

**An Exploratory Study Into the Productivity Challenges
Experienced by Manufacturing SMMEs During Lockdown
in South Africa's Gauteng Province – Ekurhuleni
Municipality**

By

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DECLARATION

I, **Murembiwa Justice Mashau**, student number **38684519**, declare that this thesis, entitled: “**An Exploratory Study Into the Productivity Challenges Experienced by Manufacturing SMMEs During Lockdown in South Africa’s Gauteng Province – Ekurhuleni Municipality**”, which I hereby submit for the degree of Master of Commerce in Business Management, is my own work and has not previously been submitted by me for a degree at this or any other institution.

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I further declare that the content of my thesis has been submitted to an electronic plagiarism detection software and that it falls within the accepted requirements for originality.



Murembiwa Justice Mashau

Signature

05 October 2023

Date

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I have endured many periods of sacrifice and perseverance, but I have now reached this point of relief. I want to start by giving God the glory for ultimately providing the stamina to finish this project. I had many help from a few individuals, whose assistance I want to properly thank for during my research project: my sincere thanks go out to my supervisors, Dr S. Mpanza and Mr B.D. Tshabalala, for their unwavering support, encouragement and aid in making this research possible.

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ABSTRACT

The focus of this study was to examine productivity issues experienced by small, medium and micro enterprises (SMMEs) in the manufacturing sector in Ekurhuleni Municipality during COVID-19 lockdown restrictions, in order to provide a framework to guide SMMEs, should similar disruptions arise in future. The research also sought to identify and investigate internal and external environmental variables that affected the productivity and sustainability of manufacturing SMMEs in Ekurhuleni Municipality. Based on a positivist research ethic, an exploratory investigation was conducted. A simple random sampling method was used to select the respondents. For a population with more than 4 000 manufacturing SMMEs registered in Ekurhuleni Municipality, a sample of 300 participants was deemed suitable. This quantitative study was conducted using a Google Forms-created online questionnaire. The questionnaire was used to determine manufacturing SMMEs' perceptions of their companies' access to technological production management equipment and their knowledge of the company's internal and external elements. SPSS version 28.0 was used to analyse the responses to determine whether there was a gap between the level of importance assigned to the access to technological production management tools of the business, and to their knowledge of internal and external factors affecting productivity. This research determined the productivity challenges experienced by manufacturing SMMEs in Ekurhuleni Municipality during COVID-19 lockdown restrictions. The study found that the respondents were inconsistent in performing specialized tasks. The study showed a clear distinction between the importance that was placed on having access to technological production management tools, and knowledge of internal and external factors affecting productivity. In addition, this study confirmed that South African SMMEs confront significant difficulties in the context of small businesses. This research study could aid business managers and owners and even researchers to gain ideas which may be helpful in making decisions when confronted with challenges such as lockdown restrictions due to a global pandemic. It is recommended that a study be conducted to investigate the impact of manufacturing SMMEs' productivity on their business performance, growth and sustainability.

Keywords: *small, medium and micro enterprises (SMMEs); productivity; production management; competitiveness; manufacturing*

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LIST OF ABBREVIATIONS

B2B	business to business
CI	competitive intelligence
CRM	customer relationship management
GDP	gross domestic product
GEMs	Global Environmental Monitoring System
IM	innovation management
MW	megawatts
MIS	management implementation structure
R&D	research and development
RVB	resource-based view
SEDA	Small Enterprise Development Agency
SEFA	Small Enterprise Finance Agency
SMMEs	small, medium and micro enterprise
SPSS	Statistical Package for Social Sciences
UNISA	University of South Africa
VAT	value-added tax

CHAPTER 1: INTRODUCTION

1.1 Introduction

This section provides an overview of SMMEs in South Africa and, more specifically, in Ekurhuleni Municipality, which formed the study area. It also explores productivity and production management in manufacturing SMMEs.

The first section of the study includes a background of the study, problems statement, research aims and objectives, research aims, research questions, significance of the study, preliminary literature review and methodology. Secondly this study will present the literature which is Chapter 2 followed by the theoretical framework including productivity challenges impacting on the inefficient functioning of the SMMEs in Chapter 3, research methodology in Chapter 5. Finally this study will present the analysis of the results in Chapter 6 and ends with the summary, conclusion and recommendations. The next section is a background of the productivity challenges faced by SMMEs in South Africa.

1.2 Background

All economies, particularly those of developing countries such as South Africa, rely on the productivity of its workforce to grow. However, because of the global COVID-19 pandemic, the majority of these economies were left vulnerable and struggling to survive (Aftab et al. 2021). In order to create a robust economy, a nation must generate enough products and services to fulfil demand and supply (Guiso et al. 2017).

Small, medium, and micro enterprises (SMMEs) make up 39% of South Africa's GDP and are crucial to the country's ability to maintain a sustainable economy (Maduku and Kaseeram, 2021). Prior to the COVID-19 lockdown restrictions in South Africa, SMMEs constituted approximately 98% of the businesses contributing significantly to the country's economic activity. These enterprises represented between 50 and 60% of South Africa's overall economic output across all regions (Nelson Mandela University 2021; Small Enterprise Finance Agency, 2022).

The lockdown restrictions were perceived by some as a significant risk, especially considering that South African SMMEs contribute up to 39% of the country's GDP, in

contrast to the 57% in the European Union (Donga et al. 2022). The financial repercussions of the lockdown measures would likely exacerbate these vulnerabilities, which have already been strained by a sluggish economy and multiple consecutive years of negative evaluations (Tairas, 2020).

Due to COVID-19 lockdown measures, many SMMEs' incomes abruptly decreased, as they were obliged to cut expenses in order to continue functioning (Shafi et al. 2020). Lowered productivity during this time also had a detrimental impact on SMMEs' profit margins and caused some of them to close their doors. By exploring the productivity challenges faced by SMMEs in Ekurhuleni Municipality during the COVID-19 lockdown, this study aims to develop a response framework that will allow SMMEs to be better prepared for future natural catastrophes, economic disruptions and environmental changes.

According to Bhorat et al. (2018), SMMEs are essential components of an economy that contribute to economic growth in both developed and developing nations. According to Lose and Kapondoro (2020), SMMEs are acknowledged as a driving force behind the goals for economic growth in both developed and developing nations. However, the majority of South African SMMEs still lack administrative and information technology skills, presenting a significant challenge. The failure of independent enterprises can be attributed, in part, to this deficiency in administrative knowledge and expertise (Yao et al. 2020).

Past research has shown that the educational background and expertise of a company's owner play a crucial role in the company's success (Rasheed et al. 2017). Thus, enhancing the skill levels of SMME owners and administrators could bolster their capacity to create jobs, potentially reducing unemployment and fostering private company growth. SMMEs must provide enough goods and services to support the expansion of the national economy because they are a key contributor to GDP – in the case of South Africa, 39% of the GDP (Guiso et al. 2017; Kritikos, 2014).

In addition, Guiso et al. (2017) note that the absence of assets reduces the net income of SMMEs and results in the closure of some of the sector's businesses. To keep their financial development manageable, emerging nations must focus on the SMME sector and support programmes to increase job creation (Bagodi et al. 2020). Due to financial

limitations, Urban and Ratsimanetrimanana (2019) concur that SMMEs still struggle to access crucial advice on market penetration.

According to Netshakhuma (2019), because of a lack of financial support, many SMMEs have been obliged to lease technological equipment or to share it among themselves in order to reduce costs and avoid investing on technology that is not essential for their company needs. According to Maduku and Kaseeram (2021), both internal and external firm conditions have an impact on an organisation's ability to succeed.

Internal factors are elements that are frequently controllable within the organisation, and can include a lack of senior personnel expertise, a lack of valuable skills (such as organising, sorting out, driving and controlling), a lack of employee training and development, and negative attitudes toward customers (Maduku and Kaseeram, 2021). Some examples of external environmental factors that are generally uncontrollable within the business include: the distribution of commodities and services at exorbitant prices, competition, increased operational capital, budgeting restrictions and augmented errors (Maduku and Kaseeram, 2021).

Leboea (2017) suggests that the majority of SMMEs in South Africa lack the necessary skills to adapt to the changes brought about by the unique conditions under which they operate. This deficiency is seen as one of the fundamental barriers preventing small businesses from achieving consistent growth and reaching their full potential.

Productivity is a crucial component of financial development and fosters its endurance and advancement (Alaghbari et al 2019). As a result, increasing the productivity of labour and goods is crucial for a country's GDP. According to Guiso et al. (2017), productivity is the estimation of the yield of labour and products per unit of work. Guiso et al. (2017) further state that information technology also has a definite impact on an organisation's overall performance throughout the production cycle as a whole.

Information technology also provides various incentives, including lower labour costs, longer supplier delivery times and improved network management between businesses. With information technology, staff and business partners may

communicate with customers more effectively and quickly. In addition, information technology has opened up more substantial commercial opportunities and access to knowledge and market data, and functions as a tool for inspiring managers and owners to adopt various functional approaches (Kolbe et al. 2021).

1.3 Problem statement

A lack of resources has an adverse effect on most SMMEs (Aftab et al. 2021). This was also experienced by many SMMEs during the COVID-19 lockdown restrictions, which provoked frustration among some and led to the termination of many SMMEs globally (Haider et al. 2020). Another challenge faced by SMMEs is possibly linked to the educational background and the mindset of their owners (Bhorat et al. 2018). The personal attributes and knowledge of these owners play a significant role in determining the company's direction, including whether a culture of continuous learning is fostered within the organization. Some have also contended that the adoption of new technologies by SMMEs in the manufacturing sector in developing countries has faced numerous mishaps, likely because these new technologies require difficult and intricate conditions in order to implement (Mabulele, 2020). These technologies include; Enterprise Resource Planning (ERP), Augmented Virtual Reality, intelligent robotics and Internet of Thing (IoT).

In addition, SMMEs' difficulties in adopting new technologies has not been studied often (Mabulele, 2020; Bhorat et al., 2018; Masocha, 2019). The number of previous studies that focus on the productivity challenges experienced by manufacturing SMMEs is insufficient and without a solid scientific foundation (Mabulele, 2020; Bhorat et al., 2018; Masocha, 2019). Consequently, the core problem explored in this study relates to how the productivity challenges experienced by manufacturing SMMEs during lockdown in Ekurhuleni Municipality can best be addressed, should any similar disruptions to the manufacturing sector arise in future (Fubah and Moos, 2022).

This study seeks to explore the productivity challenges experienced by manufacturing SMMEs in Ekurhuleni Municipality located in South Africa during the COVID-19 lockdown and develop a framework to guide SMMEs during similar circumstances in the future. The implementation of a framework of guidelines for SMMEs in general, and for manufacturing SMMEs in particular, to make use of whenever there are

disruptions, will not only improve productivity for the SMMEs, but will also improve the economic life of these entities.

1.4 Research aim, objectives and significance

1.4.1 Research questions

1.4.1.1 Primary question

What productivity challenges did manufacturing SMMEs in Ekurhuleni Municipality experience during the COVID-19 lockdown restrictions?

1.4.1.2 Secondary questions

- What are the internal environmental factors affecting the productivity and sustainability of manufacturing SMMEs within Ekurhuleni Municipality?
- What are the external environmental factors affecting the productivity and sustainability of manufacturing SMMEs in Ekurhuleni Municipality?
- Are there interrelationships existing between attitude towards access to technological production management tools of the business and knowledge of internal and external factors of the business?
- Are there variations between the groupings of (1) the age of respondents, (2) the role of respondents and (3) the education levels of respondents regarding their perceptions of access to technological production management tools and their knowledge of internal and external factors of the business?
- How can manufacturing SMMEs within Ekurhuleni Municipality improve their productivity?

1.4.2 Research aim

This research aims to investigate productivity issues experienced by manufacturing SMMEs in Ekurhuleni Municipality, Gauteng Province during COVID-19 lockdown restrictions. With the view to addressing this challenge, primary and secondary objectives were set for this study.

1.4.3 Research objectives

1.4.3.1 Primary objective

The primary objective of this study seeks to explore productivity challenges faced by manufacturing SMMEs in Ekurhuleni Municipality during COVID-19 lockdown restrictions. To achieve the primary objective, the following four secondary objectives were formulated.

1.4.3.2 Secondary objectives

- To identify the internal environmental factors affecting the productivity and sustainability of SMMEs within Ekurhuleni Municipality.
- To identify the external environmental factors affecting the productivity and sustainability of SMMEs within Ekurhuleni Municipality.
- To establish whether there are interrelationships between attitudes towards access to technological production management tools and knowledge of internal and external factors of the business.
- To ascertain if there are variations between the groupings of (1) the age of the respondents, (2) the roles of respondents and (3) the education levels of respondents regarding their perceptions of access to technological production management tools and their knowledge of internal and external factors of the business.
- To examine how manufacturing SMMEs within Ekurhuleni Municipality can improve their productivity.

1.5 Significance of the study

The decision to conduct a study specifically for small, medium, and micro-sized enterprises (SMMEs) within the Ekurhuleni Municipality could be justified for several reasons:

Ekurhuleni Municipality is a specific geographic area with its own unique economic, social, and regulatory characteristics. By focusing on SMMEs within this municipality, the study can provide insights and recommendations that are tailored to the specific challenges and opportunities faced by businesses operating in that area. This localized approach ensures that the findings are relevant and applicable to the target audience.

Ekurhuleni Municipality is known for its significant industrial and manufacturing sectors. It is home to numerous SMMEs that contribute to the local economy and

provide employment opportunities. Understanding the challenges faced by these businesses during the lockdown can help inform policymakers, business support organizations, and other stakeholders in developing targeted interventions to support and sustain the local manufacturing sector.

The study focused on SMMEs within a specific municipality can be valuable for informing local government policies and initiatives. The findings can highlight the specific areas where support is needed, identify gaps in existing assistance programs, and provide evidence-based recommendations for policy adjustments or interventions. This can lead to more effective and targeted measures to support SMMEs in the municipality.

Focusing on SMMEs within Ekurhuleni Municipality can facilitate collaboration and knowledge-sharing among local businesses, industry associations, and support organizations. The study can serve as a catalyst for bringing stakeholders together to discuss common challenges, share best practices, and explore collaborative solutions. This collaborative approach can foster a sense of solidarity and promote collective efforts to address the identified issues.

Understanding the challenges faced by SMMEs during the lockdown in Ekurhuleni Municipality can help in better preparing for potential future disruptions. The study findings can inform contingency planning, resilience-building strategies, and the development of support mechanisms that can mitigate the impact of future crises on SMMEs. It can also contribute to the development of business continuity plans and strategies to enhance the overall resilience of the local business ecosystem.

In summary, conducting a study specifically for SMMEs within Ekurhuleni Municipality allows for a localized understanding of the challenges faced by these businesses during the COVID-19 lockdown. This localized approach enables tailored interventions, facilitates collaboration, informs policy-making, and contributes to future preparedness efforts.

1.6 Preliminary literature review

SMMEs are entities regarded as important state institutions that support the tools used to combat unemployment (Bagodi et al. 2020). SMMEs are also supported by initiatives aimed at reducing poverty, enhancing economic growth and promoting a fair distribution of the nation's wealth. Despite their significant contribution to the global

economy, SMMEs often face challenges that hinder their ability to lead in innovation (Bagodi et al. 2020; Indrawati. et al. 2020). One such challenge is the rapid evolution of technology and innovation channels. These advancements have transformed the manner in which standard, routine tasks are executed, and SMMEs sometimes struggle to adapt to these changes.

To achieve sustained economic growth, emerging economies should prioritize the SMME sector, devising strategies that promote job creation, technological advancement, and enhanced productivity. Additionally, efforts should be made to bolster the business acumen and capabilities of SMME owners or directors (Bruwer et al. 2017).

Past research has identified a few factors that affect SMME management, and both local and national governments have thought about managing SMMEs (Mawela et al. 2017). It is therefore logical that organisations must participate in all business sectors, use cutting-edge technology, constantly advance innovation and position themselves in a way that gives them an advantage over rival organisations in all business sectors (Madichie et al. 2019).

Technology has been singled out as one of the strategic attributes that SMMEs need in order to keep a competitive edge over rival organisations of any size (Yao et al. 2020). Yao et al. 2020 further stated that difficulties experienced by SMMEs because of regulations and the necessity of partnerships play an important role in influencing support for technology use in SMMEs. According to several authors (Madichie et al. 2019), one of the main factors preventing SMMEs from thriving is a lack of technological adaptation and adoption.

According to L'Écuyer and Pelletier (2019), provided that these tools are used appropriately and at the right time, invention and technology are the fundamental apparatus to increase an organisation's production speed and overall productivity, reach rapid growth and gain a competitive edge. If emerging technology is not adopted at the appropriate time, many SMMEs will experience difficulties that can even lead to their collapse (Mphela and Shunda, 2018).

The world is currently begin driven by technology and, according to Kazakov et al. (2020), data and technology are changing how people work together, conduct business and even interact with their customers. However, despite extraordinary new technological developments in areas such as computerised technologies, which are developing rapidly and are likely to become indispensable resources, research on how these technologies affect how transit employees and companies conduct business is still limited (Dachs and Kritikos, 2018).

Pervasive computing is an emerging technology that integrates people, data, and computer hardware. Instead of focusing on a single system, it leverages information from various sources, including the environment in which computers operate (Dachs and Kritikos, 2018; Netshakhuma, 2019). The integration of these interconnected resources leads to a dynamic where the world becomes highly connected, and data is shared across various web platforms (Kolbe et al. 2021). Emerging technologies, such as social media, significantly influence how organizations handle and manage data (L'Écuyer and Pelletier, 2019)

I was motivated to undertake this study after observing the heavy dependence on technology by many businesses for their daily operations. This motivation was further fuelled by the desire to assess the challenges posed by various environmental factors and to identify potential growth opportunities for SMMEs, as highlighted in previous studies (Netshakhuma, 2019; Rasheed et al. 2017).

1.6.1 Different conceptions of SMMEs

Since the term “small, medium and micro enterprise”, or “SMME”, has several different meanings around the world, it is challenging to provide a single or exhaustive definition of the concept (Mphela and Shunda, 2018). Different countries and organisations frequently use their own judgment when characterising SMMEs, sometimes choosing the estimated absolute value of the organisation’s resources, the number of employees or the annual revenue generated to determine whether an organisation is an SMME (United Nations, 2022).

The National Small Business Amendment Act 29 of 2004 (NSBA) defines a small business in South Africa as a separate and independent entity. This includes cooperatives, NGOs, and companies formed by one or more directors in line with the Companies Act 71 of 2008 of South Africa. Such businesses can also have subsidiary companies (Mphela and Shunda, 2018; United Nations, 2022).

Numerous studies confirm that there is no single, agreed-upon definition of small and medium-sized enterprises (SMMEs), as definitions vary among individuals, groups, and countries and are based on national contexts. A small and medium-sized enterprise (SMME) is defined as an organisation that is run and managed by one or more people for the purposes of this research. Any branches or subsidiaries that are managed by the organisation are included in this. The definition is in line with the SMME standard standards, which are predicated on particular resource obligations and the right of the majority to vote in continuing initiatives that are part of the nation's economic sectors. This description complies with published and generally recognised standards for SMMEs (Kruger et al., 2015).

Many scholars argue that different definitions of small and medium-sized enterprises (SMMEs) can be derived from variables like the state of the national economy, research techniques, and particular laws and regulations (Domeher et al. 2017). SMMEs are divided into several divisions by the NSBA, including survivalist, micro, very small, small, and medium. The next sections will go into further detail about these classifications.

1.6.1.1 Survivalist

Survivalist businesses operate at a basic level, primarily aiming to generate just enough income to meet the immediate needs of the owner, often without significant growth or expansion prospects. They include retailers and sellers who are frequently thought of as microbusinesses. Developing business sectors around the world express how survivalist businesses are often run by those who start a business out of necessity, usually because they are unemployed and need to make ends meet (Mphela and Shunda 2018).

1.6.1.2 Micro

Micro businesses are not formally registered and only employ up to five people, such as taxi services and street vendors. The amount of money they make each year is less than R150,000.00 (Bhorat et al. 2018).

1.6.1.3 Very small

Very small businesses are formally registered and employ nine or fewer people. Additionally, a business may also be considered to be very small if it employs 20 or fewer people (Bhorat et al. 2018; Mabulele, 2020).

1.6.1.4 Small

Small businesses have more than 20 employees but less than 100 employees, are formally registered and must comply with more business laws than very small enterprises (Bhorat et al. 2018; NCR 2011).

1.6.1.5 Medium

Medium businesses can be identified by the presence of additional administrative levels with authority and control within the organisation. They have between 100 and 200 employees (Mphela and Shunda, 2018; NCR, 2011). There is broad consensus among policymakers, small-business experts and financial analysts that SMMEs are essential to the growth of the economy and the creation of jobs, and that a healthy environment for SMMEs promotes higher wages and further development of innovation and entrepreneurial skills (NCR, 2011).

According to the Small Enterprise Development Agency (SEDA (2012), the SMME sector in South Africa plays a significant role in achieving macroeconomic objectives, experimenting with unproven initiatives, and maintaining the balance between employment generation and exchange. Since Trevor Manuel served as the nation's Minister of Trade and Industry in 1995, the South African government has acknowledged the significance of SMMEs (Mphela and Shunda 2018; NCR, 2011)

- The government has no alternative on making employment with many individuals jobless and underemployed.
- The vehicle to address unemployment is SMME development.

1.6.2 Internal and external environmental factors

An organization's environmental influences encompass the immediate factors and conditions within the setting where it operates. These can include consistent customer demands, pressures from external service providers, challenges posed by competitors, and the sustainability of the surrounding environment, all of which can impact decisions related to technology adoption (Christian, 2022). The environmental framework offers insights into the structure of the organization and elucidates how the company's strategies align with its business operations (Geissdoerfer et al. 2018; Nazir et al. 2020). Nazir et al. (2020) argue that these environmental factors encompass businesses, competitors, state-owned entities, clients, and external suppliers from the community engaged in commerce.

1.6.3 Macroeconomic environmental factors

Customers' willingness to adopt emerging technologies is often tied to their perception of the tangible benefits they will receive from the technology. If they do not see a clear advantage or value addition from a particular technology, they might be hesitant to embrace it (Cowley and Davis 2019; Kumar et al. 2019). Thus, if customers are uncertain about the benefits a product offers, they may be less likely to purchase or support it.

Societal acceptance of new technology is influenced by various macroeconomic factors. Infrastructure, societal norms, cultural values, and political, legislative, and legal frameworks play a significant role in determining a society's openness to technological advancements (Solberg, 2018). However, businesses that operate internationally and deliver their products and services across borders often face challenges. These challenges can range from regulatory hurdles, cultural differences, to logistical issues. Solberg (2018) emphasizes that international businesses often encounter additional constraints and requirements compared to domestic-only enterprises.

According to Jiang et al. (2020), a variety of new internal and external elements are visibly influencing the operational configurations and philosophies of these commercial enterprises. The operations of giant multinational corporations are directly influenced by a variety of external climatic factors, including social and economic conditions, and

political and legal factors. The management team of firms may, however, regulate such aspects by putting in place a number of critical drives (Chatterjee et al. 2021).

1.6.4 Microeconomic environmental factors

Factors influencing the adoption of technology encompass a range of elements. Larivière et al. (2017) highlight the perceived benefits of the technology, the willingness of businesses to utilize it, the innovative opportunities available to directors, and the knowledge and understanding of technology by business owners. Specifically, the expertise of business owners in the realm of information technology plays a pivotal role. As an illustrative example, the adoption patterns of SMMEs in Indonesia have been significantly influenced by these factors.

Business owners are less likely to accept new, challenging technologies if they are still having problems understanding the ones that are already in use (Netshakhuma, 2019). If internal approaches for technological turnaround development are required, this shows that SMMEs' problems are caused by a lack of resources or even a lack of technology expertise. SMMEs may encounter obstacles that prevent them from realising their potential if directors and supervisory staff lack the necessary expertise. Owners of SMMEs must therefore be able to establish a pertinent individual development plan to enhance their critical thinking and draw in talented candidates with proven management expertise (Gumel, 2017; Netshakhuma, 2019; Solberg, 2018). The literature review is continued in an in-depth manner in Chapter 2.

1.7 Research method and design

The research followed a quantitative sampling approach that assisted the researcher with the reliable sampled data. According to Welman et al. (2011), the research technique is the strategy utilised systematically to tackle a research topic. By obtaining, processing and analysing data on the subject, it aids the researcher in addressing the research problem (Bryman et al. 2016). The procedures used to carry out this investigation are summarised in this section. This section of the study will discuss the research paradigm, methodology and strategy used to conduct this study.

1.7.1 Research philosophy

Research philosophy, according to Saunders et al. (2019), is a collection of assumptions and beliefs about how knowledge is produced. There are five main research philosophies: positivism, critical realism, interpretivism, postmodernism and pragmatism. These philosophies are discussed in more detail below:

Positivism is distinguished by quantitative traits that permit statistical analysis (Saunders et al. 2019). Critical realism focuses on explaining what people see and experience in terms of the underlying realities that influence the observed events (Schaffer, 2015; Shan and Williamson, 2023). Postmodernism, as described by Lyotard (1984), underscores the importance of language and power relations in shaping our understanding of the world. On the other hand, interpretivism, as highlighted by Geertz (1973), posits that humans derive meaning in ways that are distinct from the interpretations they assign to physical events. According to pragmatism, ideas are only important when they facilitate action (Bryman et al. 2016).

According to Bryman et al. (2016), philosophical assumptions or paradigms encompass a set of ideas that delineate the scope of inquiry, prescribe the methodology for doing research, and dictate the interpretation of findings within the overarching worldview embraced by researchers. Saunders et al. (2019) believe that a paradigm encompasses the researcher's underlying assumptions regarding the technique employed in an investigation, the ontological understanding of truth and reality, and the epistemological framework through which the researcher acquires knowledge pertaining to these truths or realities.

