the mean, values showed that for the lower barrier level, the effect is statistically significant [effect = 0,4835, 95% CI (0,3712; 0,5958), $p < 0,01$]. For the mean barrier level, the effect is statistically significant (effect = 0,2835, 95%; CI (0,1815, 0,3855), $p < 0,01$). However, for the high barrier level the effect is not a statistically significant effect = 0,0835, 95%; CI (-0,0786, 0,2456), $p > 0,05$) The moderation graph indicates the effect on innovation performance as encouragement and acceptance of innovation values increase for each of the levels of barriers (1 standard deviation below the mean, the mean level, one standard deviation above the mean). The graph revealed that as encouragement and acceptance of innovation increases, the mean value of innovation performance increases but with different slopes for the different barrier levels. Of interest is that for high values of barriers, the line is almost constant across the encouragement and acceptance of innovation values.

Figure 5.15 shows the moderation effect of barriers on the relationship between encouragement and acceptance of innovation with innovation performance.

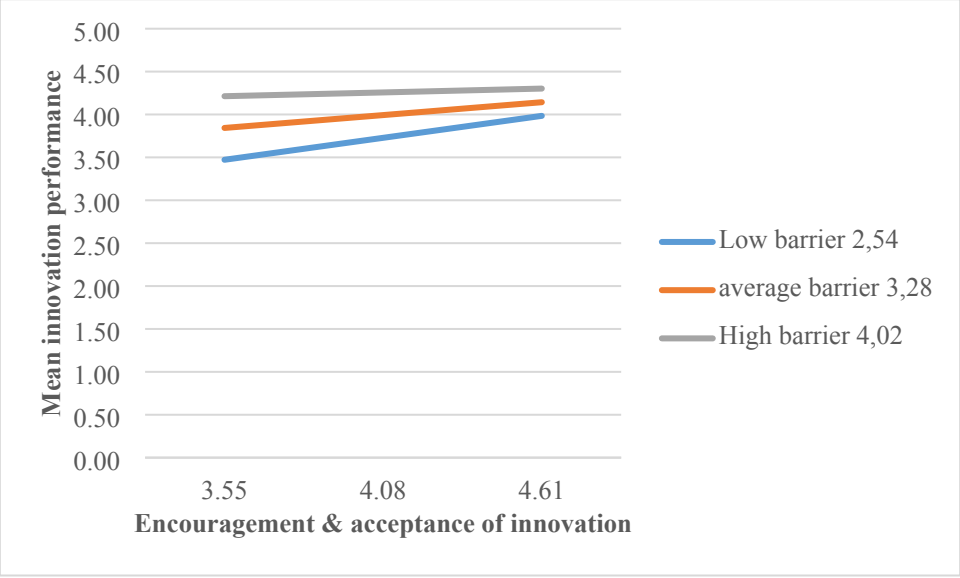


Figure 5.15: Moderation effect of barriers on the relationship between encouragement and acceptance of innovation with innovation performance

H6d: There is a moderating effect of barriers on the relationship between strategy and innovation performance.

The outcome variable evaluated for the analysis was innovation performance, the predictor variable was strategy and the moderator variable was barriers. The interaction between strategy and barriers was found to be statistically significant [F (1,296) = 21,3123; p < 0,01], 95% CI [-0,2997, -0,1206)]. Barriers thus have a moderating effect on the relationship between strategy and innovation performance. H6d was thus supported.

The conditional effect of strategy on innovation performance for the barriers at one standard deviation below the mean, at the mean and one standard deviation above the mean values showed corresponding results. For the moderator, barriers, at a value one standard deviation below the mean, at the mean and at a level one standard deviation above the mean values showed that for the lower barrier level, the effect is statistically significant (effect = 0,4038, 95% CI (0,2868, 0,5207); p < 0,01]. For the mean barrier level, the effect is statistically significant (effect = 0,2483, 95%; CI (0,1479, 0,3487), p < 0,01). However, for the high barrier level the effect is not statistically significant (effect = 0,0929, 95%; CI (-0,0307, 0,2165), p > 0.05). The moderation graph (Figure 5.16) indicates the effect on innovation performance as strategy values increase for each of the levels of barriers (1 standard deviation below the mean, the mean level, one standard deviation above the mean). The graph revealed that as strategy increases, the mean value of innovation performance increases slightly for the high barriers' value and increases moderately for the mean and increases sharply for the low barrier value.

Figure 5.16 shows the moderation effect of barriers on the relationship between strategy and innovation performance.

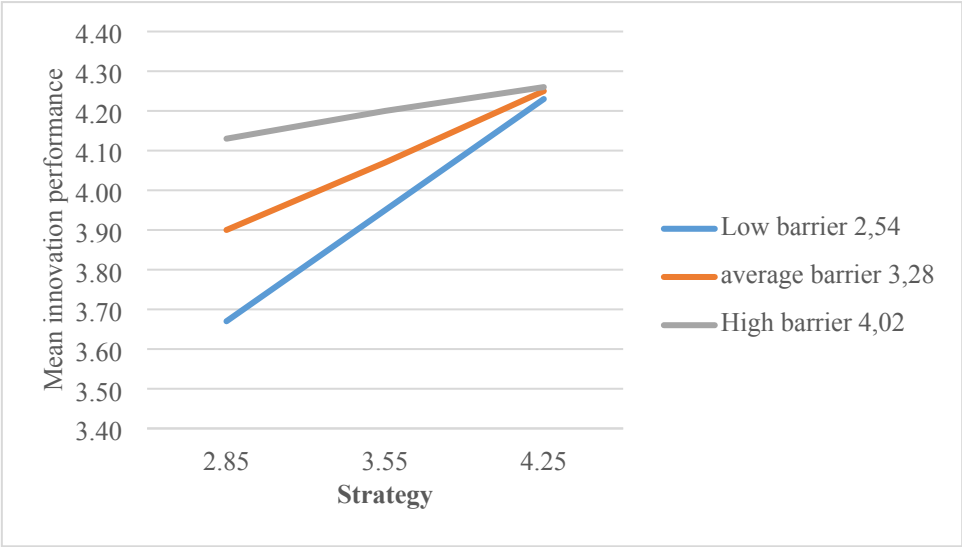


Figure 5.16: Moderation effect of barriers on the relationship between strategy and innovation performance

H6e: There is a moderating effect of barriers on the relationship between rewards and innovation performance.

The outcome variable evaluated for the analysis was innovation performance, the predictor variable for the analysis was rewards and the moderator variable was barriers. The interaction between rewards and barriers was found to be statistically significant [F (1,296) = 19,6169; p < 0,01], 95% CI [-0,3015, -0,1160)]. Barriers thus have a moderating effect on the relationship between rewards and innovation performance. H6e was thus supported.

The conditional effect of rewards on innovation performance for the barriers at one standard deviation below the mean, at the mean and at one standard deviation above the mean values showed corresponding results. For the moderator, barriers, at a value one standard deviation below the mean, at the mean and at a level one standard deviation above the mean, values showed that for the lower barrier level, the effect is statistically significant (effect = 0,3321, 95% CI (0,2425, 0,4217); p < 0,01]. For the mean barrier level, the effect is statistically significant (effect = 0,1777, 95%; CI (0,0884, 0,2671), p < 0,01). However, for the high barrier level the effect is not statistically significant (effect = 0,0233, 95%; CI (-0,1084, 0,1550), p > 0,05). The moderation graph (Figure 5.17) indicates the effect on innovation performance as the rewards' values increase for each of the levels of barriers (1 standard deviation below the mean, the mean level, one standard deviation above the mean). The graph revealed that as rewards increases, the mean value of innovation performance almost stays constant (very slight

slope) for the high barrier value but increases more sharply for the mean barrier value and has the strongest increase for the low barrier value.

