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Title

Adoption of innovation as a tool for entrepreneurial agility within road freight industry

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ABSTRACT

Lack of investment caused substantial freight and passenger rail cutbacks in South Africa in the 1990s. Capital investment for rail infrastructure fell from R1.44 billion to R500 million by 1996. Massive transit grew unrestrained, and road and rail competed for market share. (2012) SA Transport. Road operators transferred goods on road networks when rail traffic decreased due to transport deregulation. These reasons have limited freight rail use, resulting in outdated railway infrastructure and equipment. SADB (2012). Road goods transport firms have evolved dramatically in the previous 30 years to maintain quality. Transport operators require advanced vehicle management, scheduling, monitoring, and other management technologies to keep up with worldwide advances.

However, the sector lacks a solid knowledge of truck transport firm owners' capabilities to aid the nation's entrepreneurial development objectives via innovation. Innovation in fostering entrepreneurial agility is examined in the research. South African trucking business owners will be surveyed using a hybrid questionnaire to get qualitative data. Although innovation is considered crucial for efficiency and advancement, studies does not concentrate enough on the innovation ability of enterprises in this country, especially in key areas like transportation and supply chain management.

This study investigates if creative technologies like 4IR can help small firms and society nurture creativity, innovation, and entrepreneurial agility. The survey found that most Gauteng Road freight businesses invest in technology. Most subject matter experts (SMEs) agreed that firm size affects innovation. Most company owners feel the COVID-19 pandemic has changed customer buying habits. The research highlighted significant factors affecting Gauteng entrepreneurial innovation. Lawmakers, researchers, and entrepreneurs will benefit from the study.

KEYWORDS

Innovation, Entrepreneur, Agility, Fourth Industrial Revolution (4IR)

DECLARATION

I, Nokubonga Portia Dibela, declare that this research report is my own work, except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the University of Witwatersrand Business School, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

_____

Nokubonga Portia Dibela

Sign at ___**Fourways**, **Johannesburg, 2191**_____

On the___**31**__day of_____**May**_____2024

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LIST OF ACRONYMS

AI	Artificial Intelligence
CSR	Corporate Social Responsibility
DBSA	South African Development Bank
DOI	Diffusion of Innovation
DOT	Department of Transport
GDP	Gross Domestic Product
4IR	Fourth Industrial Revolution
RBV	Resource Based View
SANRAL	South African National Rail Agency
SEDA	Small Enterprise Development Agency
SMEs	Small and Medium Enterprises
SMMEs	Small, Medium, and Micro-sized Enterprises
SPSS	Statistical Package for the Social Sciences
SOE	State Owned Entity

CHAPTER 1. INTRODUCTION

1.1 Statement of purpose

South African entrepreneurs face challenges that relate to slow growth and sustainability due to non-availability of innovative strategies within their businesses, especially in the road freight industry.

1.2 Background of the study

In the 1990s, South Africa experienced significant cuts in freight and passenger rail services, primarily attributed to a lack of investment. Capital funding for the rail sector was reduced, leading to a sharp decline in infrastructure railway system spending from R1.44 billion to R500 million by 1996 (SA Transport Department, 2012). This reduction in funding resulted in uncontrolled large-scale transport, with road and rail competing for market share. Transport liberalisation further contributed to a decrease in train traffic as road operators utilised road networks for freight transfer. Consequently, these factors led to diminished freight rail utilisation, contributing to the deterioration of railway systems and equipment (SADB, 2012).

Despite these challenges, the sector lacks a comprehensive understanding of the capabilities of truck transport firm owners to support the nation's entrepreneurial development goals through innovation. The research aims to explore innovation's role in fostering entrepreneurial agility. A hybrid questionnaire will be administered to South African trucking business owners to gather quantitative data on the subject (SA Transport Department, 2012).

To preserve quality, road freight transport companies have changed significantly during the last 30 years. To reflect global advancements, transport operators need to utilise sophisticated vehicle management systems, scheduling techniques, monitoring devices, and other management technology. This research examines whether creative technologies like 4IR can assist small businesses and society in fostering creativity, innovation, and entrepreneurial agility (Cooney, 2012). Many entrepreneurs struggle to integrate innovation and entrepreneurship into their everyday operations despite these benefits (OECD, 2010:18). Firm owners are reluctant to use 4IR since it is

costly (Caskey & Subirana, 2007:670). Additionally, 4IR methods are difficult. Entrepreneurship necessitates taking risks since the company's products and services may not meet consumers' needs or be in great demand, according to Brännback and Carsrud (2016:17). Starting a new, maybe failed, firm and leading it are the first stages of entrepreneurship. Innovative strategy execution, resource distribution, marketing, and operations affect profitability, net value, and growth (Kruger, 2004:203; Canh et al., 2019:11). In the newest technology revolution, product and process innovations provide firms with an advantage over rivals, boosting their survival (Canh et al., 2019:11).

1.3 Research problem

The challenges faced by Transnet, including infrastructure issues, and rolling equipment degradation, contribute to the lack of success in commercial railway operations in the nation (South African National Rail Policy Green Paper, 2012). Additionally, the absence of a National Rail Policy by the government further hampers sector growth and its ability to respond to consumer demands and global competition. The lack of rivalry in rail freight has allowed road freight to thrive, but most South African road freight operators suffer from a lack of inventiveness, impacting their survival and competitiveness. Slow innovation hinders South African entrepreneurs, leading to underperformance in development, scalability, profitability, and job creation (Bushe, 2019:12). The limited viability of small entrepreneurs and the sluggish growth of the industry pose challenges for the government in using entrepreneur development to reduce unemployment. To enhance entrepreneurial business systems and boost firm innovation and agility, the fourth industrial revolution (4IR) is recommended (Druhmann & Hohenberg, 2014:70).

1.4 Research questions

Presently, the capacity of entrepreneurs within the road transportation businesses to innovate is not widely documented, owing to the questions that this study explores, i.e.,

1. How innovative are business owners in the road freight sector?
2. How can business owners in South Africa’s road freight transport sector incorporate innovation?

3. How does the performance or agility of road freight transport businesses depend on entrepreneurs' ability to innovate?

1.5 Rationale

Few studies have examined the pros and cons of innovative logistics in South African transportation. Thus, this research is anticipated to provide a valuable contribution to the existing body of knowledge by identifying ways to improve South African road freight logistics through innovative efforts. It will help road freight businesses create creative norms that boost entrepreneurial agility. This study will aid road freight entrepreneurs by filling a gap in the literature by presenting a complete framework that might help firms adopt and use technology strategies to increase entrepreneurial agility. To accomplish the goals of this research, the author will proceed to investigate the below aims:

1. To evaluate South African road freight transport industry's capacity for innovation.

2. To investigate how South Africa’s road freight transport companies are implementing innovations.

3. To examine how innovation adoption and innovation competency influence performance, agility, and success of South African road freight transport companies.

1.6 Hypothesis

1. **Research Question:** How innovative are business owners in the road freight sector?

Hypothesis: Entrepreneurs in the road freight industry that proactively adopt and put inventive practices into practice are likely to show a greater degree of productivity and profitability that will be reflected through the integration of emerging digitisation, innovative workflows, and techniques into their daily activities.

2. **Research Question:** How can business owners in South Africa’s road freight transport sector incorporate innovation?

Hypothesis: By fostering a collaborative organisational operation and encouraging drivers (employees) to utilise automotive technology such as tracking systems, entrepreneurs in South Africa's road freight transportation industry can effectively implement innovation, leading to increased effectiveness in operations and an edge over their competitors.

3. **Research Question**: How does the performance or agility of road freight transport businesses depend on entrepreneurs' ability to innovate?

Hypothesis: The capacity of business owners to innovate has a positive correlation with the success and adaptability of road freight transportation companies. Firms with leaders who are skilled in recognising market developments, responding to shifting client preferences, and putting creative ideas into practice will operate more efficiently, satisfy clients more effectively, and be more resilient in uncertain economic times.

1.7 Delimitations and limitations of the study

1.7.1 Limitations

The research study is limited to the following criteria:

- Long-distance vehicle transporters.
- Gauteng-based businesses.
- Road transportation industry.

The research study is not limited to the following criteria:

- South African citizens.
- Specific industry that uses road freight transport.
- Literature from only South Africa.

1.7.2 Delimitations

The research sample has a limitation due to the exclusion of enterprises engaged in transporting specialised logistics, including tanker items, explosives, fresh food (stored in the fridge), and abnormal trucks. Delimitations, as defined by the scholar, establish the boundaries of the study and specify items that are not considered within the study (Leedy & Ormrod, 2010). This study specifically concentrates on examining road freight companies, with a particular emphasis on 30 road freight entrepreneurs in Gauteng, Johannesburg.

1.8 Terminology

The subsequent operational concepts are used in this context of doption of innovation as a tool for entrepreneurial agility within the road freight industry:

1.7.3 Innovation

Innovation, as described by Schumpeter (2016), is a socio-economic phenomenon leading to the generation and/or utilisation of novel goods, alternative industrial processes, online sources of productive resources, new industries, and distinctive organisational and structural operating models. The Organisation for Economic Co-operation and Development defines innovation as encompassing original and potentially improved offerings (goods or services), techniques, creative promotional plans, unique systems for organisational procedures, and work-related structures (2005:46).

1.7.4 Business Agility

Business agility is described as "an application of productive bases such as maximum velocity, adaptability, technology, and performance even by way of the assimilation of reconfigurable resource management and business processes of the knowledge-rich environment to supply client-focused products and services in a rapidly evolving eco-system" by Yusuf et al. (2010). According to Charbonnier-Voirin (2011), who broadens the concept, agility also entails anticipating and taking advantage of market possibilities associated with environmental changes, particularly through innovation and learning. An examination of the literature demonstrates that organisational agility is

subject to a variety of viewpoints and explanations, without a single accepted theory or framework to explain it.

1.7.5 Entrepreneur

An entrepreneur is someone who decides to develop a business opportunity, assumes the risk, and takes charge (Burns, 2016:7). Innovation is included in this definition by Duermyer (2020), who also says that an entrepreneur is someone who takes personal risks to seek new ventures, innovations, or other enterprises. In most cases, the owner of the business is the entrepreneur, while the manager is a member of the staff. Even if they are employed by the organisation, managers might act entrepreneurially. According to a study (Hosseini et al., 2020:369), managerial effectiveness is enhanced by entrepreneurial abilities. To be sustainable, an organisation needs entrepreneurial thinking at all levels (Ikupolati et al., 2017:6). According to Cooney (2012:2) and Duermyer (2020), developing a growth-oriented firm requires the entrepreneurship qualities listed above. So, to secure long-term success, business executives require entrepreneurial qualities. According to Korpysa (2020:3474), entrepreneur strategy, knowledge creation, and process innovations are all included in entrepreneurship.

1.7.6 Fourth Industrial Revolution (4IR)

4IR technology changes the relationship between physical, electrical, and biological domains. The advent of the 21st century has seen 4IR evolve due to digital connectivity, better sensors, AI, and ongoing education (Schwab, 2016). Thus, 4IR radical disruption is effectively reported. Previous industrialisation successes led to the 4IR. Digitisation, innovative software packages, acquisition and distribution initiatives, and radical innovations for developing products and services that meet client requirements, modifications, and corporate social responsibility are all part of the fourth industrial revolution, but its definition is still debated (Lasi et al., 2014). Thus, 4IR is the fundamental change caused by technology in diverse areas (Lee et al., 2018). Effective management is needed to adopt technical breakthroughs in a firm and make the desired changes (Patki, 2006). AI is improving logistics management by increasing productivity and resource allocation. To promote artificial

intelligence, supply chain systems will need more automation, computer networking, internet, and coding knowledge to fulfil new safety and efficiency requirements (Mehr, 2017).

1.8 Assumptions

For firms to achieve the of entrepreneurial agility, the following assumptions will be investigated:

1. To evaluate South African road freight transport industry's capacity for innovation.
2. To investigate how South Africa’s road freight transport companies are implementing innovations.
3. To examine how innovation adoption and innovation competency influence performance, agility, and success of South African road freight transport companies.

1.9 Chapter Outline

The intention of this study is to analyse road freight entrepreneurs’ capabilities for adopting innovation. Such is going to be accomplished by means of the use of a survey design through collecting quantitative data from Gauteng company owners involved in road freight transport. Utilising a questionnaire, quantitative data will be collected (to establish innovation capabilities, the impacts of innovation capacity on business performance, and to identify impediments to the adoption of innovation).

CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

The preceding chapter included an introductory section, a concise summary of the investigation, the problem statement, and the purpose, along with the research goals of this research. The objective of this chapter is to examine literature that is pertinent to the research's topic, with a specific emphasis on research undertaken on the determinants that impact innovation inside small businesses within the road freight sector within the studied population. The section delves more into published research about the present condition of innovations. It examines the traits of innovative firms and the obstacles that hinder innovation.

2.2 Background discussion

To continue offering high-quality transportation services, road freight transportation companies have experienced significant shifts over the past thirty years. Utilising modern vehicle management systems, scheduling mechanisms, monitoring devices, and so on, and other management devices by transport operators is evidence of these changes globally. This research aims to investigate the likelihood of adopting creative technologies such as 4IR to foster the expansion of small-business capabilities and assist societies by fostering creativity, ingenuity, and entrepreneurial agility. (Cooney, 2012:1). Notwithstanding such benefits, several entrepreneurs struggle to integrate innovation and entrepreneurship into their existing day-to-day operations (OECD, 2010:18). Since 4IR is costly, company owners often hesitate to commit both the time and money necessary to adopt it in their existing day-to-day operations (Caskey & Subirana, 2007:670). In addition, 4IR techniques constitute difficult tasks.

In many countries, SMMEs' growth has been linked to innovation and entrepreneurship (Rodrigues et al., 2021:10). It may be because they precisely integrate business operational strategy with their entrepreneurial traits that SMME entrepreneurs and managers experience better performance (Emerald, 2017:14). Since it spurs development via innovation in technical, administrative, and managerial systems, entrepreneurship is a vital component of the economy (Kritikos, 2014:1).

By taking calculated risks and developing novel concepts into profitable enterprises, entrepreneurs contribute to a prosperous economy. Although the chances of success may not always be great, several entrepreneurial endeavours propel the business significantly ahead. The importance of entrepreneurs in driving economic development has been extensively recognised (Egedy et al., 2015:121; UN CTD, 2005:4; Oko, 2015:115).

2.3 Global Viewpoint OF Small and Medium Enterprise Innovative thinking

According to Marco et al. (2020), nearly 99 percent of job creation and economic growth in Europe can be attributed to startups. Given their innovative personas, entrepreneurs are crucial to the progress of society, the creation of employment, and the contribution to the GDP of any economy. Many firms, according to a poll performed by the National Economics University in 2020, experienced shortcomings as a direct result of the coronavirus pandemic. Typical issues have included a reduction in profits because of a decline in production, supply constraints, and being unable to export. (Le et al. 2020). In the last two to three years, the coronavirus epidemic has worsened the barriers, which often restrict the creative efforts of entrepreneurial firms. The table below illustrates the significance of small and medium-sized firms to the GDP and the creation of jobs in emerging countries.

2.4 The present reality of entrepreneurial innovation in South Africa

As stated by Ngek and van Aardt Smith (2013), the existence of a well-functioning small, medium-sized business industry is an essential marker of economic prosperity. According to Booyens (2011), this industry is regularly described as an important facilitator for job opportunities, GDP improvement, and innovation within South Africa. Although the state has implemented policies to promote the growth and development of this industry, the number of unsuccessful businesses remains substantial. (Neneh and Van Zyl, 2017). According to research undertaken by Fatoki (2014b), South African small and medium-sized enterprises do not develop; alternatively, they persevere owing to failings in the implementation of appropriate innovation strategies. According to the authors, 75 percent of recently launched startups struggle to reach stability. Formerly, Fatoki and Garwe (2010) warned that, lacking development, long-term viability, and innovative approaches, South African

entrepreneurs risk stalemate. This conclusion is consistent with the study results of Mirela (2008), whose work recognised innovation as a crucial element of the advancement and success of SMEs. Masona et al. (2015) validated the advantageous impact of innovative approaches alongside the profitability, productivity, and efficacy of startups. Therefore, if South African entrepreneurs are to increase their likelihood of surviving and contribute to the advancement of the country, they must immerse themselves in initiatives that foster innovation.

2.5 Road Freight in South Africa

From the South African Ministry of Transport (2012), the country's rail and roadway freight are considered as the cornerstone of the nation's long-term logistics sector, as it plays a vital role in economic and fosters entrepreneurial growth. The country has the fourteenth-longest railway system in the entirety of the globe, which links to all borders in southern Africa. All main neighbourhoods have connections by rail, making SA's rail infrastructure one of the greatest in the Continent and biggest mode of transportation (SA info Reporter, 2012). Transnet Freight Rail, a government-owned entity, is the only supplier of train transport services in this country. A division of Transnet that is responsible for managing the full railroad network and systems. Pienaar (2010) pointed out that this State-Owned Entity (SOE) is a monopolistic railway company without a competitive multimodal standpoint, given that there are other competing modalities like road transportation.

As Amos (2010) states, the railway cannot provide a full transport solution without integration, hence it needs multimodal cooperation with other modes, particularly roads. After goods transportation was deregulated in this nation, no complete alternative to rail and road competition existed. Havenga et al. (2011). Havenga stated that political initiatives to establish new transport operations are difficult and ineffectual. Road and rail compete for huge, long-distance freight. 2012 (DoT). Only a fourth of railway corridor transit is rail freight, hence Stander and Pienaar (2005) say it has little impact on urban and rural economies. Thus, road and rail compete in a small goods market niche. We think high-value items should be conveyed by road and low-value goods by rail. In SA, however, this seems unlikely. Ittmann and King (2010) found that just 34% of road transit loads of items are carried by railway, even though over 60% should. According to Stander and Pienaar (2005), railway

transport is less competitive than road transport, which explains the current expansion in road transport firms.

2.5.1 Pitfalls in the road transportation logistics

As shown in Figure 2.1 below, Othman and Sze Voon (2018) identify delivery delays, high degree of risk, poor truck-diver behaviour, and insufficient communication as the greatest problems facing emerging road freight logistics businesses. Kembro and Norrman (2019) posit that delayed transportation can be the result of increased client demands regarding order turnaround time, which results in more challenging operational scheduling. In addition to delivery delays, they additionally pinpoint delivery alternatives that are constantly changing and unpredictable as obstacles. Regarding the globalisation of the supply chain network, Kwan Tan, Yifei, Zhang, and Hilmola (2014) assert that fluctuating client demands are difficult to implement.