The selection of a researcher's methodology is influenced by their philosophical assumptions concerning human nature, epistemology, and ontology (Saunders et al., 2019).

1.7.2 Research design

Edmonds and Kennedy (2017) state that a research design encompasses a strategic framework that delineates the intended implementation of a selected methodology by a researcher to effectively tackle the identified research gap and challenge. According to Edmonds and Kennedy (2017), it is crucial to define and identify the determining components of a study area before proceeding to design the investigation. This planning phase is essential in order to gather and analyse significant data that will ultimately clarify the research objectives. The concept of a research design can be seen as a strategic approach employed to analyse a particular topic within a study (Greener & Martelli, 2018).

1.7.2.1 Research methodology

According to Creswell (2014), a research methodology can be categorised as either qualitative, quantitative or mixed method. According to Bryman et al. (2016), quantitative research is a methodology that allows for positivism and takes an objectivist origin of social reality acquired during the study that can be dissected by statistically and arithmetically based techniques. This approach is supported by statistical data, which underpin the relationship between origin and a deductive study

Additionally, quantitative research refers to techniques in study designs that are used to test the general research aims by looking at the relationships between variables that can be examined to break down the measure of information with statistical data (Apuke 2017). Yilmaz (2013) recommends making use of a measurable technique to provide research results that are open ended, and also defines a blended research methodology as a combination of quantitative and qualitative methodologies.

In order to define and analyse the challenges of environmental factors that affect the performance of manufacturing SMMEs in Ekurhuleni Municipality, a positivist quantified approach is judged appropriate in light of the study's objectives. Additionally, the study made use of a quantitative data-collection method because it included survey data that were statistically analysed.

1.7.2.2 Populations and sampling technique

1.7.2.2.1 Target population

A target population is defined as a specific group of individuals who meet certain criteria and are the focus of a research project (Martelli & Greener, 2018). Welman et al. (2011) further describe the target population as the complete set of elements (individuals or objects) possessing specific characteristics from which a sample is drawn for research purposes. Manufacturing SMMEs in Ekurhuleni Municipality will comprise this study's target population. The study only included directors and senior staff members of manufacturing SMMEs located in Ekurhuleni Municipality.

1.7.2.2.2 Sampling strategy

Sampling strategy, according to Kothari (2016), is the procedure of selecting participants from a specific demography to comprise a sample. The two most popular sampling methods are probability sampling and nonprobability sampling. Nonprobability sampling hinders the researcher's capacity to determine the probability of selecting each member of the population, whereas likelihood sampling offers every individual a fair chance of being selected (Showkat and Parveen, 2017). Convenience sampling, judgement sampling, and quota sampling techniques are the foundation of nonprobability sampling (Martelli and Greener 2018). Probability sampling is based on simple purposive sampling, systematic sampling, stratified sampling, and cluster or area sampling.

This exploratory study's primary goal is to identify, categorise, and evaluate the perspectives, evaluations, and communications of the designated executives and owners of manufacturing SMMEs in South Africa. Ishtiaq (2019) and Mashau (2016) define the simple random sampling method as a probability inquiry technique in which each member of the population has an equal and independent chance of being chosen for the sample that will be utilised to study the topic. Therefore, in order to collect data from the target population among the manufacturing SMMEs in Ekurhuleni Municipality, a straightforward random sampling procedure was used in this study. Sampling size is defined as the total number of subjects or observations included in a study by Creswell (2009) and Ishtiaq (2019). Sampling size can also be described as the technique used to select a representative sample from the population from which inferences about the complete population can be made. Purposive sampling mistakes decrease with increasing sample size (Welman et al. 2011).

It is challenging, if not impossible, to include every member of a target group in a study due to time and financial constraints. In Ekurhuleni Municipality, there are roughly 1,262 manufacturing companies that fit the several categories of SMMEs, according to the South African Black Automotive Chamber of Commerce and Industry, 2021. The sample size was taken into consideration in the study since larger samples yield better results in terms of statistical analysis, representation, and accuracy. For this study, a sample size of 300 participants was chosen, which corresponds to 23,8% of SMMEs. The management and directors of the manufacturing SMMEs were the target audience for the online questionnaires. That was managed using Google Forms.

1.7.2.2.3 Data collection

To achieve the objectives of this study, data were meticulously collected and subsequently analysed. The process of extracting information from individuals is commonly referred to as data collection. Various methods can be employed for this purpose, such as questionnaires, surveys, observations, and interviews (Kothari, 2016). Among these, online surveys are considered particularly effective for reaching and obtaining relevant data from specific target groups, especially when compared to traditional paper-based methods.

For this study, data were primarily collected through online questionnaires disseminated via email. The email addresses were sourced from the websites of manufacturing SMMEs. These questionnaires were specifically directed to directors and senior personnel of manufacturing SMMEs in Ekurhuleni Municipality. The choice of an online survey was influenced by its efficiency and the ease with which it can reach a wider audience within the target demographic (Kothari, 2016).

Mohajan (2018) underscores the importance of diversifying question types in a questionnaire to capture a comprehensive range of responses. Accordingly, the questionnaire incorporated multiple-choice questions, where respondents selected from a list of provided answers, and dichotomous questions, which limited responses to options like "Agree" or "Disagree". The design of the survey was meticulously crafted to ensure the relevance and accuracy of the data collected from the selected manufacturing SMMEs.

1.7.2.2.4 Data analysis and interpretation

Data are frequently categorised into groups or subgroups and then analysed and synthesised (Mohajan 2018). Summarising and extracting pertinent information from

raw data is the process of data analysis. The information is then transformed into useful statistics. The Statistical Package for the Social Sciences (SPSS) was used to analyse the data because it simplifies the complex statistical analysis methods used (IBM, 2020).

1.7.3 Study area

The study area is Ekurhuleni Municipality in Gauteng Province, South Africa. The study was conducted in Ekurhuleni Municipality because many manufacturing industries operate there. In addition, the researcher resides within the borders of Ekurhuleni Municipality, which meant there were fewer logistical and financial implications of conducting the study there. For example, conducting the study in this area required no long-distance travelling that would necessitate a travelling allowance.

1.7.4 Time horizon

The time horizon is the research plan outlining how much time has been allocated for the project's execution from beginning to end (Serrador and Turner, 2015). Additionally, the cross-sectional and longitudinal time horizons are recognised and represented inside the research onion (Saunders et al. 2019)

1.8 Expected study limitations

Due to the perception that private organisations' data are sensitive and protected information, obtaining data from them is typically challenging. Since their market is typically small, small businesses also worry about intimidation from rivals when sharing sensitive information and ideas. Concerns regarding confidentiality and the potential exposure of sensitive information were anticipated to increase the likelihood of non-responsiveness from the target population (Noroozi et al., 2018). To address these concerns, a letter assuring respondents of the strict confidentiality of their personal information was drafted and disseminated to the intended participants.

Since this study will only consider manufacturing SMMEs in Ekurhuleni Municipality, the conclusions may not be applicable to SMMEs in other industries or provinces, given that businesses in different locations might experience different problems. As a result, this study might overlook some nuances that might have influenced the researcher's choice of conclusions and recommendations.

1.9 Validity and reality

In this study, the consistency of the data was ensured through its reliability, while its accuracy was confirmed through validity (Borsboom et al., 2004). McMillan and Schumacher (2013) define validity as the extent to which research findings accurately represent the actual events or phenomena under study. They further argue that a test or instrument is considered valid if it measures what the researcher intends it to measure (McMillan and Schumacher, 2013). Mueller and Knapp (2018) on the other hand, states that reliability refers to the consistency of results when the same test is administered multiple times under similar conditions.

It is crucial for the researcher to obtain genuine responses and use logical methods. This ensures that the research does not merely confirm pre-existing knowledge without proper evidence, avoiding it from being a superficial exercise (Crano et al. 2003).

In this study, reliability is a metric used to show consistency by repeatedly testing the same thing and getting the same outcomes. Empirical research based on actual circumstances will serve as the foundation for this research study.

In addition, the acknowledgment, inferences and experiences of participants will form the basis of this study. The information-gathering process and research methodology are built around the perspectives, methods and considerations of businesspeople, which will be in line with their responses to the survey questions (Snelson, 2016). The data gathered focuses on identifying broad themes to produce a good understanding of the main research objective of this study.

1.10 Ethical considerations

As this study involved human participants, ethical considerations had to be taken into account, and ethical approval had to be obtained. According to Greener and Martelli (2018), the focus of ethics is on values, obligations and reasonable ethical decisions that influence decision-making, acceptable behaviour, and norms. Saunders et al. (2019) affirm the importance of the research plan to ensure that the conduct of the study does not carry a risk of causing physical harm, distress, suffering, or shame, or compromising the confidentiality or personal information of respondents. Additionally, Saunders et al. (2019) affirm the significance of adhering to ethical procedures and conduct throughout the research study process.

The code of ethics was adhered to ensure that none of the research participants were at risk. The University of South Africa (UNISA) ethics committee was consulted for approval to conduct the research. The researcher ensured compliance with UNISA's Research Ethics Policy (Fynn, 2016; UNISA, 2013). Furthermore, SMME owners and managers participating in the research were informed of the purpose of the study. All participants were provided with ethical clearance certificates via an online system, and they were also informed of the requirements of the study.

1.10.1 Confidentiality and anonymity

The information obtained from study participants remains private. The rights of all involved were valued, and all information is handled in an anonymous manner. The consent form is essential to guaranteeing participant privacy and confidentiality when sharing information during the study process.

1.10.2 Autonomy

Individuals were free to choose whether to participate in the study and could decline the invitation to participate in the study. Additionally, the researcher ensured that each participant understood their right to secrecy. This is thought to be essential to guarantee that study participants give their consent willingly rather than under pressure. Every participant was made aware of their unrestricted ability to discontinue the study at any time. They were also given the assurance that their assistance would be crucial to the thorough examination and exposition of the study results.

1.10.3 Scientific integrity of the researcher

The researcher will adhere to UNISA's guidelines for conducting research ethically. The university's ethical committee requirements were followed when requesting ethical clearance. A letter of ethical approval from UNISA's Research Ethics Committee accompanied each survey (see Appendix D). As privacy is a typical research procedure, all participants were given the assurance that their private information would not be made public. Participants had to check the box on the permission form indicating that they want to remain anonymous. This was carried out to protect the participants' privacy. The questionnaire was given to each participant electronically and privacy was guaranteed. The permission letter outlines the potential

hazards and benefits of the research as well as attests to the participant's freely granted consent to participate (Hasan, Rana, Chowdhury, Dola, & Rony, 2021).

1.11 Summary

Chapter 1 served as the foundational introduction to the research, meticulously outlining the study's background, presenting the problem statement, and detailing the research aim and objectives. This chapter underscored the profound significance of the study, offering readers a concise snapshot of the employed research methodology. Within this chapter, a particular emphasis was placed on defining SMMEs. This section was crafted to shed light on the pivotal role SMMEs play in the broader economic landscape, highlighting their contributions and challenges. As the reader progresses to the subsequent chapter, they will encounter a comprehensive literature review. This review is designed to provide a deeper exploration of SMMEs from various angles: global, national, and regional perspectives. Furthermore, it examines the tangible economic impact of these entities, delves into the intricacies of the manufacturing business model, discusses the strides in technological advancements, and critically assesses the repercussions of the COVID-19 lockdown restrictions on the productivity of SMMEs.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The purpose of the study in the literature is to review related literature and get insights from a global level to local level concerning the topic. In this case the main subheadings that will be discussed involves the overview of SMMEs and productivity management in SMMEs.

According to the Department of Trade and Industry (1996), the term “SMME” refers to a broad variety of businesses, including formally registered, unregistered and non-value-added tax (VAT) registered businesses. Small businesses encompass a broad spectrum, ranging from formalized micro-enterprises to well-established traditional firms and family-owned businesses that employ over 100 individuals (Kunene, 2022). Within this spectrum, some SMMEs represent self-employed individuals striving for survival, often hailing from socio-economically disadvantaged backgrounds. On the other hand, SMMEs situated in industrialised economies typically represent more established and structured entities. These businesses in developed regions often have better access to resources, technology, and markets, positioning them at the higher end of the SMME spectrum in terms of sophistication and capability.

The vast majority of SMMEs in South Africa are situated on the lowest stages of the economic ladder, where survivalist businesses are frequently found (Gumede, 2022). There is a need for statistics on the factors that influence SMME success due to the challenging circumstances and low success rate of SMMEs. SMMEs should modify their control techniques and productivity behaviours to achieve success in a productivity business environment in order to address these challenging scenarios (Maduku and Kaseeram, 2021). SMMEs play an important role in the economies of several countries, including South Africa (Bolosha et al. 2022; Maduku and Kaseeram, 2021).

These SMMEs are leading the formal business sector in the South African economy (Sonqoba, 2019). The South African government recognizes SMMEs as pivotal instruments in achieving its goals of creating more job opportunities, alleviating poverty, and ensuring equitable distribution of wealth (Hoekman and Taş, 2022). However, despite the active presence of SMMEs and the support they receive from

the government, South Africa's success in leveraging these businesses for economic growth has not matched the global average (Berry et al. 2002; Gumede, 2022). Furthermore, SMMEs must increase their flexibility and productive capabilities in order to face productivity challenges. This chapter provides a literature review focusing on production management and its enhancement of productivity in the sphere of manufacturing SMMEs.

2.2 Overview of SMMEs

2.2.1 Global, national, and provincial perspectives on SMMEs

2.2.1.1 Global perspective

Giving a precise meaning to the concept of SMMEs is difficult, as entrepreneurs and researchers across the globe define it from their own vantage point (Mphela and Shunda, 2018). Furthermore, Li et al. (2021) indicates that SMMEs are globally viewed as the foundations of countries' economies. SMMEs play a vital role in formulating the economies of most of the countries in the world (Lose and Kapondoro, 2020).

Lean manufacturing practices have been adopted by SMMEs in most countries globally, which proved the operational model to be working efficiently (Sajan and Shalij, 2021). Furthermore, Sajan and Shalij (2021) argue that the implementation of lean manufacturing principles in SMMEs globally has been given priority by government authorities and policymakers. Governments globally have taken a special interest in SMMEs and have implemented “lean manufacturing competitiveness schemes” for SMMEs to assist them in reducing waste, increasing productivity and absorbing a locale of constant development (Sajan and Shalij, 2021). SMMEs face many challenges to ensure sustainable growth and productivity compared to large entities (Mawela et al. 2017).

Table 2.1: Definition of SMME as described by the European Commission (Oni, 2021)

Category	Number of employees	Annual sales	Annual book balance
Micro	10	≤ EUR 2 million	≤ EUR 2 million
Small	50	≤ EUR 10 million	≤ EUR 10 million
Medium	250	≤ EUR 50 million	≤ EUR 43 million

According to the European Commission, SMMEs are businesses that employ less than 250 people (Oni 2021). Micro businesses engage fewer than ten people, whereas small businesses employ between ten and forty-nine people and have yearly sales of no more than ten million euros. Businesses classified as medium-sized if they employ less than 250 people and have a yearly balance sheet total of no more than EUR 43 million or a turnover of no more than EUR 50 million. According to Oni (2021), defining a small business is a challenging task because it varies depending on the nation or the type of economic activity in a certain region.

2.2.1.2 National perspective

The South African Reserve Bank (SARB) (2015) concurs with Oni (2021) that a small business is hard to define. Moreover, the Wholesale and Retail Sector Education and Training Authority (W&RSETA) (2014) agrees with the idea that defining SMMEs is a difficult task, as each nation has its own definition. Literature also reveals that there is no single, widespread, consistently satisfactory meaning of SMMEs (Abor and Quartey, 2010). Nevertheless, in trying to define SMMEs, there is a fairly comprehensive South African meaning of SMMEs available, which will be used in this thesis.

In South Africa, a small business is recognized as an individual entity that can encompass cooperative enterprises and non-governmental organisations (NGOs). Such a business can be owned and operated by one or multiple individuals, and it might have branches or subsidiaries. These businesses operate across various sectors or subsectors of the economy and are categorized based on their size: micro,

very small, small, or medium enterprises (NSBA 1996; South Africa, 2004). For the purpose of this research, SMMEs are further defined as businesses managed by one or more individuals, with the total number of employees not exceeding 200.

2.2.1.3 Provincial perspective

Lose and Kapondoro (2020) emphasize that within the provincial sectors of the nation, SMMEs play a pivotal role in the regional economic development strategy. This strategy aims to address the pronounced disparities observed when comparing urban centers with smaller municipalities. Guiso et al. (2017) argue that by initiating SMME development programs at the provincial level, these geographical disparities can be significantly reduced, paving the way for the revitalization of local economic activities. However, Maduku and Kaseeram (2021) contend that provincial governments have not fully leveraged their inter-regional collaboration responsibilities. As a result, they heavily rely on SMME development, seeking support and interventions from both central and other provincial government entities.

Leibbrandt et al. (2016) and Zondo (2017) uphold that SMMEs have the potential to decrease joblessness, produce revenue, establish resources, add to capacities progression, curb mob justice and draw investment opportunities within the regional government.

Mawela et al. (2017) reaffirm that SMMEs can add to the revamping of South African regional governments' neighbourhood development. For the purposes of this study, the definition of SMMEs will come from the South African context; the definition of SMMEs and categories per national legislation for small businesses can be seen in Table 2.2.

Table 2.2: Definition of SMMEs as described in the National Small- and Medium-Sized Enterprises Act (Bosma et al., 2020; Kalitanyi, 2019)

Company size	Number of employees	Annual sales (in South Africa)	Gross assets, excluding fixed property
Micro	Between 1 and 5	Equal or lower than R200 000	Limited to R100 000
Very small	Between 6 and 20, depending on industry	Range of between R200 000 and R500 000, by industry	More than R100 000 but limited to R500 000
Small	Between 1 and 50 (1 ≤ 50)	More than R500 000, to R2 million, but limited to R25 million, according to industry	More than R500 000 to between R2 million and R4,5 million, depending on industry
Average	Less than 100 to 200, by industry	More than 25 million to 50 million R, according to industry	More than 4.5 to million R18 million, according to industry

Table 2.3: The new National Small Enterprise Act threshold for defining enterprise size in South Africa (GCIS 2019)

Sector or subsector in accordance with standard industrial classifications	Size/Class	Total full-time equivalent of paid employees	Total annual turnover
Agricultural	Medium	51–250	≤ R35 million
	Small	11–50	≤ R17 million
	Micro	0–10	≤ R7 million
Mining and quarrying	Medium	51–250	≤ R210 million
	Small	11–50	≤ R50 million
	Micro	0–10	≤ R15 million
Manufacturing	Medium	51–250	≤ R170 million
	Small	11–50	≤ R50 million
	Micro	0–10	≤ R10 million
Electricity, gas and water	Medium	51–250	≤ R180 million
	Small	11–50	≤ R60 million
	Micro	0–10	≤ R10 million

Construction	Medium	51–250	≤ R170 million
	Small	11–50	≤ R75 million
	Micro	0–10	≤ R10 million
Retail and motor trade and repair services	Medium	51–250	≤ R80 million
	Small	11–50	≤ R25 million
	Micro	0–10	≤ R7,5 million
Wholesale trade, commercial agents and allied services	Medium	51–250	≤ R220 million
	Small	11–50	≤ R80 million
	Micro	0–10	≤ R20 million
Catering, accommodation and other services	Medium	51–250	≤ R40 million
	Small	11–50	≤ R15 million
	Micro	0–10	≤ R5 million
Transport, storage and communication	Medium	51–250	≤ R140 million
	Small	11–50	≤ R45 million
	Micro	0–10	≤ R7,5 million
Finance and business services	Medium	51–250	≤ R85 million
	Small	11–50	≤ R35 million
	Micro	0–10	≤ R7,5 million
Community, social and personal services	Medium	51–250	≤ R70 million
	Small	11–50	≤ R22 million
	Micro	0–10	≤ R5 million

Table 2.3 shows the economic sectors or subsectors used to classify SMMEs in South Africa. The population in this study is made up of SMMEs in the manufacturing sector. Table 2.3's medium, small or micro classifications translate onto the aggregate value of permanently salaried staff, revenue and total value of assets. Medium-sized firms are defined as those having 51–250 paid full-time employees. A micro sized firm has between zero and 10 staff members, whereas a small organisation has 11 to 50 staff members. SMMEs are described as firms generating total sales of R170 million or less for medium-sized businesses, R50 million or less for small organisations and R10 million for micro enterprises as shown on table 2.3.

2.2.2 The value and impact of SMMEs on the economy

As stated by Paul et al. (2017), SMMEs are critical for the nationwide economic growth of emerging countries such as South Africa, which is experiencing astronomical

unemployment, poverty and unequal profit distribution. However, both developed and developing countries recognise the importance of SMMEs to the economy (Arthur-Aidoo et al. 2015). The bulk of firms in developing countries, however, are SMMEs, which are anticipated to spur economic growth while addressing financial difficulties (Arthur-Aidoo et al. 2015). Up to 90% of companies in both developed and emerging nations are SMMEs, and they generate revenue through taxes, jobs and GDP (Muriithi, 2017).

SMMEs have long been acknowledged as a major driving force behind economic growth by creating jobs, inspiring innovation and empowering society. SMMEs foster financial growth and job creation in developing countries, assisting governments in addressing inequality, lack of employment and societal advancement (Motsepe and Fatoki, 2017; Nkwinika and Munzhedzi 2016; Wang et al. 2016).

According to a report by Jansen van Rensburg and Asikhia (2015), SMMEs all over the world use their innovative competitive capacities to assist the state as well as individuals in achieving their financial, social and environmental goals. SMME operations in industrialised nations like Japan, Korea, Taiwan and many others are correlated with financial success (Katua, 2014). Furthermore, Akugri et al. (2015) discovered that the success of SMMEs is linked to economic growth in North American and Asian nations, proving that SMMEs foster innovation and aid economic growth by generating jobs.

Motsepe and Fatoki (2017) and Wentzel et al. (2015) confirm that SMMEs contribute to poverty reduction and income redistribution through job creation. These enterprises may help people, communities and governments achieve economic development by creating jobs and contributing significantly to GDP and tax revenue. SMMEs have established themselves as socioeconomic leaders through their contribution to GDP (Karadag, 2016). For instance, SMMEs employ 70% of the workforce in Japan and more than 60% of the workforce in the majority of emerging nations (Karadag 2016). In China as of the year end 2015, SMMEs make up 99,4% of all businesses and account for 59% of GDP. In the Netherlands and Australia, SMMEs make up 98,8% and 97% of businesses and contribute 31,6% and 51% of each country's GDP, respectively (Wang 2016).

In Germany, Japan and Korea, SMMEs produce 57%, 55%, and 50% of the country's GDP, respectively as of the year end 2014 (Wang 2016). Akugri et al. (2015) claim that SMMEs make up roughly 90% of African businesses, including urban and rural businesses. According to Muriithi (2017), SMMEs in Kenya account for 80% of total employment, 50% of newly created positions and 40% of the country's GDP. According to Katua (2014), SMMEs make up 97% of all businesses in Nigeria and employ 50% of the labour force.

To fulfil national development objectives including reducing poverty, eliminating unemployment and distributing revenue, governments in sub-Saharan Africa frequently turn to SMMEs (Akugri et al. 2015). South African SMMEs are essential to the national economy, in line with global trends (Makopo et al. 2018). In the wake of the apartheid era, the post-apartheid government has been actively reshaping the country's economic structures. This is evident even though South African SMMEs have predominantly emerged as survivalist groups due to the national financial development programme (Lebambo and Shambare, 2020; Wentzel et al. 2015).

The government has stressed the promotion of SMMEs as engines of economic growth in the post-1994 democratic era, realising that SMMEs in South Africa can generate jobs for the disadvantaged. As a result, SMMEs represent 91% of formal firms, 60% of all employment and 57% to 60% of South Africa's GDP (Motsepe and Fatoki 2017).

2.2.3 SMMEs sustainability challenges that affect productivity

The SMMEs sector significantly contributes to the economies of many countries. However, these enterprises face substantial challenges in their early years. Specifically, studies indicate that within the first five years of operation, a staggering 90% of SMMEs experience failure or significant setbacks (Wolmarans and Meintjes, 2015). Lekhanya (2015) further supports this by noting that 9 out of 10 newly established SMMEs do not survive past a decade. The rate of continuation of SMMEs in Africa is extremely poor, with around five out of each seven new SMMEs closing their doors within the first year (Muriithi, 2017). Approximately 80% of SMMEs in Nigeria fail within the first five years (Gumel, 2017). This negates the economic

benefits of SMMEs and increases the barriers to their expansion (Akugri et al. 2015; Karadag, 2016).

Failure is also an issue in South African SMMEs; according to Makopo et al. (2018) and Rogerson (2005), just 2,1% of newly founded SMMEs endure for the first three years of operation. As stated by Muriithi (2017), most SMMEs in South Africa do not survive beyond their first year of operation, and Motsepe and Fatoki (2017) estimate that 75% of emerging SMMEs in South Africa do not endure beyond an initial period of five years.

The failure of SMMEs can be attributed to various factors, and among the primary reasons is the impact of globalisation and regulatory challenges (Karadag, 2016). Globalisation exposes SMMEs to a broader and more competitive market, compelling them to adopt more assertive and proactive business strategies to remain relevant and competitive (Arthur-Aidoo et al. 2015). By "aggressive strategies," it is implied that SMMEs often have to rapidly adapt, innovate, and sometimes take higher risks to secure their market position against larger, more established global players. However, due to their limited resources and scale, SMMEs can find themselves at a disadvantage in such a competitive landscape (Karadag, 2016).