Figure 5.17 shows the moderation effect of barriers on the relationship between rewards and innovation performance

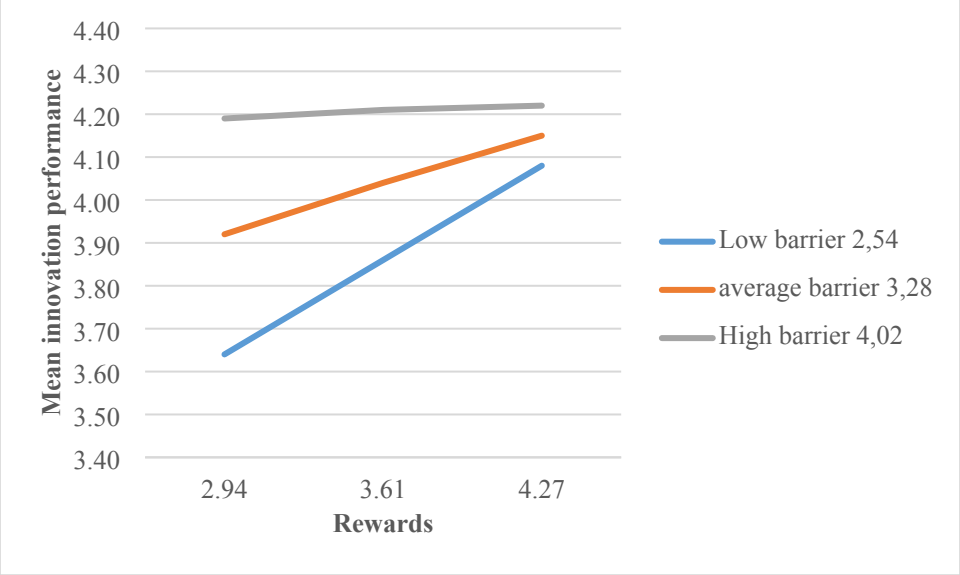


Figure 5.17: Moderation effect of barriers on the relationship between rewards and innovation performance

H6f: There is a moderating effect of barriers on the relationship between resources and innovation performance.

The outcome variable evaluated for the analysis was innovation performance, the predictor variable for the analysis was resources and the moderator variable for analysis was barriers. The interaction between resources and barriers was found to be statistically significant [F (1,296) = 21,2887; p < 0,01], 95% CI [-0,2741, -0,1102)]. Barriers thus have a moderating effect on the relationship between resources and innovation performance. H6f was thus supported.

The conditional effect of resources on innovation performance for the barriers at one standard deviation below the mean, at the mean and one standard deviation above the mean values showed corresponding results. For the moderator, barriers, at a value one standard deviation below the mean, at the mean and at a level one standard deviation above the mean, values showed that for the lower barrier level, the effect is statistically significant (effect =0,2461,

95% CI (0,1443, 0,3479); p < 0,01]. For the mean barrier level, the effect is statistically significant (effect = 0,1040, 95%; CI (0, 0214, 0,1865), p < 0,01). However, for the high barrier level the effect is not statistically significant (effect = -0,0382, 95%; CI (-0,1412, 0,649), p > 0.05). The moderation graph (Figure 5.18) indicates the effect on innovation performance as resources' values increase for each of the levels of barriers (1 standard deviation below the mean, the mean level, one standard deviation above the mean). The graph revealed that as resources increases, the mean value of innovation performance decreases slightly for the high barriers' value but increases slightly for the mean barriers' value and increases more sharply for the low barrier value.

Figure 5.18 shows the moderation effect of barriers on the relationship between resources and innovation performance.

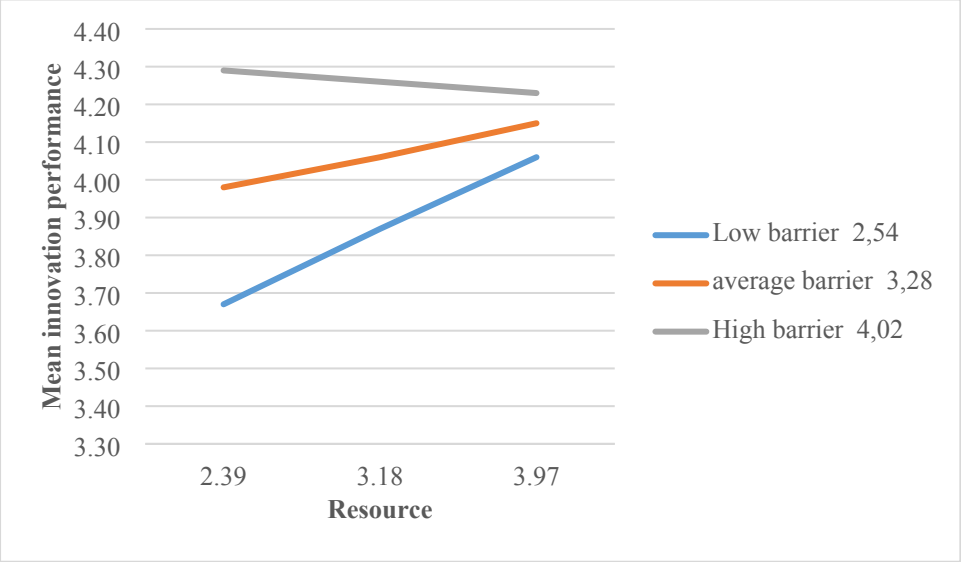


Figure 5.18: Moderation effect of barriers on the relationship between resources and innovation performance

H7: There is a moderating effect of public service conditions on the relationship between innovation capabilities and innovation performance.

H7a: There is a moderating effect of public service conditions on the relationship between people involvement and innovation performance.

The outcome variable evaluated for the analysis was innovation performance, the predictor variable was people involvement and the moderator variable was public service conditions.

The interaction between people involvement and public service conditions was found to be statistically significant [F (1,296) = 14,5428; p < 0,01], 95% CI [-0,4627, -0,1477)]. The public service conditions thus have a moderating effect on the relationship between people involvement and innovation performance. H7a was thus supported. The conditional effect of people involvement on innovation performance for public service conditions at one standard deviation below the mean, at the mean and at one standard deviation above the mean values showed corresponding results. For the moderator, public service conditions, at one standard deviation below the mean, at the mean and at a level one standard deviation above the mean values showed that for the lower public service conditions level, the effect is statistically significant (effect = 0,6052, 95% CI (0,4926, 0,7178); p < 0.01]. For the mean public service conditions level, the effect is statistically significant (effect = 0,4060, 95%; CI (0,2956, 0,5164), p < 0,01). For the high public service conditions level, the effect is also statistically significant (effect = 0,2068, 95%; CI (0,0256, 0,3879), p < 0,05). The moderation graph (Figure 5.19) indicates the effect on innovation performance as people involvement values increase for each of the levels of public service conditions (one standard deviation below the mean, the mean level, one standard deviation above the mean). The graph revealed that as people involvement increases, the mean value of innovation performance increases for all public service conditions but with different slopes.

Figure 5.19 shows the moderation effect of public service conditions on the relationship between people involvement and innovation performance.