Figure 2. 1: Outline of road transport issues

Source: Othman and Sze Voon, (2018)

2.5.2 Uncertainty in transportation supply chain network

In the logistics management writings, uncertainty can be primarily regarded as unpredictability and thus connected alongside a dearth of influence and control across the context of supply chains (Flynn, Koufteros, and Guanyi Lu (2016) and Carter, Rogers, and Choi (2015 b)). The growing intricacy of worldwide supply chain systems and the risk of late deliveries, as well as quality issues, contribute to logistics network supply insecurity. (Simangunsong, Hendry, & Stevenson, 2012). As depicted in Figure 2.2 below, Nilsson (2006) identifies four categories of unpredictability in the road transportation logistics of supply chains that contribute to a rise in the intricate nature of procedures and operations throughout the value chain. The four categories of ambiguity suggested by Nilsson (2006) and subsequently confirmed by Kwan Tan et al. (2014) and Kembro et al. (2019) are as follows:

- **Client demands**: This refers to rising and shifting client demands. For instance, a cut in turnaround times, customised purchase requests, alternatives to packaging, specialised labelling, rising in the assortment of distinct items and according to each order, an increase in the regularity of shipment, Just in Time (JIT) requirements, a growth in an array of products and services offered, and a reduction in the quantity every order.

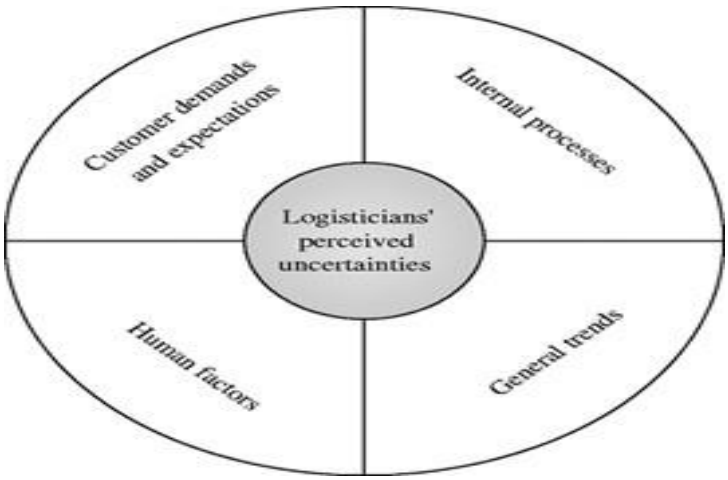
- **Internal operations**: Collaboration across sales/marketing and transportation supply chain is an essential driver of ambiguity in typical logistical tasks. An understanding of logistics in organisations is a valuable activity. It is anticipated that logistics processes will operate with efficiency and a high degree of precision, but without incurring additional expenses.

- **Human variables**: This aspect induces unpredictability because humans are unable to operate such as robotic devices and consequently are prone to making errors. Another aspect is the significance of meeting the "right" individuals when interacting with consumers. In the environment of logistics, individual variables add to both the generation of value and uncertainty. A significant amount of understanding and recognition regarding human

involvement may be utilised to derive benefits from development efforts and achieve improved client and internal coordination. Additionally, power, concealed facts, and protectionism affect one's view of human-related uncertainty.

- **Latest trends** These include trends pertaining to the evolution of innovations, thoughts, and techniques. Consequentially, it is important to evaluate the efficacy of development initiatives, as the external environment is in perpetual change.

Figure 2. 2: Categories of unpredictability in the road transportation supply chains



Source: Nilsson (2006)

2.5.3 Crime and Theft

The magnitude of transit offences suggests that they are likely to have negative effects on the road freight entrepreneurs supply chain efficacy. In general, logistics efficacy indicates the capacity to fulfil customers at the most affordable and feasible price. (IGI Global, n.d.). Ahoka, Laiho, Hintsa, Mannisto, and Holmstrom (2010) state that “distribution networks are overseen and evaluated based on a small number of crucial performance metrics, most commonly duration, price, value for clients, and consumer fulfilment," plus that safety procedures are not often reflected and frequently viewed as extra necessities and expenses. However, criminality exhibits numerous negative effects on client service, including transit delays, shortages of merchandise, and higher expenses. In addition,

business consequences could involve decreased overall productivity, tarnished credibility, and decreased profits.

- Cost hikes because of damaged or stolen goods that need to be replaced, along with the accompanying indemnity charge upsurges (Business Day, 2018; Harvey, 2018).
- Delivery delays resulting from timeline disruptions (Russell, 2001).
- Expensive service to clients in the context of missed or insufficient shipments and inventory shortages (Wilson, 2007).
- Revenue declines due to rising expenses (Harvey, 2018; Russell, 2001).
- Unjust rivalry from misappropriated merchandise resold at a discount (Cepal, 2011; International Business Wiki, 2011).
- Competitors rising (Harvey, 2018; Russell, 2001).
- Reputational harm (Harvey, 2018; Gold 'n Links, 2016; Mario)

Threats must be reduced to address transportation sector supply chain disruptions. Ahokas et al. (2010), prompted by Lee and Whang (2005), believe theft prevention should focus on transportation process management rather than expensive physical monitoring. Due to inefficient law enforcement, firms might take proactive actions to limit transit crimes' consequences on the supply chain. According to the European Commission (2007), Ahokas et al. (2010) state that to ensure high standards of merchandise acceptance, outsourcing, warehouse and storage spaces, manufacturing, and loading operations, the supply chain must have suitable safety requirements, operations, and protocols supported by Fourth Industrial Revolution technology and innovation. Additionally, the suggested requirements ought to include a "broad range of operations supply chain aspects," with:

- Employee safety especially drivers, controlling access.
- Merchandise supply chain and integrity of documenting processes.

- Cybersecurity and transportation safety for conveyances
- Disaster rescue management" (APEC, 2005 in Ahokas, et al., 2010).
- Consideration is given to these factors when determining the most efficient security initiatives.

2.6 Enterprise Innovating Behaviour of Entrepreneurs

Shane (2003) noted in his study on entrepreneurship, self-employment, and business growth that all entrepreneurial actions are imaginative. Innovation is the creative as well as experimental development of novel ideas and goods, according to Rauch, Wiklund, Lumpkin, and Frese (2009:763). Organisational behaviour specialists define entrepreneurial innovation as the creation and deliberate acceptance of innovative and profitable concepts, procedures, and goods, and approaches (de Jong & den Hartog, 2010).

2.6.1 The Relationship Between Innovation and Competitiveness

Literature provides solid evidence for the importance of technology and innovation in boosting operational efficiency to support corporation operations inside as well as through trading partners (Wu & Chiu, 2015). Funding new innovations and technological advances, plus associated expertise (such as enterprise applications, telecommunications networks, and intellectual resources), can also boost entrepreneur performance by enhancing three essential core competencies: adaptability, virtual options, and venture creation (Sambamurthy, Bharadwaj, & Grover, 2003).

2.6.2 Business Agility

In this regard, agility is defined as "the power to instantly as well as unpredictably identify and exploit emerging marketplaces" (Sambamurthy, Bharadwaj, & Grover, 2003, p. 238). Agile businesses can adapt rapidly and effectively to shifting customer requirements, competitive circumstances, and emerging creative opportunities (Mathiassen & Pries-Heje, 2006; Drnevich & Croson, 2013). Innovation is consequently considered an essential element of business development potential

(Drnevich & Croson, 2013; Lu & Ramamurthy, 2011), especially if funding of cutting-edge technologies is funnelled towards continuous improvement throughout a firm's technological system to provide a competitive edge (Lu & Ramamurthy, 2011).

The use of technologies to increase organisational agility is supported by research (Mathiassen et al., 2013). Despite academic theories that support using corporate capacity to promote agility (Drnevich & Croson, 2013), several past studies show mixed empirical evidence for using enterprise systems. Since modern technologies increasingly affect innovation, corporate planning, and marketplace frameworks (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013), empirical literature will focus on how technological acumen can be used to improve continuous improvement and how enterprises can optimally integrate their digital strategy with their success. Lu and Ramamurthy (2011) argue that enterprise agility in a commercial context must go beyond a company's flexibility (the capacity to adjust to disturbances) and highlight two forms of agility that are crucial to corporate performance which are market capitalising agility and adaptability in operations readjustment.

The market capitalising agility structure focuses on the external conditions, chiefly recognising the dynamic and challenging procedures of evolving goods and solutions to create a sustainable edge over rivals most effectively and leverage rapidly evolving emerging markets (Lu & Ramamurthy, 2011). The idea of operations adaptation flexibility refers to an organisation's potential to instantly and effectively enhance its internal processes and productivity enhancements in preparation for marketplace developments (Lu & Ramamurthy, 2011). Establishing the notion of corporate adaptation agility, Lu and Ramamurthy (2011) argue that organisational agility might be greatly enhanced with the emergence of exceptional firm technical expertise, which is supported by three primary technology characteristics: IT connectivity capacity, IT enterprise comprising skills, and an IT assertive perspective (Lu & Ramamurthy, 2011).

2.7 Analytical Framework

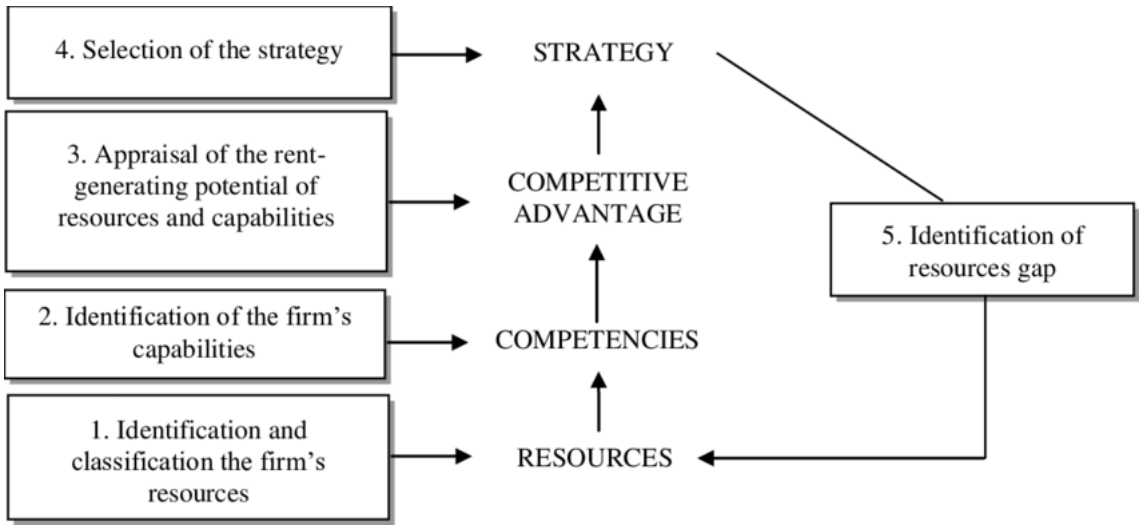
The resource-based viewpoint and the dynamic capabilities theory are employed to fully grasp innovation capability for organisational performance. The resource-based perspective focuses on identifying and analysing the company's resources that generate a competitive edge and the consolidation of such resource management (Hamel & Prahalad, 1990; Hamel & Prahalad, 1994). In contrast, the dynamic capabilities theory investigates in depth how organisations gain the ability to utilise resources. Although it is true that some academics, such as Xu et al. (2012), have said that the two theories are unconnected, others, such as Lawson and Samson (2001), consider the dynamic capabilities theory as a possible expansion of the resource-based approach.

2.7.1 Theoretical Framework: The Resource-Based View

Kirchmer (2011), cited by Marima (2018), claims that small company innovation and success depend on available resources. Small and medium-sized businesses struggle to develop, expand into new markets, improve efficiency, and compete due to resource constraints (Sibiya and Kele 2019). Thus, a company's innovation depends on its assets. Nagaraju (2015). Patanakul and Pinto (2014) also note that growing businesses need sufficient resources to develop innovative strategies. Viljamaa (2011) states that smaller enterprises are asset inhibited, whereas Sibiya and Kele (2019) found that a lack of suitable capitals might hamper a company's ability to gain a competitive edge and innovate. The resource's accessibility gets to decide the service performance, volume, and sale prices, according to seminal research by Barney (2001).

In addition, Sexton and Barrett (2003) claim that the RBV component of innovation hinges on the accessibility of resources as a foundation for creative conception. Consequently, entrepreneurs that retain scarce and valuable resources stand to gain from higher growth, sustained competitive results, and creativity. In addition, writers like Shirokova, Bogatyreva, Beliaeva, and Puffer (2016) contend that, as a plan of action, innovation is an important, infinite, and limited resource that entrepreneurs must gain in exchange for finite resources like funding, which they typically have in deficit.

Figure 2. 3: The Resource Based View Model



Source: Figurska, I. (2011). Adapted

Bacq and Eddleston (2018) propose that the Resource-Based View (RBV) provides a suitable framework for describing how small and medium-sized businesses can leverage scarce resources to enhance their capacity for innovation and client excellence. Startups can creatively utilise the RBV to maximise productivity by integrating and merging scarce assets. Contrary to common opinion, Ndesaulwa et al. (2017) argue that innovation is equally crucial for both large and small businesses. According to the RBV, process innovation stems from business acumen, competencies, and the ability to extract potential from limited resources (Bacq and Eddleston, 2018). This suggests that entrepreneurs can optimise resources by fostering innovation and gaining a competitive edge. Additionally, human capital plays a pivotal role in enhancing the appeal of microenterprises to most commercial companies (Taneja et al., 2016).

2.7.1.1. Findings from the empirical review of literature

A rising firm's creative strategy is crucial to survival and success in a changing worldwide corporate environment. Small and medium-sized firms rely on innovation to stay ahead of the competition due to technology, client preferences, and fierce competition. (2013); Kim, Park, and Paik (2018). Eggink (2011) discovered that small and medium-sized company creativity results from community cooperation. Innovation may not be encouraged by environments. Innovation-focused startups

concentrate on creating and launching novel goods and offerings. (Naranjo-Valencia, Jiménez-Jimenez, and Sanz-Valencia, 2011; Guo, 2019). Researchers agree that innovation helps small and medium-sized businesses increase profits. Guo 2019; Prajogo 2016; Galloway, Miller, Sahaym, and Arthurs 2017. Entrepreneurial innovation variables have also been extensively studied, but in many fields. Ferreira et al. (2018). Startups are more innovative and struggle to obtain a competitive edge, according to Antoln-López et al. (2015). Bloch and Bhattacharya (2016) also found that startups innovate more than larger companies.

Since the millennium, global economies have shifted to creative and innovative markets. Thus, businesses must innovate to compete in the present market (Ehrenberger, Koudelkova, and Strielkowski, 2015; Kim, 2018). Thus, small enterprises must constantly innovate to survive. In competitive business environments, companies must reinvent themselves or fail. Ingenuity helps entrepreneurs create new products, services, and processes, expanding their businesses and giving them an advantage over competitors (Arshad et al., 2018). Bowen, Rostami, and Steel (2010) reiterate that startups need innovation to flourish and expand commercially. To produce new ideas, goods, and services, small firms must improve their innovation strategies (Kim et al., 2018). Yang (2011) claims that small creative enterprises outperform rivals in technological efficiency and growth. Krause (2017) claims that small businesses must innovate to be competitive or risk failure. Therefore, entrepreneurs' success relies on their ability to innovate (Pivcevic & Petric, 2011). According to research, several factors influence entrepreneurs' creative ideas (Salome et al., 2013).

2.7.1.2. Critical Views on Resource Constraints and Barriers to Innovation in SMEs in the Road Freight Industry

2.7.2.1. Limitations on available resources

- **Financial constraints:** Although Beck, Demirguc-Kunt, and Levine (2005) highlight the importance regarding financial accessibility, the theory typically fails to consider the intricate aspects of managing finances in small and medium-sized enterprises (SMEs). Several small and medium-sized enterprises (SMEs) might exhibit a deficiency in knowledge of finances or

strategic thinking, which is necessary to maximise the utilisation of the cash at their disposal. Furthermore, the distribution of financial drawbacks has not been consistent across areas or industries. Certain locations or industries could benefit from greater favourable opportunities for alternate funding methods, such as micro financing or state subsidies, these have not been widely discussed in conventional research.

- **Innovative finance methods:** There is a conventional belief that money is limited; however, a new study indicates that creative options for financing, such as crowdsourcing, venture capitalists, and collaborative efforts, might help alleviate these limitations. Nevertheless, the actual use and potential to expand these approaches in the road freight sector have not been thoroughly investigated (Lam & Law, 2019).

2.7.2.3. The costly expenses associated with innovation.

- **Cost-Benefit Analysis:** The assertion that substantial expenses discourage the adoption of innovation, as argued by Beck, Demirguc-Kunt, and Levine (2005), may be too simplistic. Small and medium-sized enterprises (SMEs) often encounter a situation in which they must assess the costs and benefits of innovation. In this scenario, the foreseeable advantages of innovation, such as improved productivity and client retention, are greater than the early expenses. The exploration of this theory could be furthered through further evaluations that quantitatively assess the perks in relation to the initial costs, thereby offering a more distinct depiction of the possible return on investment (ROI) derived from innovation.
- **Technology adaptation and scalability** are also subject to criticism, particularly in terms of the capacity of innovations to scale up. Numerous technology programmes are designed primarily for bigger corporations, and their application to small and medium-sized enterprises (SMEs) is sometimes neither simple nor direct. This discrepancy highlights a requirement for innovative approaches that prioritise subject matter experts (SMEs) while also being affordable and capable of being expanded in scope (Lee, Shin, & Park, 2012).

2.7.2.4. Obstacles to the development and implementation of new ideas and technologies

- **Regulatory Flexibility and Support:** Parida, Westerberg, and Frishammar (2012) argue that there is a demand for a system of regulation that strikes an equilibrium between promoting innovation and guaranteeing regulation, since the current regulations are seen as burdensome. State-run organisations and regulators have the potential to adopt a more proactive strategy by offering additional directives, expediting the licensing of novel methods, and giving monetary compensation for adherence to regulations (Blind, Petersen, & Riillo, 2017).
- **Legislative adaptations** are necessary due to the continual evolution of innovation. The existing legal structures frequently fail to maintain pace with technological progress, resulting in obstacles for small and medium-sized enterprises (SMEs) seeking to introduce innovative solutions. Implementing a regulatory strategy that is progressive and collaborative might assist in aligning rules with the rapid speed of technological advancements (Pelkmans & Renda, 2014).