The problems that SMMEs encounter differ by country and can include political, competitive and economic circumstances (Arthur-Aidoo et al. 2015). In sub-Saharan African nations like South Africa, various challenges prevent new SMMEs from succeeding (Motsepe and Fatoki, 2017). A lack of resources and managerial expertise, as well as corruption, subpar infrastructure and politics, make these problems worse (Akugri et al. 2015; Muriithi, 2017).

Internal business processes and SMMEs' constrained financial resources, as well as external variables such as competition within the sector and from other organisations, all provide challenges. As a result, a competitive climate that includes major and multinational firms has been included to the external list of SMMEs concerns (Karanja et al. 2014; Paul et al. 2017).

South Africa's SMMEs success rate of 2,1%(compared to the 7,6% global average) demonstrates the country's insufficient efforts to increase SMMEs sustainability and solve SMMEs' problems (Worku et al. 2016). According to Motsepe and Fatoki (2017), SMMEs can perform better and survive with the aid of financial expertise, mentoring and educational programmes and orientations for entrepreneurs. Furthermore, information and training may assist SMMEs in better managing challenges (Arthur-Aidoo et al. 2015). According to Worku et al. (2016), such measures are the responsibility of the government.

Support-based institutions are essential to the survival of South African SMMEs (Gumel 2017; Worku et al. 2016). Traditional business approaches, such as these external support systems, undermine the competitive competencies of SMMEs, resulting in poor performance (Karanja et al. 2014; Motsepe and Fatoki, 2017).

According to Alrabeei and Kasi (2014), future studies on SMMEs should concentrate more on innovation and competitiveness than on financial resources. As a result, overcoming the difficulties confronting SMMEs necessitates a heavy emphasis on innovation management tactics. Modern SMMEs' challenges should be addressed through innovative and information-based business procedures that enable adaptable and innovative responses to modifications in the commercial environment (Karadag, 2016; Katua, 2014).

The rapid pace of transformation in the business environment compels SMMEs to be innovative for their survival because it is essential in reducing competitive obstacles while improving their competitive edge and surviving (Cheng and Chen, 2017; Karim et al. 2021). As a result, in order to overcome challenges and become competitive firms, South African SMMEs must embrace innovation (Stummer and Kiesling, 2021).

Bongomin et al. (2018) state that one of the most important factors in the adoption of new technologies by SMMEs and the use of technology is the cost of implementation. Numerous researchers agree that SMMEs with little working capital are more inclined to postpone innovation installation and to postpone utilising new advancements, particularly if execution expenses are perceived to be high (Domeher et al. 2017). According to Urban and Ratsimanetrimanana (2019), the majority of SMMEs in most

African nations have trouble acquiring financial support to complement banking institutions' technological objectives. As a result, the application and use of developing technologies are likely to be viewed as too expensive by SMMEs that cannot acquire financial support, which is problematic (Urban and Ratsimanetrimanana, 2019).

In the rapidly evolving technological landscape, SMMEs face significant challenges. Indrawati et al. (2020) highlight that many SMMEs grapple with the adoption of new technologies due to a combination of limited technological expertise and financial constraints. Moreover, both end users and staff emphasize the importance of technological infrastructures as internal factors influencing their decisions to adopt or resist new technological implementations (Li and Li, 2020). Building on this, Li and Li (2020) argue that, given the complexities of the global economy, understanding these external factors is pivotal for shaping the direction of future research in this domain.

2.3 Productivity management

This section explores the definitions of productivity management before moving on to topics of productivity management procedures and productivity management in SMMEs. A summary of productivity management frameworks follows, after which this section is concluded.

2.3.1 Definition of productivity and productivity management

The concept of productivity encompasses a wide range of interconnected activities that have garnered significant interest across various industries and fields. According to Fang et al. (2019), productivity can be defined as the correlation between the outputs produced by a system and the inputs utilised in the creation of those outputs. The concept of productivity is frequently described as the ratio of output to input volume (Walheer, 2018). In essence, the metric assesses the degree of effectiveness with which a nation's production factors, including labour and capital, are employed to generate a given quantity of output. The significance of productivity as a catalyst for economic development and competitiveness cannot be overstated. It forms the bedrock for numerous international evaluations and comparisons of national performance (Aftab et al., 2021). According to Johnson and Rasulova (2017),

productivity can be understood as the outcome of a commercially exploited or institutionalised invention or creative concept.

According to Saule et al. (2019), this institutionalised mechanism is focused on managing production as well as the procedures for developing and commercialising new goods and services. Managing innovation within the organisational discipline is an issue of production management, according to Ivanov et al. (2020) and Tidd and Bessant (2021). According to Hervás-Oliver et al. (2017), production management is a management strategy used in corporate organisations to create and market novel practices, procedures, systems and products that are governed at all levels of the organisation. Aside from restructuring tasks and fostering novel and innovative solutions within a company, productivity management also includes new business practices that enhance processes and performance (Akdil et al. 2018; Sony and Naik, 2019).

Based on these diverse views, this study used the following definitions of productivity and productivity management:

- Productivity is the introduction of new or improved products, processes or organisational practices, as well as the introduction of innovative goods, manufacturing techniques, distribution channels, raw material supplies and business models, with the goal of enhancing business performance.
- Productivity management is an institutionalised system that oversees the development, manufacturing and sale of new goods, processes, services and business models.

2.3.2 Impact of COVID-19 lockdown restrictions on SMME productivity

Mboera et al. (2020) claim that the COVID-19 lockdown restrictions disrupted organisations' regular operations by impairing the global, local and public economy. Financial conditions are the immediate impact of any structure's vulnerabilities. Catastrophic events are a type of environmental disruption that can lead to downturns in economic indicators (Aftab et al. 2021).

Aftab et al. (2021) also claim that the lockdown restrictions were a new source of vulnerability that causes dissatisfaction in organisations and economies. The

economy, organisations and other public events in many countries were harmed by the COVID-19 pandemic (Mboera et al. 2020).

Haider et al. (2020) claim that the adoption of lockdown restrictions resulted in dissatisfaction and closures of SMMEs across the globe. For example, this was the case in Pakistan, a non-industrialised country that experienced a surge of COVID-19 in its metropolitan areas, which are home to a large number of SMMEs (Haider et al. 2020). The abrupt shutdown had a significant impact on organisations in metropolitan areas. The spread of COVID-19 had a severe impact on SMMEs, big businesses and economies all around the world, and people's financial activities and means of subsistence were jeopardised (Aftab et al. 2021; Govindan, 2018).

Environmental factors play a pivotal role in the operations of organizations, influencing resources such as labour, waste materials, and financial allocations for projects. Addressing the adverse impacts of climate change is essential. Resource management suggests that organizations should strategize and implement measures to counteract the detrimental effects of climate change, ensuring sustainable operations (Haider et al. 2020).

2.3.3 Productivity management processes

The organisational architecture or productivity management framework can help individuals and teams become more productive. Turnhout et al. (2020) emphasise the value of understanding various forms of production in an organisation in earlier productivity studies. To better understand productivity, it was important to study existing literature on incremental and radical productions, the productivity of processes and items and productivity of marketing and organisational productions (Edwards-Schachter, 2018).

2.3.3.1 Classifications of production

This section covers the types, degrees and categories of production. The classification includes technological, non-technological and organisational production. Radical and incremental production are two productivity levels, and the modes of production are job, batch and flow. Technological management processes can involve technology to deliver client value-added services or non-technology-related productivity management processes can involve production processes to boost the organisation's

competitiveness in the market (Cheng and Chen, 2017). However, productivity is also dependent on the adoption of new business strategies, organisational restructuring and promotional activities in addition to the development and use of new technologies.

(i) Technological production

According to Gupta and Barua (2016) and Rahman et al. (2016), technological production refers to the utilisation of various equipment, tools, instruments, and systems in order to introduce innovation and improve and optimise production processes within the commercial operations of an organisation. De Massis et al. (2015), on the other hand, assert that technical production encompasses the methodologies and actions employed by organisations to conceive, develop, manufacture, and introduce a novel product, service, or process.

According to Chassagnon et al. (2014) and Haned et al. (2012), there has been an increasing focus within the literature on technical advancements. Abdulwahed and Hasna (2017) as well as Rodrigues and Pereira da Costa (2015) argue that the utilisation of robust and well-structured research and development (R&D) practises, despite their often-high costs, is more probable in the context of capital-intensive production.

R&D efforts are essential to ensuring that organisations maintain and increase their technological proficiency, productivity and competitiveness (Gupta and Barua, 2016; Wang and Chen, 2018). Every facet of productivity, growth, competitiveness and economic expansion is impacted by the development of new technology.

In addition, production of this nature is frequently employed to achieve a competitive edge by easing the burden on the production infrastructure (Rodrigues and Pereira da Costa, 2015). Technological production is one of the most significant forces behind organisational change, according to other studies (Nicolaidis, 2014; Tomasi et al. 2021). Because technology production can help organisations perform better and be more competitive, they frequently make use of it (Rodrigues and Pereira da Costa, 2015).

(ii) Non-technological production

Non-technological production is defined as the implementation of marketing-related activities (Rudawska et al. 2018; This kind of work is used to establish an organisation's credibility and reputation externally rather than generating value from within. Employing these methods increases the likelihood that an organisation will meet its objectives more quickly than an organisation that does not.

The addition and augmentation of technological breakthroughs by non-technological improvements is equally important (Ahmad and Van Looy, 2020). In addition to conventional R&D and technological innovations, non-technological production research is gaining popularity and is increasingly being taken into consideration (Ahmad and Van Looy, 2020; Merono-Cerdan and López-Nicolás, 2017). Non-technological production increases a company's ability to compete in the market and benefits both the customer and the business.

(iii) Organisational production

By emphasising new changes in organisational culture, regulations and norms rather than new technology, organisational production is distinct from technological production (Alvesson and Sveningsson, 2007; Reynolds and Uygun, 2018). Organisational production is characterised as the use of innovative organisational techniques and operational processes, restructuring the place of employment or altering its external interactions, and incorporates modifications to working procedures and new methods of managing human resources (Lapidus and Abramov, 2018; Milusheva, 2019).

With an emphasis on administrative, organisational and management production that largely overlap in the concept of organisational production, these fundamental institutional changes relate to organisational routines. When developing productive systems, goods and processes, Lapidus and Abramov (2018) define organisational production as a tool used to adapt to shifting competitors and technological advancements. It is primarily a framework for organising the organisation's new advances. In this sense, organisational production can be thought of as aiding technological growth and production. In today's dynamic and global economy, organisational production remains a critical source of business success, allowing

organisations to improve the commercialisation of new goods on the market (Milusheva, 2019; Pereira and Romero, 2013; Verdu-Jover et al. 2017).

Organisational production is also important for improving corporate performance, growth and competitiveness. Organisational production has the advantage of enhancing performance and productivity by lowering administrative and operational expenses, boosting morale among staff members and lowering the price of supplies. The complexity of organisational production, however, calls for careful thought when choosing a model to utilise, particularly given that, for the best outcomes, new product innovations should be integrated with organisational production (Lapidus and Abramov, 2018; Milusheva, 2019).

2.3.3.2 Degrees of production

There are two degrees of production: new (radical) production and enhanced (incremental) production (McDermott and O'Connor, 2002; Yaribeygi et al. 2019).

(i) Radical production

Radical manufacturing entails the creation of entirely new inventions, which are frequently accompanied by new knowledge. This newness, which will profoundly affect an organisation's competency, is defined as radical production (Chaoji and Martinsuo, 2022; McDermott and O'Connor, 2002; Yaribeygi et al. 2019). This level of manufacturing refers to the development of new technologies that are different from those already in use. Furthermore, research and creative idea development are used to create new value, which is the primary source of radical production (Chaoji and Martinsuo 2016, 2022).

(ii) Incremental production

Incremental production is characterized as the enhancement or redefinition of a pre-existing innovation or method to deliver goods or processes through steady, gradual alterations (Fukumura and Carminati, 2022). This approach in manufacturing involves the strategy of introducing minor, low-risk modifications to a company's existing product, aiming for quick and cost-effective returns (Shang et al., 2020; McDermott and O'Connor, 2002). Such alterations can be implemented by tweaking current systems or designs, fostering enhanced productivity (Chaoji and Martinsuo, 2022;

Fukumura and Carminati, 2022). Moreover, Yaribeygi et al., (2019) emphasize the importance of understanding these incremental changes within the broader context of market dynamics and organizational adaptability, especially when examining their effects on productivity in challenging environments such as during lockdowns.

2.3.3.3 Categories of production

Production can be divided into several categories, including job production, batch production, flow production and business model. Additionally, according to Ohno and Bodek (2019), production can be divided into four primary categories: job production, batch production, flow production management business model (see Figure 2.1).

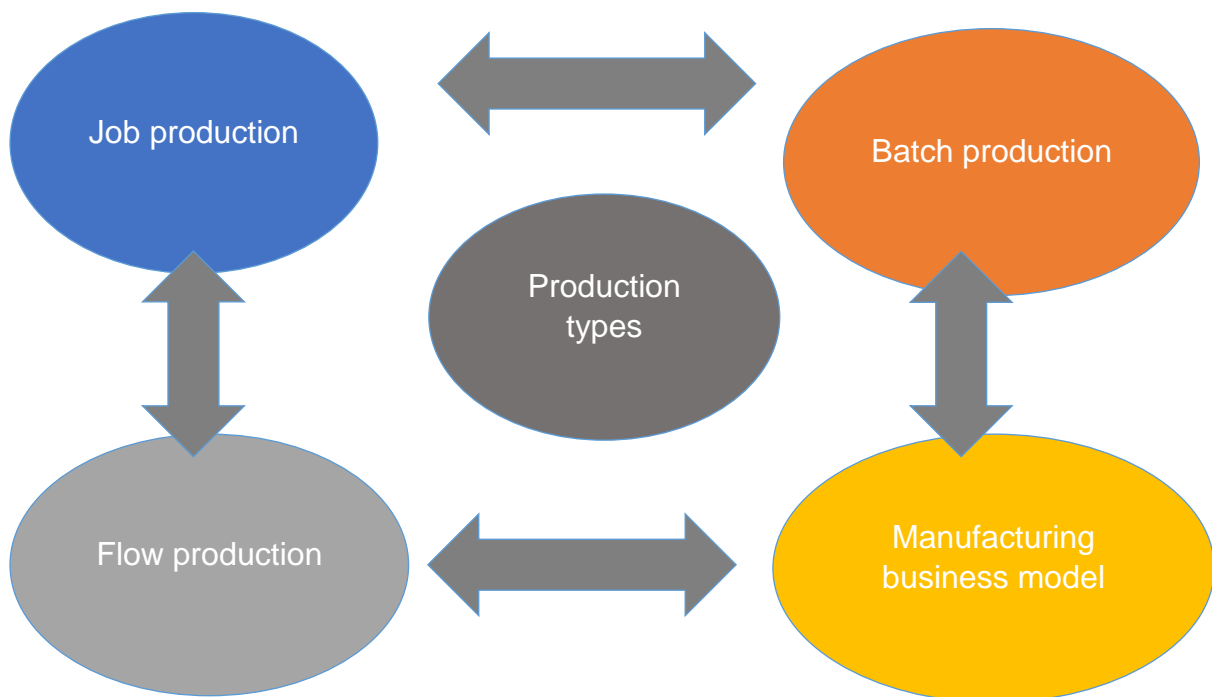


Figure 2.1: Categories of production

(i) Job production

Creating one or a few copies of a single product designed and constructed according to the customer's exact requirement is job production. (Alavian et al., 2016)

Creating new jobs is commonly thought of as a way to revitalise a business (Beyene et al. 2016). Academics have made an effort to clarify how employment are created. In order to match the requirements of the client, job production comprises enhancing

the operational features of a newly given good or service (Gupta and Barua, 2016). According to Dossou-Yovo and Keen (2021) job production also includes the development of new goods and markets, product innovations, and the replacement or modification of outdated components. According to Beyene et al. (2016) and Wang and Chen (2018), job production is an institutional process of renewal that results from the integration of expertise from both inside and outside the organisation.

(ii) Batch production

A vast number of identical goods are created simultaneously instead of one at a time in a process known as batch production. The manufacturer sets the size of the batch and the frequency of production. Batch production is the application of novel mechanisms or techniques to an operation in order to enhance mobility, reduce labour costs and improve the quality of the product or service being rendered (Hervas-Oliver et al. 2017; López-Nicolás and Merono-Cerdan, 2011). Batch production is crucial for enhancing a product's efficiency and offering efficient services once the product design has been stabilised (Hervas-Oliver et al. 2017; Soetevent and Bruzikas, 2017).

(iii) Flow production

The existing literature on production also emphasises the flow of production. Flow production is another name for continuous production. It enables a product to be produced on an assembly line through several steps. It is defined by the goods' constant progression through the production process (Seuring and Müller, 2008; Witell et al. 2015). This method of production generates vast quantities of the same commodities over time. The dynamic process of flow production combines risk management in progressive, logical and cooperative ways (Snyder et al. 2016; Witell et al. 2015). Although flow production has garnered a lot of attention, its definition continues to be a challenge for scholars.

The theoretical expansion of flow production has been delayed by researchers' attempt to characterise it on a technological basis, which has limited its breadth and influence (Snyder et al. 2016). According to Cheng and Chen's (2017) definition of flow production, this is a strategy whereby a company frequently modifies service delivery procedures in order to improve client experiences. Moreover, according to Snyder et al. (2016), flow production refers to the implementation of a new or improved service to generate value for the business by meeting customer needs and enhancing

customer experiences. This approach needs to benefit the management of operations, services and delivery activities in order to have an impact on changes in the selling point (Cheng and Chen, 2017; Skålén et al. 2015; Witell et al. 2015).

Flow production is also credited with generating value for consumers through new or improved service business models for employees, clients, alliance partners, entrepreneurs and the general public (Snyder et al. 2016). Flow production can be investigated from both an integration and a demarcation approach (Witell et al. 2015). From the assimilation perspective, flow production is viewed as a way to introduce new technology, but from the demarcation perspective, flow production is seen as a way to offer production services (Skålén et al. 2015; Witell et al. 2015).

Firms are increasingly focusing on either flow production outcomes or the flow production process itself, because of the desire for new value propositions. Snyder et al. (2016) and Witell et al. (2015) emphasize the importance of maintaining a clear distinction in the production flow between the client and the business. They advocate that this distinction should be universally recognized and adopted within the industry. Recent research revealed that flow production is produced by the interaction and overlap of flow systems in the firm, the market and the microenvironment.(Odita et al. 2022)

By making additional resources available to them, flow manufacturing also enables clients to boost their value generation. As a result, incorporating consumer feedback is essential to an organisation's effectiveness (Cheng and Chen, 2017). Additionally, flow production creates new opportunities and significantly affects many daily activities. For handling their customer needs, renowned companies such as IBM and Starbucks have effectively employed flow manufacturing (Snyder et al. 2016). However, flow manufacturing is also viewed as unsustainable because of how quickly competitive markets are changing (Cheng and Chen, 2017; Witell et al. 2015). As a result, organisations must constantly modify their operations and product offerings to compete in today's unpredictable and competitive business environment.

(iv) Manufacturer business model

The business strategy employed by the manufacturer entails the utilisation of raw materials in order to build a product that can be afterwards marketed. The

implementation of this particular business strategy may need the integration of premanufactured elements to form a novel product, as exemplified by the automotive industry. The manufacturer may engage in direct sales to customers, as exemplified by the business-to-consumer approach. In the business-to-business (B2B) strategy, the organisation's sales phase is contracted out to a different organisation. Usually, wholesalers sell their goods to retailers, who then sell them directly to customers. An illustration of this kind of business is a clothing producer who sells to a store, who then sells to consumers. The manufacturer business model of a corporation may involve developing a new model, changing existing systems or implementing novel operational procedures (Foss and Saebi, 2017).

The cornerstones of such accomplishments are new value propositions and the use of developing technology to gather and distribute value to customers. This calls for either rewriting some aspects of the value contention or the business model (Baldassarre et al. 2017; Keiningham et al. 2019). Organisational change, innovation, turnaround, re-engineering, transformation, acquisitions and divestiture are all examples of manufacturer business models that relate to how a company creates, captures and delivers value (Taran and Boer, 2015). The most effective and efficient way to structure new business models and improve competitiveness is to use manufacturer business models (Wirtz and Daiser, 2018).

A manufacturer business model, according to experts (Taran and Boer 2015; Wirtz and Daiser, 2018), is a structure that enables a company to generate and deliver value while still making money and maintaining its competitiveness. The major objective of the manufacturer business model is to generate income by providing customers with more value in the form of a product or service (Foss and Saebi, 2017; Keiningham et al. 2020). This is a novel and complete approach to organisational production. In addition, the manufacturer business model enables companies to adapt to consumer trends and succeed in a competitive and difficult market. It could be a significant source of organisations' competitiveness and financial performance.

The manufacturer business model was regarded as essential to maintaining sustainability and competitiveness in IBM's poll of CEOs worldwide (Foss and Saebi, 2017; Taran and Boer, 2015). Therefore, organisations should work to improve their

operational processes by fundamentally changing their business models in order to produce and deliver value. To secure their ability to compete and survive over the long term in a competitive business environment, organisations must re-evaluate their business models more frequently (Keiningham et al. 2020; Taran and Boer 2015).

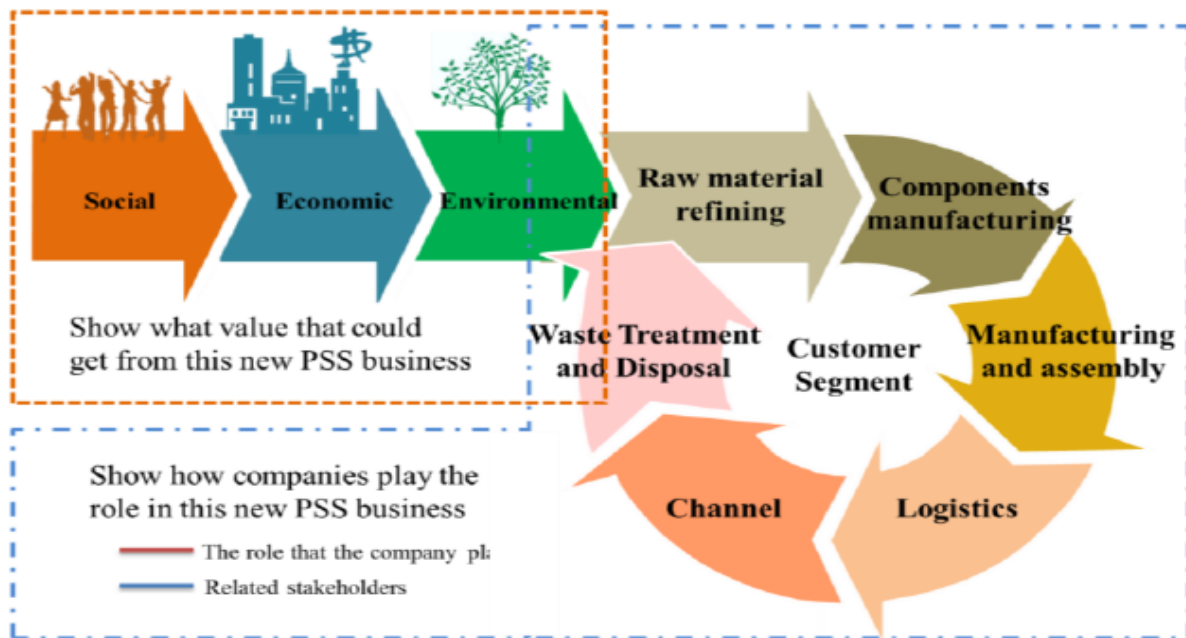


Figure 2.2: Manufacturing business model (Chen and Chiu, 2014)

2.3.4 Production management practices in SMMEs

Production management is the process of setting up an organisation's operations to deliver the necessary goods and services. It involves organising, carrying out and supervising processes that turn raw resources into finished products and services. Various researchers (Hoffmann et al. 2023; Pertuz and Pérez 2021; Walker et al. 2015) have cited production management as a crucial component of a company's newness management strategy.

The significance of production management practices has inspired interest in organisational and management research. The understanding of production management practices within SMMEs is not as extensive as it is for larger businesses (Didonet and Villavicencio, 2020; Hervas-Oliver et al. 2017). While SMMEs tend to engage in a higher proportion of non-manufacturing activities compared to larger enterprises, they still play a significant role in production processes (Quinn et al. 2013).

A study by Schilirò (2015) found that companies of all sizes use innovations; however, they are more common in SMMEs. Production management practices should be a top goal for most firms because it is crucial for increasing competitiveness, improving administration and extracting the value of information. There is currently no information in the existing literature on businesses that employ production management software.

According to production literature, there is a connection between creativity and economic success as well as between creativity and SMME success (Nicolaidis, 2014; Sandada and Mangwandi, 2015). The literature provides additional support for the positive relationship between innovation and economic success. The importance of innovation may be seen in how it enables companies to create products that are both competitive and valuable to consumers. Production management helps SMMEs achieve their financial goals quicker than their counterparts (Martínez-Costa et al. 2018). Innovation has a positive impact on organisational culture and productivity.

The organisations that prioritise production practice integration are setting the bar for creating competitive and successful business responses. The production, however, is realised when it is provided to the market in an efficient manner (Olaniyi and Reidolf 2015; Walker et al. 2015). In a market environment that is becoming more competitive and dynamic, businesses must adapt to changes in the market in order to boost growth and profitability (Bassiti and Jhoun, 2013; Hajikarimi et al. 2013).