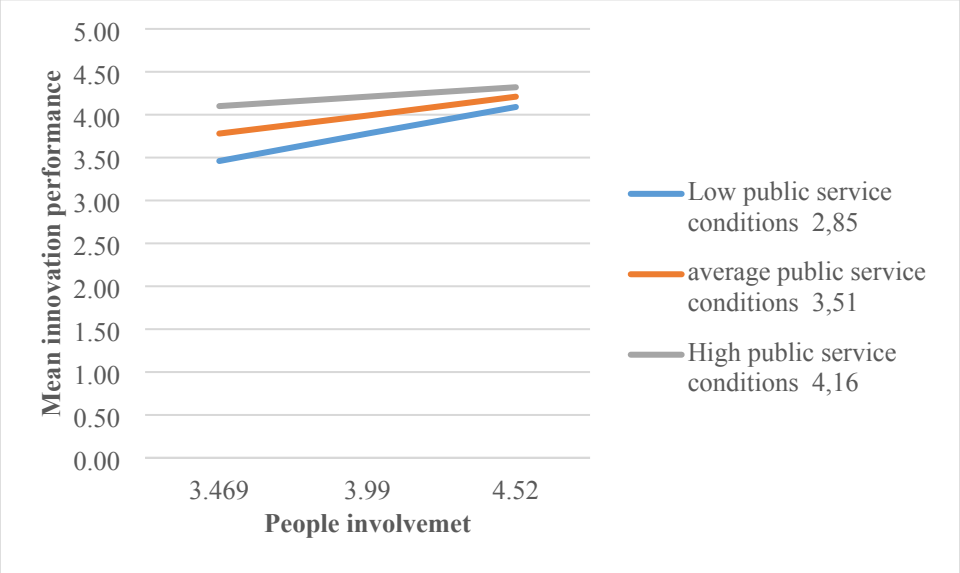


Figure 5.19: Moderation effect of public service conditions on the relationship between people involvement and innovation performance

H7b: There is a moderating effect of public service conditions on the relationship between strategy and innovation performance.

The outcome variable evaluated for the analysis was innovation performance, the predictor variable was strategy and the moderator variable was public service conditions. The interaction between strategy and public service conditions was found to be statistically significant [F (1,296) = 10,6806; p < 0,01], 95% CI [-0,2551, -0,0634)]. The public service conditions thus have a moderating effect on the relationship between strategy and innovation performance. H7b was thus supported.

The conditional effect of strategy on innovation performance for public service conditions at one standard deviation below the mean, at the mean and one standard deviation above the mean values showed corresponding results. For the moderator, public service conditions, at a value one standard deviation below the mean, at the mean and at a level one standard deviation above the mean, values showed that for the lower public service conditions, the effect is statistically significant (effect = 0,4495, 95% CI (0,3491, 0,5499); p < 0.01]. For the mean public service conditions level, the effect is statistically significant (effect = 0,3456, 95%; CI (0,2602, 0,4310), p < 0,01). For the high public service conditions level, the effect is statistically significant (effect = 0, 2416, 95%; CI (0,1305, 0,3527), p < 0.05). The moderation graph (Figure 5.20) indicates the effect on innovation performance as strategy values increase for each of the levels of public service conditions (1 standard deviation below the mean, the mean level, one standard deviation above the mean). The graph revealed that as strategy increases, the mean value of innovation performance increases fairly sharply across all the levels of public service conditions.

Figure 5.20 shows the moderation effect of public service conditions on the relationship between strategy and innovation performance.

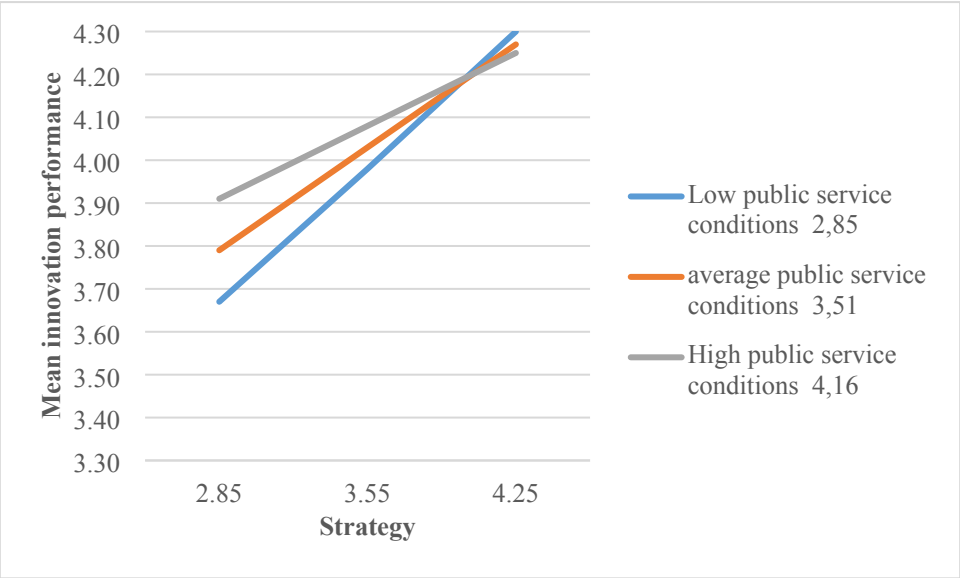


Figure 5.20: Moderation effect of public service conditions on the relationship between strategy and innovation performance

H7c: There is a moderating effect of public service conditions on the relationship between resources and innovation performance.

The outcome variable evaluated for the analysis was innovation performance, the predictor variable was resources and the moderator variable for analysis was public service conditions. The interaction between resources and public service conditions was found to be statistically significant [F (1,296) = 5,0537; p < 0,01], 95% CI [-0,2074, -0,0138)]. The public service conditions thus have a moderating effect on the relationship between resources and innovation performance. H7c was thus supported.

The conditional effect of resources on innovation performance for public service conditions at one standard deviation below the mean, at the mean and at one standard deviation above the mean values showed corresponding results. For the moderator, public service conditions, at a value one standard deviation below the mean, at the mean and at a level one standard deviation above the mean, values showed that for the lower public service conditions level, the effect is statistically significant (effect = 0,2837, 95% CI (0,1847, 0,3827); p < 0.01)]. For the mean public service conditions level, the effect is statistically significant (effect = 0,2115, 95%; CI (0,1337, 0,2893), p < 0, 01). For the high public service conditions level, the effect is statistically significant (effect = 0,1393, 95%; CI (0,0379, 0,2408), p < 0.05). The moderation graph (Figure 5.21) indicates the effect on innovation performance as resources' values increase for each of the levels of public service conditions (1 standard deviation below the

mean, the mean level, one standard deviation above the mean). The graph reveals that as resources increases, the mean value of innovation performance increases less as the value of public service conditions increases.

Figure 5.21 shows the moderation effect of public service conditions on the relationship between resources and innovation performance.

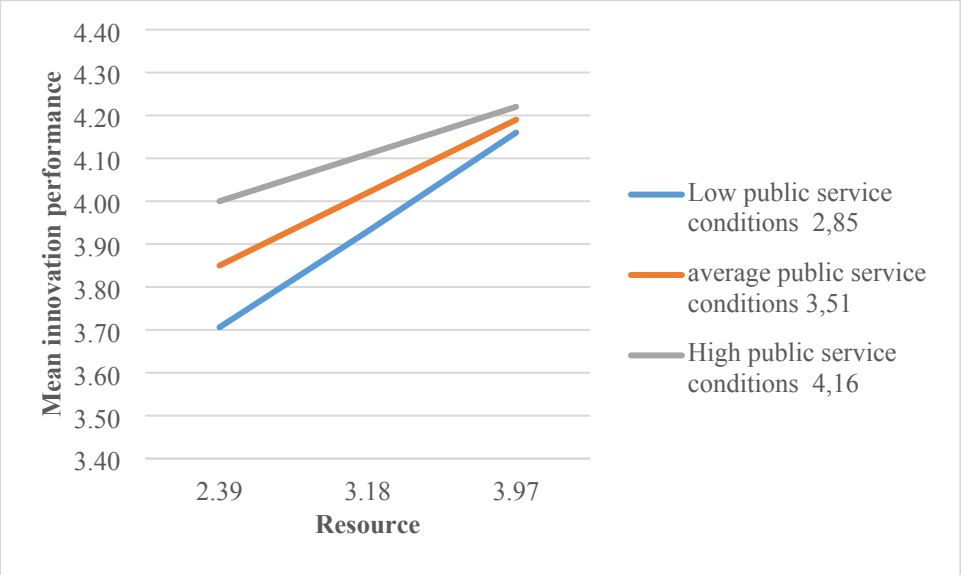


Figure 5.21: Moderation effect of public service conditions on the relationship between resources and innovation performance

H7d: There is a moderating effect of barriers on the relationship between knowledge effectiveness and innovation performance

The moderation effect of barriers on the relationship between knowledge effectiveness and innovation performance was not statistically significant, therefore barriers were not a moderator in this relationship [F (1,296) = 1, 3581; p > 0,05], 95% CI [-0,1900, 0,0487].