2.7.2.5. Inadequate availability of highly skilled labour

- **Employee development programmes** are not given enough priority, despite the fact that the dearth of trained workers is emphasised (Parida, Westerberg, & Frishammar, 2012). Enhanced collaboration between authorities, industry organisations, and colleges and universities are needed to develop focused training and accreditation initiatives which cater to the unique requirements of the road freight sector.
- **Talent retention strategies** are focused on not just obtaining qualified personnel but also keeping them inside the organisation. The literature might further investigate techniques that small and medium-sized enterprises (SMEs) can use for retaining talented employees. These approaches may include offering competitive compensation packages, providing opportunities for professional growth, and establishing a workplace that promotes creativity. (Phillips & Roper, 2009).

2.7.2.6. Constraints in the physical or organisational systems that support and enable various activities.

- **The criticism of Public-Private Partnerships (PPPs)** revolves on the need for inventive methods in building infrastructure. Public-Private Partnerships (PPPs) have the potential to be a practical and effective option for addressing infrastructure deficiencies. PPP, or Public-Private Partnerships, may promote the creation of essential infrastructure that fosters innovation in small and medium-sized enterprises (SMEs) by leveraging government funds and maximising the effectiveness of private sector companies (Hodge, Greve, & Boardman, 2017).
- **Digital infrastructure** is sometimes overlooked in favour of tangible infrastructures, but its relevance should not be underestimated. Dependable connectivity to the internet and easy accessibility to online technologies remain also essential for small and medium-sized enterprises (SMEs) in the road freight business. Enacting regulations that focus on enhancing technology in locations that lack adequate access might greatly boost the ability to innovate (Katz & Koutroumpis, 2013).

To tackle the limitations and obstacles to innovation in small and medium-sized enterprises (SMEs) in the road freight sector, a comprehensive and diverse strategy is necessary. Critical perspectives argue that in addition to recognising these issues, there must be a focused endeavour to adopt inventive funding methods, flexible rules, extensive worker training, and strong infrastructure policies. By expanding the range of theories to encompass such crucial perspectives, the next studies might provide more pragmatic and implementable suggestions for promoting innovation in small and medium-sized enterprises (SMEs).

2.8 Conceptual Framework

In accordance with ideas of innovation (1934–1942), Joseph Schumpeter showed that economic growth and innovation come from the radical invention of new commodities and services (Taylor, 2013). Schumpeter already confirmed entrepreneurs' role in innovation, according to Hong, Oxley,

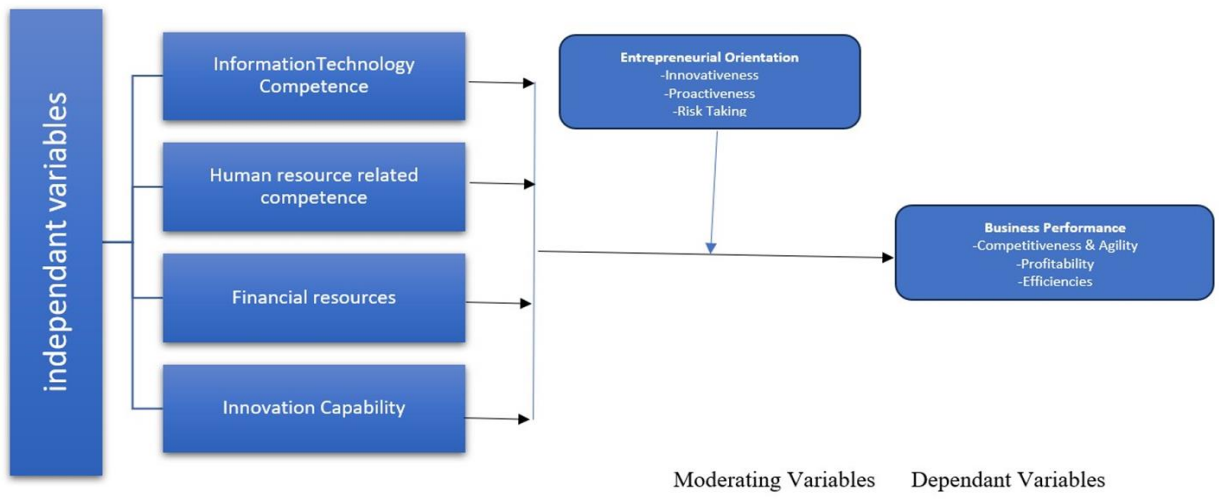
McCann, and Le (2016). Despite noting that Schumpeter (1942) supported large, well-established enterprises, this study focuses on "initial Schumpeter," who believed innovation drove entrepreneurial progress. Innovations in customer-focused products and services encourage entrepreneurship, according to Kiveu, Namusonge, and Muathe (2019) (Molokwu, Barreria, & Urban, 2013). Entrepreneurship encourages innovation and economic spin-offs from investments.

Innovation is the addition of a new feature or improvement to items or processes, and it is often related to doing something new (Popescu, 2014). Kuratko, Morris, and Covin (2011) state that establishing a firm is to be inventive and profit by creating new products, services, or business methods that improve customer interactions. A more creative business model benefits stakeholders and boosts firm performance. In contrast, Taylor (2013) claims that innovation may guarantee entrepreneurial development, sustainability, and uniqueness. To the contrary, Ambad and Wahab (2013) argue that a creative company boosts its likelihood of success and generates a good return on investment. Sharma and Dave (2011) established that Schumpeter was one of the initial writers to highlight innovation in entrepreneurship. Schumpeter proposed "creative destruction," which states that novel goods, skills, operations, and methods disturb a competitive environment (Langgroodi, 2021). This disruption will boost innovation, revenue, and growth. According to Kuratko et al. (2013), innovative SMEs seek better ways to fulfil tasks, which might result in new products or services. Antoncic and Hisrich (2003) say small and medium-sized firms innovate mostly in technical, administrative, product, and service areas.

As shown in the conceptual model below, the variables that influence the innovative business behaviours of entrepreneurs are listed as independent variables. The following Figure 2.4 illustrates the connection amongst dependent, moderating, and independent variables. The dependent variable in the conceptual framework provided before is the entrepreneur's innovative behaviour,

whereas the independent variables are the entrepreneur's viewpoint, competences, behaviour characteristics, combined with their surroundings (Hungund, 2019).

Figure 2. 4: Conceptual Model



Source: Adapted, S. Hungund (2019)

2.8.1 The Resource-Based View

Business RBV is a prevalent managerial model (Beard and Sumner, 2004; Runyan et al., 2006). RBV centres around a business's unique combination of capabilities that give it an edge over competitors. Recognising a company's long-term competitive edge is a major focus of business planning and administration. Most of these studies have been organised using an exclusive business system since the early 1960s. Most academic research on how to stay ahead of the competition has focused on a company's strengths and weaknesses. There is not much question that this strategy has proven extremely beneficial in elucidating the awareness of the effect of a business's surroundings on its success (Barney, 1991). As stated by Barney (1991), the RBV approach to analysing an organisation's internal abilities and deficiencies is founded on just two core principles.

Firstly, based on Penrose (1959), this study advances that businesses may be seen as combinations of economically viable assets and that each business holds a unique collection of those resources. According to Schumpeter, there exists an essential business connection between innovation and a nation's GDP. A country that is unable to adequately promote entrepreneurship is unlikely to foster innovative thinking and creativity. The venturing of entrepreneurs onto invention disrupts and substitutes conventional commercial practices (Chipunza, 2014), and diversity of company resources is assumed.

Second, Selznick (1957) and Ricardo (1966) suggest that numerous such assets are either too costly to reproduce or unavailable. This is resource rigidity. A key element of the RBV is its focus on internal business variables. This strategy resembles Penrose's (1959) revolutionary study. Grant (1991) and Miller and Shamsie (1996) notice a growing interest in using corporate assets to drive strategy. This passion shows frustration with corporate organisations' strict balancing paradigm, which emphasised business techniques and outside forces (Grant, 1991). Several strategic advances led to a resource-based perspective. RBV characterises a corporation by its assets. According to Penrose (1959), a firm is a resource base, not just a system. The term "resource" is sometimes limited to firm productivity and efficiency (Wernerfelt, 1984). Miller and Shamsie (1996) say resources must generate income or avert losses. Access to a wide asset will reduce the company's market advantage.

2.8.1.1. Resource-based view theory as anchor for this research study

The resource-based view (RBV) hypothesis provides a fundamental framework for comprehending how small and medium-sized enterprises might use their distinctive resources to augment their ability to innovate and gain a competitive edge. The Resource-Based View (RBV) focuses on identifying and analysing the assets of a business that provide a competitive advantage, as well as effectively managing those assets. It additionally examines the evolving capacities hypothesis, which explores how organisations develop the capacity to efficiently use resources. Bacq and Eddleston (2018) have recently provided scholarly citations that endorse the RBV theory. They argue that the RBV offers a good structure for explaining how organisations might use limited resources to improve their

ability to innovate and deliver excellent service to clients. Furthermore, a study conducted by Mathiassen et al. (2013) provides evidence that using technology may enhance organisational agility, which is in line with the Resource-Based View's focus on using resources to gain a competitive edge.

In addition, the RBV theory has been referenced in studies conducted by Wu & Chiu (2015) and Sambamurthy, Bharadwaj, & Grover (2003), providing proof of the significance of innovative technology in boosting productivity and improving entrepreneurship. These studies emphasise the significance of using innovative technologies to improve fundamental skills like flexibility, digital alternatives, and enterprise creation, in line with the concepts of the Resource-Based View (RBV) philosophy. Overall, the resource-based perspective theory offers a strong conceptual framework for comprehending how firms may use their distinct resources to promote innovation, strengthen their competitive edge, and boost performance, as shown by recent scholarly references.

2.8.1.1.1. The significance of the Resource-Based View (RBV) in relation to innovation and entrepreneurship.

In the Resource-Based View (RBV) paradigm, innovation is seen as a crucial competitive asset. It includes recent advancements in technology, methods, and goods that lend an edge over others (Schumpeter, 1934; Zahra & George, 2002). Innovation is a crucial business skill that allows companies to adjust to marketplace fluctuations, fulfil client demands, and take advantage of new prospects (Teece, Pisano, & Shuen, 1997).

2.8.1.1.2. The incorporation of Resource-Based View (RBV) in the Road Freight Sector

Physical resources in the road freight business involve sophisticated truck management platforms, contemporary scheduling procedures, and monitoring gadgets. These references (Barney, 1991; Grant, 1996) are essential for enhancing efficiency and the quality of service. Intangible resources refer to the specialised knowledge and skills in managing transportation, well-established client connections, and a recognised track record for being dependable and innovative. These assets

improve the business's capacity to create novel products and sustain competitiveness (Hall, 1992; Sirmon, Hitt, & Ireland, 2007).

2.8.1.1.3 Obstacles in the process of obtaining and using resources.

Small and medium-sized enterprises (SMEs) in the road freight business frequently possess substantial limitations when it comes to obtaining crucial assets for innovations. Obstacles such as expensive expenses and restricted financial means are often encountered (Beck, Demirguc-Kunt, & Levine, 2005; Lee, 2009). Efficiently managing and optimising current resources is essential for overcoming these limitations. This entails making calculated investments in technology, education, and workflow enhancements (Barney, 2001; Sirmon, Hitt, & Ireland, 2007).

2.8.1.1.4. Resource-Based View (RBV) and Dynamic Capabilities

The Dynamic Capabilities Theory: This theory expands upon the Resource-Based View (RBV) by emphasising the company's capacity to effectively combine, develop, and adapt its inside and outside capabilities in order to effectively respond to dynamic and evolving contexts (Teece, Pisano, & Shuen, 1997; Eisenhardt & Martin, 2000).The integration of Resource-Based View (RBV) with Dynamic Capabilities Hypothesis offers a more holistic comprehension regarding how companies may maintain an edge over their competitors by consistently innovating and adapting (Teece, 2007; Helfat & Peteraf, 2003).

2.8.1.1.5. Empirical Evidence

Empirical research indicates that organisations that capitalise on their distinctive assets for innovation tend to demonstrate superior performance. For example, organisations that allocate resources to sophisticated logistics computer programmes and telematics can enhance client retention, minimise fuel use, and optimise route scheduling (Holcomb & Hitt, 2007; Protogerou, Caloghirou, & Lioukas, 2012). Practical insights are provided by examples of SMEs that have overcome limited resources by means of collaborative efforts, public funding, or novel ways to finance (Branzei & Vertinsky, 2006; Parida, Westerberg, & Frishammar, 2012).

It is imperative that small and medium-sized enterprises (SMEs) prioritise investing in tools that possess a high opportunity for differentiated advantage and creativity. This encompasses the improvement of the workforce and innovations in technology (Simon, Hitt, & Ireland, 2007; Wernerfelt, 1984). It is imperative to cultivate a work environment that prioritises innovation. This entails the promotion of innovation, the encouragement of risk-taking, and the implementation of continuously enhanced strategies (Crossan & Apaydin, 2010; Volberda, Van Den Bosch, & Heij, 2013). The government can assist SMEs by offering opportunities for financing, tax credits, and educational programmes to encourage investment in resources and invention (Beck, Demirguc-Kunt, & Levine, 2005; Lee, 2009). Executives ought to prioritise the identification and cultivation of critical resources, the establishment of proactive collaborations, and the preservation of adaptability in response to market fluctuations (Barney, 2001; Sirmon, Hitt, & Ireland, 2007).

2.8.2 Types of Innovation

Innovation in entrepreneurship is propelled by the innovation process. According to Dervitsiotis (2010), a concept can only be transformed into currency via a comprehensive innovation process. Product innovation, process innovation, and service innovation are the three primary categories of innovation undertaken by small businesses. The three have a significant impact on the innovative endeavours of entrepreneurs due to their interdependence, mutual promotion, and shared impact. Innovation is an essential generator of prosperity and development, according to the 2010–2012 Innovation in the SA Manufacturing Industry report. Innovation activities include the development or application of an innovative or enhanced offering, management, or invention, according to the publication.

2.8.3 Product Innovation

Popadiuk and Choo (2006) define product innovation as the launch of an innovative or improved merchandise that drives a company's competitive development in a current or developing market. Product innovation, according to Wang (2016), involves small enterprises enhancing goods, commercial participation, inventive thinking, and discovery. Product innovation also emphasizes

efficiency in creating something new (Kahn, 2018). Wang (2016) divides product innovation into substantial and incremental categories. Small (2018) agrees with Ahalin, Drnovek, and Hisrich (2012) that product innovation involves creating new ideas and a unique offering that will be obvious in an enterprise's final result, advertising strategy, or solution. According to the 2010-2012 Innovation in the South African manufacturing sector study, 39.6% of entrepreneurs' goods are innovative.

2.8.4 Process Innovation

Chipunza (2014) explains process innovation as the launch of some new, enhanced technique intended to expedite the delivery of an item or solution to the consumer. The expression 'process' can refer to the interconnectedness of processes resulting in the process of converting ideas into new services with additional benefits for the target customer base. As stated by Kahn (2018), process innovation entails modifying a procedure to increase productivity while lowering operational expenses. This writer argues additionally that organisational operations, manufacturing platforms, and distribution structures encourage process creativity the most.

2.8.5 Service Innovation

Service innovation, which combines new ideas with improved business services, is ideal for entrepreneurs, according to Wang (2016). It also improves firm structure. As per Witell et al. (2016), service innovation scholars disagree. Instead, Maureen (2018) describes service innovation as the use of newfound technology and methods to provide higher-quality products and services. Kindstrom and Kowalkowski (2014) claim service innovation fosters innovative goods, concepts, and services. The concept revolves around the way the newly introduced item would fulfil customer requirements.

2.8.6 Marketing Innovation

Innovation involves entrepreneur promotion. Kahn (2018) claims that marketing innovation seeks to connect people to advertising categories. According to Maureen (2018), marketing innovation involves firms creating goods or skills that promote entrepreneurs in a marketplace. Gustavsson and Larsson (2020) agree that marketing innovation gives companies an advantage.

Marketing innovation increases brand awareness and uniqueness, which increases customer interest, according to Kahn (2018). A winery business market innovation study by Beringer Vineyards (2015) found that virtually all customers who tasted the beverage bought it. Advertising efforts may boost entrepreneurs' revenues, profitability, and market competitiveness even more. Aksoy (2017) states that although markets help and improve a company's innovation efficiency, its competitiveness relies on it.

2.9 Entrepreneurs Innovation Principles

Here are the two most important principles that entrepreneurs may implement to foster innovation.

2.9.1 Open Innovation

Henry Chesborough (2003) established the theory of open innovation for entrepreneurs, which alludes to a company's capacity to assimilate outside expertise necessary for the creation of groundbreaking concepts. Chesborough (2003) demonstrated that major company concepts may arise either internally or externally within the company and be embraced by the competition. Chesborough (2003) revealed that, in contrast to closed innovation, open innovation does not constitute an either-or construct. Rahman and Ramos (2013) show the beneficial association between open innovation and the innovation productivity of entrepreneurs. Srisathan, Ketkaew, and Naruetharadhol (2020) perceive open innovation as a formidable corporate approach for achieving long-term success in entrepreneur development.

2.9.2 Closed Innovation

Closed innovation is based on the idea that startups need greater influence over the innovation process. Internal innovation is developed inside the company and shared amongst personnel to meet standards of excellence. Alawamleh, Ismail, Aladwan, and Saleh (2018) outline the principles of closed innovation as:

- The company must hire the best skilled individuals that exist in the industry.
- The essence of innovation originates through the marketing team of the firm rather than the good or solution itself.
- Ensuring proper focus on the company's distinctive selling point.
- Marketplace is an environment of rivalry; therefore, the organisation has to emerge successful.