Globalisation and rapid technological development are putting pressure on businesses to rely on production management strategies and the ability to provide cutting-edge products to the market in order to remain competitive and appealing to customers (Martínez-Costa et al. 2018). Due to this heightened competitiveness, innovation management practice should be a key element in maintaining longevity and ongoing growth. As opposed to large firms, SMMEs are more susceptible to barriers to innovation. This is because smaller businesses have higher challenges than larger ones due to internal resource constraints and a lack of experience (Deshati 2016; Lesáková, 2014).

The focus of research on SMMEs' problems and shortcomings has largely switched to SMMEs' efficiency, achievement and finding ways to solve problems (Rahman et

al. 2016). There is a presumption that SMMEs are more innovative and flexible than large organisations since they have fewer communication channels. The positive impact of mobility makes it easier for SMMEs to create emerging technologies, manufacturing procedures, approaches to marketing and business ventures (Deshati, 2016). SMMEs often have the opportunity to adjust to a rapidly evolving marketplace because of their agility, which allows them to develop swiftly as they cater to marketplace demands (Carvalho, 2018; Didonet and Villavicencio, 2020).

There are various contradictory findings about the sorts of innovation created in the SMME environment, according to Quinn et al. (2013). Lesáková (2014) claims that innovation management activities in SMMEs are more human-centred and are primarily informal procedures. SMMEs rely on straightforward and unplanned innovation management processes as opposed to larger organisations, which employ complex innovation management methods. According to Gupta and Barua (2016), SMMEs have a comparative edge in terms of innovation potential.

Moreover, a number of factors affect such potential, including competitiveness, lower costs, increased efficiency, satisfying customer expectations, handling stricter governmental regulations and enhancing their company's reputation. Lesáková (2014) views the inventiveness of SMMEs in terms of goods, technologies, procedures and services as a way to boost their level of achievement and efficiency. The research on innovation also highlights how crucial it is to combine goods, procedures and innovation within an organisation in order to improve an organisation's efficient governance of risk (Pereira and Romero, 2013).

The businesses making use of a variety of innovations generally outperform those using just one type of innovation in terms of number of innovations brought to market (Longenecker et al., 2022). The majority of innovative new products come from SMMEs, which also give priority to R&D-based inventions (Deshati, 2016; Dossou-Yovo and Keen, 2021). However, Chassagnon et al. (2014) note that R&D-driven innovations are not the exclusive source of SMMEs' innovation. In order to boost productivity and ensure survival, managers are increasingly focusing their efforts to innovate on enhancing the quality of their goods and services. It happens because

SMMEs generally have a low level of technological production deployment, which hinders productivity (Rahman et al. 2016).

In the ever-evolving business landscape, SMMEs can potentially enhance their innovation by integrating both non-technological and technological production methods. While the need for businesses to continuously refine their products and services to remain competitive is evident, the escalating competition compels businesses to adapt their organisational structures to navigate swiftly changing markets (Keiningham et al. 2020).

Quinn et al. (2013) identified discrepancies in research regarding SMMEs' inclination towards both radical and incremental innovations. Given the inherent agility of SMMEs, which allows them to implement minor enhancements more swiftly and cost-effectively than broad-scale innovations, recent research has underscored this significant aspect of their development. Dossou-Yovo and Keen (2021) argue that successful entities prioritize implementing organizational advancements over purely technological ones, as the former can amplify the effectiveness of technological innovations (Lesáková, 2014). Bayarcelik et al. (2014) emphasize that SMMEs often emulate best management practices observed globally, viewing it as a form of innovation. Contrarily, Nani (2017) suggests that while mimicking strategies can enhance a company's intrinsic value and optimize its operations, it shouldn't be misconstrued as a purely inventive strategy.

SMMEs should use production management to improve their competitiveness and sustainability, allowing them to develop new operational processes that suit marketplace demands (Martínez-Costa et al. 2018; Martínez-Costa and Martínez-Lorente, 2008) Administering modernisation techniques improves an organisation's performance as well as leading to greater client retention and income (Pertuz and Pérez, 2021). SMMEs should undoubtedly enhance their companies' sustainability by consistently developing and creating new ideas and creating novel amenities (Masocha, 2019).

Martínez-Costa et al. (2018) claim that by implementing a variety of complementary types of technologies and concentrating on processes, client service and promotional

strategies, development can be attained. By using innovation management as an essential development tool, SMEs can improve their efficiency, effectiveness, the final product, compliance with environmental regulations, and employee engagement (Herbst and Barnard, 2016; Quinn et al. 2013). According to Cheng and Chen (2017) and Louw et al. (2018), SMMEs can improve their innovative operations by remaining diligent, consistent, and ambitious in order to avoid disappointing results and boost efficiency and earnings by adapting to changing conditions and performing more effectively in global markets.

According to contemporary research on innovation, competitive innovation is crucial to business practise. (Dereli, 2015) Scholars have increased their emphasis on manufacturing because it enhances organisational competitiveness. As a result, the process of initiating or commencing production over sales agents, marketing programmes, and campaigns was regarded as a crucial factor in enhancing competitiveness. This makes sense for a competitive company that innovates (Patri, 2005). Small and medium-sized enterprises are more successful against rivals when their competitiveness is enhanced through innovation (Adla et al., 2020).

2.4 Summary

This chapter examined essential variables that are the subject of the study: SMMEs in the manufacturing sector, production in SMMEs and production management in SMMEs, with the goal of defining substantial production processes that have the capacity to boost the productivity of SMMEs in the manufacturing sector. The chapter also included multidimensional descriptions of SMMEs in South Africa and around the world. The economic importance and challenges of SMMEs were examined in order to have a better knowledge of the environment they function in.

This chapter delved into SMMEs within the manufacturing industry, highlighting that manufacturing based SMMEs play a pivotal role in the value chain of South African manufacturing, especially in the Ekurhuleni Municipality. It was observed that many firms in this region are engaged in manufacturing activities. Furthermore, the chapter shed light on the challenges faced by manufacturing SMMEs in South Africa, including navigating a rigorous regulatory landscape and dealing with operational constraints. The discourse also touched upon production management as it pertains to SMMEs.

Various aspects of production, such as processes, classifications, levels, and typologies, were explored. Additionally, the chapter examined the practice of production management within SMMEs and introduced several frameworks that can be adopted to enhance their operational efficiency.

The theoretical framework of the study is provided in the next chapter. The productivity and sustainability of SMMEs in relation to internal and external environmental factors are also examined. The next chapter highlights contingency theory and the external factors affecting the productivity and sustainability of manufacturing SMMEs: technology, environment, the government, firm size, firm age, owner's educational level, owner's experience level and supporting agencies.

3 THEORETICAL FRAMEWORK

3.1 Introduction

As previously discussed, various factors influence productivity and sustainability in manufacturing SMMEs, including, but not limited to, firm size, staff training and resource availability (Rickards and Ritsert, 2018). The level of education and expertise of the owner or management also significantly affects the organisation's output (Kalkhouran et al. 2015). SMMEs in Ghana's – an emerging economy – poor rate of production, for instance, was linked to the owners' lack of knowledge (Amoako, 2013). Similarly, insufficient business skills are arguably largely to blame for the low production rate and productivity of South African SMMEs (Lekhanya, 2016; Maharaj and Garbharran, 2014).

Researchers have identified key elements that are thought to be indicators of what motivates or influences the productivity of SMMEs generally, as well as those elements specifically related to manufacturing SMMEs (Jamil et al. 2015).

It has been demonstrated empirically that productivity has an impact on the sustainability and profitability of manufacturing enterprises (Msomi et al. 2020). Additionally, Amara (2017) demonstrates the significance of enterprises harmonising their more complex productions, since this will have a significant impact on how well the firm runs, allowing the SMME owner or management to make well-informed decisions. It is therefore crucial to pinpoint the specific factors that influence SMMEs' productivity and sustainability. Regarding this study's objectives, the factors have been identified as either internal or external and are discussed further in the following sections.

3.2 Contingency theory and its Applicability to the Study

The contingency theory, rooted in organizational theory, posits that there is no one-size-fits-all approach to organizational management and decision-making. Instead, the optimal course of action is contingent upon various internal and external factors (Fiedler, 2006). This theory's essence lies in its adaptability, suggesting that

organizations must tailor their management strategies to best fit their unique circumstances.

In the context of the productivity challenges faced by Manufacturing SMMEs during the lockdown in South Africa's Gauteng Province, particularly in the Ekurhuleni Municipality, the contingency theory becomes highly relevant. The internal and external environmental factors affecting these SMMEs' productivity and sustainability are not static; they are influenced by a myriad of variables, from technological advancements to regulatory changes and market dynamics (Skelcher and Smith, 2015).

One of the primary objectives of this research is to understand the internal environmental factors affecting the productivity and sustainability of SMMEs within the Ekurhuleni Municipality. Here, the contingency theory can provide a lens through which to view these factors not as isolated challenges but as variables that require different management and operational strategies depending on the broader context (Donaldson, 2001). For instance, an SMME with a robust technological infrastructure might approach productivity challenges differently from one that relies heavily on manual processes.

Furthermore, the external environmental factors, such as regulatory changes or market shifts, can also be better understood through the contingency theory. SMMEs must adapt their strategies based on these external contingencies to remain sustainable and competitive. The theory suggests that there isn't a singular strategy that would work for all SMMEs; instead, each enterprise must evaluate its external environment and adjust accordingly (Oros and Nissen, 2010).

Another objective of this research is to ascertain the interrelationships between attitudes towards access to technological production manufacturing tools and knowledge of internal and external business factors. The contingency theory can shed light on this by suggesting that the relationship between these variables might be contingent upon other factors, such as the organization's size, structure, or market position (Ipinnaiye et al. 2017). For instance, an SMME with a more hierarchical

structure might have different attitudes towards technological tools compared to a more decentralized one.

Considering the variations between the age, roles, and education levels of respondents in their perceptions of access to technological tools, the contingency theory offers a perspective that these variations might be influenced by other contingent factors. For example, older respondents might have different attitudes towards technology based on their past experiences, which could be a contingent factor affecting their perceptions (Fiedler, 2006).

The contingency theory provides a comprehensive framework to understand the myriad of challenges and variables faced by Manufacturing SMMEs in the Ekurhuleni Municipality. By adopting a contingency perspective, this research can offer nuanced insights and recommendations tailored to the unique challenges and opportunities presented by each contingency, ultimately contributing to the broader academic discourse on SMME management and sustainability.

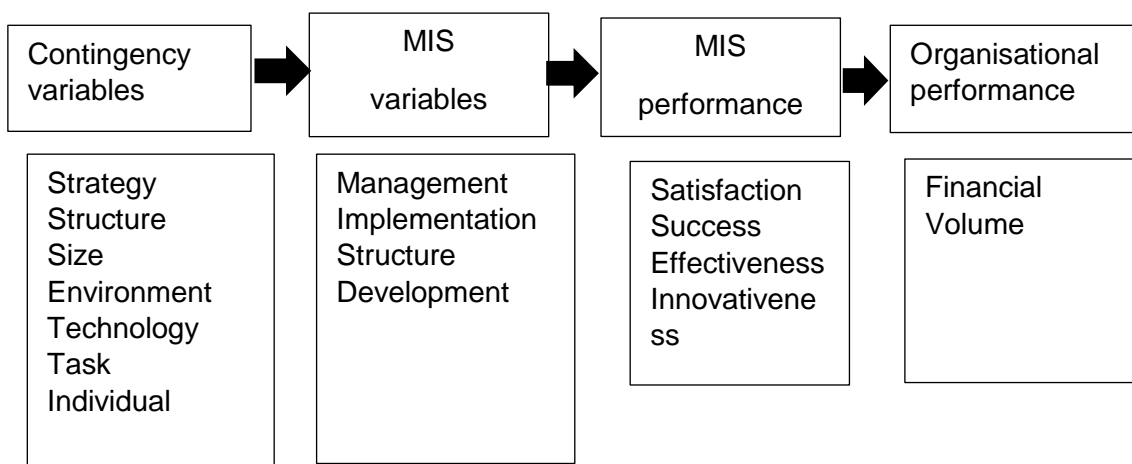


Figure 3.1: Contingency theory representing theory in management implementation structure (MIS) (Weill and Olson, 1989)

The adoption of production management in firms is influenced by different circumstances, as indicated by Weill and Olson (1989) in their exposition of contingency theory. The present study utilised a contingency theoretical framework to systematically identify the internal and external elements that exert influence on production within the context of manufacturing small, medium, and micro enterprises (SMMEs). Upon conducting a thorough review of the available scholarly works, the researcher successfully identified several supplementary internal and external elements that were not previously addressed in the literature. These aspects have been duly incorporated into the empirical findings of the study.

3.3 Internal factors

Cant and Wiid (2013) note that there are several internal factors that influence SMMEs' productivity and sustainability. These include access to funding, reliable infrastructure, management abilities and level of education, investment expertise, the adoption of technological innovations and comprehension of production costs. The productivity of SMMEs may be compromised by resource limitations, such as insufficient production skills and a lack of management and staff training (López and Hiebl, 2015). The three most important factors among these were observed to be education, experience and training. These factors will be discussed in greater detail in the following sections (López and Hiebl, 2015).

3.3.1 Educational level of manufacturing SMME owners

Lower levels of education in SMME owners and managers have been identified by authors such as Lekhanya (2016) as presenting a major obstacle to the expansion of SMMEs in South Africa. Education among management, which must possess the necessary skills to boost business performance, is necessary for SMMEs, or any form of business, to be sustainable, productive and viable (Amoako 2013; Lande et al. 2016). Mashavira and Chipunza (2021) assert that the management in the majority of organisations must possess the essential skills, experience and understanding of organisational operations in order for the business to function effectively.

The knowledge and abilities required for making informed judgments in the business sector are recognised to be added to or created by education (Littlewood and Holt, 2018). SMMEs depend on the owner or manager to make wise business decisions.

Therefore, the management's level of education has an impact on the company's output and performance (Jamil et al. 2015; Neneh, 2018). This also applies to manufacturing SMMEs, where the owner or manager must have a sufficient level of education to oversee the operation of the company (Azudin and Mansor, 2017). Azudin and Mansor (2017) found that Malaysian manufacturing SMMEs had difficulty integrating or managing production without the SMME owner or manager holding some level of education or knowledge. In contrast, Omsa et al. (2018) found that medium-sized Indonesian enterprises did not view the level of education as significant in a production management role.

Ghazilla et al. (2015) concur that an SMME's owner or manager's level of education or knowledge critically affects the types of skills needed, and is important in managing a company's day-to-day operations and making wise decisions, as this depends to a significant extent on the owner or manager. Yeboah (2015) discovered that SMME owners and managers with university or postgraduate degrees saw more progressive sales growth by acquiring the necessary abilities than SMME owners and managers with only a high school diploma (Omsa et al. 2018). Similarly, Jevwegaga et al. (2018) discovered that the managers' educational backgrounds had a substantial impact on the commercial performance of Nigerian SMMEs.

3.3.2 Experience level of manufacturing SMME owners

Knowledge of contracts, interpersonal dynamics, accounting and the environment are just a few of the types of experience and knowledge needed to manage an SMME's operations (Henriques and Catarino, 2014). The lack of experience among SMMEs' owners and managers was another reason given for the failure of manufacturing SMMEs to adopt productivity management systems according to Asah et al. 2015. Effective resource management also demands a certain level of experience, which affects both the implementation of the production that will be processed by a firm and the success of the business (Asah et al. 2015). The owner or manager's level of experience was found to be one of the most important determinants of production in several studies (Lampadarios, 2016; Vanauken et al. 2017). The implementation of productivity management systems directly resulted in increased performance, growth and sustainability (Lampadarios, 2016; Vanauken et al. 2017).

3.3.3 Size of firm

The size of a company affects the management style it employs, such as whether it is traditional or modern (Azudin and Mansor, 2017; Hu et al. 2015). According to Ahmad and Mohamed (2015), different management philosophies can be readily adopted by various SMMEs depending on the size of the company. Abdel-Kader and Luther (2008) state that larger enterprises are better able to adapt to current management styles than smaller companies because of their more developed infrastructure and greater access to resources.

The use of traditional costing and budgeting systems has also been demonstrated to be driven by size and there is a connection between size and the use of performance measurements (Asogwa et al.,2017). Moreover, to properly create and manage the use of production management systems, a more sophisticated organisational structure is needed for larger organisations (Elhamma, 2015; James and Hoque, 2000).

Ezeagba (2017) contends that the type of production management system that will be chosen is more likely to be impacted by the strategy of senior management than by the size of the corporation. According to Li and Dang (2013), a firm's size can be classified in a number of ways, including by turnover, employee turnover, total assets or market value of equity, and this determines the type of production management systems that will be adopted and customised to meet the firm's specific goals. Based on this, it is clear that the size of the firm has no bearing on whether production management systems are adopted.

3.3.4 Age of firm

According to Yeboah (2015), when businesses that have been around for more than six years implement the appropriate production management systems, their sales increase significantly. According to Alkhajeh and Khalid (2018), SMMEs in South Africa can implement production management as early as the start-up stage if they perceive a need to advance their strategy and improve their performance. However, businesses that have gone through the development phase typically employ modernised production management systems that are more complex (Ceptureanu et al. 2020).

SMMEs with less than three years of experience frequently struggle to obtain bank financing, making it challenging for them to adopt the pertinent production management systems that can benefit them (Wang et al. 2016). As a result, younger companies frequently need more experience implementing complex production management systems, hindering their potential to expand (Igwe et al. 2018). Therefore, the age of the company substantially influences SMMEs' production management.

3.3.5 Structure of firm

According to Senftlechner and Hiebl (2015), a complex firm structure is not required to adopt techniques for using financial and non-financial information; rather, it serves to support the organization's operation regardless of its structure. However, researchers have discovered that the type of production management systems used depends on the form of the organisation (Ipinnaiye et al. 2017).

Otley (2016) argues that, since there are several production management system architectures, each SMMEs must determine which production management system will work best with its unique organisational structure. For manufacturing SMMEs in particular, the organisational structure adopted by the company is crucial for building production management systems capable of boosting product development and sustainability (Gandhi and Thakkar, 2021).

The structure of a firm and the kind of production management systems used by SMMEs, particularly manufacturing SMMEs, are significantly impacted by changes in company size, as only those specific production management systems can support the functions required by these businesses (Gentile-Lüdecke et al. 2020).

According to several researchers, SMMEs with straightforward structures and few resources are not required to implement production management systems (Kalkhouran et al. 2015). Nevertheless, manufacturing SMMEs must generate opportunities by putting the newest production management systems in place if they want to develop into larger businesses (Suh and Lee, 2017). Ahmad and Zabri (2015) also asserted that, even though these enterprises do not have complicated

organisational structures, implementing production management systems is still crucial to promote expansion.

3.3.6 Training of staff

Training can help SMMEs' owners and managers develop their abilities, knowledge and competencies, which will help them adopt production management systems more successfully (Whittaker et al. 2014). Staff training may also be considered a requirement for innovation and the effective adoption of more modern production management systems. Moreover, Maes and Sels (2014) contend that training plays a significant part in establishing a competitive edge in the market by enhancing a staff's diverse competencies.

Consequently, by training their staff, manufacturing SMMEs will be enabled to create innovative ways to improve their company's performance, product lifespan and sustainability (Omri, 2015). Ghebrihiwet (2019) and Ipinnaiye et al. (2017) emphasise that training enables a firm's employees to obtain more knowledge about implementing production management systems and boosts their work competencies, allowing them to operate more effectively. Pacheco et al. (2016) concur that training contributes to the expansion of businesses.

However, there are other studies, such as that by Padachi and Bhiwajee (2016), which failed to provide evidence that training provided to SMMEs' owners or managers and staff improved the enterprise's performance. This might be because of the factors identified by Antonioli and Della (2016), who discovered that most organisations do not facilitate post-training follow-up sessions to assess staff competency levels after training.

3.4 External factors

According to research, government policies are external variables that have a significant influence on the growth of SMMEs (Jamak et al. 2014). The fact that the South African government receives tax benefits from SMMEs while frequently failing to provide incubation for these businesses raises serious concerns. According to Hasanaj (2017) and Maas and Herrington (2007), newly established SMMEs are often

unaware of aiding organisations such as Khulula Enterprise Finance, SEFA and SEDA.

Several researchers have also argued that the government hinders the expansion of SMMEs by collecting taxes (Chamberlain and Smith, 2006; Naicker and Rajaram, 2018). Aigbavboa, Oke, and Kakanyo (2016) state that the Employment Act, rigorous labour laws, a lack of networking opportunities, increasing costs, rising petrol prices, and challenges with suppliers are the main reasons why SMMEs fail. Other factors include changes in the outside environment. According to Cant and Wiid (2013), the majority of manufacturing SMMEs are unable to deploy production management systems because of each of these problems. Olawale and Garwe (2009) draw attention to the fact that a business cannot control external environmental factors, making it difficult for management to choose which external factors can be ignored given that they all affect how the firm operates.

Additionally, it has been determined that these variables affect how production management systems are adopted, which significantly affects the expansion of the economies of these companies. Most academics are aware of how the adoption of production management systems is influenced by external environmental factors. These elements include the economy, market success, establishing networks, criminal activity, unethical labour and stringent restrictions (Lekhanya, 2015; Lekhanya, 2016; Lo et al. 2016).

SMMEs in the manufacturing sector must deal with various technological changes because the market is always evolving, due to the introduction of new technologies, product improvements or other advancements (Jamali et al. 2015). All types of businesses are under pressure due to the present markets' global orientation, which forces management to constantly modify their company procedures.

Another important factor for SMME owners and managers to consider is environmental responsibility; they need to be aware of the environmental effects of their business (Jamali et al. 2015). An organisation's ability to remain viable can be affected by the climate in particular (Csutora and Harangozo, 2017). Overpopulation, biodiversity loss, deforestation, poverty and limited access to water and other resources are

sustainability challenges brought on by climate change (Kalkhouran et al. 2015) that businesses will increasingly need to consider. Furthermore, studies have indicated that due to their greater financial resources, major enterprises are better able to account for carbon emissions than SMMEs (Harangozo and Szigeti, 2017). The necessity of examining SMMEs' contributions to climate change and ensuring their sustainability in this setting is becoming more and more evident in the literature.

The competitive climate in business has changed because of significant environmental change, rapid technology advancement and product and market innovation, but the risks are still unknown (Abdelzaher and Abdelzaher, 2017; Kwarteng et al. 2015). It is crucial that SMMEs search for a competitive advantage and the expansion of their share values. However, SMMEs must constantly adapt to environmental changes and invest significant effort to keep client loyalty in order to maintain a competitive edge (Cardoş et al. 2011).

Due to these circumstances, manufacturing SMMEs are being forced to innovate better planning, controlling, decision-making, risk management and appraisal systems inside their organisations. A number of studies, including those by Cardoş et al. (2011) and Intakhan (2018), emphasise the importance of adapting to modifications in the firm's environment, competition and global influences in order to improve the performance of business operations by adopting pertinent production management systems. In order to understand their effects on the adoption of production management systems in manufacturing SMMEs, only the factors listed in the follow sections were identified and analysed for this study.

3.4.1 Government and supporting agencies

Globally , most government organisations have been set up to assist SMMEs in obtaining financing and to provide them with the money they require for continued operations, because these companies are regarded as important participants to the economy (Oparaocha, 2015). According to Asah et al. (2015), SMMEs owners and managers who are aware of these organisations are better equipped to satisfy their managerial financial demands and acquire the competencies necessary for implementing production management systems.

These assisting organisations, however, are frequently only recognised for their capacity to provide financial assistance and learning; barely any focus is currently given to them being networking hubs that might promote research into the possible adoption of applicable production management systems (Oparaocha, 2015). There are various government institutions in South Africa that were created to help manufacturing SMMEs by offering finance, guidance and capacity-building for how to effectively increase business performance. Among them are SEDA, Khulula Enterprise Finance and Ntsika Enterprise Promotions (Agwa-Ejon and Mbohwa, 2015). They were created to support SMMEs of all kinds.

A number of academics have observed that many SMMEs are unaware of such institutions; hence, they typically do not receive any help from the government (Ayandibu and Houghton, 2017; Dlamini et al. 2019). This is a factor in the high rate of company failure among manufacturing SMMEs.

By creating more employment prospects than the government, many governmental functions are arguably now performed by SMMEs (Bushe, 2019). To be able to obtain the necessary funding, guidance, mentoring and training that will help them to, among other things, adopt the most appropriate production management system to suit their needs, manufacturing SMMEs must therefore make use of these government agencies (Gomes et al. 2018; Msomi et al. 2020; Sousa et al. 2019).

3.4.2 Technology

Technology is one of the main ways for any company to obtain a competitive edge because it allows for higher efficiency by speeding up the production process (Amesho et al. 2021). The use of technology by manufacturing companies, according to Bharati and Chaudhury (2010), is commonly acknowledged as a tool that encourages product innovation, improves direct or integrated communication between the many roles in the organisation and permits flexibility. However, due to the high expense of updating their technologies in a market that is diversified, technological innovation is a big concern for all manufacturing SMMEs (Karadag, 2016).

In this regard, it has been discovered that the majority of manufacturing SMMEs have poor rates of adoption of production management systems, frequently because of a

failure to employ the kinds of technologies that would allow them to benefit from lower production costs (Karadag, 2016). In a study in the US by Bharati and Chaudhury (2010), medium-sized firms were shown to be more aware of new technologies than smaller firms. Moreover, most SMMEs owners or managers who are not formally educated often cannot adapt to either existing or newer technologies.

The adoption of the most recent software can help organisations implement the most effective production management systems (Giotopoulos et al. 2017). Technology also enables the adoption of more complex production management systems, which can increase business turnover (Martí and Quas, 2018). However, to address this, suitable technologies, competent management support, adequate company size, resources and infrastructure are all necessary (Schneider et al. 2015).