H7e: There is a moderating effect of public service conditions on the relationship between leadership and innovation performance

The moderation effect of public service conditions on the relationship between leadership and innovation performance was not statistically significant, therefore public service conditions was not a moderator in this relationship [F (1,296) = 0,3927; p > 0,05], 95% CI [-0,1377, 0,0712].

H7f: There is a moderating effect of public service conditions on the relationship between encouragement and acceptance of innovation and innovation performance.

The moderating effect of public service conditions on the relationship between encouragement and acceptance of innovation with innovation performance was not statistically significant, therefore, public service conditions were not a moderator in this relationship [F (1,296) = 0, 8170; p > 0,05], 95% CI [-0,2344, 0,0868].

H7g: There is a moderating effect of public service conditions on the relationship between rewards and innovation performance.

The moderating effect of public service conditions on the relationship between rewards and innovation performance was not statistically significant, therefore public service conditions was not a moderator in this relationship [F (1,296) = 1,8415; p > 0, 05], 95% CI [-0,1851, 0,0340].

5.12 CONCLUSION

This chapter presented the biographical and background information of respondents, which was followed by the innovation capabilities (leadership, involvement, strategy, rewards and resources) of the respondents. The results of respondents' innovation performance and innovation activities, which included the barriers to innovation in the business and the perceptions of being innovative, were discussed. The implementation of innovation followed and included the forms of innovation, the number of innovations introduced in the business in the last two years, and how respondents perceived the status of their business regarding the use of innovation. Innovation knowledge and effectiveness, and public service conditions, which included policies and regulation, were discussed. The opportunities and challenges experienced by respondents were also highlighted. In the section on inferential statistics the EFA was described, as was the factor analysis using the PCA for the barriers to innovation and perceptions. This was followed by the descriptive statistics of the results on the constructs. The Pearson correlation analysis conducted was presented and the chapter concluded with a discussion of the research hypotheses.

The next chapter presents the conclusion and recommendations of the study.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter provides an overview of the literature study. The primary and secondary objectives, including the research hypotheses for the study, are revisited. The significance of the study is highlighted and confirms that innovation performance depends on small business owners' capability inherent within a small business and, to a large extent, on the small business owner's awareness of these innovation capabilities. The theoretical and practical implications of the study are identified, the limitations of the study are addressed, while recommendations are made and further areas for research are presented.

6.2 OVERVIEW OF THE LITERATURE STUDY

Small businesses play an instrumental role in most economies. They contribute to the economy as a result of their innovativeness and by creating value-adding products and services through their innovation capabilities. Knowledge, innovation and ongoing technological change are strong determinants of differentials in productivity and growth, as well as a country's ability to benefit from globalisation. Innovation stimulates the TEA rate through the commercialisation of ideas.

It was found that innovative businesses have higher rates of profit, greater market values, better credit ratings and improved chances of survival. Innovation is an important source of innovative opportunities and is an essential activity for the small business to undertake in order to remain competitive and sustainable. Furthermore, innovation has an impact on the performance of the small business. Technology used in small businesses increases the capacity to meet customer demands and to keep up with competitors. It was revealed that small businesses have a more focused technological capability than larger businesses. As innovation drives change and create profits, continuous innovation guarantees value creation for individuals and the small business.

The literature has shown that governments play a significant role in mitigating the limitations of technological learning to recognise the advantages of operating in an international market. Governments should provide opportunities for technological conversation and sustainable development and should set clear policy objectives for innovation. Concentrated regulations

and policies stimulate important improvements in product and process technology. It was found that the various types of innovation in small businesses vary from economy to economy. R&D investment, the economic standards of innovation-driven economies and strong technological environments enable the small business to create high impact innovations. However, innovation and technological advances pose great challenges to the small business, and many small businesses are unfamiliar with these. Furthermore, most small businesses have limited opportunities (and resources) for the expansion of technological innovation.

It was found that the RBV is an important strategic management tool that presents capabilities and resources as essential sources for obtaining a sustainable competitive advantage and higher performance for the small business. Dynamic capabilities revolve around competencies such as strategies and resources. The diffusion perspective theory was highlighted, and it was found that the decision of the small business to adopt an innovation depends on factors such as the leadership drive, the reward system, the skills to adapt to new technology and the budget for innovation.

Open innovation in small businesses has been deemed a successful approach to achieve sustained high growth with low innovation costs. Process innovation may result in improved quality of goods and services; however, it does not necessarily result in new products and services. It was found that BMI is crucial to firm performance for the role that it plays in value creation and value capturing. BMI also plays an important role in improving the performance of the small business. When customers acquire new value from products and services, the innovation of the business model can stimulate their desire to purchase new products and services, which improves business performance. The interrelationship between BMI, the non-linear innovation capability-based model, technology innovation and marketing innovation was also discussed. It was found that the non-linear innovation capability-based model could provide a framework for small business owners; however, it is difficult to measure the degree to which this model contributes to the overall innovativeness of the small business.

Innovation is a fundamental capability for small businesses as they require efficient and effective use of their resources and capabilities to add value to their products and services. Diffusion identifies the factors that influence the rate at which an innovation is adopted and is the process by which innovations are spread and become popular. Leadership, involvement, strategy, reward systems and resources were discussed as important innovation capabilities of the small business. It was also revealed that as small businesses have a more focused

technological capability than larger businesses; this has a positive effect on innovation performance in the sense that there is limited distraction in the smaller technological area.

In an increasingly volatile and competitive global environment, it is crucial for the small business to identify creative techniques for products, services, distribution channels and relationships in order to differentiate and retain players in the automotive industry. The automotive industry is a crucial role player in terms of economic value and job creation. An overview was provided of the automotive industry from international and national perspectives. In South Africa, the automotive retail industry is one of the largest manufacturing industries owing to its output and contribution to the country's GDP. The export and import potential of the South African automotive industry was highlighted and the country's vehicle exports to major regions, as well as vehicle sales and export comparisons, were also presented.

The literature review concluded with barriers faced by the automotive industry and by the small business. It was revealed that the Covid-19 pandemic had a huge effect on the structure and ownership profile of the industry. The pandemic also disrupted supply chains, profitability, demand and sales. The South African automotive industry faces strong competition from other developing nations and regions. Furthermore, it was revealed that the Fourth Industrial Revolution and globalisation will transform economic sectors and will require new modes of work, production and consumption. Small businesses experience administrative burdens, limited cash flow, low profit margins in the automotive industry, skills shortages and limited resources. Accordingly, without innovation, small businesses will find it difficult to adapt to a changing environment.

6.3 SUMMARY OF RESPONDENTS' BIOGRAPHICAL AND BACKGROUND INFORMATION

Descriptive statistics were used for Section A of the questionnaire, which sought to obtain biographical and background information on the respondents. A total of 57% of the respondents were male and 43% female, and the majority of the respondents, namely 30,3%, were between 40 and 49 years of age. Small business owners of Black descent were in the majority, accounting for 50,7% of the total number of respondents, and 5,3% of the respondents were foreign nationals. Some 31,7% of the respondents were diploma holders.

The majority of the respondents, namely 21,2%, were in the repair services industry, and 31,3% operated in the Johannesburg south area. For 33.7% of the respondents, the location of the business was in an industrial area (site), and 36,8% operated as a close corporation. Some 38%

of the respondents had been operating as a business for more than five years, 49,4% had between six and 20 full-time employees, and 36,3% had between one and five part-time employees. A total of 65% of the respondents had identified an opportunity to start the business.