2.10 Conclusion of Literature Review

The chapter included a detailed examination of how innovation is used as a means to enhance entrepreneurial agility in the road freight business. This included a complete evaluation of the existing research and the establishment of a theoretical structure. The content highlights the importance of innovation in small enterprises in the road freight industry and how it affects entrepreneurial agility. The study also examines the worldwide perspective on innovative ideas in small and medium-sized enterprises, the current state of entrepreneurial innovation in South Africa, and the road freight business in the nation. An in-depth analysis is conducted on the obstacles and possibilities in road freight transportation, which include uncertainties in freight supply chain networks, instances of crime and theft, and potential hazards in road transportation logistics. Furthermore, the study examines the concepts of open and closed innovation and how they contribute to promoting entrepreneurial agility in the road freight business.

Moreover, the research examines the correlation between innovation and competitiveness, company adaptability, and other forms of innovation, such as product, process, service, and marketing innovation. The paper also explores the ideas that entrepreneurs might use to cultivate innovation, including both open and closed innovation. The theoretical framework used encompasses the resource-based view (RBV) and the dynamic capacities theory, with a specific emphasis on the significance for technological adoption, corporate strategy, and enterprise success. The RBV principles demonstrate how organisations may maintain a competitive advantage by acquiring a diverse range of capabilities, including IT innovation. It highlights the significance of recognising the incorporation of technology adoption, corporate strategy, and business achievement.

Ultimately, the chapter offers useful perspectives on the importance of innovation in the road freight sector, highlighting the obstacles, prospects, and theoretical models that are pertinent to promoting entrepreneurial adaptability via the implementation of technologies. This emphasises the significance of comprehending the function of innovation in small enterprises, specifically in the road freight industry, and its influence on productivity, business adaptability, and effectiveness in operations. The research also emphasises the principles and categories of innovation that entrepreneurs may use to improve their inventive talents, along with the theoretical frameworks that provide a strong conceptual basis for analysing technology adoption and entrepreneurial agility.

CHAPTER 3. RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter studied current research on road freight startup firms and their creative techniques. Multiple materials significant to this research's goals were examined. This chapter describes the research approach. It describes the target population, data collection, sample methods, exploratory study design, and ethics. After evaluating the literature, Sekaran and Bougie (2016) recommend constructing the study's technique to answer the questions. Answers to a standardised questionnaire with closed-ended questions will be gathered to understand how South African road freight companies implement innovation. SPSS 28.0 for Windows will examine the data.

3.2 Research approach

Myers (2019) believes that qualitative and quantitative study methodologies are important for analysing businesses since they are dependable and necessary for research. The experimental aspect of qualitative and quantitative research frameworks, which use scientific data, is crucial. Myers (2019) suggests that quantitative research is more suitable for substantial amounts of data to generalise results to more individuals. Myers (2019) also believes that a qualitative study design is ideal for academics who are keen on learning everything about a subject. Scholars must connect with group members to understand real-life situations, according to the writer.

Myers (2019) explains that a quantitative study focuses mainly on what the population being studied is saying, whereas the data assist the writer in comprehending individuals, what they do, and what motivates them at all times. According to Struwig and Stead (2013), quantitative research measures are constructed through observation or questionnaires that are structured. According to Rasinger (2013), the primary feature common to quantitative research studies is information that can be measured. According to Struwig and Stead (2013), the focus of quantitative research is statistical proof, which is obtained by collecting answers from a particular group of people.

This study used descriptive design. This involves examining some data at a certain moment in time (Babbie, 2007). The researcher adopted this strategy because of budget and time limitations. The information gathered is quantitative and was obtained using an online self-reported survey to assess the components of interest. This kind of material collection enables the testing of many subjective assertions and aids in statistical analysis, allowing the researcher to identify connections among variables (Hair, Babin, Money & Samouel, 2003).

3.3 Research Questions and Hypotheses

Research Question 1: How innovative are business owners in the road freight sector?

Hypothesis 1: Companies operating in the road freight industry demonstrate a substantial degree of innovation, marked using novel technology, procedures, and business strategies.

Research Question 2: How can business owners in South Africa's Road freight transport sector incorporate innovation?

Hypothesis 2: Owners of businesses in the road freight transport industry in South Africa can introduce innovations by investing more in technology, improving personnel education programmes, and forming strategic collaborations with technological suppliers.

Research Question 3: How does the performance or agility of the road freight transport businesses depend on entrepreneurs' ability to innovate?

Hypothesis 3: There is a positive correlation between the productivity and agility of road freight transport enterprises and the entrepreneurs' capacity to innovate. This means that greater instances of innovation are related with improved productivity, client retention, and enhanced competitiveness.

3.4 Research design

This research utilises a cross-sectional survey approach to gather data from a varied group of small and medium-sized enterprises (SMEs) in the road freight business at a certain moment in time. This methodology enables the analysis of connections across variables and offers a concise overview of

the present condition of innovation adoption and its affecting elements. Cross-sectional surveys offer a momentary depiction of the population, enabling analysts to gather and examine information regarding several factors concurrently (Levin, 2006). In this study, a cross-sectional survey is used to evaluate the implementation of cutting-edge technology in small and medium-sized firms (SMEs) operating in the road freight sector. The researcher conducts an investigation of a representative sample of small and medium-sized enterprise (SME) owners and managers to get evidence on their utilisation of contemporary vehicle management systems, scheduling methods, and other cutting-edge technologies. This methodology would facilitate the determination of the extent to which technology is being used and the variables that are linked to it throughout the survey period (OECD, 2010; Rodrigues et al., 2021).

3.5 Rationale

Cross-sectional surveys are a useful method for detecting trends and correlations of information, which is crucial for comprehending the impact of different variables on the adoption of innovation in small and medium-sized enterprises (Creswell, 2014). Cross-sectional research studies are very effective for measuring the commonality of particular traits or behaviours within a group. In addition, it has the ability to detect relationships between several factors (such as the size of the company, the educational background of the owners, and their financial well-being) and the degree of acceptance of innovation (Mann, 2003). Researchers and industry executives may gain an improved awareness of the elements that have the strongest connection to elevated rates of innovation by studying the frequency of innovation adoption and its related aspects. By analysing this data, we may get valuable insights that can be used to develop specific strategies and resources to improve innovation in less inventive sectors of the economy (Levin, 2006).

Generally, cross-sectional surveys are more efficient in terms of cost and time compared to longitudinal investigations. Unmanned aerial vehicles (UAVs) are a feasible option for many researchers since they take less time and less resources to gather data (Sedgwick, 2014). A cross-sectional survey is an effective method for researchers to acquire pertinent information on the road freight business without requiring significant time or monetary funds.

The need of efficacy is especially apparent in dynamic businesses, where fast changes require prompt and practical insights (Sedgwick, 2014). Although cross-sectional surveys are unable to demonstrate causation, they are capable of identifying connections between variables. These correlations have the potential to produce ideas that may be looked into more via exploratory or longitudinal investigations (Mann, 2003).Within the road freight business, establishing connections between factors such as firm size, technological investments, and instances of innovation might aid in developing theories on causative processes. Subsequent study may evaluate these theories, leading to a more profound comprehension of the sector's innovation processes (Mann, 2003).

3.6 Data collection methods

Various information gathering techniques exist for researchers, and everyone has benefits as well as drawbacks. It is the researcher's responsibility to investigate and select which technique is most suitable for gathering information (Denscombe, 2010). In accordance with Dan (2012) and Stewing and Stead (2013), material can be gathered through computing devices, in-person, and mail, in addition to phones and online. In addition, the writers emphasise that the data collection technique must answer the research query and fulfil the intentions of the research.

• **Digital approaches** - Surveys are sent electronically to those surveyed, who then respond and return the surveys via email with an online form.

• **Self-administration of questionnaires** - this is by far the most prevalent technique, using researchers carrying out the surveys in person. A researcher has the option of waiting for respondents to give feedback or having them answer in their absence. The analysis used qualitative research techniques, and semi-structured conversations with participants in the study were used to gather quantitative data.

The above elements were incorporated to a semi-structured interview agenda. The writer used online digital forms to deliver questions directly for this investigation. This strategy is thought to get more responses (Welman et al., 2005; Struwig and Steege, 2013). Writer must also pick up final research questionnaires in person.

3.7 Population and sample

3.7.1 Population

Rasinger (2013) defines a population as any components or categories that are pertinent to the scholar and that can be utilised in the course of the study. The components are classified based on similar traits determined by the research problem for any study (Zikmund, Carr, and Gryphon, 2013). Factors can refer to individuals, goods and services, or organisations. Cox (2008) affirms that populations have to incorporate every component and subdivision pertinent to the research topic that is significant to the person conducting the study. For this assignment, the writer will approach the Truckers Association of South Africa (TASA) to provide a list of registered start-up truckers in Gauteng.

3.7.2 Sampling method

For the sake of this investigation, a quantitative method design was employed, and a planned survey was developed to collect information from interviewees. The questionnaire's primary purpose is to collect information regarding the study's components, such as inventiveness tactics or adoption of innovation, entrepreneurial agility, and efficiency. Furthermore, a pilot study allowed the author to recognise unclear assertions and revise them for precision and orderliness before presenting the survey to the participants.

Bryman and Bell (2011) say a Likert scale measures respondents' opinions on a subject. Many researchers rate using the Likert scale. This is because every utterance is given equal weight and relevance (Kumar, 2019). Most rating systems ask responders to rate their agreement with the proposition. Five Likert points are used to rate alternatives like Highly agree, agree, Neutral, vehemently disagree, and disagree. The Cronbach's Alpha test determines research reliability and validity. The researcher used a 5-point Likert scale because she felt respondents needed many options to respond thoughtfully.

Section A: Demographics

The demographic information segment of the survey emphasised the scope of the company and the number of proprietors or administrators of entrepreneurs. It considered factors including:

• Male or female

• Road-freight Industry

• Workforce Count

• The number of Years in trading

Those surveyed are to be requested to provide pertinent responses to the located above content.

Section B: Entrepreneurial Innovation Strategies

Participants are to be prompted, using a 5-point Likert scale, to select the most applicable alternative from strongly agree, agree, neutral, strongly disagree, or disagree.

Section C: Innovation-influencing variables

In this segment, which serves as the research's foundation, interviewees will be questioned about the variables that contribute to entrepreneurs' innovation adoption.

3.8 Procedure for data collection

The present research reviewed the literature and established its theoretical foundation using data from secondary sources. These encompassed publications, dissertations, and articles pertaining to entrepreneurial growth in addition to innovation-influencing variables. A great deal of the data used by the researcher in order to develop the survey was derived from secondary sources.

3.8.1 Data collection methods

The procedure of gathering data is a crucial step in doing research (Heaton, 2004: 37). In this research, questionnaires were the primary data collection techniques, as covered below.

3.8.1.1. Quantitative data

The positivist paradigm served as the foundation for the quantitative information gathered in this investigation. In order to extrapolate the findings to a larger population, the author employed questions to gather data (Cooper & Schindler, 2003: 45). The data gathered allowed the scholar to extrapolate or draw inferences in order to assess the likelihood that the findings would hold true over a wider population (Creswell, 2002).

3.8.1.2. Questionnaires

A formalised series of questions is referred to as a questionnaire and is distributed to participants with the goal of gathering data (Cant et al., 2005: 147). A questionnaire comprising both open-ended and closed-ended questions was used by the individual conducting the study to gather data. The survey was created in English so that it would be understandable to those surveyed in all different languages. It was also designed in a manner that ensured it could gather pertinent data regarding every research objective without preventing those who were interested in taking part (Cant et al., 2005: 147).

The use of questionnaires made it possible to get accurate and legitimate data. Further explanations for employing questionnaires encompassed the following:

• Enabled confidentiality, allowing participants to be truthful in their responses.

• Assured that data from multiple participants was similar.

• Was simple and fast regarding the information analysing.

• Was economical in the context of time and resources.

3.9 Data analysis strategies and interpretation

The data was transferred using Microsoft Excel into the statistics package from IBM for Social Sciences (SPSS) version 28. The data was analysed and categorised using conventional statistical methods as suggested by Tabachnick, Fidell, and Ullman (2007).

The data's descriptive statistics, including means and standard deviations, had been analysed. Before proceeding with additional experiments, the reliability of each scale was evaluated by determining internal consistency using Cronbach's coefficient alpha (α). The Kaiser-Meyer-Olkin (KMO) assesses the sufficiency of the sampling by comparing the total of the squared inter-item correlations to the sum of the squared partial inter-item correlations, aggregated across all variables. A correlation matrix is suitable for factor analysis when the Kaiser-Meyer-Olkin (KMO) measure methods 1 or exceeds 0.60.

3.9.1 Descriptive statistics

Descriptive statistics were used to succinctly summarise the demographic features of the group, together with the degrees of innovative adoption, resource limitations, and impediments.

3.9.1.1. Statistical Inference

- **Factor analysis** is used to uncover the latent components that account for the trends seen in the information about resource limitations and obstacles. Factor analysis is a statistical technique that may be used to simplify complicated information and enhance the understandability of the findings (Fabrigar & Wegener, 2011).
- **Correlation analysis** is a statistical method used to examine the connections across variables and detect possible collinearity (Pallant, 2020).
- **Regression analysis**, specifically multiple regression, is utilised to evaluate the predictions and ascertain the influence of independent factors on the uptake of innovation. These will facilitate comprehension of the comparative significance of various aspects (Field, 2013).

3.9.1.2. Software

The researcher manually coded the survey's answers, evaluated the information gathered. SPSS version 28.0 for Windows will be utilised to determine the demographic features of the target audience. In the fourth chapter, the statistical procedures used for the research project are explained in more depth. This entails identifying recurring trends and condensing the pertinent information learned from the inquiry in order to interpret the results that could have been collected (Zikmund et al., 2013: 68). The quantitative data were numerical data collected using questionnaires.

3.10 Variables and Measurement

3.10.1 Dependent Variable

The dependent variable in this study is innovation adoption, which is assessed utilising a composite indices that take into account the various kinds and degrees of innovative processes and techniques used by small and medium-sized enterprises (SMEs). The score is being created utilising Likert-scale questions that span from 1 (indicating non-adoption) to 5 (indicating complete adoption) (Damanpour, 1991).

3.10.2 The factors that are not influenced by other variables.

- **Financial Resources:** Assessed via the evaluation of money accessibility, credit accessibility, and budgeting techniques, using Likert-scale questions (Beck, Demirguc-Kunt, & Levine, 2005).
- **The skilled workforce** is assessed by considering factors such as the presence of trained staff, investment in employee training, and turnover. This assessment is done using Likert scale questions, as described by Parida, Westerberg, and Frishammar (2012).
- **Infrastructure** is assessed based on the standard of transportation infrastructure, availabilit y of digital tools, and internet connection. This assessment is done using Likert-scale questions, as described by Katz and Koutroumpis in 2013.

3.11 Possible limitations and challenges of the research

The research contains possible drawbacks. The primary drawback that might have impacted the research's validity was financial limitations. The author of the paper lacks funds to extend the study to various parts of Gauteng or South Africa, wherever certain companies in the road freight sector operate. Another restriction of the research involved the limited time available. The six-month timeframe for the investigation was insufficient to address all crucial aspects of the research that its author was hoping to address in order to improve its validity and capacity for generalisation.

3.12 Quality Assurance

3.12.1 Validity

Validity is Silverman's (2017) definition of research credibility. According to Denscombe (2010), a measurement tool must determine its data across multiple experiments to be valid (Neuendorf 2019). Stokes (2011) also states that an instrument must accurately represent its goals to be valid. Valid surveys measure what they're supposed to. When achieved, it will help researchers achieve study goals (Jan and Tony, 2012). The three main methods are used to evaluate construct, content, criterion, and surface validity. This study's reliability has been guaranteed using Cronbach's Coefficient Alpha computational software, which is commonly employed in comparable studies (Stokes, 2011). The questionnaire is going to be administered to the researcher to assure the study's validity. As there were no causes for concern, the researcher was given permission to proceed with the study.

3.12.2 Reliability

Bartholomew, Knotts, and Moustaki (2011) say factor analysis simplifies concealed factors by reducing the number of identifiable and quantifiable variables. In this research, factor analysis was done by connecting variables to demonstrate independence. This was completed by engaging the Kaiser-Meyer Olkin (KMO) Measure of Sampling Adequacy and Bartlett's test on 10 variables.

3.13 Ethical considerations

Ethics is the researcher's ability to maintain study participant anonymity, according to Best (2012). Researchers' general behaviours, activities, and basic beliefs must always be suitable and fulfil standards. Adams and Lawrence (2015) suggest that the academic's conduct norms should protect respondent health. Wallman (2011) also claims that ethical questions concern morality and social status. Anderson (2013) lists respect for humans, benevolence, and fairness as ethical criteria for human studies. The researcher obtained ethical approval from the WBS for this investigation **(Annexure D).** The researcher received the respondent's assent by having them acknowledge a written form. In addition, an introduction memo **(Annexure A)** was sent to interviewees to ensure they were aware of the study's goals and intentions.

3.13.1 Privacy and Anonymity

According to Bell (2010), the scholar ought not to be able to recognise the source of the answers. The researcher understood that respondent confidentiality is crucial and that their personal information must be concealed. Thus, the researcher guaranteed that no identities of participants or private data were included in the disseminated forms. It was specified in the cover letter that privacy and secrecy must be maintained.

3.13.2 Voluntary participation

The present research confirmed that taking part in the study was discretionary and that respondents were free to disengage at any stage with no explanation. Preceding administering the survey, the researcher also personally notified respondents how they possessed the option to participate voluntarily.

3.14 Conclusion

In this chapter, the author of the study describes and evaluates the approach used to conduct the study. This section elaborated on the project's structure, population to be studied, methodology of

sampling, and the pilot research. It also included survey operation, collecting information, ethical issues, and data interpretation. The subsequent chapter provides the information's examination and explains the undertaking's scientific results.

CHAPTER 4. DATA ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Introduction.

The objective of this chapter is to outline and examine the research outcomes derived from the surveys performed by the author of the paper. The surveys yielded distinct topics, which are further explained and explored in this section. The responses to the surveys are subsequently contrasted to the material reviewed in Chapter three of this study to determine the degree of correspondence between the published literature and what was discovered in the study. Gathering information included the use of a study survey consisting of structured questions. The survey was divided into three parts, labelled A, B, and C. Each segment had questions mostly derived from the material that was studied.

4.2 Presentation of data.

The author of the study individually organised the data obtained via surveys. The information collected was organised based on the study's topics, which emerged from the study objectives. The identified topics include road freight constraints, the consequences of these obstacles, and the necessary measures to tackle them. The information will be arranged and exhibited based on certain topics, as indicated in the subsections that follow.