3.4.3 Changes in the economy

Global or national shifts in society and culture can be brought about by a dynamic change in the economic structure as a result of political or market rules, technology advancements or both (Goryakin et al. 2015). Cant and Wiid (2013) concur and assert that all businesses, especially SMMEs, need to be aware of market diversification and how to respond to it. SMMEs in South Africa have experienced a variety of difficulties in recent years, including load shedding, high loan rates, fluctuating exchange rates, price increases, job losses, corruption, the introduction of new technology and communicable diseases (Organisation for Economic Co-operation and Development (OECD) 2020).

Finance, competitiveness and criminality are some of the most urgent challenges facing SMMEs, according to the results of a 2015 SMMEs survey (Handbook of Research on Consumerism and Buying Behaviour in Developing Nations, 2016). However, criminality is no longer the first priority. Instead, South African SMMEs' most serious problem is frequent and extended power outages ("load shedding"). This is a persistent problem in South Africa that has lasted years. For example, in the first quarter of 2019, there were significant production interruptions in South Africa due to excessive load shedding, which resulted in unhappy customers and equipment damage (Small Business Development, 2022).

Load shedding affects manufacturing SMMEs production. This inactive time, which can continue up to four hours, causes loss of sales. Due to the lack of backup generators in the majority of these businesses, this has a direct impact on SMMEs' performance. During Stage 2 load shedding, it is estimated that South Africa's economy loses an average of R2 billion per day (SARB, 2022; Walsh et al. 2021).

The profitability and sustainability of SMMEs are thus directly impacted by load shedding. Because of spoilages and irrecoverable losses brought on by these frequent power outages, the output of the majority of manufacturing SMMEs has been severely hampered, and the failure rates of these businesses have risen as a result. (Nedbank, 2023) Furthermore, South Africa's has experienced periods of recession during the last several years, which has a direct impact on the trade of SMMEs and may also have an impact on the adoption of production management systems.

According to McNamara et al. (2016), the rate of inflation in Europe has had an adverse impact on the performance of SMMEs, as a share of GDP as well as their ability to receive financing from the banking industry. According to Ipinaiye et al. (2017), inflation has a detrimental impact on SMMEs' levels of growth, output, pricing and costing of goods and services in addition to negatively affecting their performance.

The GEMs report 2019 ranked South Africa 72nd globally with regards to highest crime rate. Crime is another element that academics have highlighted as contributing to the changes in the economy (GEMs, 2019). This research also demonstrated how crime affects businesses' ability to survive.

3.4.4 Competition

South African SMMEs are facing increased competition from the country's large businesses, particularly in Ekurhuleni Municipality (Badenhorst-Weiss and Cilliers, 2019; Magalhaes and Hartanto, 2020). SMMEs need to "continually transform, evolve, or reinvent their own way" (Lebusa, 2013) . This is so that they can be sustainable and long-lasting business in order to counteract this competition. Consequently, the development and survival of SMMEs, particularly those in Ekurhuleni, depends on

their enhanced productivity and their ability to compete with rivals (Badenhorst-Weiss and Cilliers, 2019; Tselepis et al. 2016).

Competitiveness is defined by comparing the degree related to economic or monetary competition across various businesses in a same sector and their environmental contexts and allows one to gain a significant amount of market advantage (Sachitra, 2016). In business and public discourse, the phrases “competitiveness”, “competition” and “competitive advantage” are frequently used synonymously.

These ideas’ definitions can change depending on the issue at hand. While the concepts of competitiveness and competitive advantage are evident at the national, industrial, and business levels, competition is the primary metric for economic activity (Cong and Thu, 2020; Sachitra, 2016). Additionally, according to several researchers (Cong and Thu, 2020; Delp and Mayo, 2017; Utami and Lantu, 2014), while competition is fostered by rivalry, the competitive advantage is only attained when a company leverages competition to capitalise on opportunities. Therefore, a company's competitiveness begins with enhancing its competitive edge (Sachitra, 2016). This includes a method of developing, sustaining and delivering exceptional value to clients in a way that makes it difficult for rivals to imitate (Badenhorst-Weiss and Cilliers, 2019; Sachitra, 2016).

3.4.4.1 Competition

The notion of “competition” (which comes from “contest” or “pursue together”) refers to the competitive state brought on by multiple stakeholders working toward a common commercial goal (Zelga, 2017). As a result, competition is typically viewed as a situation where rival parties attempt to compete over a single resource. Competition inherently entails a state of rivalry when there exists only one prospective victor. The emergence of competitive rivalry can be attributed to the presence of two or more competitors who are actively contending for a prize that is unattainable for all participants. Utami and Lantu (2014) suggest that there exist four crucial criteria in the realm of corporate competition. The rival enterprises and/or potential newcomers are the rival competitors.

- Profits, market share, resources and customer happiness are the objects of competition and the reason why competition exists.

- Competitive capability shows a company's tenacity in a competitive environment.
- The competitive outcomes demonstrate the justifiable advantages of competing products among rivals.

3.4.4.2 Competitiveness

Competitiveness originates from the concept of competition (Cong and Thu, 2020). However, because competition is a complex and extensively researched topic, there are numerous distinct definitions of the term in the literature. There isn't a single, all-encompassing definition of competitiveness, despite the fact that it has become more and more significant among scholars and organisations (Ibarra et al. 2018). The notion of "competitiveness" is still poorly understood despite extensive discussion and investigation (Setyawan et al., 2015), and its definition is not generally agreed upon.

Accordingly, the corporate, manufacturing, and national perspectives can be used to clarify competitiveness (Utami and Lantu, 2014). Since productivity is dependent on a firm's capacity to maintain a competitive edge, improvement in productivity and firm-level competitiveness are related (Sachitra, 2016). However, according to (Navickas et al. 2015), one must take an organization's goal into account while determining competitiveness. Definitions of "competitiveness" also need to highlight a clear relationship between domestic and international economic activity, as economic globalisation increases the strains of competition on all enterprises (Akaba et al. 2014; Habánik, 2018). From the perspective of the enterprise, competition is characterised by the ability of the company to expand its revenue, outperform its competitors locally and globally, and endure and prosper (Cong and Thu, 2020; Sipa et al. 2015; Utami and Lantu, 2014).

"Competitiveness" at the industrial level refers to comparing companies that are involved in the same or similar industries. It highlights the extent to which individuals, groups, economies, or geographical areas can sustain their competitiveness in order to provide financial benefits (Sachitra, 2016). Industrial competitiveness, according to Sibel (2015), is the process of gaining and preserving an ongoing competitive edge

over competitors. According to Anton et al. (2015), competitiveness is defined by Porter (1980) as the use of a strategy that creates value and is reproducible, giving an industry an edge over others.

According to Ibarra et al. (2018), the globally accepted definition of competitiveness emphasises the importance of the "system of structures, policies, and events that define the level of productivity of a country." This suggests that the social, cultural, and economic elements impacting the population are expanding and getting stronger (Ibarra et al. 2018). According to some writers, there is a strong correlation between corporate and global competitiveness. But the concept of firm-level competitiveness is defined in terms of business productivity, growth, and profitability, which makes it quite plain and straightforward (Sipa et al., 2015).

3.4.4.3 Competitive advantage

Experts and practitioners in strategic management frequently employ the term "competitive advantage" to define and compare an organisation's performance to that of competitors, as well as to explain what amounts to variances in performance (Sachitra, 2016; Sigalas, 2015). Due to the fact that competitive advantage is the result of a few firm operations, it may be difficult to comprehend from the firm's perspective (Porter, 1980).

Competitive advantage, as defined by Chahal and Bakshi (2015) and Badenhorst-Weiss and Cilliers (2019), is an edge in the marketplace that helps a firm to outperform its competitors. With a competitive edge, a corporation can service more clients than its competitors. When a company can develop and maintain competitive features to outperform its competitors, its competitive advantage becomes evident; this additionally relies on assessing relevant performance characteristics, including profits, financial results and possibilities for costs (Sigalas, 2015; Uzoamaka and Owuamanam, 2023). Additionally, a competitive edge often stems from a scarce or valuable resource; a company will only have a competitive advantage if it has built a distinct and sustainable resource (Badenhorst-Weiss and Cilliers, 2019; Sachitra, 2016).

3.5 Organisational environmental factors: a solution for SMMEs

Businesses must provide their customers with competitive services in today's modern, dynamic business climate since consumer preferences and technological advancements are constantly changing (Galvão et al. 2018). As a result, organisations need to take measures that are more competitive and make strategic changes to become more competitive. The SMME sector is debating ways to enhance and maintain its competence in a turbulent and volatile marketplace due to a combination of factors, including the 2008 global economic crisis, which forced inefficient enterprises either to transform or disintegrate (Beyene et al. 2016), encouraging businesses to find new methods to thrive and survive. Therefore, to adopt sustainable competitive strategies, SMMEs must enhance their performance.

Because of the challenges and changes in the business environment brought on by globalisation in the twenty-first century, SMMEs must strategically consider elements that will lessen those pressures and increase their ability to compete with already established rivals (Anton et al. 2015; Uchegbulam et al. 2015). SMMEs will only be able to survive in a globalised, competitive world if they adopt innovation-oriented methods.

Evidence from the literature shows that organisations' competitive behaviour yields favourable consequences (Carvalho et al. 2014). Organisations can achieve this by implementing non-static, proactive and innovative management techniques (Sibanda et al. 2018). An enterprise's ability to expand its target audience's negotiating power and attain its business goals is also improved by competitiveness. As a result, SMMEs can enhance their competitiveness by aiming to do something better than others, something that is challenging to mimic, beneficial for their clients and difficult to replicate, and something that generates more profit than their rivals (Anton et al. 2015; Hutahayan and Yufra, 2019).

Businesses can boost and preserve their competitiveness in various ways, including engaging in activities that differentiate their competitive products in the market (Uchegbulam et al. 2015). Other resources that can be controlled to increase competitiveness include: "financial, people, and technological resources; structure of organization and infrastructure; innovation, efficacy, and durability; brand and

prestige; cultural; product/service variety, adaptability; and customer services” (Carvalho et al. 2014).

Managing people, money, resources and technology capabilities is critical for increasing competition and improving corporate success (Anton et al. 2015). A study by Monyane and Bama (2022) identified customer relationship management (CRM) as one of the essential tools for managing a business in a competitive market, which should be driven by harmonising internal and external aspects and specific entrepreneurial talents. Firms should create a strategy for competing involving invention that is in line with the targeted competitive goals to achieve higher client retention levels than usual.

The following components were suggested as strategies to improve the competition capacity of SMMEs in a study by Utami and Lantu (2014):

- Running a business is more enjoyable for the business owner when they can do it passionately. Business performance will improve, and there will be more competition. The business will be competitive if it has a growth strategy to assure sustainability.
- For the government, streamlining SMMEs-related bureaucracies (such as the tax burden) will permit rapid expansion. The government must offer SMMEs assistance programmes that open doors for growth.
- For the benefit of the intermediaries: SMMEs support institutions (such as educational professionals, banking institutions and educational organisations) should teach SMMEs, support company owners, do investigations, regularly impart expertise about the SMMEs context and make it easier for SMMEs to obtain capital and prospective investors.
- According to various research, the primary elements influencing SMMEs’ competitiveness are government support programmes and the entrepreneurial abilities of SMME owners (Banwo et al. 2015). Support programmes through regional and municipal authorities and organisations that ease access to credit facilities, business licenses, promotions, branding and training are also important (Taneo et al. 2017). According to Cheng and Chen (2017), rather

than the belief that the government should encourage it, internal corporate innovation is the most critical approach to boosting competitiveness.

Competitive intelligence (CI), according to a study by Priporas et al. (2019), is what allows for competitive behaviour. Whereas SMMEs tended to adopt informal methods, large organisations practised CI more. It should be noted that CI only supports organisations' moral and legal methods for collecting and analysing data about rivals and related sectors to enhance the market's competitive position (Priporas et al. 2019). Such procedures are essential for SMMEs working within a competitive, global market with limited resources. SMMEs can utilise CI to gather information through techniques like routine trips to the locations of competitors and then use the evidence to increase their level of competitiveness (Priporas et al. 2019).

Monyane and Bama (2022) cite client relationship management as one of the critical technologies to assist organisations in managing a competitive environment and boosting and retaining customer loyalty. However, client relationship management is generally better suited to boost an organisation's marketing efforts than its competitiveness (Guha et al. 2018). In contrast, Dhliwayo and Madhovi (2017) note that client relationship management could increase competition by helping SMMEs to comprehend clients and react more quickly and effectively.

Client relationship management increases a company's competitiveness by assisting it in better understanding its clients and providing them with value (Galvão et al. 2018). Similar to service-oriented organisations, where service delivery happens whenever there is a provider-customer connection, client relationship management improves innovative processes (Monyane and Bama, 2022). Many scholars regard competitiveness as requiring invention (Azis et al. 2017; Sipa et al. 2015) As a result, organisations accept innovation as the primary means of inventing significance and gaining an advantage over rivals in a competitive business climate (Farida and Setiawan, 2022).

Innovation is viewed as a critical basis of competition capacity for any company that aims to be sustainable and thrive in markets with intense competition, since it is regarded as essential to gaining a competitive advantage and winning customers (El

Bassiti and Ajhoun, 2014). Competitiveness, sustainability and corporate performance are all strongly influenced by innovation (Mazzola et al. 2018; Walker et al. 2015). Scholars discovered that innovation-focused businesses outperformed others as early as the nineteenth century (Zhang, 2022). Only inventive businesses can compete in today's economy by bringing creativity to the market more quickly than their rivals (Hutahayan and Yufra, 2019; Louw et al. 2018).

In order to improve SMMEs' competitiveness, survivability and competency, Tselepis et al. (2016) suggest using the innovation management technique. Businesses that use innovation management may create and keep a competitive advantage in their market. According to Farida and Setiawan (2022), many businesses rely on their ability to innovate to increase their chances of success and survival. It is undeniable that SMMEs can create competitiveness in this way, and those who do not risk losing future value. Only those that innovate can survive in a competitive market (Cheng and Chen, 2017; Sipa et al. 2015).

3.6 Theories of Organisational Strategies in Response to Environmental Factors

The realm of competitiveness in economics has seen significant contributions from classical economists, with figures like Adam Smith laying foundational ideas that would later influence the development of modern theories in the 1980s. While Smith's seminal works in the 18th century provided a basis, the theory of competitiveness gained momentum and clarity in the 1980s, particularly after the publication of Michael Porter's influential works (Ahmedova, 2015).

Porter's (1980) contributions marked a significant shift in understanding competitiveness. He delved deep into the enterprise-level aspects, examining them from both industrial and organisational competitive advantage perspectives. His works signalled the evolution and maturation of the conventional economic framework, which became more pronounced in the 1990s (Ahmedova, 2015). Porter (1980) posited that competition, in the context of the modern global economy, isn't just a transient phase but an essential mechanism for long-term progress. He emphasized its role as a pivotal driver of national success, a view that has been echoed and expanded upon in subsequent studies (Sachitra, 2016; Utami & Lantu, 2014).

Numerous strategic theories exist; however, these theories are seldom employed as a foundation for increasing competition capacity (Zonooz et al. 2011). Organisations rely on their organisational competitive strategy, which is a strategy that allows leadership to stand out in a particular competitive environment and serves as a means of enhancing or preserving an organisational advantage over rivals.

This strategy entails a number of elements, such as an examination of customer behaviour, the environment of the market and rivalry in the marketplace (Uchegbulam et al. 2015). The fundamental competency strategy, the strategic direction method, the resource-based view and the competitive advantage strategy model are a few of the concepts that have been widely used to study competitiveness (Utami and Lantu, 2014). In order to gain market dominance and satisfy their stakeholders and clients, organisations also rely on innovation to enhance their organisational strategy. The resource-based perspective and general competitive strategies are two of the crucial elements of Porter's (1980) theory of competitive strategy and advantage model, which are discussed in greater detail in the following section.

3.6.1 Generic competitive strategies

Strategic marketing and management literature has researched the general competitive strategies in detail (Kaya, 2015). Porter (1980) was the first to create the theory of generic competitive strategies, which has greatly advanced the fields of organisational study and strategy (Uchegbulam et al. 2015). Businesses use generic strategies for competition to surpass their rivals, according to Porter (1980).

The archetype of competitive strategy serves as the foundation for most of these tactics. As a result, organisations that want to maintain their competitiveness or their ability to differentiate themselves in the broad market utilise generic competitive strategies (Uchegbulam et al. 2015). To produce higher value and as a means of helping organisations beat rivals within an industry, businesses can increase production by implementing one or a mix of various generic strategies (Utami and Lantu, 2014). Porter's (1980) three generic strategies: overall cost leadership, differentiation and focus – are covered in the sections that follow.

3.6.2 Cost leadership generic strategy

Concerned about cost imbalances is the cost leadership strategy. According to Porter (1980), the cost leadership approach necessitates a significant level of control over expenditure governance. The quality of the product or service is not compromised when a company employs the cost leadership strategy (Utami and Lantu, 2014).

3.6.3 Differentiation generic strategy

The differentiation generic strategy is more closely related to entrepreneurial activities than the leadership strategy, despite being more expensive (Kaya 2015). This tactic is a means of producing a good or service that is exclusive to the market (Porter 1980). When a business develops distinctive services or goods that consumers see as distinct from those of competitors and rivals and as offering higher value, it employs the differentiation generic strategy (Utami and Lantu, 2014). By using the differentiation generic strategy, a company can establish a defensible edge and generate earnings that are above average for the sector (Kaya, 2015; Porter, 1980). However, promoting a differentiation generic strategy does cost more in a few functional areas.

3.6.4 Focus generic strategy

In a focus generic approach, a business chooses a certain market sector to successfully service as its niche market (Utami and Lantu, 2014). Such an approach is predicated on providing superior service to a certain market segment, consumer, constrained geographic area or product line than competitors who compete in a more varied way (Salavou, 2015).

3.6.5 Resource-based view

In order to assess a resource's value, the resource-based view is used (Uchegbulam et al. 2015). This theory has its origins in strategic management. Although the resource-based theory shares some characteristics with the work of older industrial economists, the literature on managerial and strategic thinking embraces its impact on competition capacity (Lafuente et al. 2020). This idea became well-liked since it highlights a company's ability to compete and looks at how companies participate in the market and handle competition among resources that could have an impact on performance (Alvarez & Barney, 2017).

The resource-based view theory posits that a firm's internal resources have a significant role in influencing its competitive capabilities (Uchegbulam et al., 2015). According to Lafuente et al. (2020), the foundation for sustaining a competitive advantage is in the cultivation of resources and core capabilities. The resource-based view theory is founded on the premise that the competitive edge of a company is contingent upon its ability to utilise its resources in a successful and effective way. Moreover, this proposition is based on the notion that resources, when they impact a company's performance, may possess economic worth, exhibit relative scarcity, and possess uniqueness (Ruivo et al., 2015).

The resource-based view is criticised for its internal concentration and tendency to neglect market needs, despite its significance in the field of strategy, while certain concepts in the field recognise the link connecting resources and the dynamics of markets (Wang et al. 2022). Additionally, the resource-based view evaluates resources using a database of both tangible and immaterial resources (Wang et al. 2022). The physical resources that a company consumes can be seen and measured as tangible resources (Utami and Lantu, 2014). This includes all resources with physical features like structures, equipment and materials, and they are simple to replicate and highly visible to rivals (Kull et al. 2016; Wang et al. 2022). As their economic value is simple to calculate, competitors frequently copy tangible resources (Wang et al. 2022).

Intangible resources are less apparent than tangible resources and less amenable to competitive imitation (Kull et al. 2016; Wang et al. 2022). The organisation's human capital is an example of intangible resources, and includes trust, management skills, creative resources such as scientific expertise and records, notions and the ability to create new ideas. In addition to resources, such as consumers' and suppliers' opinions, other examples of intangible resources that cannot be measured include: production techniques, brand recognition, intellectual property rights and registered trademarks, and technological advancements (Utami and Lantu 2014; Wang et al. 2022).

According to Kull et al. (2016) and Wang et al. (2022), managers are generally more focused on achieving a long-term competitive edge, which enables organisations to continue to outperform their rivals by creating, exploiting and preserving resources and skills that cannot be duplicated. To become sources of long-term competitive advantage, a firm's resources may not all have the same potential (Wang et al. 2022). By generating economic value, the resources will give their users a long-lasting competitive advantage, and their uniqueness and non-substitutability will allow new ways to capitalise on the economic value they bring (Nason and Wiklund 2015). For the business to sustain its competitive advantage, its resources also need to demonstrate some resilience against imitation by rivals (Nason and Wiklund, 2015; Nelson and Cottle, 2019).

3.7 Measures of production competitiveness in SMMEs

Several metrics, including potential, process and performance measurements, comprise the broad idea of competitiveness (Utami and Lantu 2014). Similarly, firm competitiveness highlights the company's capacity to outperform rival businesses from a financial, revenue or market share standpoint (Akben, 2016). However, according to Ceptureanu et al., 2020, the motivation behind the competitiveness metric lies in scholars' point of view. Despite some differences, the emphasis on competitiveness stresses the many criteria of "excellent execution, long-lasting advantages in competition, trade performances, expenditures management, and expansion factors" (Ceptureanu et al., 2020). In contrast, Ahmedova (2015) claims that a firm is competitive if it can create and maintain opportunities that result in improved performance and long-term profitability. Other research, including employee and sales growth, have been used as subjective competitiveness measures, according to Sachitra (2016).

A study by Utami and Lantu (2014) cites potential, process and performance measures as goals to strive for or as factors that affect the business. A few examples of these include: inside factors "monetary competencies, staffing competence and innovative competence"; outside factors "general environment, environment of competition and sustaining environment"; and entrepreneur attributes "passion and determination". According to Sachitra (2016), cost, profitability, market share and productivity are common indicators of competitiveness at the company level. Many other concepts,

including pricing, the expense of time, revenue, mobility, expansion of sales and staff development, can also be used to gauge an organisation's competitiveness (Sachitra 2016).

Productivity is determined by competitiveness, according to Flores-Tapia et al. (2022); however, Ceptureanu et al. believe that competitiveness indicators include components of "productivity, efficiency, and profitability" (2020). The opposite is also true, according to Ahmedova (2015) and Ceptureanu et al. (2020), who argue that an evaluation of competition can be based on generated increases in profitability and productivity, which are possible to maintain when an acceptable equilibrium across value to shareholders, value to customers, commercial capital and personnel is maintained.

According to Sachitra (2016), competition can be assessed by looking at previous or anticipated performance and measures of asset earnings, other than financial results (client satisfaction, staff progress), and comparison against rivals. Competitive advantage is considered a barometer of competitiveness since it can raise a company's profits (Sachitra, 2016). Regarding "product innovation, the efficiency of production, monetary circumstances, and organisational efficacy about reconfiguration and buyer inspiration" (Ahmedova, 2015), competitiveness at the enterprise level is quantifiable. Additionally, a competitive environment tends to affect the firm's competitiveness, which can be assessed using benchmarks set by customers and rivals.

Therefore, a market share is a vital sign of competition ability at the corporate, sectoral or governmental levels. Gains in the market share, therefore, help to raise the level of competition (Ceptureanu et al. 2020; Sachitra, 2016). According to Lockett (2018), sales prospects and financial tools are further indicators of competitiveness in a crowded market. The organisation must use creative marketing strategies to increase its competitiveness in response to the sales measures (Lockett, 2018).

3.8 Summary

Organisational environmental factors are a theoretical idea that provides a comparison between businesses, industries or countries. The challenges of ecological factors and

activities can all be understood by this notion. In the corporate world, organisational environmental factors are seen as a barometer of development and continuity, such as how SMMEs deal with competition as a reason for failure. Thus, SMMEs' ability to develop and retain their competitiveness will be critical to their survival and flourishing. As a consequence, this chapter covered the concept of competitiveness in the context of SMMEs. This chapter also discussed minor business competitiveness issues and some of the inherent solutions that can assist SMMEs.

In addition to competitiveness theories, this chapter covered measurements used to assess an organisation's level of competitiveness. The next chapter (Chapter 4) covers the research approach, research design and research methodology used in this study. A discussion of the study's ethical considerations is also included in the chapter.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

An outline of the literature that is currently available on the elements that influence productivity in manufacturing SMMEs, including the theoretical framework of the thesis, was presented in the preceding two chapters. The environmental factors that have affected manufacturing SMMEs during the COVID-19 lockdown in Ekurhuleni Municipality were explicated using contingency theory. In addition, the researcher also highlighted the significance of environmental factors in decision-making for manufacturing SMMEs.

The present chapter provides an overview of the research methods employed in the study. This study examines the research process by analysing the "research onion" model proposed by Saunders et al. (2019), as seen in Figure 4.1. The chapter commences by examining different research philosophies with the aim of determining appropriate ideologies for the present investigation. The subsequent section of this paper examines the process of theory formation, along with research strategies, data collection methods, data analysis techniques, target population selection, sample procedures, concerns of reliability and validity, limitations of the study, time horizon issues, and ethical concerns.

4.2 Research onion model

This chapter was arranged using the research onion method (Saunders et al., 2019). According to Saunders et al. (2019), the research onion serves as a tool for guiding researchers by incorporating multiple layers that are essential to the research process and helping to shape the study design. The six layers of the research onion are as follows (refer to Figure 4.1): research philosophy, theory creation approach, methodological choices strategy, time horizon, technology, and procedures (Saunders et al. 2019).