6.4 RESEARCH OBJECTIVES REVISITED

This section presents an overview of the primary and secondary objectives of the study as revisited. Inferential statistical tests were conducted for sections B to E in the questionnaire (innovation capabilities – leadership, involvement, strategy, rewards, and resources, innovation performance, innovation activities, and public service conditions). Table 6.1 gives the results of the objectives of the study.

Table 6.1: Objectives of the study as revisited

	Objective	Objective achieved/ not achieved
	Primary objective:	
•	To explore the innovation capabilities (leadership, involvement, strategy, rewards, and resources) of small businesses in the City of Johannesburg as they relate to innovation performance in the automotive retail industry.	Achieved. Section 5.3.1 – 5.3.5.
	Secondary objectives:	
•	Investigate the innovation capabilities of small business owners	Achieved. Section 5.3
•	Investigate the barriers that affect small business owners' innovation capabilities	Achieved. Section 5.3.1. (Figure 5.7).
•	Determine whether there is a relationship between the innovation capabilities and the innovation performance of small businesses. *This objective was broken down into the following sub-objectives:*	
-	There is a relationship between people involvement and the innovation performance of the small business.	The sub-objective was achieved. Section 5.10 (Table 5.8).
-	There is a relationship between encouragement and acceptance of innovation and the innovation performance of the small business.	The sub-objective was achieved. Section 5.10 (Table 5.8).
-	There is a relationship between rewards and the innovation performance of the small business.	The sub-objective was achieved. Section 5.10 (Table 5.8).
-	There is a relationship between leadership and the innovation performance of the small business.	The sub-objective was achieved. Section 5.10 (Table 5.8).

Table 6. 1: Objectives of the study as revisited (continued)

Number	Objective	Objective achieved/ not achieved
-	There is a relationship between resources and the innovation performance of the small business.	The sub-objective was achieved. Section 5.10 (Table 5.8).
-	There is a relationship between strategy and the innovation performance of the small business.	The sub-objective was achieved. Section 5.10 (Table 5.8).
•	There is a significant relationship between knowledge effectiveness and the innovation performance of the small business.	The objective was achieved. Section 5.10 (Table 5.8).
•	There is a significant relationship between the barriers that affect small business owners' innovation capabilities and innovation performance.	The objective was achieved. Section 5.10 (Table 5.8).
•	There is a relationship between innovation activities and the innovation performance of the small business. *This objective was broken down into the following sub-objectives:*	
-	There is a relationship between the level of innovation and the innovation performance of the small business.	The sub-objective was achieved. Section 5.10 (Table 5.8).
-	There is a relationship business innovativeness and the innovation performance of the small business.	The sub-objective was achieved. Section 5.10 (Table 5.8).

Source: Author's own compilation

6.5 RESEARCH HYPOTHESES SUPPORTED

To answer the set research hypotheses for the study, the main hypotheses were broken down into sub-hypotheses. Table 6.2 presents the summary results of the hypothesis testing.

Table 6.2: Results of the hypotheses testing

Number	Hypotheses	Supported/ Not supported
H1:	There is a relationship between innovation capabilities and the innovation performance of the small business. *This hypothesis was broken down into the following sub-hypotheses:*	Section 5.11.1. *(Hypotheses testing using multiple regressions analysis).*
H1a:	There is a relationship between people involvement and the innovation performance of the small business.	Supported. Section 5.11.1 (Table 5.9).
H1b:	There is a relationship between encouragement and acceptance of innovation and the innovation performance of the small business.	Supported. Section 5.11.1 (Table 5.9).

Table 6.2: Results of the hypotheses testing (continued)

Number	Hypotheses	Supported/ Not supported
H1c:	There is a relationship between rewards and the innovation performance of the small business.	Supported. Section 5.11.1 (Table 5.9).
H1d:	There is a relationship between leadership and the innovation performance of the small business.	Not supported. Section 5.11.1 (Table 5.9).
H1e:	There is a relationship between resources and the innovation performance of the small business.	Not supported. Section 5.11.1 (Table 5.9).
H1f:	There is a relationship between strategy and the innovation performance of the small business.	Not supported. Section 5.11.1 (Table 5.9).
H2:	There is a relationship between knowledge effectiveness and the innovation performance of the small business.	Supported. Section 5.11.1 (Table 5.9).
H3:	There is a relationship between public service conditions and the innovation performance of the small business.	Not supported. Section 5.11.1 (Table 5.9).
H4:	There is a relationship between the barriers that affect small business owners' innovation capabilities and innovation performance.	Supported. Section 5.11.1 (Table 5.9).
H5:	There is a relationship between innovation activities and the innovation performance of the small business. *This hypothesis was broken down into the following sub-hypotheses:*	
H5a:	There is a relationship between the level of innovation and the innovation performance of the small business.	Not supported. Section 5.11.1 (Table 5.9).
H5b:	There is a relationship between business innovativeness and the innovation performance of the small business.	Supported. Section 5.11.1 (Table 5.9).
H6	There is a moderating effect of barriers on the relationship between innovation capabilities and innovation performance. *This hypothesis was broken down into the following sub-hypotheses:*	Section 5.11.2. *(Moderation analysis).*
H6a:	There is a moderating effect of barriers on the relationship between leadership and innovation performance.	Supported. Section 5.11.2; Fig 5.13
H6b:	There is a moderating effect of barriers on the relationship between people involvement and innovation performance.	Supported. Section 5.11.2; Fig 5.14
H6c:	There is a moderating effect of barriers on the relationship between encouragement and acceptance of innovation with innovation performance.	Supported. Section 5.11.2; Fig 5.15
H6d:	There is a moderating effect of barriers on the relationship between strategy and innovation performance.	Supported. Section 5.11.2; Fig 5.16
H6e:	There is a moderating effect of barriers on the relationship between rewards and innovation performance.	Supported. Section 5.11.2; Fig 5.17
H6f:	There is a moderating effect of barriers on the relationship between resources and innovation performance.	Supported. Section 5.11.2; Fig 5.18

Table 6.2: Results of the hypotheses testing (continued)

Number	Hypotheses	Supported/ Not supported
H7:	There is a moderating effect of public service conditions on the relationship between innovation capabilities and innovation performance. *This hypothesis was broken down into the following sub-hypotheses:*	
H7a:	There is a moderating effect of public service conditions on the relationship between people involvement and innovation performance.	Supported. Section 5.11.2; Fig 5.19
H7b:	There is a moderating effect of public service conditions on the relationship between strategy and innovation performance.	Supported. Section 5.11.2; Fig 5.20
H7c:	There is a moderating effect of public service conditions on the relationship between resources and innovation performance.	Supported. Section 5.11.2; Fig 5.21
H7d:	There is a moderating effect of barriers on the relationship between knowledge effectiveness and innovation performance.	Not supported. Section 5.11.2
H7e:	There is a moderating effect of public service conditions on the relationship between leadership and innovation performance.	Not supported. Section 5.11.2
H7f:	There is a moderating effect of public service conditions on the relationship between encouragement and acceptance of innovation and innovation performance.	Not supported. Section 5.11.2
H7g:	There is a moderating effect of public service conditions on the relationship between rewards and innovation performance.	Not supported. Section 5.11.2

Source: Author's own compilation

6.6 SIGNIFICANCE OF THE STUDY

The study will benefit small businesses by increasing small business owners' awareness of the types of innovation capability that should be used to enable them to be more competitive and sustainable. The study will increase small business owners' understanding of innovation capability as a critical determinant of small business performance and recognise that technological transformation is a necessary part of economic progress and globalisation.

Improving small business owners' innovation capabilities will ensure the business's long-term viability, sustainability and economic growth. Furthermore, the study will assist small business owners to understand the barriers to their capability to be innovative.