4.3 Response Rate

As stated in the previous chapter, information was gathered in two phases. The initial phase included gathering quantitative data via survey forms, followed by conducting informal conversations with interested companies in the subsequent phase. During the first two weeks of the first phase, a total of seven businesses submitted self-administered answers, accounting for 46.66 percent of the sample. The survey forms were acquired using email or WhatsApp message links, which were shared by the study's author to ensure convenience and efficient communication.

4.4 Data Processing

The present research used SPSS 28.0 to enter survey answers and conduct descriptive and inferential statistical analysis. SPSS's ability to examine a wide range of variables and statistical presumptions justified its adoption. Pre-coding was used for most questionnaire questions. The data was imported into Excel and examined using SPSS version 28.0 to extract key points. Inferring from chi-square test findings requires evaluating p-values, according to Harms and Lakens (2018). Conventional findings presentation requires a statement on statistically significant outcomes. A p-value less than 0.05 is noteworthy since it is generated from a test statistic.

4.5 Research Instrument

The study questionnaire had 51 items, which were measured at either a nominal or an ordinal level. This survey was broken down into three parts that assessed different topics, as seen in **Annexure A:**

4.6 Descriptive Statistics

Descriptive statistics represent a crucial component of an empirical investigation since they offer a straightforward and comprehensible measurement (Mishra et al., 2019). Frey (2018) defines descriptive statistics as the process of efficiently arranging and synthesising material. This research project will demonstrate, condense, and debate significant amounts of data using graphs and tables of data.

4.7 Reliability Testing

According to Neuendorf (2019), reliability refers to the frequency with which a tool for measurement produces consistent findings when tested many times. The writer argues that material evaluation is pointless unless dependability is established beforehand. In this experiment, the author used Cronbach's Alpha to assess the questionnaire's consistency. A reliability value of 0.70 or greater is deemed "acceptable" for a recently created construct, according to Frost et al. (2007).

4.8 SECTION A

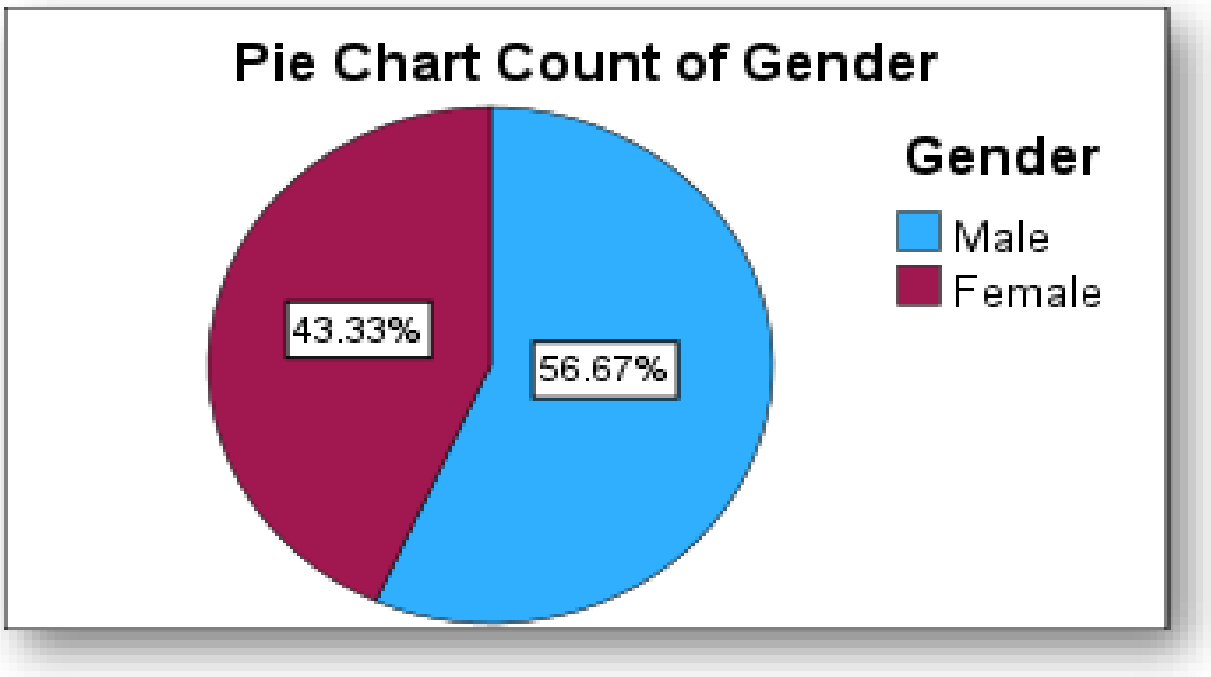
4.8.1 Biographical Data Analysis

This part provides the biographical details of the participants, encompassing an assessment of their gender, company status, duration of experience, how many workers, industry sub-sector, and educational attainment.

4.8.1.1. Gender analysis participants

Figure 4.1. displays the gender distribution of the responses. The overall proportion of male and female respondents representing the small businesses in the road-freight sector and taking part in the survey indicates a relatively unequal distribution of the two genders, with men accounting for 56.67 percent and females accounting for 43.33 percent. There's a relatively balanced distribution of genders among business owners and managers, with both male and female representation. However, there seems to be a slight male dominance, especially among owners in certain sub-sectors (e.g., Road Trucking and Supply Chain Technologies).

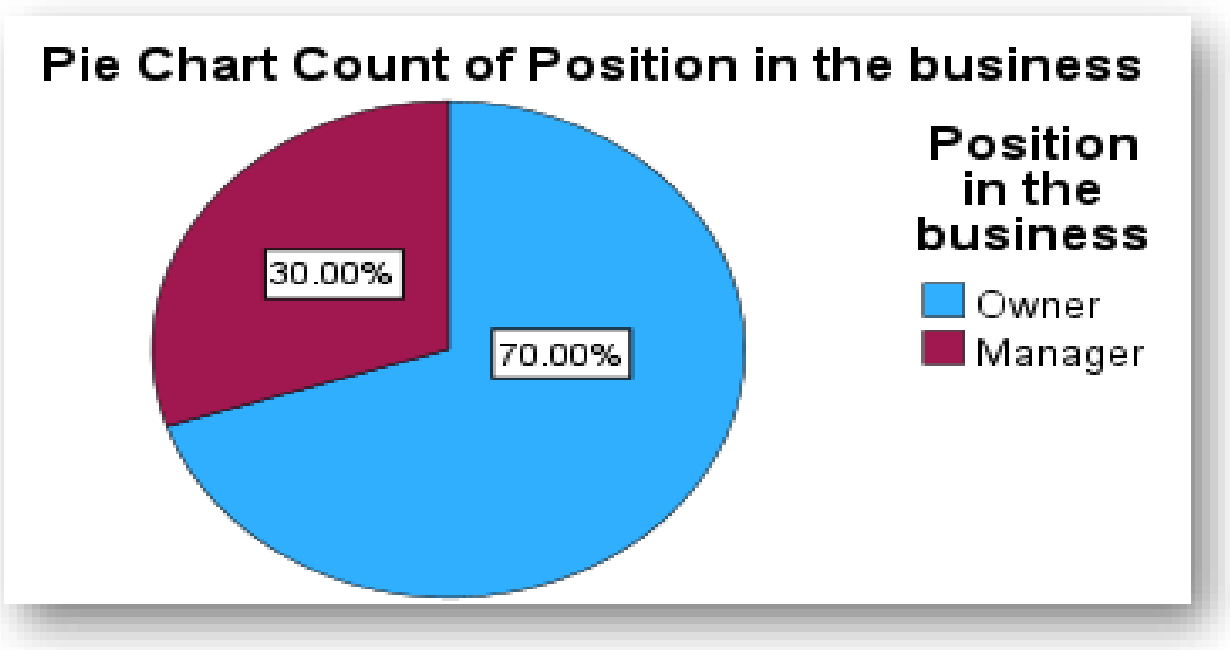
Figure 4. 1: Gender respondents



4.10.1.1. Position in the business

Figure 4.2 of the research depicts the managerial roles of trucking business interviewees sampled in Johannesburg from the 30 total population. The findings suggest that just a minority of persons (30 percent) are manager operated businesses, while the majority (70 percent) are the actual owners of the truck enterprises.

Figure 4. 2: Position in the business

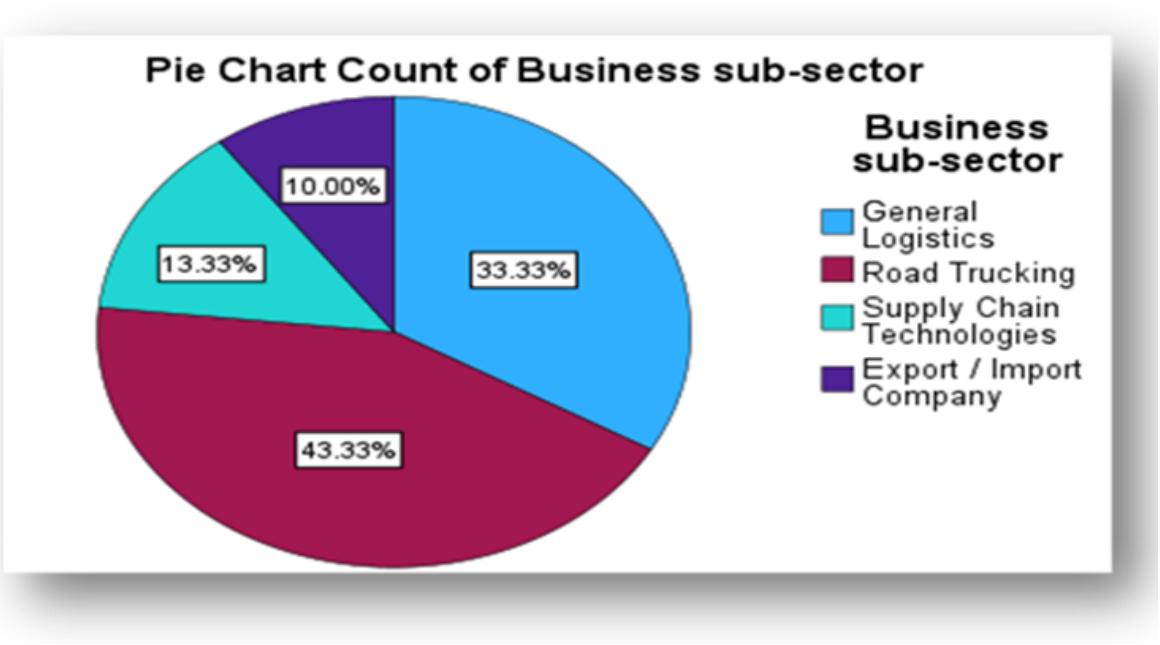


4.10.1.2. Business sub-sectors

The research included a variety of companies that provided various services within road freight for the studied population, as illustrated in Figure 4.3 below. According to this analysis, the largest proportion of the businesses that took part in the study were engaged in road trucks, accounting for 43.33 percent. The second largest proportion is at 33,33 percent, while the third largest is supply chain technologies is 13,33 percent, lastly /Import and export Companies accounting for a mere 10 percent.

- **General Logistics and Road Trucking** are the most common sub-sectors, indicating a possible higher demand or opportunity in these areas within the logistics sector.
- **Supply Chain Technologies and Export/Import Companies** show a trend towards specialisation, with individuals focusing on niche areas within logistics.

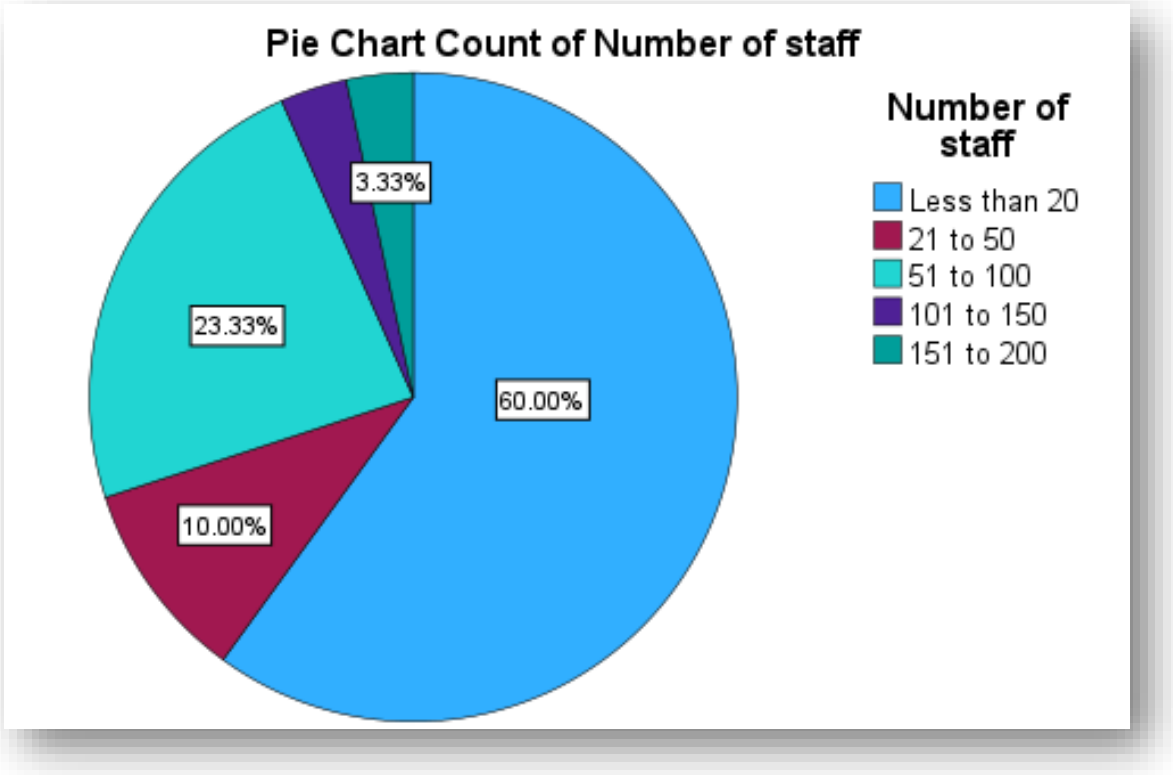
Figure 4. 3: Business sub-sectors



4.10.1.3. Number of staff

This study selected organisations based on their staff numbers. Figure 4.4. below shows the workforce size of several trucking companies; the study explores minor road-freight firm employment trends. 60 percent of road transportation companies employ 20 or fewer people. Only 23.33 percent of these enterprises employ 51 to 100 people, while 10 percent employ 21 to 50. Unfortunately, companies that employ 101 to 150 or 151 to 200 individuals account for 3.33 percent each. The results support Bardarova, Serafimova, and Atanasoski (2019) and Schachtebeck et al. (2019), who likewise believe road-freight small firms may provide sustainable jobs.

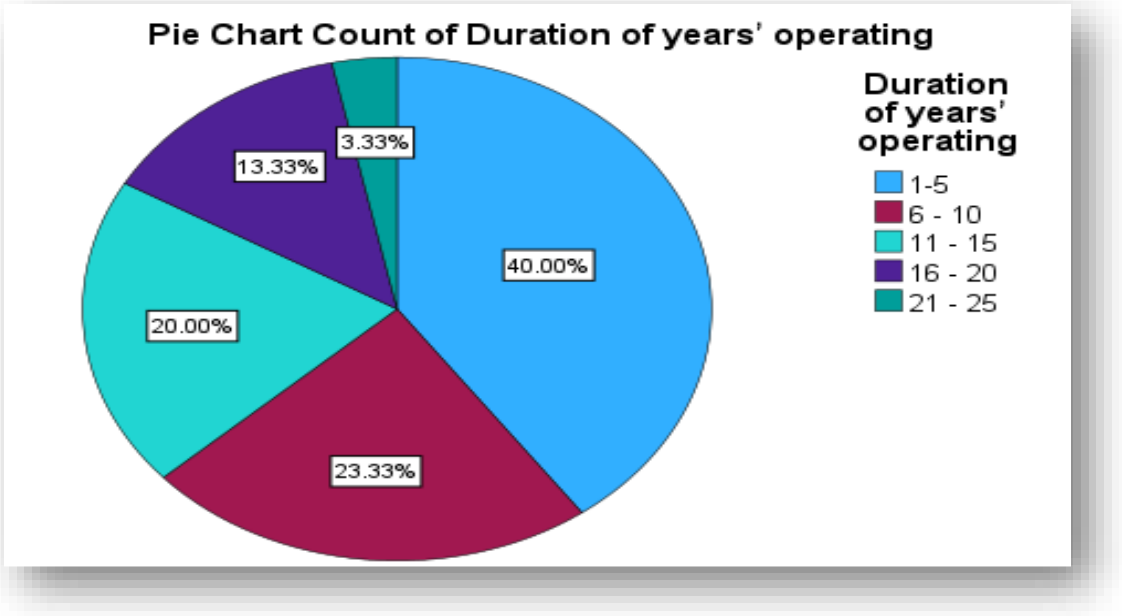
Figure 4. 4: Number of Staff



4.10.1.4. Duration of years' operating

The study focused on enterprises with varied durations within the industry , Figure 4.5 below shows the duration of time the participants remained in control of the firm. The findings indicate that the investigated firms have fairly consistently maintained the functioning of their activities. 40% of companies that have been operational for 1–5 years were surveyed, while the average for businesses with 6–10 and 11–15 accounts for 23, 33, and 20 percent, respectively. Lastly, businesses with a stint of operating experience between 16–20 and 21–25 years account for 13,33 and 3,33 percent, respectively. Notably, businesses with a longer operational history (11 years or more) tend to have owners or managers with higher levels of education, particularly in road trucking.