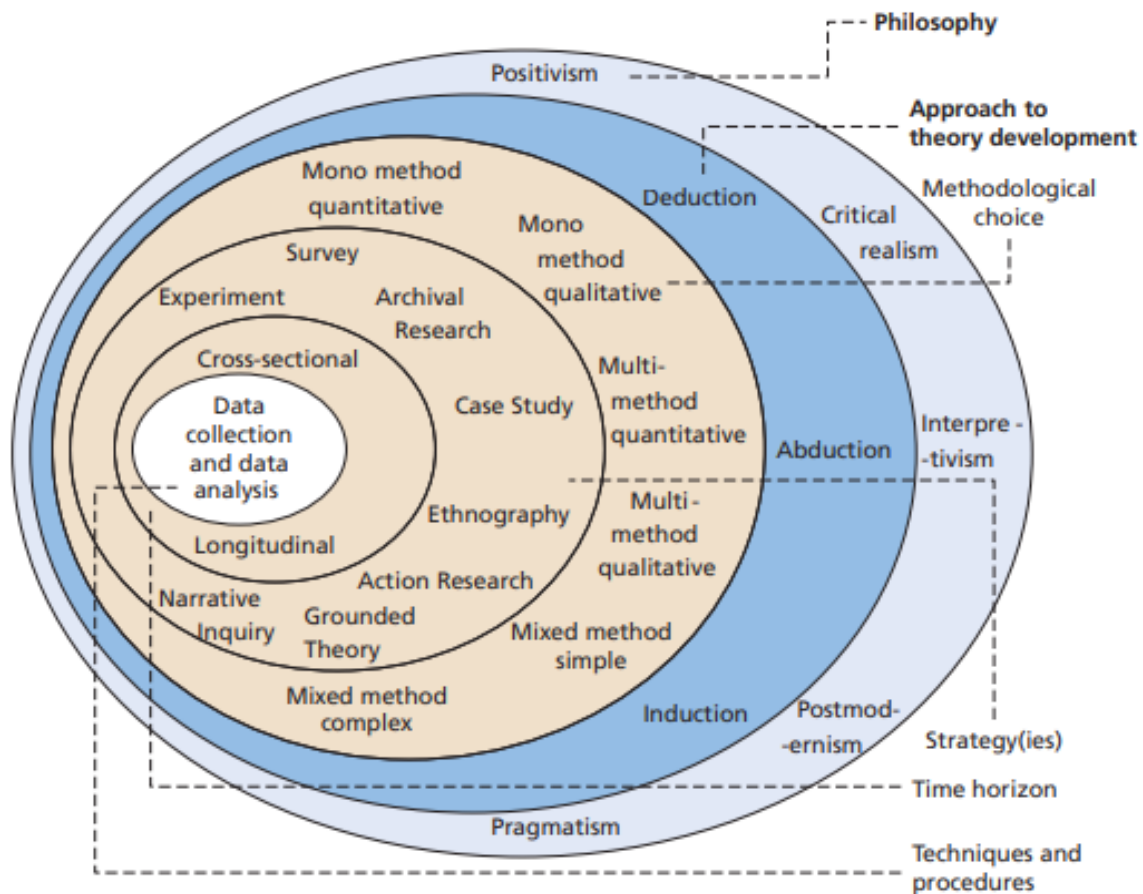


Figure 4.1: The research onion (Saunders et al. 2019:130)

4.3 Research philosophies

A research philosophy can be described as a collection of beliefs and perspectives towards the process of knowledge generation (Bryman, 2016; Saunders et al., 2019). The existing body of literature demonstrates the presence of diverse research philosophies, as evidenced by the works of Bryman (2016), Creswell (2014), and Kothari (2016). Saunders et al. (2019) have delineated a comprehensive set of primary research philosophies, namely critical realism, interpretivism, postmodernism, positivism, and pragmatism. These philosophies will be expounded upon in greater depth thereafter.

Goundar (2012) asserts that critical realism is focused on providing an explanation for individuals' perceptions and experiences by examining the underlying realities that influence the seen phenomena. Interpretivism emphasises how people create meaning differently than it is by physical occurrences, whereas postmodernism

emphasises the importance of communication and power dynamics. Positivism is characterised by quantifiable properties that lead to statistical analysis (Saunders et al. 2009). In pragmatism, ideas are only important when they facilitate action (Bryman, 2016). This study adopted a positivist approach.

A positivist approach was chosen for this study as it is deemed appropriate to distinguish and analyse the difficulties of environmental factors that influence manufacturing SMMEs' performance in Ekurhuleni Municipality.

4.3.1 Approach to theory development

Theory development is a systematic process that involves constructing ideas to effectively facilitate desired societal transformations (Makarfi, 2017; Saunders et al., 2019). There are three primary research methodologies for this purpose: induction, deduction, and abduction (Saunders et al., 2019).

The deductive methodology, as described by Vears and Gillam (2022), builds a theory based on pre-existing assumptions. Following the establishment of these assumptions, the research approach is designed to test the hypothesis. Makarfi (2017) emphasizes that the deductive method becomes particularly relevant when adopting a positivist strategy. Saunders et al. (2019) further elucidate that the deductive process begins with the identification or assumption of a theory, deriving conclusions from this assumption, and subsequently refining the theory based on the findings.

For this study, the deductive approach has been chosen due to its alignment with the positivist paradigm. This approach is deemed most suitable for investigating the productivity challenges faced by manufacturing SMMEs in Ekurhuleni during the COVID-19 lockdown. The deductive method allows for a structured exploration, starting with established theories and moving towards specific observations, ensuring a comprehensive understanding of the challenges in the specified context.

4.4 Research methodologies

To comprehensively understand and measure the factors influencing the productivity challenges faced by manufacturing SMMEs during the COVID-19 lockdown, this study employed a quantitative research technique. This approach is particularly effective for generalizing findings based on empirical evidence.

The quantitative method is inherently compatible with questionnaires, as it facilitates the systematic collection and analysis of numerical data (Jilcha, 2019; Sileyew, 2019). Utilizing this approach, the study was able to delve into the specific variables influencing the decision-making processes of manufacturing SMMEs concerning their productivity strategies. Moreover, questionnaires, being structured and standardized, allowed for consistent data collection across respondents, ensuring reliability. As a result, the research could accurately identify and quantify the determinants impacting how manufacturing SMMEs navigated productivity challenges during the COVID-19 lockdown.

4.5 Research design

Dannels (2018) posits that a research design encompasses a systematic approach that integrates several methodologies and observational methods to collect empirical data pertaining to a specific subject matter. According to Wright, O'Brien, Nimmon, Law, and Mylopoulos (2016), the establishment of a study design serves to define the criteria for data collection and provides a structured framework for addressing the current research issue. The selection of an optimal methodology for collecting complete data and conducting analysis is facilitated by the implementation of a study design. According to Asenahabi (2019), a study design serves as a valuable instrument for collecting data pertaining to the chosen topic under examination. In essence, the primary objective of a study design is to provide guidance to the researcher regarding the appropriate methods for data collection, transformation of raw data into meaningful insights, and subsequent analysis employing proper research equipment.

There are three primary categories of quantitative research approaches, including descriptive research, experimental research, and causal comparative research. The study utilised the descriptive research approach. According to Creswell (2014), it is

acknowledged that a quantitative research study can be conducted utilising either experimental or survey research methodologies.

According to Nzuza (2018), the main objective of descriptive analysis is to ascertain the potential relationships between the pertinent variables of the study. Descriptive research is a methodology employed to elucidate the characteristics and attributes of variables, with a focus on providing a comprehensive description rather than delving into the underlying causal mechanisms. The primary objective of employing a descriptive research method is to systematically observe, accurately describe, and meticulously document various components of a given situation in a natural and unobtrusive manner (Polit and Beck, 2014). According to Sekaran and Bougie (2016), descriptive research is a method employed to collect data that enables the creation of assessments of individuals, events, or circumstances. According to Burns et al. (2011), a descriptive research design encompasses various approaches, including theory development, identification of challenges in current practice, justification of existing practices, evaluation and critique, as well as exploration of practices adopted by others in similar contexts.

The main goal of this study was to identify how manufacturing SMMEs in Ekurhuleni Municipality experienced productivity challenges during COVID-19 lockdown restrictions and develop strategies for these enterprises to improve productivity around the Ekurhuleni Municipality. Therefore, the key goal of the study was to pinpoint the variables that affect these organisations' productivity. This was accomplished by analysing the replies to the survey from owners, managers and other pertinent stakeholders related to the challenges experienced in their various firms.

The author adapted the one recommended by Saunders to follow the research methodology process to examine the relevance of methodology theories on how manufacturing SMMEs in Ekurhuleni Municipality experienced productivity challenges during COVID-19 lockdown restrictions. The author followed the quantitative approach to generalise the findings based on the empirical evidence which is well addressed. 300 participants were targeted for the study. The author also addressed the demographics and the likert scale used which was well structured in the methodology section.

The correlation between those variables was therefore descriptive in nature. The researcher outlines the numerous factors that led owners, managers and other stakeholders to choose the production strategies that were used in their businesses. According to Sekaran and Bougie (2009), gathering data is the purpose of doing a research study, as well as converting it into relevant facts that can then be recognised as information through analysis, and using that information to address an identified knowledge gap. Data obtained through distribution of the research questionnaire were coded and analysed using SPSS.

4.6 Data-collection instruments

The process of obtaining information to aid in the researcher's understanding of the phenomena covered in the study is known as data collection (Taherdoost, 2021). Additionally, the information gathered can be separated into two categories: primary and secondary data.

While secondary data is obtained from any existing source, including books, journal articles, newspapers, reports, theses, and dissertations, government documents, conferences, and websites, primary data collecting involves making observations or conducting interviews. In order to acquire up-to-date, precise information from the respondents, primary data were collected.

To gather primary data, the researcher distributed questionnaires to the various owners, managers and other decision-making stakeholders of manufacturing SMMEs in the Ekurhuleni area. Approximately 300 business owners, managers and other decision-making stakeholders chose to take part in this study. The respondents were chosen and presented with survey questionnaires. The survey was completed by the participants via Google Forms, and participants were given enough time to complete the survey. The researcher exported the data to MS Excel once all the questionnaires had been completed, coded the responses and cleaned the data.

A Google Forms method was utilised since physically distributing the questionnaire to the target group would have been costly and physically taxing. Ponto (2015) defines a survey as a method for gathering data from a representative sample of several organisations. Personal, telephone, internet and postal data collection are the four

main methods that can be utilised to conduct a survey (Johnson and Christensen, 2020).

Adams (2015) claims that there are limitations to publishing or emailing questionnaires since the recipients might not complete them or be too busy to do so. By giving the surveys to respondents directly, this problem may be solved.

The primary research questions were addressed by the instrument used in this study, which compiled a series of questions mostly centred on the productivity limitations faced by manufacturing SMMEs under COVID-19 lockout restrictions (Engidaw 2022; Hossain et al. 2022).

A considerable sample size of about 300 individuals was included in the study; the sample size was chosen based on the participant count. Likert scale responses and closed-ended questionnaires were made. By using this approach of data collecting, the researcher was able to ask questions about the subject and explain some of the key concepts to the respondents while also encouraging them to be truthful in their answers. By guaranteeing the respondents' privacy and anonymity, this was accomplished. The data was collected by the researcher from August 2022 to March 2023. This allowed the survey respondents ample time to complete the questionnaire.

4.6.1 Population

According to Shukla (2020), the term “population” refers to the entire category of people or the full group of people, objects or events that the researcher wishes to analyse. It also refers to all the individuals who fulfil the research’s eligibility requirements. In order to generalise the findings, a representative sample is drawn from the population group (Zhang et al. 2023).

Reaching the desired audience may be hampered by a lack of time and access to money (Saunders et al. 2019). The researcher therefore specifically selected manufacturing SMMEs in this study that were headquartered in Ekurhuleni Municipality, which is in close proximity to the researcher’s place of residence. A target population must be accurate or specific in order to fulfil the study’s objectives (Garg,

2016). Only manufacturing SMMEs based in Ekurhuleni Municipality make up the population of this study.

According to the South African Automotive Industry Report (2013) database, Ekurhuleni Municipality has around 4 000 manufacturing SMMEs that are officially registered. There is a significant lack in the literature regarding the productivity problems experienced by manufacturing SMMEs, which led to the study topic including manufacturing enterprises. The purpose of the study was to determine the productivity challenges experienced by manufacturing SMMEs during COVID-19 lockdown. The study might be helpful to their performance because it was created to help with resource evaluation, control and planning to maximise profit. The study's sample size will be covered in the section below.

4.6.2 Sample size

Since the sample is utilised to extrapolate the study's conclusions to the full population, sample size is crucial in research studies. The SEDA report from 2021 states that there are 186 733 registered manufacturing SMMEs in Gauteng Province.

1 262 manufacturing SMMEs in the Ekurhuleni Municipality that are affiliated with the South African Black Automotive Chamber of Commerce and Industry make up the research population. According to Cao and Banaji (2020) and Sekaran and Bougie (2016), an estimated sample size of 300 should be used for a population of 1,262. Additionally, Cao and Banaji (2020) reaffirm that a predicted sample size of 300 with a percentage level of 0.67 is appropriate for a population above 1200 as shown in Table 4.1 below:.

Table 4.1: Sample size (Own)

Manufacturing SMMEs	Proportion	Sample size
1 262	0,67	300

4.6.3 Sampling method

Sampling is considered to be one of the most important phases in a research process since it affects the quality of inferences made from the researcher's findings (Rajkumar 2015). Sekaran and Bougie (2016) define sampling being the process of selecting a suitable number from a researcher-selected population or group. Sampling, as defined by Saunders et al. (2019), is the procedure of choosing the most appropriate individuals from the total population. It can be divided into two groups: sampling with probability and sampling without probability.

Whereas nonprobability sampling prevents the researcher from ascertaining this probability, probability sampling gives each member of a community an equal chance of being chosen (Mohajan, 2018). Nonprobability sampling is based on convenience sampling, judgement sampling, and quota sampling procedures; probability sampling is based on simple random sampling, systematic sampling, stratified sampling, and cluster or area sampling (Martelli and Greener, 2015).

According to Mashau (2016), simple random sampling is a probability inquiry technique in which every member of the population has an equal and independent chance of being included in the sample. Therefore, in order to collect data from the target population among the manufacturing SMMEs in Ekurhuleni Municipality, a straightforward random sampling procedure was used in this study. The study considered the simple random sampling method because bigger samples are better concerning representation, accuracy and statistical analysis. The survey was directed to directors and management of the manufacturing SMMEs.

Table 4.2: Different sampling methods (Sekaran and Bougie 2016)

Probability sampling	Nonprobability sampling
This sampling technique guarantees that there is a definite chance of being selected (Vehovar et al. 2016).	This technique does not guarantee members of the population that they will participate in the study (Steinmetz 2016).
It is accurate, efficient, (Alsyouf 2004). Mainly for small target populations	It is most preferred when dealing with a large target population (Alsyouf 2004).

4.6.4 Data-collection technique

A data-collection technique is said to be the ideal tool, such as the survey method, that assists with collecting data and helps create statistical data (Whitehead and Whitehead 2016; Sekaran and Bougie 2016). In this case, this involves a survey or questionnaire to record respondents' opinions and to help accomplish the research objectives.

4.6.4.1 Questionnaire

One method for doing research and gathering data from respondents is the use of questionnaires (Whitehead & Whitehead, 2016). It typically contains a list of questions, which can be posed in various ways, with the aim of extracting information, after which the data are analysed. The survey therefore records the respondents' opinions and should include all of the information that is essential to address the study's primary objectives, as determined by the researcher.

A questionnaire is a research instrument or data-collection method that expedites the collecting of data through a survey. Moreover, it is one of the techniques most frequently used by researchers to gather information from a certain population that is pertinent to their research (Saunders et al. 2019). In surveys, every respondent is asked the same set of predefined questions in the same sequence. However, there are also other methods for gathering data using this tool, such as telephone surveys, postal surveys and in-person interviews (Johnson and Christensen, 2020).

The researcher in this study used a survey in Google Forms to expedite data collection and receive information from the respondents who were most readily accessible. A five-point Likert scale was used in the questionnaire to ensure that the questions were precisely targeted and elicited an accurate amount of agreement or disagreement felt by each respondent.

Questions on a five-point Likert scale have a predefined response: Strongly disagree (1); Disagree (2); Neutral (3); Agree (4); and Strongly agree (5). This was used to determine the different preferences of the respondents (Myagkov, 2000). A Likert scale is used to gauge how strongly respondents feel about the study's focus areas.

A survey must be simple to use and interesting to the respondents in order for it to completely achieve its potential for gathering data (Brace, 2018). The aims and objectives of the study should be taken into consideration when creating the questionnaire's questions. Johnson et al. (2020) assert that the questions should be succinct, rational and understandable by the respondents. The researcher should evaluate the pertinent literature, which was covered in Chapter 2 of this dissertation, before developing the questionnaire. The existing literature, which provided the foundation for this study, was heavily consulted in the development and construction of the questionnaire (Pare and Kitsiou, 2016).

4.6.4.2 Design and layout of questionnaires

The researcher must give significant thought to the questionnaire's design. This can take a lot of time and requires some skill. The questionnaire's structure should include straightforward language and questions that are organised and simple to understand (Jenn, 2006; Johnson and Karlay, 2018; Kazi and Khalid, 2012). In addition, a questionnaire should be organised logically, moving from general to specific topics in a clear and logical sequence (Buchanan, 2016; Jenn, 2006). The questionnaire for this study had 43 items that were divided into three sections (see Appendix C).

The survey was structured as follows:

- Section A: Demographic information
- Section B: Production management tools
- Section C: Internal and external Factors that affect productivity and sustainability.

Section A concentrated on the respondents' demographic data, including their age, education, number of years in the business, type of business and influence over decision-making. To determine whether the respondent is an SMME owner, manager or other decision maker, the type of business as well as the respondent's level of experience were included in this part of the survey.

Section B focused on the respondent's knowledge of production management tools used by manufacturing SMMEs, primarily to ascertain whether the production management tools employed by these businesses aided their productivity. These were questions 7 through 19, and their purpose was to learn more about the production considerations, technology, infrastructure, products and innovation used by manufacturing SMMEs in Ekurhuleni Municipality. The respondent was required to explain how COVID-19 lockdown restrictions affected their business operations. This was measured with questions using the aforementioned five-point Likert scale.

Section C focused on identifying the internal and external influences on productivity challenges experienced by manufacturing SMMEs during COVID-19 lockdown restrictions. The first discussion focused on internal variables, which were covered by questions 20 through 31 on the questionnaire. A five-point Likert scale ranking was once more employed to gauge the strength of the opinions expressed.

The main topics in this area included education, experience and training, as well as the size, age and organisational structure of the manufacturing SMMEs. Questions 32 through 43 addressed external factors or influences, which were broken down into four broad themes: the environment; the national government and related organisations; technological advancements; and customers, competition and market innovation.

4.6.4.3 Pilot study

According to Pearson et al. (2020), a pilot study is a pre-testing method used to determine whether the study is feasible on a small scale. Finding out if participants possess knowledge of the questions that make up the research instruments is the aim of the pilot study. The equipment's reliability can be assessed by the researcher through a pilot study (Patel, Godden, Royster, Timmerman, Crooker & McDonald, 2017).

To make sure that participants have no trouble answering the questions, it is imperative that the researcher undertake a pilot study prior to distributing a self-completed questionnaire (Tanyaradzwa, 2018). Pilot research is intended to determine whether the questionnaire was designed correctly. Even with meticulous attention to detail, errors could still occur in the absence of pilot testing. In order to

guarantee that the final data capture tool contains the fewest errors possible, a pilot study is conducted.

All of the responses to the questionnaire need to be comprehensible and fulfil the researcher's needs (Jenn, 2006; Saunders et al. 2019). A pilot test was administered to twenty participants who were chosen at random from the study population. Since these responses were regarded as test responses, they were excluded from the research analysis and findings.

Participants had the chance to mark any comments or inquiries in the questionnaire that they felt were unclear or ambiguous throughout the pilot trial. Additionally, they were given the opportunity to assess whether or not the questions were simple to understand and answer. This pilot study's main goal was to identify any gaps or unclear areas in the questions that would have presented difficulties for the respondents. While certain questions were reasonably understood and well-received by those who participated, feedback from the pilot study showed that other questions were unclear or did not fully capture the necessary information. The researcher was able to improve and modify those questions to better suit the study aims thanks to this insightful feedback, which was really helpful. The researcher was able to complete a thorough and error-free version of the questionnaire after making the required adjustments in light of the findings of the pilot study (Smith & Johnson, 2018).

4.6.4.4 Administration of questionnaire

Each participant received an equal opportunity to respond to the questionnaire, and no specific racial or social group was targeted. The survey that was presented to the desired selected number of respondents remained standardised from the population.

The purpose of the survey was to assist the researcher with the following:

- The survey aids the researcher to identify the production management tools that manufacturing SMMEs in Ekurhuleni Municipality have implemented. The participant group was deemed an appropriate one by the researcher since they

had a high level of familiarity with the topic under investigation (Askari et al. 2016).

- The survey serves as a tool for the researcher to systematically analyse the collected data, discern emerging patterns, and make informed comparisons. This process aids in drawing meaningful conclusions and insights related to the productivity challenges faced by manufacturing SMMEs in Ekurhuleni Municipality during the lockdown. Such conclusions are pivotal in addressing the research objectives and providing actionable recommendations for stakeholders involved (Quinlan et al. 2015). The conclusions sought were intended to help in identifying significant productivity challenges experienced by manufacturing SMMEs in Ekurhuleni Municipality during COVID-19 lockdown restrictions, with the purpose of preparing for unexpected circumstances in future.
- The survey provides access to a sufficient number of respondents for the research. For quantitative research to be permitted and the outcomes of the sample to be applied to the entire population, the respondent group needs to contain a sizable number of participants (Garg, 2016).

4.7 Time horizon

The data-collecting time horizons and contextual references are related to the research time horizons (Sekaran and Bougie, 2016; Van Zyl, 2014). The following sections provide more information on these cross-sectional and longitudinal study timeframes.

4.7.1 Longitudinal time horizon

A longitudinal study is employed in research when data is collected at multiple points in time (Van Zyl, 2014). A longitudinal study is a suitable approach when the researcher aims to investigate phenomena at various time intervals in order to address the research question, owing to its efficacy in analysing patterns of change and development (Saunders et al., 2019; Sekaran & Bougie, 2016; Van Zyl, 2014).

4.7.2 Cross-sectional time horizon

According to Saunders et al. (2019) and Sekaran and Bougie (2016), a cross-sectional study is any research in which data is only collected once throughout a given time

period (days, weeks, or months). In this investigation, a cross-sectional temporal horizon was used. Rather than collecting data at multiple points during the investigation, the researcher collected it all at once. This led to a 16-week data collection period, which did not include weekends.

4.8 Data preparation

The act of converting data into a format that can be analysed and processed is known as data preparation (Ngibe and Lekhanya, 2019). Processing the gathered raw materials is crucial in order to provide useful data that can be utilised to address the research questions (Busetto et al. 2020). A critical step in the data-preparation process is data coding (Ngibe and Lekhanya, 2019). The data must be processed and converted into codes. Consequently, the questionnaires had to be pre-coded, allowing the researcher to electronically collect each completed questionnaire from the respondents and construct a data set. Each questionnaire received a number from the researcher to help identify it.

4.9 Data analysis

When a researcher seeks to pinpoint the connections between variables and any discrepancies between the groups included, they employ descriptive analysis (Hair et al. 2019; Kaliyadan and Kulkarni, 2019). Frequency or percentage tables are used to exhibit the findings of the statistics; a bar graph is used to show percentages and mean standard deviation.

The data analysis will involve the following:

- Bar graphs can either be displayed as horizontal or vertical bars, which show the comparison amongst categories.
- Cross tabulation is a strategy for comparing the connection between two heterogeneous variables (Adhikari et al. 2021).
- A pie chart is a circular illustration with a 100% coverage area that shows the data.

According to Richmond (2006), data analysis refers to the methodical use of statistical and/or logical methodologies to depict, exemplify, condense, appraise, and assess

data. The data analysis for this study was conducted utilising the latest iteration of the Statistical Package for the Social Sciences (SPSS). The utilisation of SPSS, a comprehensive suite of computer programmes, enables users to obtain data from surveys conducted through questionnaires and other sources. This data can be manipulated in many manners, allowing for the generation of diverse statistical analyses, reports, and documentation (Kabir, 2016). In the process of doing a descriptive analysis, several methods such as cross tabulation, figures, tables, and graphs were employed to present the findings. The data gathered from the surveys were subjected to analysis using the Statistical Package for the Social Sciences (SPSS).

4.10 Reliability and validity

Reliability is the consistency of findings drawn from experiments or processes that are carried out or made public in predictable or comparable circumstances (Crowther and Lancaster, 2012). According to Adhikari et al. (2021), reliability evaluates the precision, consistency and accuracy of research features. According to Jackson (2021), scores must remain constant even when they occur over a range of times in order for reliability to be tested. Therefore, in this study, reliability was guaranteed by explicitly framing questions, asking them in a straightforward manner and making them brief.

However, there are two well-acknowledged limitations on reliability that must be addressed: participation bias and participant error (Sekaran and Bougie, 2016). A reliability coefficient of 0.70 and higher is considered satisfactory (Gupta and Gupta, 2021). To prevent any inconsistencies, the study used a pre-coded questionnaire. For all participants, the questionnaire's questions were standardised and in the same order. Although there are no set criteria for a "good" questionnaire, the design of a questionnaire has a considerable impact on the information received from respondents, which has implications for the validity and reliability of the results (Saunders et al. 2019).

Validity assesses how accurately the survey questions were able to provide answers to the questions they were intended to respond to (Mohajan, 2017). Validity is thus concerned with measuring or scaling precision in the instruments and to confirm what the test was supposed to measure (Saunders et al. 2019). A study may use one of

three different validity strategies: experience validity, concurrent and predictive validity, or concept validity (Mohajan, 2017).

The two validity strategies can be defined as follows:

- Experience validity examines every component of a variable and how well formed the questions are.
- Concurrent and predictive validity compares the study's findings to a tautological to corroborate what was previously known.