The study will also help small business owners to understand the relationship between innovation capabilities and innovation performance. For small business owners, this means that employee training and support will become more important, as will the need to encourage and enable an innovative culture. The innovation capabilities (leadership, involvement, strategy, rewards, and resources) support, in conjunction with the management approach, the development of innovation capabilities in the small business. Finally, scholars, other researchers and the government may also benefit from the study as the innovation capabilities of small businesses were explored as they relate to innovation performance in the automotive retail industry in the City of Johannesburg.

6.7 IMPLICATIONS FOR THEORY AND PRACTICE

The implications for theory and practice, as identified in this study, are presented in the following sections.

6.7.1 Implications for theory

Small businesses play an instrumental role in most economies. They are an important driving force for innovation and can be as innovative as large businesses. Innovation capabilities are important to any business as they assist in achieving sustainable growth. Innovation is also an important driver of competitiveness, profitability and productivity and leads to greater cost-efficiency and the provision of new products and services to meet customers' demands. Small business owners could manage innovation effectively and efficiently by optimising their organisational structures.

Innovation influences the performance of the small business and there is a strong correlation between innovation and performance. A lack of basic infrastructure in the form of electricity and broadband internet access hinders scientific development and technological adaptation and scarce internet availability is not sufficient to draw global partners to work with. Governments play an important role in mitigating the limitations of technological learning to recognise the advantages of operating on a global scale; however, governments recognise that small businesses are engines for job creation and economic growth. BMI is crucial to firm performance as it plays an important role in value creation. Innovation capabilities include

leadership, involvement, strategy, rewards systems and resources, and small business should ensure that these are in place.

Trends such as autonomous driving, digitisation and electrification will shape the future of the automotive industry and will have a huge impact. The automotive industry will remain a crucial role player on both a national and an international scale in terms of job creation and economic value. In South Africa, the automotive retail industry (sector) is one of the largest manufacturing industries and contributes significantly to the country's GDP. A key aspect of the automotive industry is the level of global integration within global markets or global value chains. The Covid-19 pandemic supply chain disruptions have highlighted the reliance on exports and imports, with rising prices and lead times resulting from the pandemic.

6.7.2 Implications for practice

Innovation can be a source of innovative opportunities, comparative advantage and access to markets through collaboration. The failure of small businesses to innovate leads to reduced competitiveness and eventually to the demise of the business. Small businesses play an important role in technological change because they have many advantages as sources of innovation in that they are quick to adopt new and high-risk initiatives. They facilitate structures that value ideas and originality and have the capacity to reap substantial rewards from market share in small niche markets. Innovation in small businesses should be extended to areas such as supply chains, labour processes, management techniques and marketing. Technological capability is important for business success. In the small business there are limited distractions and greater capability in the smaller technological area. In addition, customers can be an important source of innovation for the small business.

Technology used in small businesses increases capacity to meet customer demands and to keep up with competitors. Small business owners with high levels of education and training are more likely to be successful. Many small businesses form alliances with bigger businesses as they lack the funds to fully market their innovations and such cooperation focuses on business technology capacity through R&D exchange.

Dynamic capabilities revolve around core competencies such as strategies and resources. Creativity in small businesses should include expertise, motivation and creative thinking skills. The Fourth Industrial Revolution emphasises new production processes in manufacturing and services, a predominance of digital products over physical products and the evolution of a

sharing economy. Furthermore, technological advances and innovation pose great challenges to the small business as many such businesses are unfamiliar with the progress of technology and innovation.

6.8 LIMITATIONS OF THE STUDY

The study was limited to small businesses operating in the City of Johannesburg in the automotive retail industry. The selection of respondents was limited by geographical area and the selection was made only from some areas of the City. The results of the study may not be readily transferable to other sectors (industries) and provinces, as the focus of the study was only on one industry (the automotive retail industry) and one region (City of Johannesburg). The researcher was constrained by a limited budget; hence, only certain areas of the City of Johannesburg were included in the study. The researcher also experienced constraints in terms of time available to conduct the fieldwork and to mitigate this, two fieldworkers were used to assist with the collection of the data.

Furthermore, a large proportion of neutral responses were presented for some sections (section 5.3.2 – involvement, section 5.3.3 – strategy, section 5.3.4 – rewards, section 5.5.1 – barriers to innovation in the business, section 5.5.2 – perceptions of being innovative, section 5.5.4 – innovation knowledge and effectiveness, and section 5.6.1 – policies and regulation). However, no issues regarding a lack of understanding of the statements were raised by the respondents during the piloting of the research instrument (questionnaire).

6.9 RECOMMENDATIONS AND FURTHER RESEARCH AREAS

The recommendations based on the study and areas for further research are presented in the following sections.

6.9.1 Recommendations

The findings of the study suggested that small businesses in the City of Johannesburg are making significant attempts to identify the necessary innovation capabilities needed to ensure the sustainability of their businesses. Small businesses should be encouraged to be innovative and technologically inclined as technology can help with marketing and networking activities. Furthermore, small business owners should be accorded the necessary guidance to take moderate and calculated steps that are supported by a clear plan of action on how to invest their resources in new technology.

To fully capitalise on their innovation opportunities, small businesses in the automotive retail industry should implement policies that encourage and promote the development of local technologies. Because of their small size and resource constraints, small businesses are unable to develop new technologies or make critical changes to existing ones; however, they could initiate minor innovations to suit their circumstances. However, for small businesses to fully realise this potential, specific policy measures should be implemented to ensure technological advancements.

In terms of collaboration, the government and research institutes can expand the innovation resources available to small businesses. To ensure better understanding and collaboration, the government will need to maintain close ties with the automotive retail industry. This will ensure that knowledge is available, knowledge gaps are identified and innovation skills are embedded in small businesses. The government and small businesses should conduct a "stocktake" of their policies, programmes and routines to determine what exists within their respective structural resource portfolios to enable and facilitate innovation. This task also draws on strategy and emphasises the importance of correspondence between the innovation system levels in which the government enables knowledge and the resource inputs in response to the input needs of the small business.

Small business owners should actively consider their management approach to innovation capabilities and develop the necessary dynamic capabilities in their businesses to implement innovation capabilities. Hence, small business owners should have an active management approach based on a long-term managerial orientation and innovative culture to foster innovation capabilities. Beyond the uncertainty and complexity that small businesses face when embracing innovation capabilities, they should deploy a set of innovation capabilities, promoting practices and routines focused on sensing technological options, conceptualising and experimenting, collaborating, and enacting a strategy for innovation capability. These steps may aid in the identification and exploitation of opportunities, as well as in the development of innovative capabilities.

Publicly funded R&D institutions should be encouraged to focus on the technology needs of the small business. The lack of information access can be attributed to the inadequacy of small business support institutions. As a result, there is a growing need for a policy that encourages the establishment of documentation systems and information collaboration to provide information to small businesses at a low cost. The government should establish training and

information centres to provide managerial and technical courses to small business owners. Small businesses lack finance; therefore, the government should establish a loan system for small businesses. Such a system should include low interest rates to ensure the viability of these small businesses.

There is a need for a structured approach to implement and execute the innovation capabilities of small businesses. Small business owners and managers should have a clear strategy for innovation capabilities, use written and standardised processes for implementing innovation, document their routines, and rely on different kinds of metrics for measuring and reviewing the impact of the implementation of innovation capabilities. They should also have an active management approach which is based on a long-term managerial orientation and innovative culture to foster innovation capabilities. Beyond the uncertainty and complexity that small businesses face when embracing innovation capabilities, they should promote practices and routines that are focused on sensing technological options, conceptualising and experimenting, collaborating, and enacting an innovation capability strategy. This will assist in the identification and exploitation of opportunities, as well as the development of innovative capabilities.