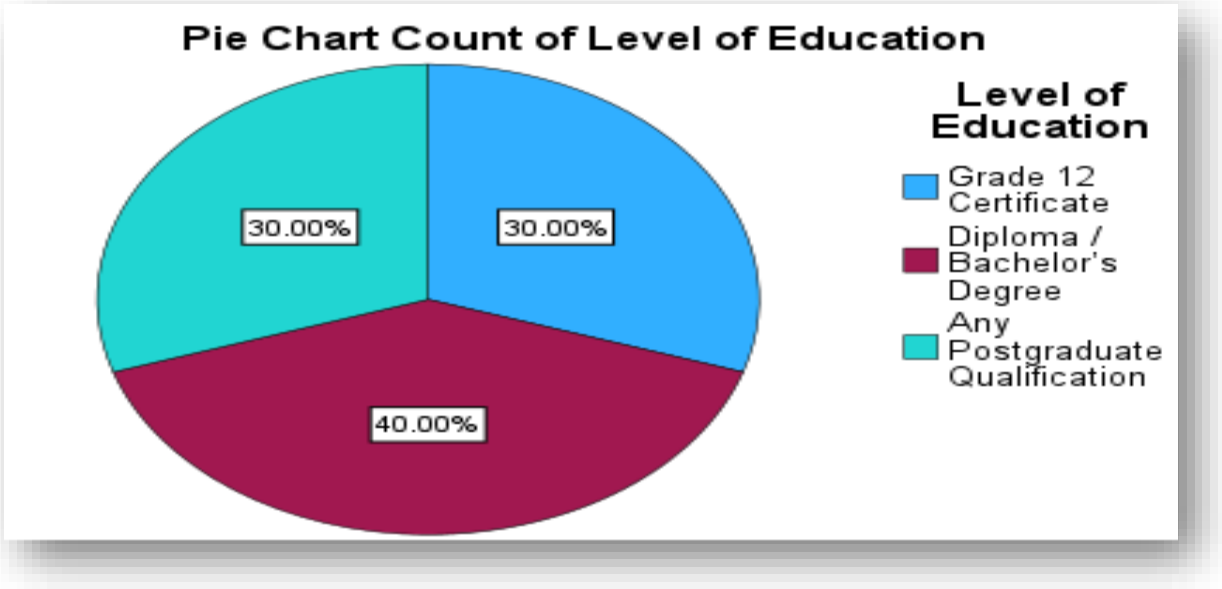
Figure 4. 5: Duration of operating years



4.10.1.5. Level of Education

The research focused on individuals with varying levels of educational attainment. Figure 4.6 shows that approximately 40 percent of the participants possess a matric qualification; 30 percent achieved a bachelor's qualification; and 30 percent attained a postgraduate qualification. The logistics sector is accessible to individuals with a range of educational backgrounds, from high school diplomas to advanced degrees. However, the level of education might influence the type of role or the scope of responsibilities one might undertake. Higher education levels, especially postgraduate qualifications, could be indicative of businesses that are more complex, possibly involving international operations, sophisticated supply chain technologies, or large-scale logistics services.

Figure 4. 6: Level of Education



4.8.2 Insights and Trends

- **Education and Business Size:** There seems to be a correlation between the level of education and the size and maturity of the business, particularly in roles with greater responsibility (owners and managers of larger and/or older businesses).
- **Sector Specialisation and Gender:** While there is broad gender representation, certain sub-sectors (e.g., Road Trucking) show male dominance, especially at the ownership level for larger businesses. Meanwhile, females are making significant inroads as owners and managers across various sub-sectors, including those with higher education levels.
- **Small Business Prevalence:** The logistics sector, at least within this dataset, is characterised by a large number of small businesses, which could indicate a sector with low barriers to entry or the importance of niche services that can be provided by smaller entities.
- **Emerging Trends in Education:** As companies expand and technology advances (noted by Supply Chain Technologies as a sub-sector), higher education may become more vital in logistics.This research shows a dynamic logistics industry with diversified leadership and a tendency towards higher education for company growth and size.

4.9 SECTION B

4.9.1 Factor Analysis for Reliability

Bartholomew, Knotts, and Moustaki (2011) say factor analysis simplifies concealed factors by reducing the number of identifiable and quantifiable variables. In this research, factor analysis was done by connecting variables to demonstrate independence. This was performed by utilising the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's test on 10 variables.

Table 4.1. below shows KMO and Bartlett's test findings. The Kaiser-Meyer-Olkin (KMO) measures sampling adequacy by comparing the total of the squared inter-item correlations to the sum of the squared partial inter-item correlations, totalled across correlations. The correlation matrix is factor analysable when the KMO approaches unity or is greater than.60 (Tabachnick and Fidell, 2007). Kaiser (as described in Field, 2005) also suggests recognising KMO values above.50 as appropriate, medium between.50 and.70, outstanding between.70 and.80, wonderful concerning.80 and.90, and exceptional exceeding.90. This research has a KMO sampling adequacy of 0.665, which is above 0.5 and suitable.

Bartlett's test of Sphericity is a numerical method that assesses if variables are uncorrelated in the identity matrix (Lee and Kang, 2018). A Chi-square test with $p<0.05$ indicates that the factor analysis is convincing, and the information is valuable. Therefore, prerequisites for factor analysis are met in this research. The KMO Measure of Sampling Adequacy score is over 0.50 and the Bartlett's Test of Sphericity significance value is below 0.05.

Table 4. 1: KMO & Bartlett's Summary

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.665
Bartlett's Test of Sphericity	Approx. Chi-Square	88.460
	df	36
	Sig.	<.001

4.9.2 Cronbach's alpha Validity

Cronbach's alpha is used to assess the reliability of the scale. Table 4.2 clearly shows the dependability score of 0.745 for sections B and C of the research. A dependability scores equal to or greater than 0.60 is often considered acceptable and advisable. The total score over 0.745 indicates that the research findings are accurate, consistent, and trustworthy. Furthermore, all sections meet the required Cronbach's alpha value.

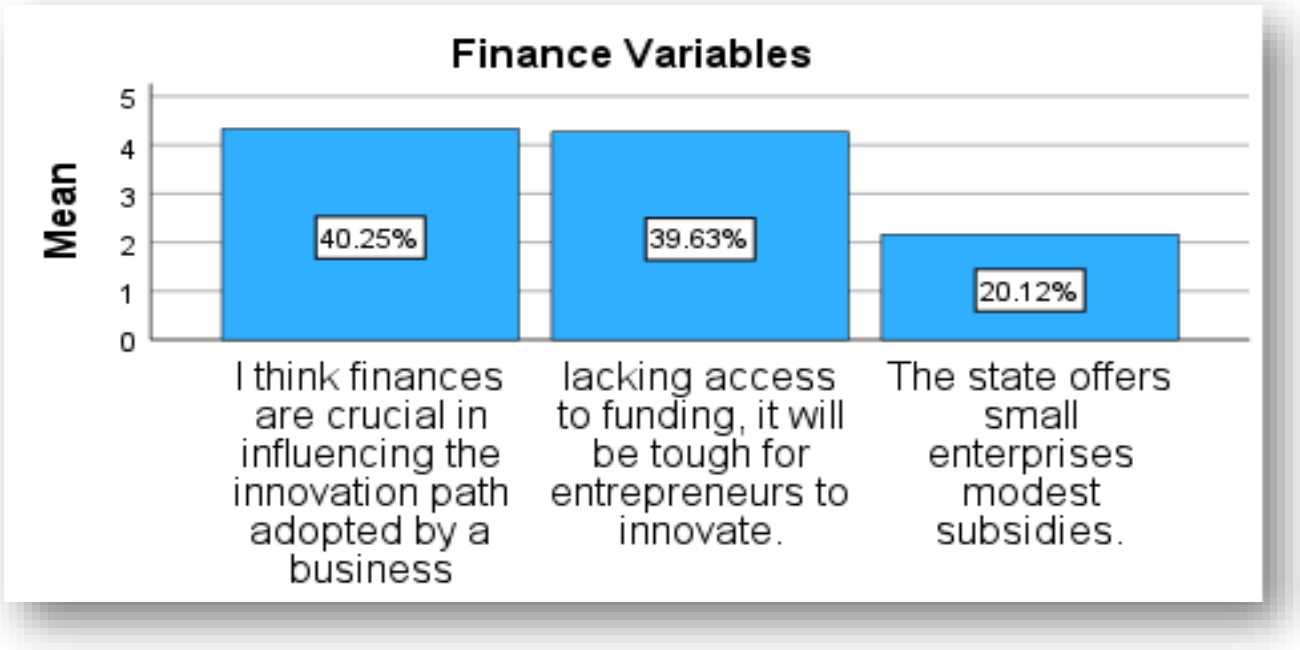
Table 4. 2:Cronbach's Summary for all variables

KMO and Bartlett's Test			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	Bartlett's Test of Sphericity		
	Approx. Chi-Square	df	Sig.
.665	88.460	36	<.001

4.9.3 Respondent Perceptions on Financial Factors

This component of the research wanted to identify respondents' financial views. Figure 4.7. shows the frequency of respondents' financial views. Respondents rated their agreement with the claims on a Likert scale from "Strongly Disagree" to "Strongly Agree". Figure 4.6 shows that many respondents believed funding greatly impacted entrepreneurial creative projects. 40.25 percent agreed, while 35.1% said money is important. A minority (20,12%) disagreed. The respondents agree with the study (Divisekera and Nguyen 2018; Chimucheka 2013) that highlights and confirms the significance of funding in developing entrepreneurs' creativity.

Figure 4. 7: Finance Variables

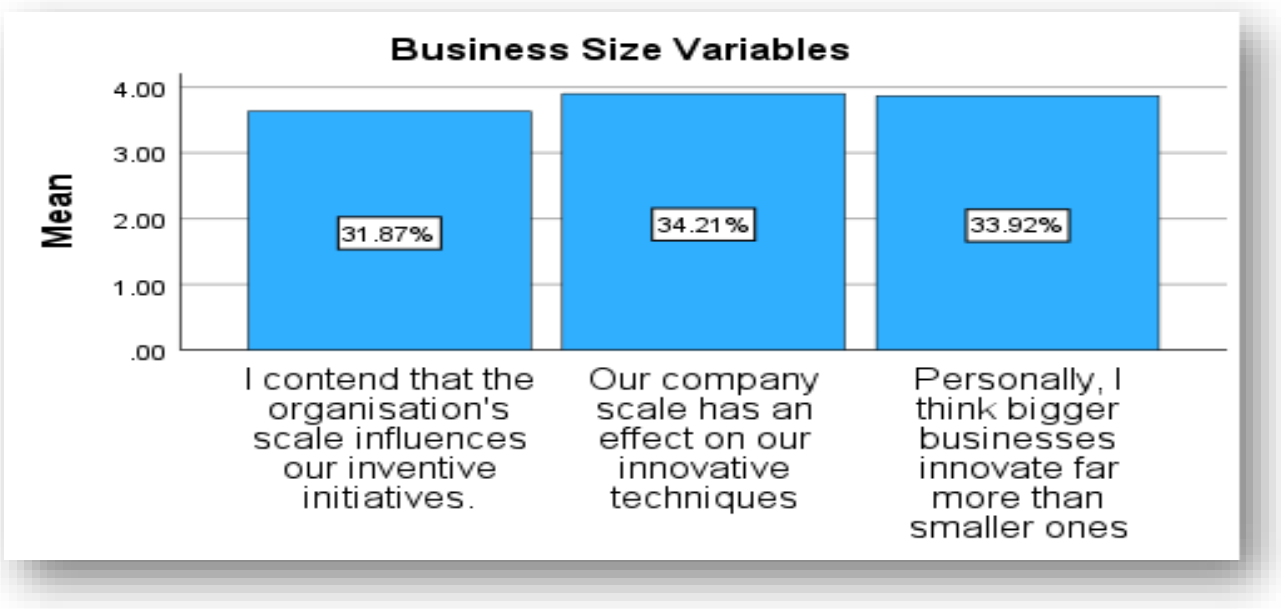


4.9.4 Respondent Perceptions on Business Size

Shown in Figure 4.8 are comments about the perception that big firms are more inventive than smaller enterprises, whether respondents think the size of a company influences its innovation strategy, and how company managers or owners see the impact of business size on innovation initiatives. 34.21 and 33.92 percent of owners and managers, respectively, agreed, while 31.87 percent remained neutral on the business's size and role in defining the innovative initiatives that are

implemented. The consensus indicates that interviewees businesses see the company size as an important element in shaping their innovation strategy. Bayarçelik et al. (2014) contend that large corporations are more inclined to innovate compared to small ones.

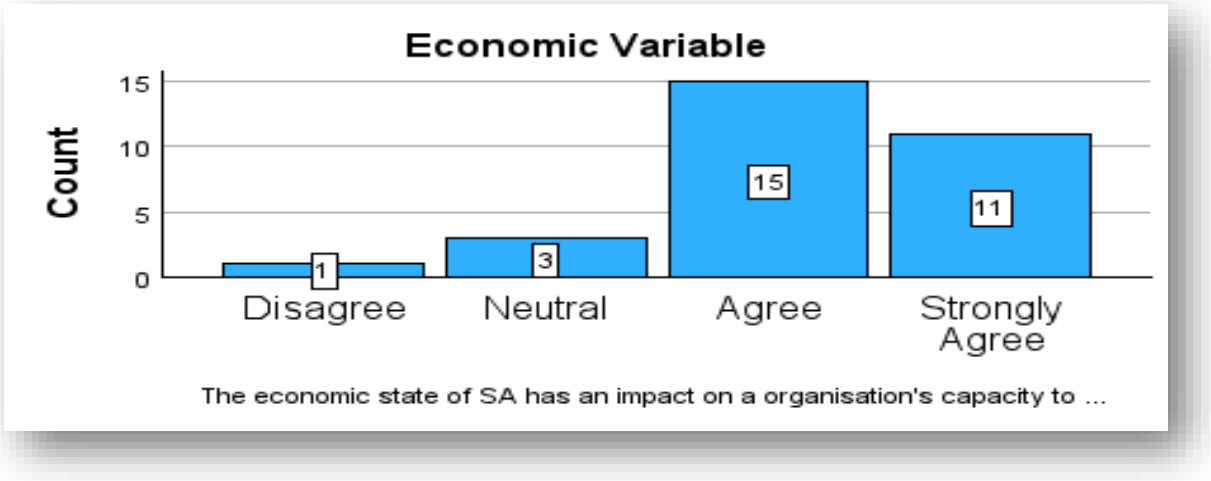
Figure 4. 8:Business Size variables



4.9.5 Respondent perceptions on economic situation

Figures 4.9. provide replies on how the current economic situation affects entrepreneurs' efforts to innovate. 50 percent of businesses agreed, and 36.66 percent strongly agreed that South Africa's economic situation impacts entrepreneurs' innovation initiatives. 10 percent disagreed, and 1 percent remained neutral with the statement. Therefore, the majority of respondents concurred with the notion that the ongoing economic downturn in South Africa hinders digitisation capacity of microenterprises. Van Scheers (2018) confirms that the economic recession poses a danger to the sustainability and productivity of entrepreneurs.

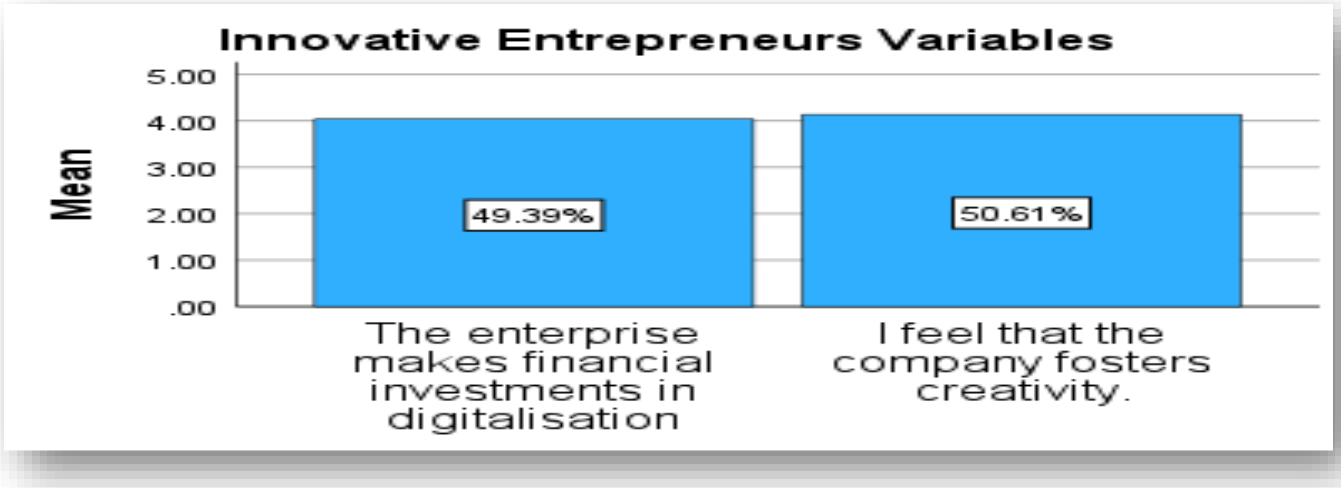
Figure 4. 9: Economic Variables



4.9.6 Respondent Perceptions on Innovative Entrepreneurs

Figures 4.10 Discuss how the environment for innovation impacts innovation techniques. by business owners and managers. The 50,61 % confirmed that their enterprises foster new ideas. 49.39% of company proprietors and managers consider innovation to be ingrained in their corporate culture. The results indicate that small businesses within the road-freight industry have adopted an attitude of innovation. Aksoy (2017) agrees that there is a significant correlation between small and medium-sized company culture and creativity. Furthermore, the writer doubts that businesses can be creative devoid of an environment that encourages collaboration.