Experience validity was used in this study to determine whether the research instrument chosen was appropriate for addressing the aims and objectives.

4.11 Statistical analysis

The act of collecting and analysing data and drawing conclusions from data in order to provide meaningful information is known as statistical analysis. To extrapolate results from the sample to the entire population, descriptive and inferential analysis methods were utilised to analyse the data set. As a result, the researcher was able to assemble, analyse, and analyse the data in order to draw conclusions about the study's aims (Nørskov et al., 2021; Meeker et al., 2022).

Regression equations were developed utilising the study to assess the components that were shown to be crucial for manufacturing SMMEs' productivity (Krishnaswamy and Satyaprasad, 2010). Following the discovery of trends and patterns, the researcher summarised the data. Using a quantitative approach, charts, graphs, tables and other relevant statistical tests were presented.

4.12 Inferential statistics and chi-square

According to Terr-Blanche et al. (2006), descriptive analysis focuses on the characteristics of a sample by utilising a smaller and more condensed dataset derived from the larger population. Krishnaswamy and Satyaprasad (2010) argue that the utilisation of inferential statistics is important in order to make inferences and draw conclusions about the target population. The study employed inferential statistics to draw inferences about the results and conclusions pertaining to the crucial elements that impact the adoption of production management tools by manufacturing small,

medium, and micro enterprises (SMMEs) in the Ekurhuleni Municipality. The present investigation employed the chi-square test, a statistical method commonly used to compare categorical variables within a single population (Foley et al., 2021). Foley et al. (2021) suggest that the chi-square test can serve as a means to validate or offer an alternative examination of the observed frequencies in a study. The statistical significance of the identified influential factors in this inquiry was examined using the chi-square test.

4.13 Factor analysis

Factor analysis is a statistical technique frequently employed when conducting research surveys. This tool helps the research process by breaking down the quantity of inquiries or variables into more manageable speculative elements (Aspers and Corte, 2019). In addition, a component analysis determines whether the variables or items measure the same thing. Taherdoost et al. (2014) contend that, by locating smaller factors that account for the variances observed from significant variables, a factor analysis has the power to simplify data. The KMO test and Bartlett's test must yield measurements of 0.50 (significant level) or less to determine if the research is sufficient for factor analysis.

4.14 Summary

In this chapter, the researcher delved into the research methodology adopted for this study. We explored the rationale behind the chosen research approach, sampling methods, and data collection techniques. The chapter provided a comprehensive explanation of how the research was structured to achieve the objectives set out in the introductory chapter, especially in addressing the productivity challenges experienced by manufacturing SMMEs in Ekurhuleni Municipality during the COVID-19 lockdown restrictions. Having established a solid foundation through the research methodology, we now transition to Chapter 5, which focuses on the presentation and analysis of the data collected. In this next chapter, we will present the empirical findings in a structured manner, employing various data visualization techniques to aid comprehension. Further, a rigorous analysis will be conducted to interpret these findings, drawing connections to the literature and providing insights into the challenges and dynamics faced by manufacturing SMMEs.

CHAPTER 5: DATA PRESENTATION AND ANALYSIS

5.1 Introduction

This chapter will present and analyse the research findings. The primary aims of this chapter are to provide a comprehensive quantitative and descriptive overview of the research survey replies, as well as to elucidate the inferential statistical analyses conducted in order to address the research inquiries, utilising the data gathered from the participants. The data collected from participants was coded and analysed using SPSS version 28.0. A descriptive statistical analysis has been conducted using the data obtained from the participants. This analysis includes cross-tabulations, graphs, tables, and figures. In order to assess the importance of the research findings, inferential methods such as correlation and chi-square tests were employed.

The research data were collected from owners, managers and other decision-making stakeholders of manufacturing SMMEs in Ekurhuleni Municipality via surveys, with aim of exploring the productivity challenges experienced by these firms during COVID-19 lockdown restrictions. The questionnaire contained 43 questions divided into three sections: demographic information, production management tools and internal and external factors that affecting productivity and sustainability.

5.2 Data analysis

The data were gathered from manufacturing SMMEs' owners, managers and other essential decision-makers. The research findings have been displayed in graphs, figures, cross-tabulations and other formats. The questionnaire was divided into three sections, as discussed in section 5.1 and previously.

5.3 Response rate

Only 223 of the 300 questionnaires distributed were returned and considered valid for the study, which equates to a 74% response rate. This was an acceptable rate of response as it is greater than 65%, which is considered the minimum in order for an analysis to be performed (Sekaran and Bougie, 2016).

5.4 Demographic information

This section will discuss the results pertaining to the demographic information of the respondents. This overview is summarised and categorised as follows: age group, highest qualification, number of permanent employees, number of years in the business, type of business, type of influence over decision-making and education level. All these questions were included to determine the type of SMME owner, manager or other decision-maker who was responding, the type of business and the respondent's level of experience.

5.4.1 Age distribution of respondents

The age groups of the respondents involved in this study are reflected in Figure 5.1. This shows that most respondents (70,4%) were between the ages of 25 and 39, while 26,5% were between 40 and 49 years old. Additionally, 2,7% of the respondents were between 50 and 59 years old, and only 0,4% were over 60. Most respondents were, therefore, from the first age group.

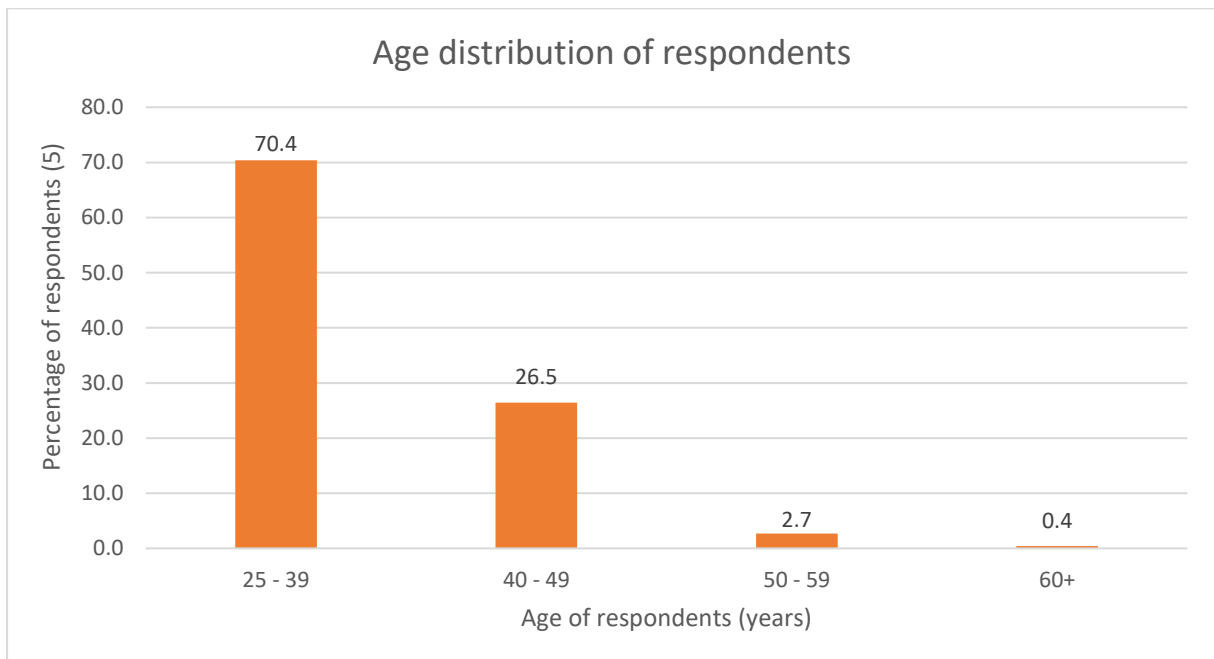


Figure 5.1: Age distribution of respondents

5.4.2 Highest level of education

Most respondents (79,5%) had a post-secondary qualification – either a diploma or a bachelor's degree. 12.6% of the respondents had a postgraduate degree. It is evident, therefore, that most respondents had a post-secondary qualification. It was also clear

that manufacturing SMMEs' owners and managers view education as an essential strategic tool that can influence their productive capabilities.

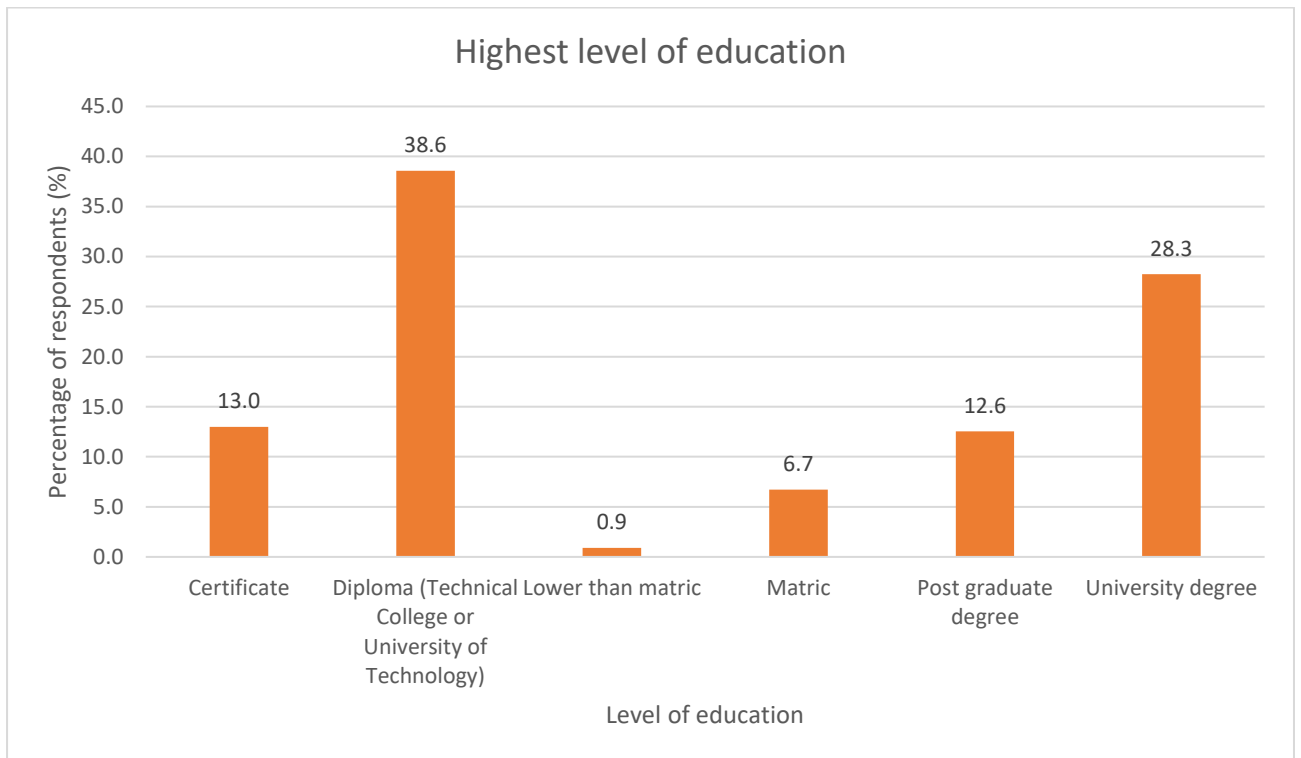


Figure 5.2: Respondents' highest level of education

5.4.3 Number of permanent employees

All the participating SMMEs had at most 20 employees. The majority (48%) of respondents indicated that there are 10 employees permanently employed in their businesses. In total, 29,1% of SMMEs had between 1 and 5 employees; 17,5% had between 6 and 9 employees; and 5,4% SMMEs had between 11 and 18 employees.

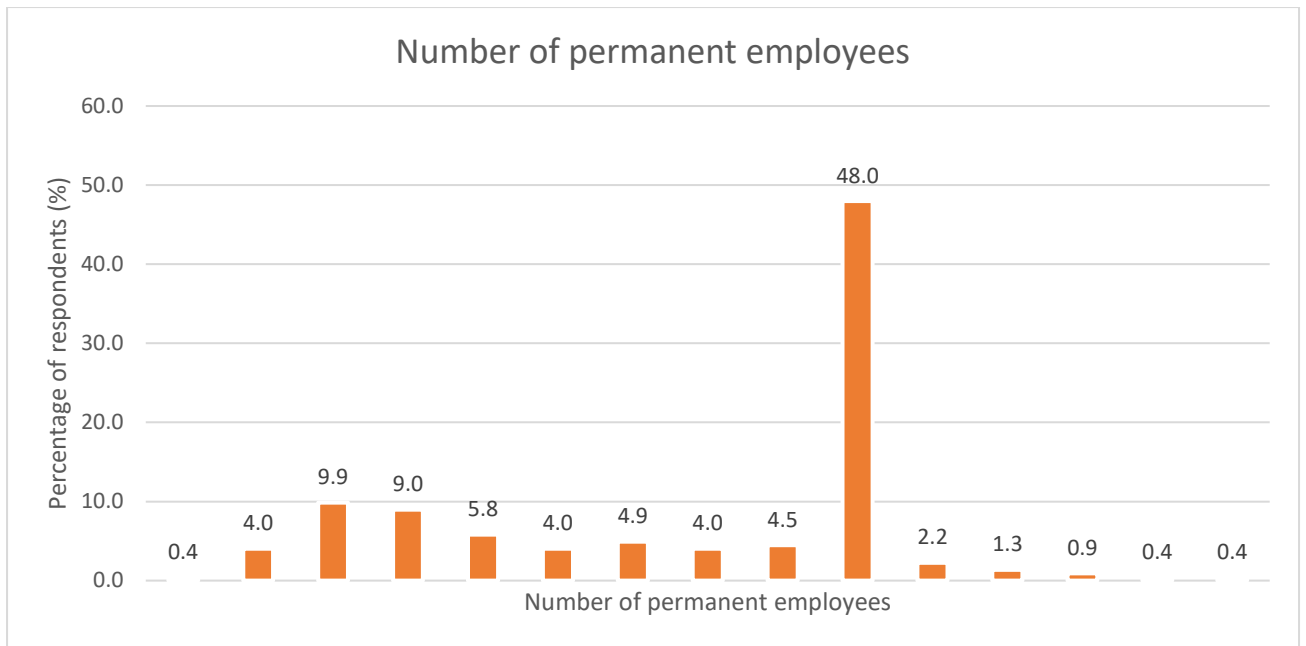


Figure 5.3: Number of permanent employees employed by the business

5.4.4 Age of the business

The majority (77,6%) of respondents indicated that their SMME had been active for more than 6 years, with a sizeable number (22,4%) who had been in business for less than 6 years. This indicates that the respondents were mostly from established businesses. On average, the businesses of respondents have been in existence for 7,93 years, with a median age of 7 years. The oldest business age, 14 years, was reported by 3,1% of respondents.

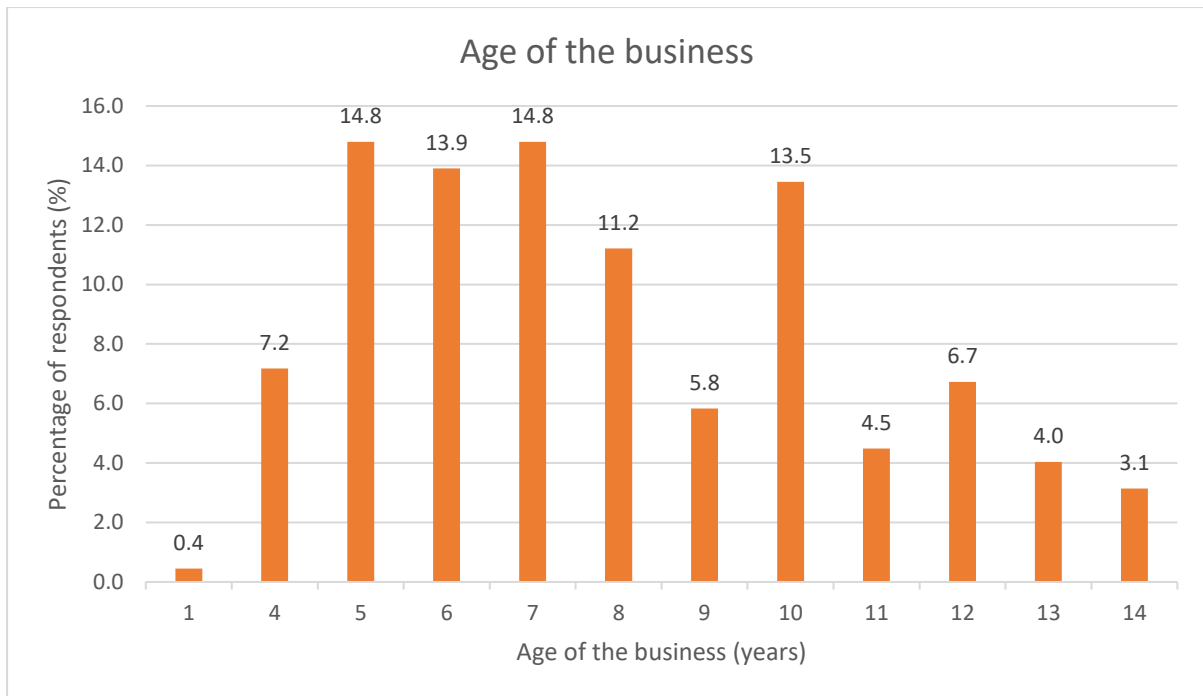


Figure 5.4: Age of the business

5.4.5 Role of respondents

As shown in Figure 5.5, 63,7% of participants in the study were managers, whilst 35,4% of respondents were owners of the business and 0,9% of participants were supervisors (other decision-making stakeholders). This indicated that the great majority of respondents are responsible for decision-making in the business.

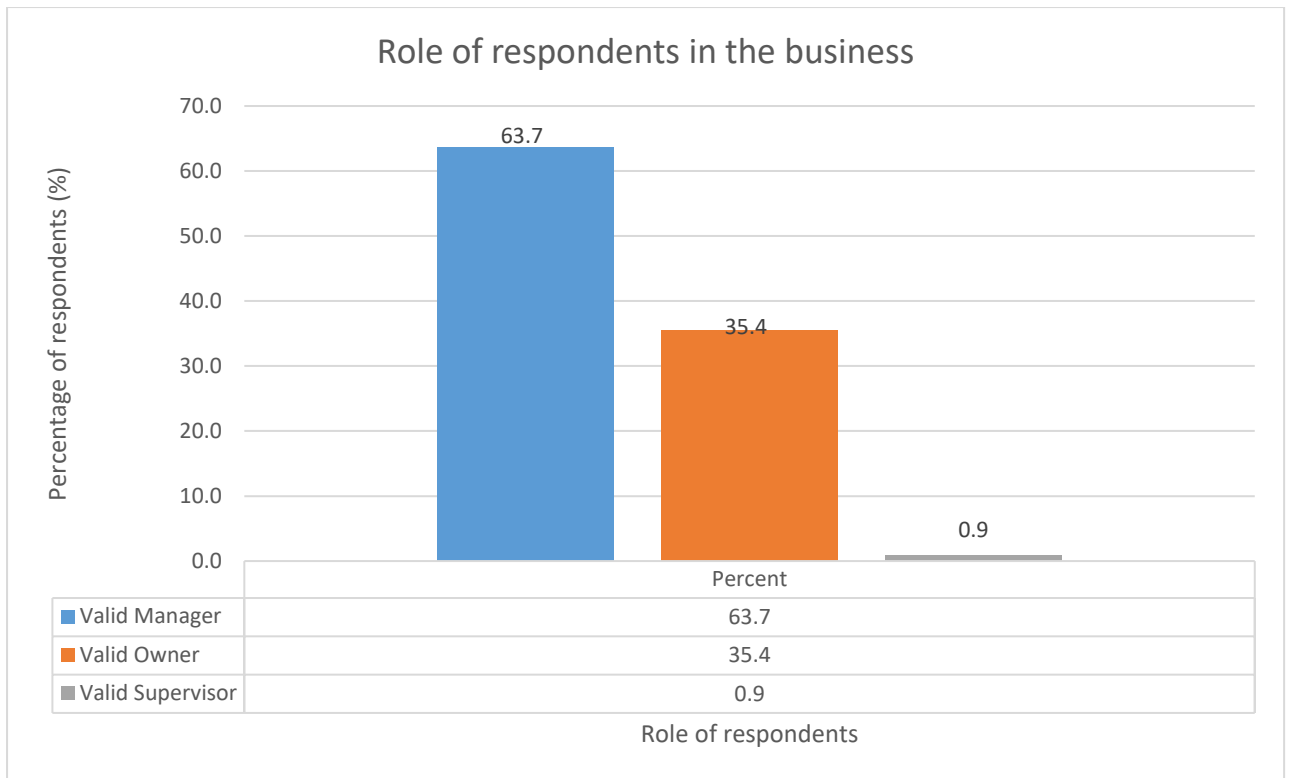


Figure 5.5: Role of respondents in the business

5.4.6 Legal status of business

As depicted in Figure 5.6, 90,1% of respondents worked for or owned private companies, while 6,7% of the respondents were worked for or owned partnerships. Close corporations made up 2,7% of respondents, and co-operatives 0,4%.

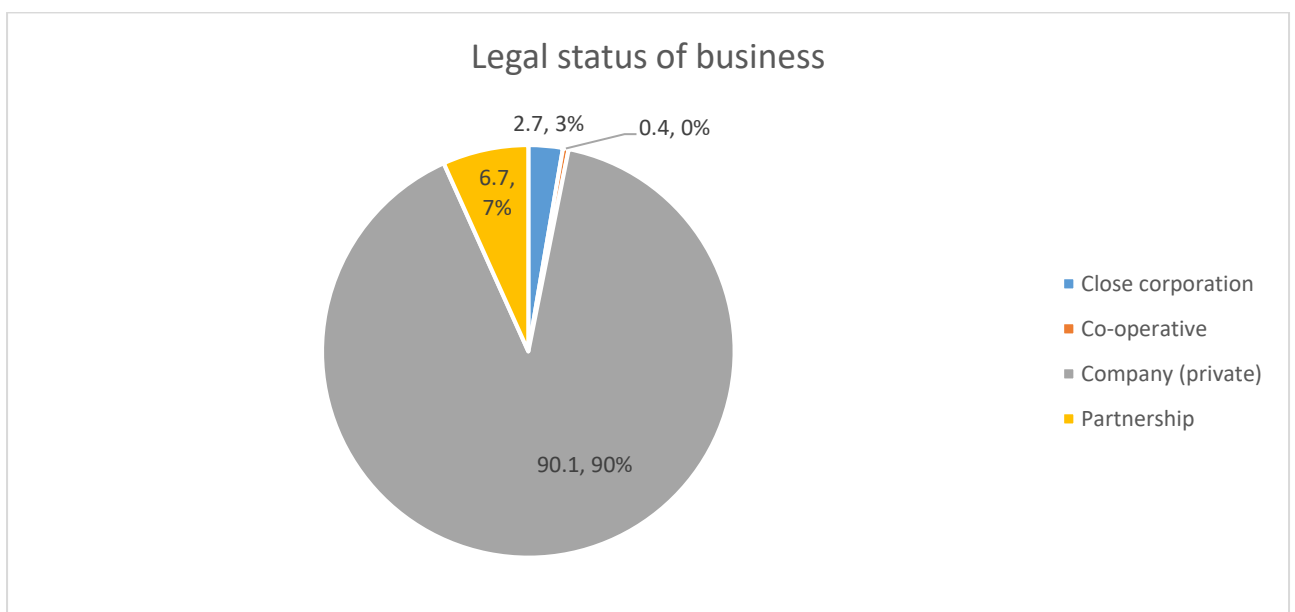


Figure 5.6: Legal status of business

5.5 Descriptive statistics

The descriptive statistics presented in this subsection are provided to better understand the technological production challenges experienced by manufacturing SMMEs in Ekurhuleni Municipality during COVID-19 lockdown restrictions. Quantitative information acquired through a questionnaire forms the foundation of the analysis. The data collected were primarily based on responses rated on a five-point Likert scale. As previously mentioned, participants rated their perceptions as: (1) Strongly disagree; (2) Disagree; (3) Neutral; (4) Agree; and (5) Strongly agree. Mean values which range from 1 to 2,4 indicate unfavourable judgments, whereas mean values between 2,5 and 3,4 indicate neutral perceptions. Mean values between 3,5 and 5,0 show a favourable response.

In this study, the three primary measured constructs are the following: attitudes toward the availability of technological production management tools for the business; attitudes toward the company's knowledge, skills and resources; and attitudes toward the practicality of using such devices in the industry. The next subsections include an examination of the data using descriptive statistics.

5.5.1 Availability of technological production management tools

Figure 5.7 displays respondents' opinions regarding the availability of technological production management tools for the firm. A relatively large percentage of neutral responses were observed, as the rate of neutral responses ranged between 17% and 21%. While the percentage of participants who agreed or strongly agreed ranged from 29,6% to 65%, the overall agreement rate was 32,3%. Only 29,6% of respondents agreed or strongly agreed with the B1 statement, "Our business currently has production management tools that are fully utilised." B1 indicates that the response is from Section B and the number 1 indicates that it was question 1 on section B. However, over 50% of the respondents agreed or strongly agreed with statements B4 and B6–B13.

Since SMMEs' managers and owners have to deal with the daily reality of running their manufacturing companies, they may have a relatively realistic perspective of their company's production management tools. However, since this was not tested in a real-

world company setting, it is also possible that the managers and owners participating in the study may have inflated expectations or opinions of their production management tools.