6.9.2 Further research areas

As a quantitative research approach was used by the researcher, a mixed-method approach would assist in obtaining more in-depth information and knowledge on the problems associated with the relationship between small business owners' innovation capabilities and their innovation performance. A qualitative study or case studies would also fill some gaps in understanding and implementing the innovation capabilities in the small business. Furthermore, there is a need to focus more closely on the automotive retail industry, as many studies have focused on small businesses in general or the manufacturing sector. More research is needed to get a clear picture of the relationship between the innovation capabilities and the innovation performance of small businesses in Gauteng province, and in South Africa's automotive retail industry as a whole.

A further research area is to investigate whether innovation performance is associated with specific types of innovation capability, such as the process or marketing innovation capability. Service and product innovations were the most studied type of innovation capability; however, other types of innovation require further research. Further research on the innovation capability to collaborate from both an inbound and outbound innovation perspective could also be

beneficial. A comparative study could be conducted to test the adoption rate of innovation in small businesses that use innovation adoption as opposed to those that do not participate in innovation adoption. Finally, as presented in chapter 5 and as limitations of the study, further research could be conducted on involvement, strategy and rewards as innovation capabilities; barriers to innovation in the (small) business; perceptions of being innovative; innovation knowledge and effectiveness; and policies and regulation on innovation.

6.10 CONCLUSION

The primary objective of the study was to explore the innovation capabilities (leadership, involvement, strategy, rewards, and resources) of small businesses in the City of Johannesburg as they relate to innovation performance in the automotive retail industry. Innovation capabilities are a key driver for small business sustainability because they are important underpinning organisational capabilities that sustainably influence innovation in a business. Innovation capability is also important in fostering an innovative business culture and understanding, as well as responding appropriately to the external environment and internal promoting activities. The literature revealed that benefits such as profitability, time to market and business sustainability should be possible through the innovation capabilities of small businesses just as they are in large businesses.

Innovation and technology pose significant challenges to the small business. Technology is used as a driver of innovation in small businesses and influences their performance. It was found that small business owners are (frequently) unaware of innovation and technology, and even if they are aware, technology, specifically, may not be available, affordable or appropriate for local conditions. Furthermore, a small business's technological capability is influenced by the owner, who may lack managerial training and experience.

Small businesses can benefit from a wide range of innovation capabilities. Some small businesses rely on their abilities to generate product innovation, whereas others develop a set of actions that contribute to innovation capability. Focusing on innovation capability can have an impact on innovation performance. There is, however, no universal reward for successfully deploying innovation capability; rather, small business owners should identify the appropriate dimensions of innovation capability based on their specific business needs.

A significant relationship was found between innovation capabilities and innovation performance in small businesses within the automotive retail industry. The findings revealed

that innovation capability is associated with new product performance and innovation performance. This significant relationship, however, requires a successful organisational structure, learning processes and relationships with the government and research institutions. Product innovation capability is associated with business growth and competitive advantage in general. However, individual innovation capabilities have been demonstrated to significantly and positively affect innovation outcomes. In this study, different types of innovation capability were found to contribute to the innovation performance of the small business, for example technological innovation was found to be connected to product innovation. As a result of innovation activities, the strategy (a plan intended to achieve integration of new ideas) allows for the integration of new ideas and related capabilities, as well as access to a greater range of external knowledge sources and types of innovation.

Small businesses play an important role in South Africa's economic development by creating jobs, fostering creativity and promoting economic development. The fact that small businesses have limited innovation capabilities that prevent them from reaching their full potential piqued the researcher’s interest. As a result, the researcher conducted this study to assist small business owners in the automotive retail industry to identify the capabilities that were lacking and to assist these businesses to achieve sustainable growth and to become competitive.

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Appendix A: Ethical clearance certificate

UNISA university of south africa

UNISA DEPARTMENT OF BUSINESS MANAGEMENT RESEARCH ETHICS REVIEW COMMITTEE

18 November 2019

ERC Reference #: 2019_CEMS_BM_095
Name: Robert Chanda Marcellino Lupiya
Student #: 35180196
Staff # N/A

Dear Mr Robert Chanda Marcellino Lupiya

Decision: Ethics approval from 06 November 2019 to 05 November 2024

Researcher(s): Mr Robert Chanda Marcellino Lupiya
E-mail address: 35180196@mylife.unisa.ac.za
Telephone #: 078 327 0331

Supervisor(s): Prof Thea Visser
E-mail: vissed@unisa.ac.za
Tel: (012) 429-2113

Innovation capabilities of small businesses in the City of Johannesburg within the automotive retail sector

Qualification: M Com degree

Thank you for the application for research ethics clearance by the UNISA Department of Business Management Ethics Review Committee for the above-mentioned research. Ethics approval is granted for 5 years, from 06 November 2019 to 05 November 2024.

*The **low risk application** was **reviewed** by the Department of Business Management Ethics Review Committee on 06 November 2019 in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment. The decision will be tabled at the next Committee meeting on 22 January 2020*

The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.

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2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the Department of Business Management Ethics Review Committee.
3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's Act, no 38 of 2005 and the National Health Act, no 61 of 2003.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.
7. No field work activities may continue after the expiry date (05 November 2024). Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

*The reference number **2019_CEMS_BM_095** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,

Chairperson: Prof. Sharon Rudansky-Kloppers
Department of Business Management
E-mail: rudans@unisa.ac.za
Tel: (012) 429-4689

Executive Dean: Prof. Thomas Mogale
Economic and Management Sciences
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Appendix B: Questionnaire

INNOVATION CAPABILITIES OF SMALL BUSINESSES IN THE CITY OF JOHANNESBURG WITHIN THE AUTOMOTIVE RETAIL INDUSTRY

Researcher:

ROBERT CHANDA MARCELLINO LUPIYA

Student Number: 35180196

Phone Number: 0783270331

University of South Africa (UNISA)

Note: All responses are confidential and neither the individual nor the organisation will be identified in any report or release.

Dear Sir/Madam

My name is Robert Chanda Marcellino Lupiya and I am doing my Master of Commerce degree in Business Management with the University of South Africa. The title of my master's dissertation/research is **INNOVATION CAPABILITIES OF SMALL BUSINESSES IN THE CITY OF JOHANNESBURG WITHIN THE AUTOMOTIVE RETAIL INDUSTRY.** As a small business owner, you are invited to participate in my research by completing the attached questionnaire. The purpose of the questionnaire is to investigate the innovation capabilities that small businesses might lack.

INSTRUCTIONS

1.This questionnaire is only applicable to small business owners in the automotive retail industry and operating in the City of Johannesburg.

2.Please mark (**X**) in the relevant boxes.

3.Please complete every question/statement to ensure the validity and reliability of the study.

SECTION A: BIOGRAPHICAL AND BACKGROUND INFORMATION

1. GENDER	
a) Male	
b) Female	

2. AGE GROUP	
a) Between 18 and 29	
b) Between 30 and 39	
c) Between 40 and 49	
d) Between 50 and 59	
e) Between 60 and 65	

3. ETHNIC GROUP	
a) Black	
b) White	
c) Indian	
d) Coloured	
e) Other (specify)……	

4. NATIONALITY OF OWNER	
a) South African	
b) Foreign citizen If foreign citizen, state country of origin ……	

5. HIGHEST LEVEL OF EDUCATION	
a) Below Grade 12	
b) Grade 12	
c) Certificate	
d) Diploma	
e) Degree	
f) Post graduate qualifications (honours, masters or doctoral)	

6. TYPE OF INDUSTRY	
a) Automotive retail sector/industry	
b) Manufacturing sector	
c) After-sales sector	
d) Retail motor trade	
e) Repair services	
f) Automotive fuel	
g) Other (specify)……	

7. AREA OF BUSINESS – CITY OF JOHANNESBURG							
Northern		**Eastern**		**Southern**		**Western**	
Midrand		Sandton		Johannesburg CBD		Rosebank	
Kya Sand		Woodmead		City Deep		Parktown	
Ivory Park		Randburg		Southgate		Northcliff	
Other (specify)	….....						