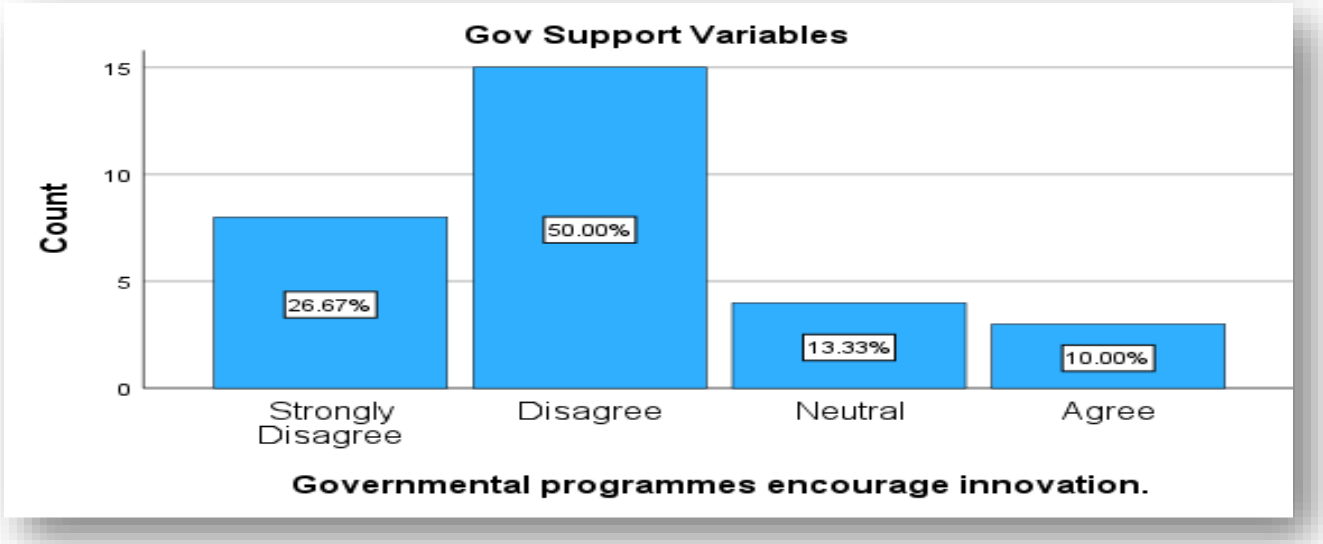
Figure 4. 10: Innovative Entrepreneurs variables



4.9.7 Respondent Perceptions on Gov. Assistance Variables

Approximately 13,33 percent of interviewees chose to stay neutral concerning whether policies implemented by the government support innovation, while 50 percent disagree and 26,67 percent strongly disagree. Only a mere 10 percent agree that government policies implemented by the government support innovation.

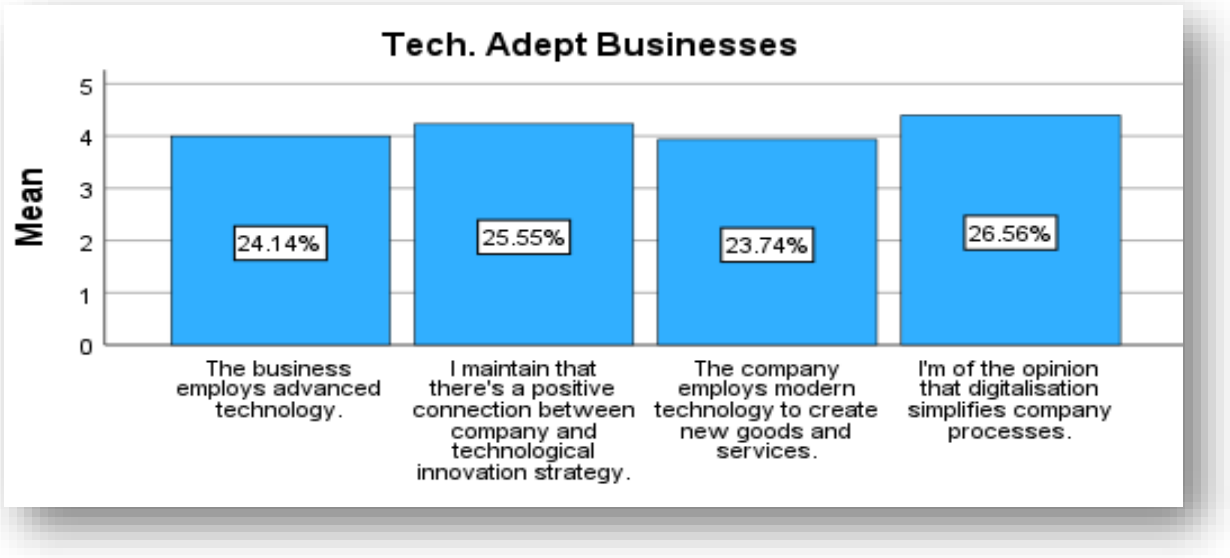
Figure 4. 11: Perceptions on government assistance



4.9.8 Respondent Perceptions on variables about Technology adept businesses

Figures 4.12 show managers and owners' views on how digitisation affects their strategy for innovation. Research shows that advances in technology drives entrepreneurial innovation. Dobni et al. (2015) contend that entrepreneurs arebecoming moreg conscious of their requirements for technologies since it allows them to innovate (Mbali et al. 2019), which informs customers' decisions. Bayarçelik et al. (2014) argue that technology costs prevent certain entrepreneurs from developing new goods and services. 24,14 percent said their organisation employs the newest technology, and 26,56 percent said it makes business simpler and more pleasurable. Additionally, 23.74% ofcompaniesy agreed that technology improves consumer products and services.Therefore, it, seems that most small businesses withinthe roadd freight industry utilise innovation to create new goods and services.

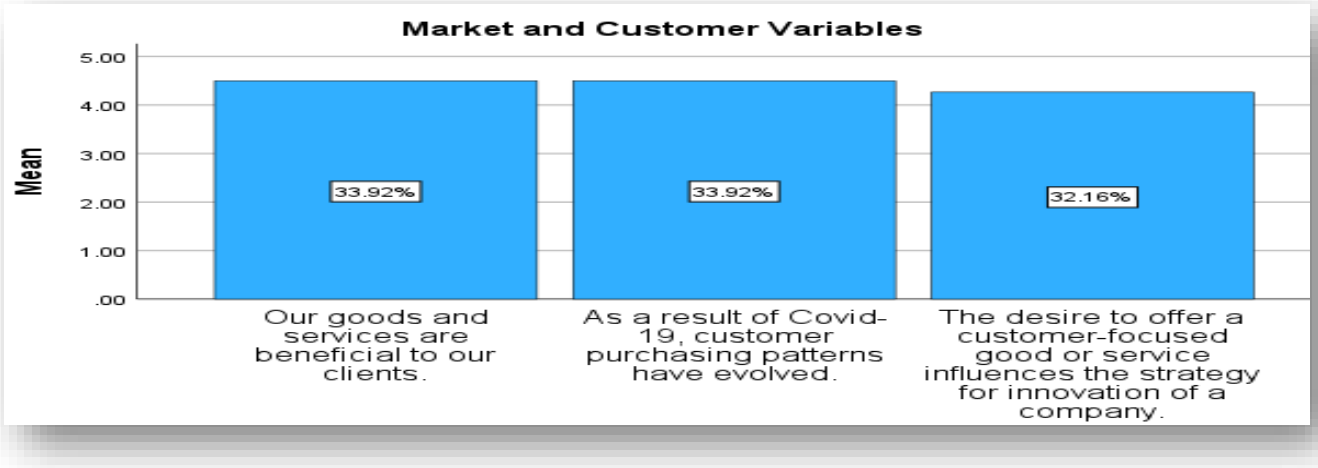
Figure 4. 12: Technology Adeptness of entrepreneurs



4.9.9 Respondent Perceptions on Market and Customer Variables

Additionally, 33,92 percent of interviewees said their goods or services bring benefits to consumers, while 33,92 percent said customer happiness is their top goal. It's noteworthy that 33.92 percent of firms felt that the COVID-19 outbreak had impacted customer purchasing habits. The studies prove COVID-19 hurts road freight entrepreneurs. Syriopoulos 2020; Juergensen et al. 2020; Bruwer, Hattingh, and Perold 2020 agree that COVID-19 has hurt Entrepreneurs worldwide and South Africa in especially.

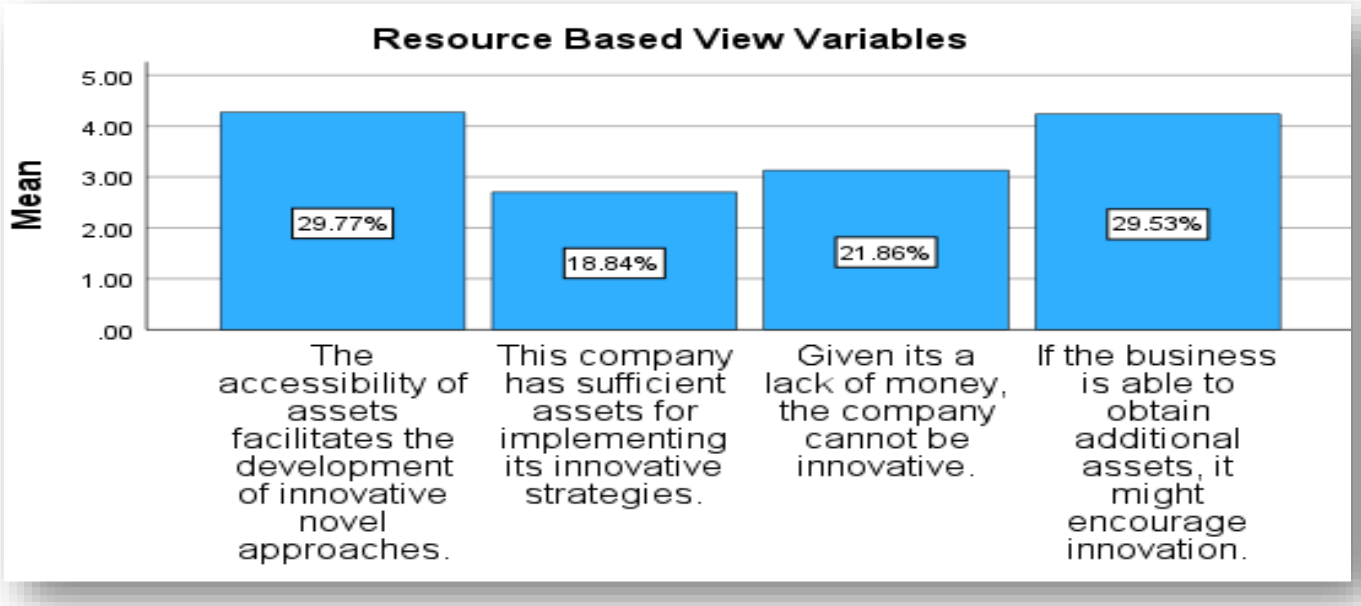
Figure 4. 13: Market and customer variables



4.9.10 Respondent Perceptions on the Resource-Based View

Figure 4.14 summarises company views on how resource availability affects innovation initiatives. Barney's (2001) resource-based theory asserts that assets affect product and service attributes and price. Thus, 29.77% thought that increasing firm resources would boost innovation. A further 29.53 percent said a corporation could innovate with greater resources. About 21.86 percent of firms say resource shortages hinder innovation. Finally, 18.84% of organisations are unsatisfied with their innovation challenges due to resource constraints. Thus, investing more in small enterprises in this market would boost innovation.

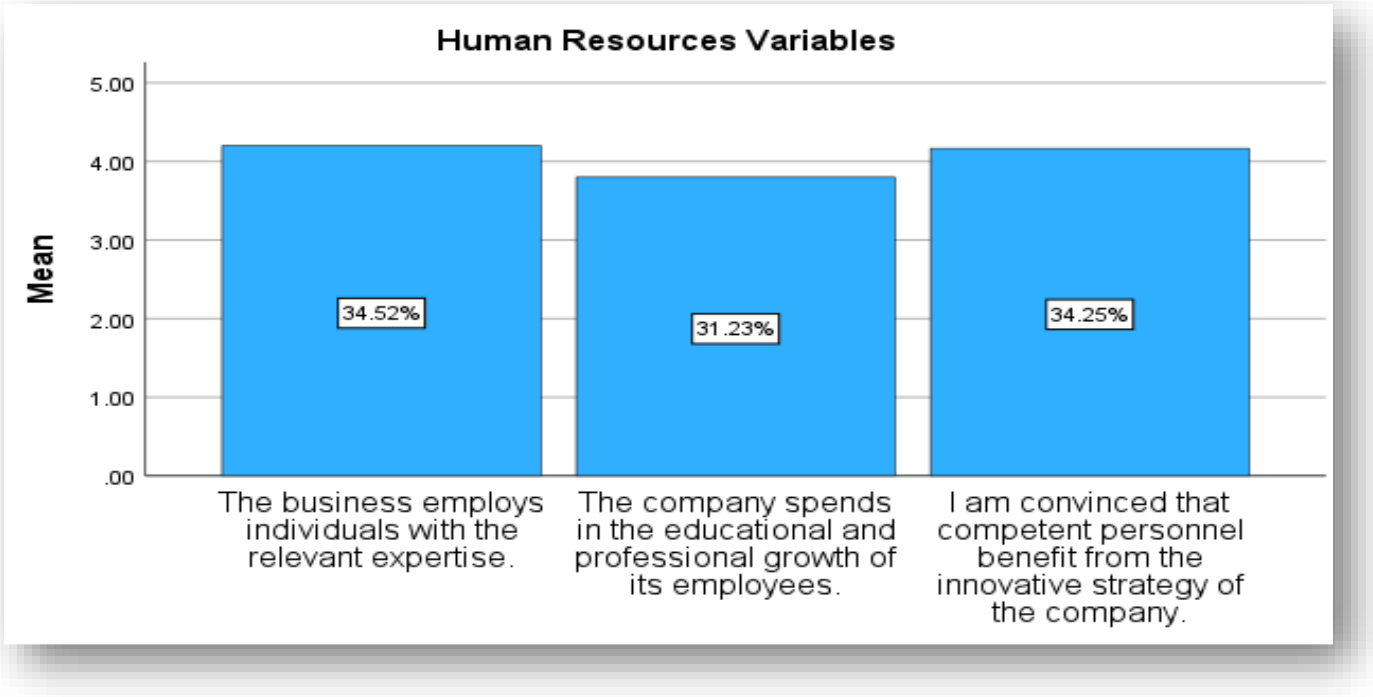
Figure 4. 14: RBV Variables



4.9.11 *Respondent Perceptions on Human Capital*

Figure 4.15 summarises company surveys' human resources views. The study examined how human resources affect innovation tactics. The study shows that 31.23% of businesses spend on staff education and training. Rabie, Cant, and Wiid (2016) emphasise staff training and development to help SMEs succeed in the market, especially as small businesses fail often. Besides agreeing that credentials are a need (34,25 percent), 34,52 percent said their companies hire qualified workers. The results indicate that entrepreneurs within the road freight industry recognise the value of human resources in business innovation. However, companies falter in personnel education and advancement. Kulkarni (2013) succinctly states that training improves worker satisfaction and corporate growth.

Figure 4. 15: Human capital variables

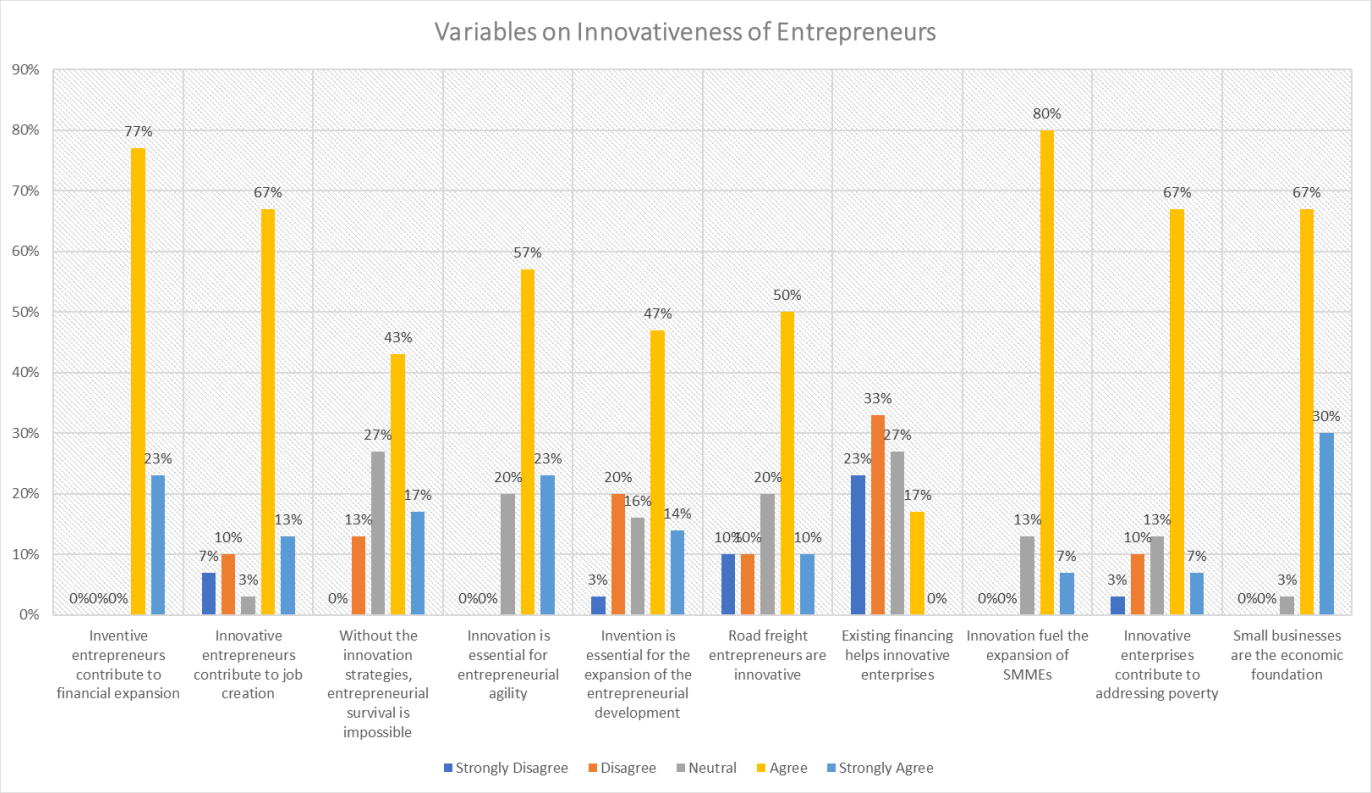


4.10 Section C

4.10.1 Respondent Perceptions on Innovative Entrepreneurs

Figure 4.16 shows respondents' opinions concerning whether microenterprises are innovating. The writer examined the proportion of remarks in five classifications (Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree) for every argument concerning entrepreneurial innovation, its significance, and its influence on economic aspects such as job creation, financial growth, and poverty alleviation to analyse the provided data. The statements address many facets of entrepreneurship, with an emphasis on innovation and its perceived importance.

Figure 4. 16: Summary variables on innovative entrepreneurs



4.10.1.6. Overview of Key Insights

- **Strong Support for Entrepreneurial Contribution to Financial Expansion:** Statement 1 shows overwhelming support (100% Agree and Strongly Agree combined) for the view that inventive entrepreneurs contribute to financial expansion, indicating a strong consensus on the positive economic impact of entrepreneurial innovation.
- **Innovation Linked to Job Creation:** With 80% leaning towards agreement (67% Agree, 13% Strongly Agree) in Statement 2, there's a clear recognition of the role of innovative entrepreneurs in creating jobs, despite some reservations (17% Disagree or Strongly Disagree).
- **Necessity of Innovation for Entrepreneurial Survival:** Statement 3 presents a more divided view, with a significant 27% neutral and 60% agreeing (43% Agree, 17% Strongly Agree) on the indispensability of innovation for entrepreneurial survival, suggesting some uncertainty or varied experiences regarding innovation's role.

- **Innovation as Key to Entrepreneurial Agility:** The responses to Statement 4 (80% Agree or Strongly Agree) emphasise the importance of innovation for entrepreneurial adaptability and responsiveness, with no disagreements, highlighting a consensus on innovation's value in maintaining competitiveness. According to Bouazza (2015) and Chandran et al. (2019), innovation drives development for small businesses.
- **Varied Opinions on Invention for Entrepreneurial Development:** Statement 5 shows more varied opinions, with a significant portion (20% Disagree, 3% Strongly Disagree) expressing skepticism about the essentiality of invention for entrepreneurial development, alongside 61% in agreement.
- **Perceptions of Road Freight Entrepreneurs' Innovativeness**: Statement 6 indicates mixed feelings about the innovativeness of road freight entrepreneurs, with a balanced spread of opinions but a slight majority (60% Agree or Strongly Agree) viewing them as innovative.
- **Scepticism About Financing's Role in Supporting Innovation:** Statement 7 reveals scepticism (56% Disagree or Strongly Disagree) about the effectiveness of existing financing in helping innovative enterprises, coupled with a notable 27% neutral stance, indicating concerns or perceived gaps in financial support for innovation.
- **Strong Belief in Innovation's Role for SMME Expansion:** Statement 8 shows strong belief (87% Agree or Strongly Agree) in the capacity of innovation to fuel the expansion of businesses with minimal neutrality and no disagreement.
- **Innovative businesses and poverty reduction:** With 74% agreeing, Statement 9 suggests a positive view of innovative enterprises' contributions to addressing poverty, though with some skepticism (13% Disagree or Strongly Disagree).
- **Small Businesses as Economic Foundation:** Statement 10 has a strong endorsement (97% Agree or Strongly Agree) of the view that small businesses serve as the economic foundation, underscoring the critical role of small enterprises in economic structures.

4.10.1.7. Summary

The data reveals a strong belief in the importance of innovation and entrepreneurship in driving economic expansion, job creation, and addressing poverty. There is a consensus on the positive impact of inventive entrepreneurs, innovation for entrepreneurial agility, and the expansion of SMMEs. However, there are mixed feelings about the role of invention in entrepreneurial development and the innovativeness of specific sectors, like road freight. There's notable scepticism regarding the adequacy of existing financial support for innovative enterprises. Overall, the responses underscore the value placed on innovation within the entrepreneurial ecosystem while also highlighting areas where perceptions diverge, particularly around financing and sector-specific innovation.

4.11 Study Limitation

There is a scarcity of research on the determinants of small businesses or entrepreneurs within the road freight industry in the country on innovation initiatives. Consequently, the results are limited to the sampled 30 from Gauteng and may not be projected across different regions.

4.12 Summary of the Chapter

The chapter provided a comprehensive examination and discourse on the study results of small businesses or entrepreneurs within the road freight industry. The results were presented via the use of descriptive statistical methods, which included demographic information, characteristics that influence innovation, and creative small businesses or entrepreneurs within the road freight industry. The results were examined using version 28, of the Statistical Package for the Social Sciences (SPSS). The concluding section will provide a conclusive evaluation and suggestions derived from the study results.

CHAPTER 5. : RECOMMENDATIONS AND CONCLUSION

5.1 Introduction

This section builds upon the data analysis and results presented in previous chapters and displays the primary outcomes of this academic research. The findings of the investigation are derived from the research results and address its objectives. The study aimed to assess determinants impacting small firms or entrepreneurs operating in the road freight sector. The chapter will conclude by providing proposals for small enterprises or entrepreneurs in the road freight sector in Gauteng to enhance their innovation strategy.

5.2 Summary of key findings

- The study determined that for most small businesses or entrepreneurs within the road freight industry within Gauteng, the extent of a company impacts its innovation initiatives. The conclusions align with Jin, Navare, and Lynch's (2019) assertion that innovation plays a crucial role in shaping a company's development.
- Furthermore, the study findings reveal that management competencies influence small enterprises or entrepreneurs in the road freight sector in Gauteng innovation. A majority of respondents (34.52 percent) agreed that management skills and knowledge influence the innovation strategy.
- The survey revealed that 24 percent of small enterprises or entrepreneurs operating in the road freight sector in Gauteng allocate funds towards technological investments. The results suggest a favourable impact since technology is known to facilitate inventive activity.
- The survey also discovered that human resources have a crucial impact on creating and impacting innovative behaviours inside companies. The majority of small firms or entrepreneurs in the road freight industry in Gauteng confirmed that they hire individuals with the appropriate skills, experience, and competence.
- Furthermore, the research validates that the accessibility of monetary funds is a determinant that impacts the innovative strategies of small companies or entrepreneurs

in the road freight sector in Gauteng. According to Fombang and Adjasi (2018), innovation operations are costly, particularly for small enterprises. Therefore, having the necessary financial resources is essential to supporting these initiatives.

- The study results indicate that a significant number of small firms or entrepreneurs in the road freight industry in Gauteng strongly support the idea that creative entrepreneurs contribute to job creation. The results align with existing evidence that also validates the importance of small and medium-sized businesses (also known as SMEs) in generating employment opportunities and reducing poverty.

5.3 Literature Review Comparative Findings

The conclusions found that various factors influence Gauteng road freight businesses to innovate. Most owners/managers complain that government support on their innovation strategies is not sufficient. The survey also found that many Gauteng road freight small businesses and entrepreneurs agreed that financial resources greatly impacted their capacity to innovate. Most firms said funding shortages hinder innovation. The study suggests that financial availability drives company innovation (Hoogendoorn et al., 2017).

Additionally, the research also determines that most small enterprises or entrepreneurs in the road freight sector in Gauteng hold the belief that the educational background of the owner/manager has an impact on the attitude of innovation inside the organisation. The majority of owners/managers were generally in agreement that organisations led by managers that hold some kind of qualification seem to be more inventive. Moreover, these managers contribute to the establishment of a forward-thinking organisational climate by facilitating the exchange of concepts and incentivising innovative ideas. The report also suggests that enterprises are contributing to economic growth via their ability to innovate. The results align with the consensus in studies micro entrepreneurs are vital to the economic growth of the nation (Machaka 2018).

The research additionally concludes that only a minority of small businesses in this industry

invest in digitisation initiatives to enhance innovativeness. However, a majority of businesses strongly agree that technological advances are crucial for sustainability and competitiveness. This can be attributed to the availability of funds for innovation. According to several studies, like the one conducted by Talukder et al. (2020), there is a consensus that digitisation greatly facilitates innovation for entrepreneurial development.

5.4 Conclusions

The survey also found that most small company enterprises in the study region believed that weak economic growth had a detrimental impact on creativity and innovation. The firms have indicated that the present economic slowdown is impeding their capacity to develop new goods or provide new services. The majority of small enterprises in this sector lacked sufficient resources to support innovation efforts. The majority emphasised their insufficient resources for creating innovative goods.

5.5 Study Recommendations

The government needs to promote strategies that provide a favourable setting for efficient digital commerce and digital payment systems in order to enhance prospects for digital employment, ensure fair competition for digital enterprises, and bolster South Africa's beneficial position on the continent for the global digital economy. As small businesses continue to have difficulties obtaining and accessing financial resources, they should look at financing alternatives to guarantee their long-term expansion.

5.6 Study Implications

The investigation has determined that the adoption of technology is now in its nascent phase. Entrepreneurs are advised to actively engage with governments and private sector programmes for technological innovation and transform the way they operate accordingly. The government also needs to prioritise development programmes for entrepreneurial innovation and digitise their businesses.

5.7 Further Study Recommendations

The research was restricted to small firms within the road freight sector, specifically focusing on a tiny population in the Gauteng region. Subsequent researchers have the potential to broaden the scope of the study to include all provinces within South Africa. The research recommends that further investigations ought to explore the root reasons for the delayed adoption of technology among small business owners. Future research should use several methodologies to investigate the same problem. Conducting interviews and administering surveys might provide a deeper understanding of how technological advancements are being spread in this country. Moreover, doing industry-specific research is crucial to fully understanding the broader determinants that impact the spread of innovation across different sectors of the economy as a whole. The present study used a mixed research technique. Additional investigation might be carried out via either qualitative or quantitative research methodologies.

CHAPTER 6. SUMMARY OF THE RESEARCH CHAPTERS

6.1 Chapter 1

The introductory chapter explained the study's context, geographic setting, and research problem. The author of the paper noted that the challenge of the research revolves around a gap in the literature. Topics and aims were also offered to explain the study. The study's importance was underlined, emphasising that Gauteng's small road freight enterprises and entrepreneurs could gain most. It examines aspects affecting entrepreneurial innovation techniques in this area. The chapter concludes with the research study's framework.

6.2 Chapter 2

The objective of this chapter was to examine literature that is pertinent to the research's topic, with a specific emphasis on research undertaken on the determinants that impact innovation inside small businesses within the road freight sector within the studied population. The section delved more into published research about the present condition of innovations. It examines the traits of innovative firms and the obstacles that hinder innovation. The evaluation of the literature proved closely connected to the study's research question and aims.

6.3 Chapter 3

This chapter describes the research approach. It describes the target population, data collection, sample methods, exploratory study design, and ethics. After evaluating the literature, Sekaran and Bougie (2016) recommend constructing the study's technique to answer the questions. Answers to a standardised questionnaire with closed-ended questions will be gathered to understand how South African road freight companies implement innovation. SPSS 28.0 for Windows will examine the data.

6.4 Chapter 4

The objective of this section was to outline and examine the study outcomes derived from the surveys performed by the author of the paper. The surveys yielded distinct topics, which are further explained and explored in this section. The responses to the surveys are subsequently contrasted to the material reviewed in Chapter three of this study to determine the degree of correspondence between

the published literature and what was discovered in the study.

6.5 Chapter 5

This chapter serves as the concluding section of the investigation, providing a comprehensive presentation of the findings and suggestions. This part provides a comprehensive review of the study and draws recommendations according to the research goals. Suggestions are provided on the most effective methods that small enterprises in the road freight industry may use to enhance their innovation initiatives. The chapter finishes by presenting potential avenues for further investigation.

6.6 Concluding Remarks

The objective of the research was to evaluate the determinants that impact the innovation strategies of small enterprises operating in the road freight sector in Gauteng. A grand total of 51 closed-ended surveys have been distributed to holders and supervisors of small enterprises operating in the road freight sector in Gauteng. Chapter two conducted a comprehensive evaluation of the latest research on small firms and innovation. The data obtained from the participants was evaluated using the most up-to-date statistical software. The results indicate that company innovation methods are influenced by characteristics such as the size of the organisation, availability of money, management skills, and government backing. Ultimately, the study ended by proposing specific measures that small enterprises operating in the road freight sector in Gauteng might undertake to enhance their capacity for innovation and gain an edge over rivals. Additionally, the analysis identified potential topics for future academics to explore in order to further develop the field.

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APPENDIX A

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

University of the Witwatersrand,

St Davids Pl &, St Andrew Rd,

Parktown,

Johannesburg,

2193

Truckers Association of South Africa

108 Elizabeth Ave,

Parkmore,

2196

28 May 2023

Dear Sir/Madam,

Re: Permission to conduct research at Truckers Association of South Africa

My name is Nokubonga Portia Dibela.I am studying for a Master of Business Administration in the Wits Business School at the University of the Witwatersrand. To enable me to complete my studies, I invite you please to help in the research through answering the enclosed survey forms.

It will take roughly fifteen minutes to answer the survey. Please kindly note that this doesn't involve is any reimbursement or anticipated risk associated with participating. Kindly refrain from mentioning your personal details in order to guarantee that every detail is kept discreet. Wits Business School and my supervisor will receive duplicates of the work being performed. Should you opt for to get involved in the aforementioned research, please respond as truthfully as you can to all inquiries. Being involved is completely freely done, meaning that you may decline at any moment.

I will appreciate your help assisting me with completing this questionnaire. South Africa's Road freight sector can use innovative methods towards entrepreneurial development and agility, and the accumulated information will offer valuable insight into how this can be accomplished. The desire to

take part in this research project will be indicated by completing and subsequent submission of the forms. If you need more knowledge or have any queries, don't hesitate to reach me using the details that are provided underneath.

Nokubonga Portia Dibela (Mrs)

2126453@students.wits.ac.za

0780973972 Researcher

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Supervisor

APPENDIX B: QUESTIONNAIRES

SECTION A: GENERIC BUSINESS DATA

DETAILS TO PARTICIPANTS:

1.Please choose a single answer using a checkmark for every question.

2.Respond to EVERY pre-coded question in the following section.

3.Please DO NOT leave any question empty.

1. Kindly specify assuming that you are the trucking business owner or manager.

1.1	Trucking business owner	1
1.2	Manager	2

2. Kindly specify which of the aforementioned INDUSTRIES applies to your organisation:

2.1	General Logistics	1
2.2	Road Trucking	2
2.3	Supply Chain Technologies	3
2.4	Export/Import Company	4

3. Kindly specify details a person's gender:

3.1	Male	1
3.2	Female	2

4. Please specify actual of workforce

4.1	Less than 20 employees	1
4.2	21 to 50 employees	2
4.3	51 to 100 employees	3
4.4	101 to 150 employees	4
4.5	151 to 200 employees	5

5 . How many years are you been running or owning the company for?

5.1	1-5 years	1
5.2	6-10 years	2
5.3	11-15 years	3
5.4	16-20 years	4
5.5	21-25 years	5

6.What is your highest level of qualification:

6.1	Matric/ Certificate	1
6.2	Diploma / Bachelor’s degree	2
6.3	Honours degree / B.Tech/Any Post Graduate Qualification	3

SECTION B:Variable 1 Factors Influencing Entrepreneurs to Adopt Innovation Strategies

A strategy for increasing business growth, agility and efficiency through goods or services invention is an innovation strategy..

DETAILS FOR PARTICIPANTS:

1. Kindly mark just ONE answer for every Likert Scale comment listed below.
2. Respond to EVERY single pre-coded statement in this section.
3. Kindly fill all questions.
4. **KEY**:SD = Strongly Disagree; D = Disagree; N = Neutral; A = Agree; SA = Strongly Agree

VARIABLES		**SD**	**D**	**N**	**A**	**SA**
7	**Finance Variables**					
7.1	I think finances are crucial in influencing the innovation path adopted by a business	1	2	3	4	5
7.2	lacking access to funding, it will be tough for entrepreneurs to innovate.	1	2	3	4	5
7.3	The state offers small enterprises modest subsidies.	1	2	3	4	5
8	**Business size**					
8.1	I contend that the organisation's scale influences our inventive initiatives.	1	2	3	4	5
8.2	Our company scale has an effect on our innovative techniques	1	2	3	4	5

8.3	Personally, I think bigger businesses innovate far more than smaller ones	1	2	3	4	5
9	**Economical condition of the country**					
9.1	The economic state of SA has an impact on a organisation's capacity to create inventive novel goods or services	1	2	3	4	5
11	**Innovative ethos in entrepreneurship**					
11.1	The enterprise makes financial investments in digitalisation	1	2	3	4	5
11.2	I feel that the company fosters creativity.	1	2	3	4	5
12	**Assistance from the government and innovation strategies**					
12.2	Governmental programmes encourage innovation.	1	2	3	4	5
13	**Startups are technologically adept**					
13.1	The business employs advanced technology.	1	2	3	4	5
13.2	I maintain that there's a positive connection between company and technological innovation strategy.	1	2	3	4	5
13.3	The company employs modern technology to create new goods and services.	1	2	3	4	5
13.4	I'm of the opinion that digitalisation simplifies company processes.	1	2	3	4	5
14	**Market focus and consumer conduct**					
14.1	Our goods and services are beneficial to our clients.	1	2	3	4	5

14.2	As a result of Covid-19, customer purchasing patterns have evolved.	1	2	3	4	5
14.3	The desire to offer a customer-focused good or service influences the strategy for innovation of a company.	1	2	3	4	5
15	**The resource-based view**					
15.1	The accessibility of assets facilitates the development of innovative novel approaches.	1	2	3	4	5
15.2	This company has sufficient assets for implementing its innovative strategies.	1	2	3	4	5
15.3	Given its a lack of money, the company cannot be innovative.	1	2	3	4	5
15.4	If the business is able to obtain additional assets, it might encourage innovation.	1	2	3	4	5
16	**Human resources**					
16.3	The business employs individuals with the relevant expertise.	1	2	3	4	5
16.4	The company spends in the educational and professional growth of its employees.	1	2	3	4	5
16.5	I am convinced that competent personnel benefit from the innovative strategy of the company.	1	2	3	4	5

SECTION C: Variable 2 Innovative Entrepreneurs

SMMEs, as defined by the Small Business Act No. 102 of 1996, have been companies with over 20 but fewer than 200 employees or with a yearly turnover of under R100 million.

		SD	D	N	A	SA
18.1	I contend that inventive entrepreneurs contribute to financial expansion.	1	2	3	4	5
18.2	I contend that innovative entrepreneurs contribute to job creation.	1	2	3	4	5
18.3	Without the innovation strategies, entrepreneurs and entrepreneurial survival is impossible.	1	2	3	4	5
18.4	Innovation is essential to business success, longevity and entrepreneurial agility.	1	2	3	4	5
18.5	Invention is essential for the expansion of entrepreneurial sector and development.	1	2	3	4	5
18.6	Road freight entrepreneurs are primarily innovative.	1	2	3	4	5
18.7	Existing financing helps innovative enterprises.	1	2	3	4	5
18.8	Innovation fuel the expansion of entrepreneurs.	1	2	3	4	5
18.9	I am convinced that innovative enterprises contribute to addressing poverty.	1	2	3	4	5
18.10	Small businesses are the economic foundation.	1	2	3	4	5