8. LOCATION OF THE BUSINESS	
a) Taxi rank/train or bus station	
b) Industrial area/site	
c) Private home	
d) Shopping centre	
e) Other (specify)……	
9. FORM OF BUSINESS	
a) Sole ownership	
b) Partnership	
c) Close corporation (CC)	
d) Other (specify)……	
10. NUMBER OF YEARS IN BUSINESS OPERATION	
a) Less than 1 year	
b) Between 1 and 2 years	
c) Between 3 and 5 years	
d) More than 5 years	
11. NUMBER OF FULL-TIME EMPLOYEES	
a) None	
b) Between 1 and 5	
c) Between 6 and 20	
d) Between 21 and 50	
12. NUMBER OF PART-TIME EMPLOYEES	
a) None	
b) Between 1 and 5	
c) Between 6 and 20	
d) Between 21 and 50	

13. REASON FOR STARTING THE BUSINESS (you may select more than one option)	
a) To use my skills	
b) To create employment	
c) To increase my personal income	
d) Was unemployed	
e) Identified opportunity	
f) Other (specify) ……	

SECTION B: INNOVATION CAPABILITIES

On a scale of (1) Strongly disagree, (2) Disagree, (3) Neutral, (4) Agree, (5) Strongly agree, rate the extent to which innovation capabilities are used in your business.

14. Leadership	**1**	**2**	**3**	**4**	**5**
	Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
(i) Management provides facilitation in innovation					
(ii) Management promotes technical and managerial training					
(iii) Innovation is a priority for the management of our business					
(iv) Management is willing to take risks in innovation					
(v) Management provides guidance and support for innovation					

15. Involvement **I …**	**1** **Strongly disagree**	**2** **Disagree**	**3** **Neutral**	**4** **Agree**	**5** **Strongly agree**
(i) encourage the acquisition of new knowledge					
(ii) encourage the transfer of knowledge					
(iii) encourage participation in innovative projects					
(iv) am committed to participate in innovative projects					
(v) encourage the follow-up on innovative ideas					
(vi) Provide education and training to enhance employees' skills					

(vii) encourage employees to think creatively and to come up with innovative ideas about new developments					
(viii) encourage staff to gain the necessary technical knowledge in this sector.					
(ix) am prepared to accept external ideas for innovation					
(x) actively collaborate with clients to come up with new ideas					
(xi) share important information on new technological developments among staff					

16. Strategy	**1**	**2**	**3**	**4**	**5**
	Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
(i) The business has a clear strategy for innovation					
(ii) The innovation strategy of the business is communicated to the staff					
(iii) The success criteria for the evaluation of the innovation strategy has been formulated					
(iv) Innovation strategies are measured on a regular basis					
(v) Innovation targets are reviewed on a regular basis					
(vi) Training programmes support the innovation agenda of the business					

17. Rewards	1	2	3	4	5
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
(i) Innovation rewards and recognition systems are known by all staff					
(ii) Staff members contributing to innovation receive equitable rewards for their contribution(s)					
(iii) Staff members contributing to innovation are acknowledged by the business					
(iv) Alignment exists between the incentive system and the monetary value of innovation					
(v) There is improvement with the existing reward system for innovative ideas by staff					

18. Resources	1	2	3	4	5
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
(i) Technology in the business is up to date					
(ii) The business has sufficient resources to execute innovation					
(iii) Resources are a limiting factor for innovation					
(iv) The technology development process in the business is effective					
(v) I have access to shared innovation resources such as experts, software and hardware					
(vi) Innovation capabilities are limited					

SECTION C: INNOVATION PERFORMANCE

On a scale of (1) Strongly disagree, (2) Disagree, (3) Neutral, (4) Agree, (5) Strongly agree, rate the degree to which the following factors influence innovation performance in your business.

19. Innovation performance …	**1**	**2**	**3**	**4**	**5**
	Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
(i) has had a positive effect on staff productivity					
(ii) has had a positive effect on teamwork among staff					
(iii) has had a positive effect on the integrity of the business					
(iv) has had a positive effect on the image of the business					
(v) has had a positive effect on the efficiency of the business					

SECTION D: INNOVATION ACTIVITIES

On a scale of (1) Strongly disagree, (2) Disagree, (3) Neutral, (4) Agree, (5) Strongly agree, rate the degree to which the following influence innovation implementation in your business.

20. Barriers to innovation in the business	**1**	**2**	**3**	**4**	**5**
	Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
(i) There are sufficient resources available to keep up with the pace of technological innovation					

(ii) There is alignment between organisational daily tasks, communication and innovation					
iii) There is a lack of technological knowledge and skilled staff					
(iv) The budget makes provision for innovation					
(v) There is sufficient investment in research and development (R&D)					
(vi) Staff experience resistance to change regarding innovation					

21. Perceptions of being innovative	**1**	**2**	**3**	**4**	**5**
	Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
(i) The business has systems in place for suggesting innovative ideas					
(ii) All staff are engaged in collecting innovative ideas					
(iii) Feedback is provided to staff for innovative ideas received					
(iv) The business is highly innovative owing to its technological capability compared to other businesses in this sector					
(v) Innovation is an important factor for business success					
(vi) The business is as innovative as large businesses owing to technical productivity					

22.Different forms of innovation exist. Which of the following have you implemented?

(22)	Forms of innovation (you may select more than one option)	Tick
1	Product	
2	Business model	
3	Service	
4	Process	
5	Marketing	
6	Technological	
7	None	
8	Other (Specify)……..	

23. How many innovations did you introduce in your business in the last two (2) years?		Tick
1	None	
2	1–3	
3	4–6	
4	7–9	
5	10 and more	

24. How do you perceive the status of your business regarding the use of innovation?	Tick
(i) Adoption of innovation	
(ii) Not involved in innovation	
(iii) Radical innovation	
(iv) Incremental innovation	
(v) Other (specify)……	

25. Innovation knowledge and effectiveness	1	2	3	4	5
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
(i) I consider myself knowledgeable on innovation					
(ii) I consider our business knowledgeable on technological advances					

(iii) I consider innovation to be a viable method to improve the effectiveness of our business					

SECTION E: PUBLIC SERVICE CONDITIONS

On a scale of (1) Strongly disagree, (2) Disagree, (3) Neutral, (4) Agree, (5) Strongly agree, rate the degree to which the following have influenced innovation capabilities implementation in your business.

26. Policies and regulation	**1**	**2**	**3**	**4**	**5**
	Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
(i) New regulations are imposed by the government regarding innovation					
(ii) There are changes in government policies regarding innovation					
(iii) Innovation leads to the restructuring of our business					
(iv) I have the autonomy to spend on innovation					

27. Are there any opportunities or challenges that you experience in your business in terms of innovation?

Thank you for completing the questionnaire.

Appendix C: Language editing certificate

`Alexa Barnby

Language Specialist

Editing, copywriting, formatting, translation

BA Hons Translation Studies; APEd (SATI) Accredited Professional Text Editor, SATI

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4 January 2023

DECLARATION OF PROFESSIONAL EDIT

INNOVATION CAPABILITIES OF SMALL BUSINESSES IN THE CITY OF JOHANNESBURG WITHIN THE AUTOMOTIVE RETAIL INDUSTRY

by

Robert Chanda Marcellino Lupiya

I declare that I have edited the above master's dissertation, ensuring that the work follows the conventions of grammar and syntax, correcting misspelling and incorrect punctuation, changing any misused words and querying if the word used is what is intended, ensuring consistency in terms of spelling, punctuation, capitalisation and other aspects of style, as well as checking referencing style.

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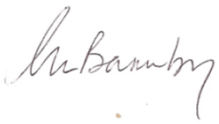

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