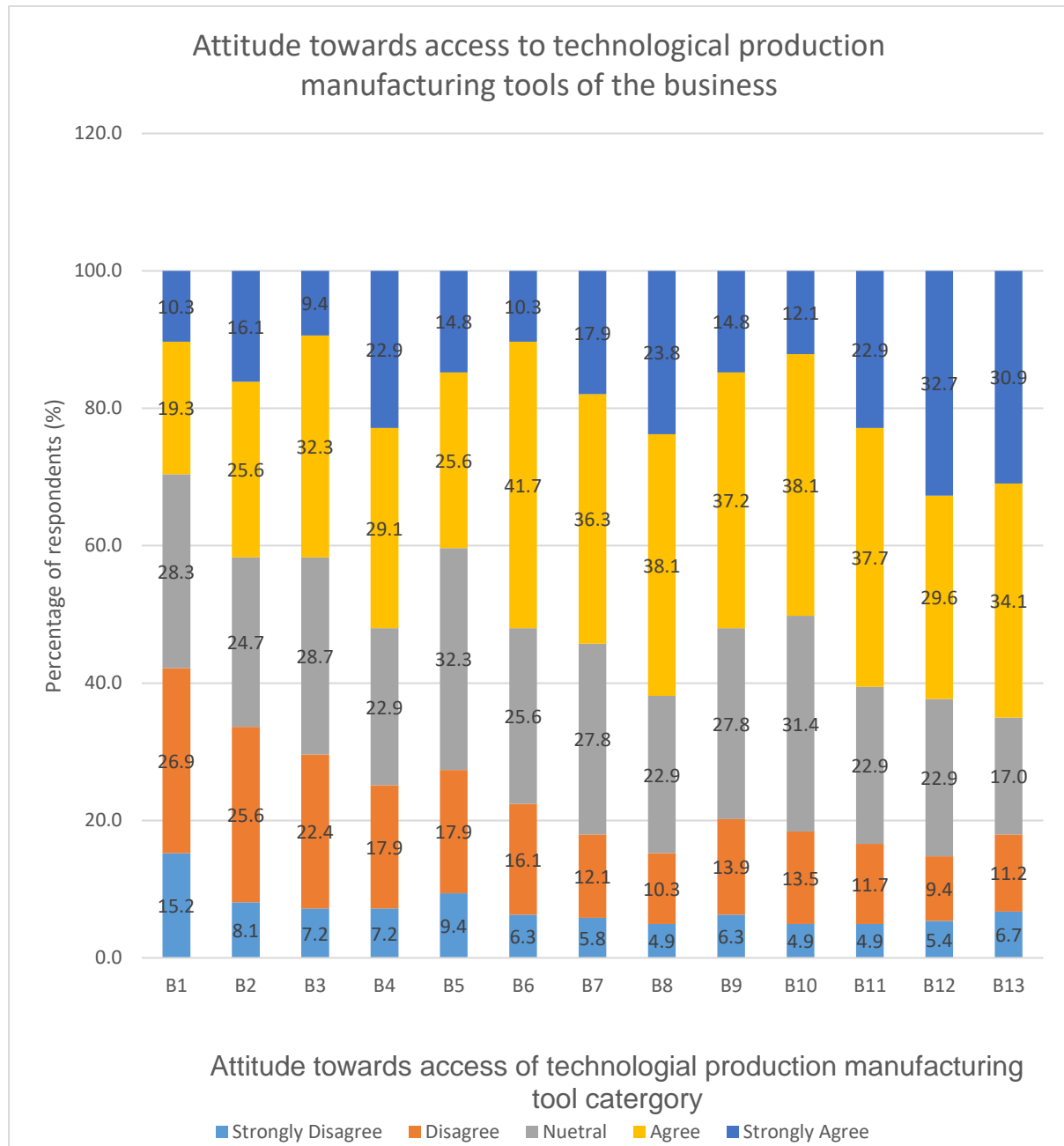


Figure 5.7: Section B- Availability of technological production management tools

5.5.2 Understanding of internal and external factors

5.5.2.1 Internal factors

The next factor evaluated by the questionnaire is “Knowledge of internal factors”. The responses of the study participants are presented in Figure 5.8. C1 indicates that the

response is from Section C and the number 1 indicates that it was question 1 on section C. The neutral ideas observed ranged between 17% and 30,5% across all statements, while the percentage of those who agreed or strongly agreed with responses ranged between 44,4% and 67,3%. The highest level of agreement, just over two thirds, was observed for the C10 statement: “The firm size has an impact on productivity and sustainability”. The lowest level of agreement was for the report. Overall, most respondents (over 50%) agreed or strongly agreed with all statements, except for the following: “Training of staff” and “Resources such as funds and time are available to allow staff training to be productive in the business successfully”, most respondents (over 50%) agreed or strongly agreed.

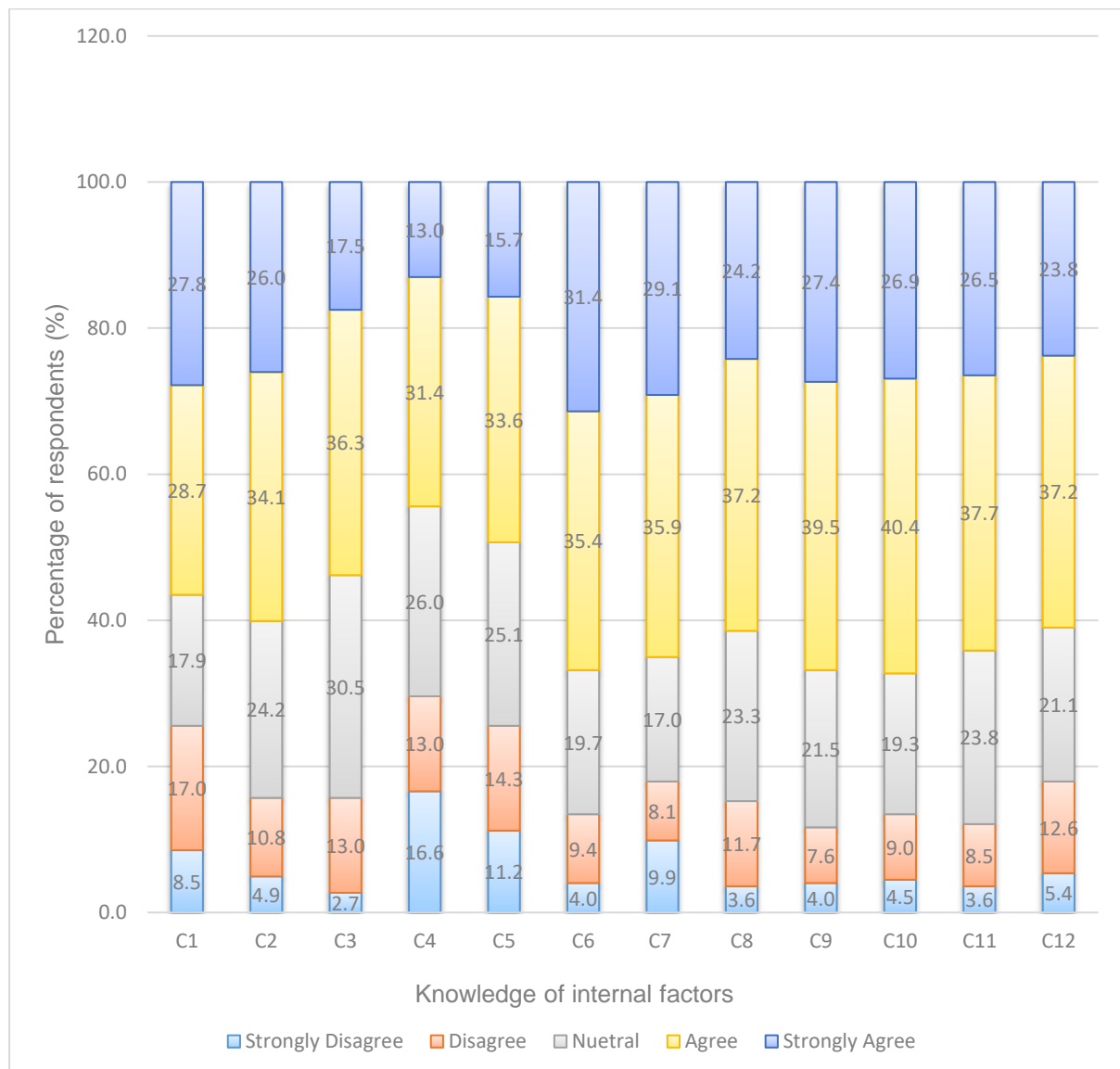


Figure 5.8:Section C- Knowledge of internal and external factors of the business

5.5.2.2 External factors

The next factor evaluated by the questionnaire is “Knowledge of external factors”. The responses of the study participants are presented in Figure 5.9. C20 indicates that the response is from Section C and the number 20 indicates that it was question 20 on section C. A reasonably low percentage of neutral responses was observed, as the rate of neutral responses ranged between 10,3% and 22,9% across all statements. In comparison, most respondents agreed or strongly agreed with all statements, as the positive response rates ranged between 62,8% and 81,2%. The highest level of agreement was observed for two statements: “Market innovations impact productivity” and “Technology improves the business's productivity”.

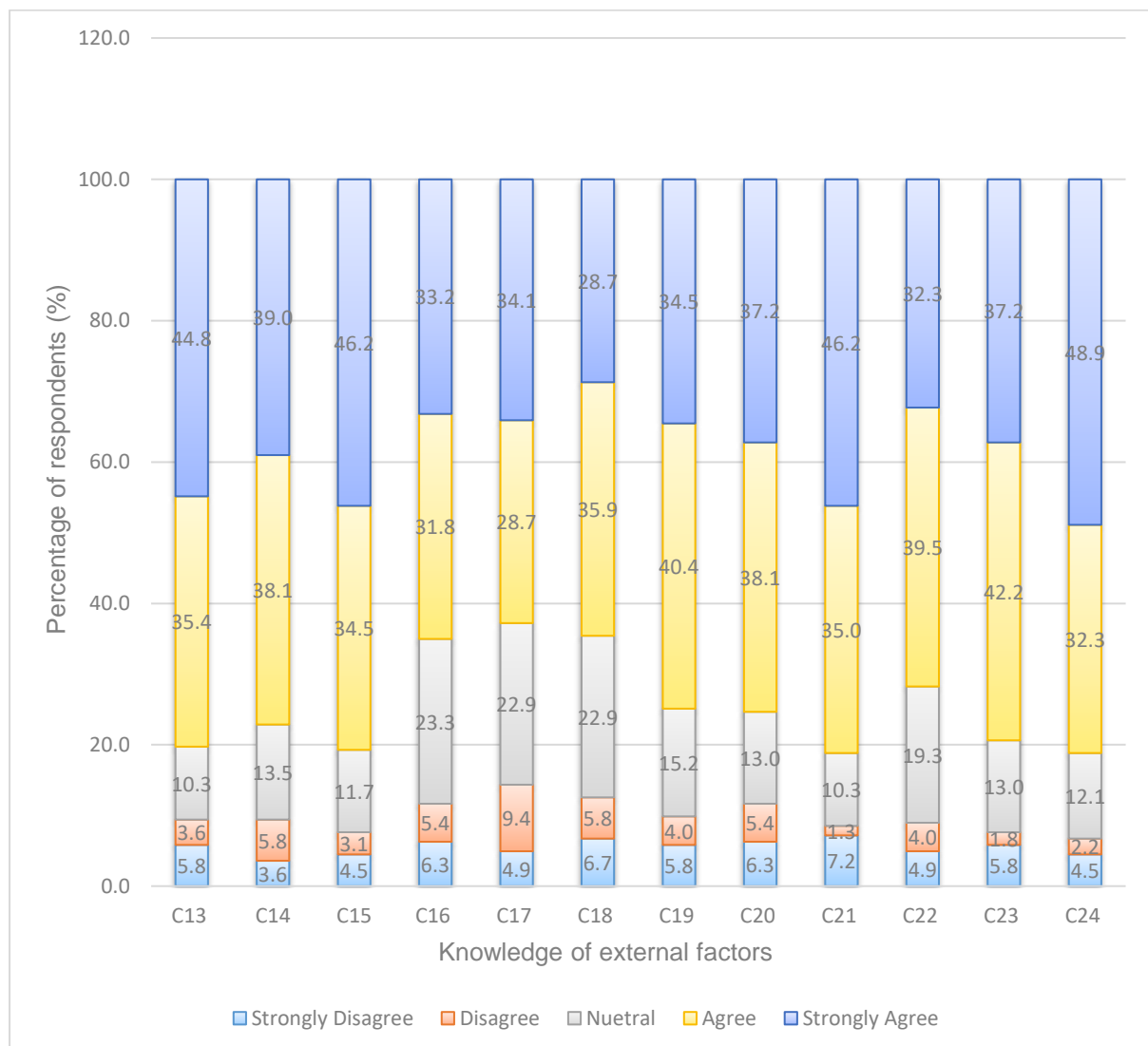


Figure 5.9: SECTION C-Knowledge of external factors of the business

5.6 Data validity and reliability

Exploratory factor analysis, a data reduction and latent factor identification technique, was conducted to assess the data's assembled validity and reliability and to see if meaningful combinations of the items in each subsection can be formed. The primary axis scaling as an extractive approach with Promax rotation was carried out to determine if influential factors (groupings of the statements) could be identified. Several factors were found using Kaiser's eigenvalue criterion of a result larger than 1.

Table 5.1: Summary of exploratory factor analysis for subsection B

Section	Factor	KMO and Bartlett's test (Sig. value)	% Variance explained	Factor loadings		Cronbach's alpha
				Factor 1	Factor 2	
	Section B	0,890 P < 0,001	50,90%	Factor 1	Factor 2	
B1	Our business currently has production management tools that are fully utilised.			0,660		0,865
B2	Our business has had difficulties getting access to production management tools required to conduct our business.				0,613	0,670
B3	Our business has acquired the necessary production management tools.			0,702		
B4	Funding, infrastructures, internet connection availability, training, etc. are the barriers to gaining access to production management tools.				0,658	

B5	Training of staff is frequently conducted in order to provide capacity in the business.				0,629	
B6	The post-training of owner/manager and staff improves productivity in the business.			0,696		
B7	The availability of time and money hinder the ability to offer proper training needs for effective productive in this business.			0,584		
B8	The age of the enterprise influences the productivity and sustainability.			0,606		
B9	The enterprise strategy influences the productivity and sustainability.			0,562		
B10	The firm size has an impact on the productivity and sustainability.			0,676		
B11	The change in firm size had an impact on the productivity and sustainability.			0,599		
B12	The enterprise structure has an influence in productivity of the enterprise.			0,494	0,334	
B13	Production management tools are useful and enhance				0,624	

	the smooth running of the business by managers/owners.					
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The KMO test's result was above the recommended threshold of 0,6, and the Bartlett's test's result was statistically significant ($P < 0,001$) for the 13 items in section B (Field 2013), indicating that exploratory factor analysis was appropriate to conduct on the data.

The analysis identified two factors based on the eigenvalue criterion (eigenvalue greater than 1) (Field, 2013) that explained 50,9% of the total variance. One item (B12) double-loaded onto both factors. After consideration of the factor-loading values and the context of item 12 about factors 1 and 2, item 12 was retained with factor 1.

The internal coherence (reliability) of each of the discovered components was then assessed using the Cronbach's alpha coefficient, with a level of confidence specified in the existing literature as 0,5 (acceptable), 0,6 (sufficient for exploratory research) and 0,7 for previously applied apparatus. The Cronbach's alpha values for the two identified factors were 0,865 and 0,670, which were considered acceptable. Subsequently, two factor-based variables, labelled "Innovative business focus" and "Challenges of introducing production management tools", were calculated using the mean value across the items included in each factor. For sections C1 to C12, the results of the exploratory factor analysis are shown in Table 5.2.

Table 5.2: Summary of exploratory factor analysis for sections C1–C12

Section	Factor	KMO and Bartlett's test (Sig. value)	% Variance explained	Factor loadings			Cronbach's alpha
				Factor 1	Factor 2	Factor 3	
C1	Section C	0,847 $P < 0,001$	61,60%				
C2	The education level of the SMMEs owner/manager				0,769		0,770

	is relevant for production management.						
C3	My skills as an owner/manager allow me to be productive in the operations of the business.			0,702	0,796	0,613	
C4	Resources such as funds and time are available to allow training of staff in order to successfully be productive in the business.			0,846		0,756	0,713
C5	Training of staff is frequently conducted in order to provide capacity in the business.					0, 738	
C6	The post-training of owner/manager and staff improves productivity in the business.				0,499		
C7	The availability of time and money hinder the ability to offer proper training needs in order to effective productive in this business.			0,413			0,820

C8	The age of the enterprise influences the productivity and sustainability.			0,698			
C9	The enterprise strategy influences the productivity and sustainability.			0,440	0,357		
C10	The firm size has an impact on the productivity and sustainability.			0,758			
C11	The change in firm size had an impact on the productivity and sustainability.			0,669			
C12	The enterprise structure has an influence in productivity of the enterprise.			0,781			

The KMO test's result was above the recommended threshold of 0,6, and the Bartlett's test's result was statistically significant ($P < 0,001$) for the 12 items in section C (Field 2013), indicating that exploratory factor analysis was appropriate to conduct on the data.

The analysis identified three factors based on the eigenvalue criterion (eigenvalue greater than 1) (Field, 2013) that explained 61,6 % of the total variance. One item (C9) double-loaded onto both factors. After consideration of the factor-loading values and the context of item 9 about factors 1 and 2, item 9 was retained with factor 1. Subsequently, the Cronbach's alpha coefficient was used to establish the internal consistency (reliability) of each of the identified aspects with thresholds stated in the literature as 0,5 (acceptable), 0,6 (sufficient for exploratory research) and 0,7 for

previously applied apparatus. The Cronbach's alpha values for the three identified factors were 0,820, 0,770 and 0,713, which were considered satisfactory.

Subsequently, three factor-based variables were calculated, namely: (1) "The impact of age, size and strategy of business on productivity and sustainability"; (2) "The impact of education, skills and experience of owner/manager on the business"; and (3) "Resource availability for training". For sections C13 to C24, the exploratory factor analysis results are shown in Table 5.3.

Table 5.3: Summary of exploratory factor analysis for sections C13–C24

Section	Factor	KMO and Bartlett's test (Sig. value)	% Variance explained	Factor loadings		Cronbach's alpha
				Factor 1	Factor 2	
C1 to C24	Section C	0,938 P < 0,001	67,30%	Factor 1	Factor 2	
C13	The uncertain environment under which the enterprise operated during the lockdown influences productivity.			0,798		0,931
C14	The impact of environmental changes influences the productivity and sustainability of the enterprise.			0,722		
15	The inflation of the economy influenced the productivity and sustainability of the enterprise.			0,846		
16	Government subsidies (funds) assist in improving capacity for the production and sustainability of the business.				0,699	0,825

17	Supporting agencies have an impact on the productivity of the enterprise.				0,858	
18	Political and social changes have an effect on the productivity and sustainability of the business.				0,781	
19	Networking with other enterprises has an effect on the productivity and sustainability of the business.				0.623	
20	The use of technology plays a huge role in the productivity of the enterprise.				0.541	
21	The use of technology improves the productivity of the business.				0.511	
22	The competition has an impact on the production and sustainability of the enterprise.				0.498	
23	The productivity of the enterprise has an influence on the success of the business in the market.				0.456	
24	Market innovations have an impact on the enterprise.				0.422	

For the 12 items in section C (Field, 2013), the results of the Bartlett's test were statistically significant (P 0,001) and the KMO test was over the suggested threshold

of 0.6, suggesting that an exploratory factor analysis should be performed on the data. Based on the eigenvalue criterion (eigenvalue larger than 1), two components were discovered in the analysis (Field 2013), accounting for 67.3 % of the total variance. Nothing was loaded twice onto either component. The Cronbach's alpha coefficient was then used to evaluate the internal consistency (reliability) of each of the found components, with a threshold defined in the literature as 0,5 (acceptable), 0,6 (adequate for exploratory study), and 0,7 for previously deployed apparatus. The two factors that were found had Cronbach's alpha values of 0,931 and 0,825, respectively, which were deemed satisfactory.

Subsequently, two factor-based variables, labelled as “General economic and business impacts” and “Governmental and political impacts”, were calculated using the mean value across the items included in each factor.

5.7 Factor discussion

The descriptive for each of the newly identified factors are given in Table 5.4. Furthermore, the correlation between these factors were established and are provided in Table 5.5.

Table 5.4: Factor descriptive

	SecBF1	SecBF2	SecCF1	SecCF2	SecCF3	ExfacF1	ExfacF1
N-valid	233	233	233	233	233	233	233
Missing	0	0	0	0	0	0	0
Mean	3,4006	3,37111	3,7070	3,6233	3,1973	4,0443	3,7728
Median	3,4444	3,2500	3,6667	3,7500	3,5000	4,2222	4,0000
Std	0,76862	0,85287	0,80608	0,87504	1,09836	0,86220	0,98751
Skewness	-0,458	-0,365	-0,475	-0,516	-0,471	-1,523	-0,731
Kurtosis	0,891	0,062	0,762	0,128	-0,363	2,591	0,215
Minimum	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00

The following applies to Table 5.4:

- SecBF1 indicates “Innovative business focus”.
- SecBf2 indicates “Challenges of introducing production management tools”.

- SecCF1 indicates “The impact of age, size and strategy of business on productivity and sustainability”.
- SecCF2 indicates “The impact of education, skills and experience of owner/manager on the business”.
- SecCF3 indicates “Resource availability for training”.
- ExfacF1 indicates “General economic and business impacts”.
- ExfacF3 indicates “Governmental and political impacts”.

The factor with the highest mean value (4,04) was “General economic and business impacts” and the factor with the lowest mean value (3.2) was “Resource availability for training”. All the skewness and kurtosis values fall between –2 and +2 (Metin et al. 2012). Therefore, the normality assumption holds for all seven of the newly identified factors. Correlation analysis was conducted in order to address research objective 4: to identify whether there are interrelationships between attitudes towards access to technological production management tools and knowledge of internal and external factors of the business.

Correlation analysis quantifies the magnitude and orientation of the association between two variables. The direction of the correlation might exhibit either a positive or negative relationship, while the degree of the correlation is quantified on a scale ranging from 0 to 1. A value of 0 indicates no connection, whereas a value of 1 signifies a perfect correlation. A correlation value of 0.10 is commonly interpreted as indicating a weak or tiny relationship. A correlation coefficient of 0.30 is typically considered to signify a moderate correlation. On the other hand, a correlation coefficient of 0.50 or above is generally regarded as indicative of a strong or significant correlation.

Table 5.5: Correlation matrix

	SecBF1	SecBF2	SecCF1	SecCF2	SecCF3	ExfacF1	ExfacF2
SecBF1	1						
Pearson correlation							

SecBF2 Pearson Correlation	0,480**	1					
SecCF1 Pearson correlation	0,365**	0,432**	1				
SecCF2 Pearson correlation	0,629**	0,420**	0,570**	1			
SecCF3 Pearson correlation	0,272**	-0,151*	0,104	0,200**	1		
ExfacF1 Pearson correlation	0,363**	0,369**	0,644**	0,406**	0,092	1	
ExfacF2 Pearson correlation	0,161*	0,050	0,306**	0,134*	0,309**	0,638**	1

* Indicates significance at the 5% level

** Indicates significance at the 1% level

The correlations between the seven factors were all positive, with the only exception being between “Challenges of introducing production management tools” and “Resource availability for training”, which were negatively and weakly (less than 0,3) correlated. Strong correlations (above 0,5) were observed between Sec BF1 and SecCF2, Sec CF1 and SecCF2, SecCF1 and ExfacF1 ,SecCF2 and ExfacF2. Only three of the pairs did not show statistical significance and indicated very weak correlations of 0,104, 0,050 and 0,092, respectively. Therefore, interrelationships exist between 18 of the 21 pairs of factors. Descriptive statistics was conducted] in order to address research objective 5: to ascertain if there are variations between the groupings of (1) the age of the respondents, (2) the roles of respondents and (3) the education levels of respondents regarding their perceptions of access to technological production management tools and their knowledge of internal and external factors of

the business. In order to analyse respondents' knowledge of internal and external factors of the business, parametric independent t-tests were conducted for 1) and 2) and the nonparametric Kruskal-Wallis test for 3), due to some groups having a small sample size.

Inferential analysis was performed, firstly to assess whether statistically significant differences exist with regard to the seven recognized factors between the groups as defined by the categories of role (only manager and owners, excluding supervisors) and age of respondent (20–39 years and 40–59 years, excluding the 60+ response). The categories were chosen so as to contain enough responses to conduct the parametric test.

The statistical significance of the differences between these groups was determined from descriptive statistics for independent groups. The significance level was set at 5%.

Table 5.6: Mean and standard deviation of the seven factors per role group

	Role_adj	N	Mean	Std. Deviation
SecBF1	1	79	3,4824	0,79187
	2	142	3,3537	0,75968
SecBF2	1	79	3,4620	0,95666
	2	142	3,3187	0,79233
SecCF1	1	79	3,9283	0,84043
	2	142	3,5822	0,76743
SecCF2	1	79	3,9430	0,79758
	2	142	3,4489	0,87140
SecCF3	1	79	3,1709	1,22706
	2	142	3,1937	1,02079
ExfacF1	1	79	4,2447	0,71841
	2	142	3,9272	0,91987
ExfacF2	1	79	3,8059	0,95573
	2	142	3,7418	1,00777

The results of the test are shown in Table 5.7.

Table 5.7: The Lavene and T test for equality of means

		Levene's Test	Sig.	t-test for equality of means	df	Two-sided p
SecBF1	Equal variances assumed	1,253	0,264	1,189	219	0,236
	Equal variances not assumed			1,175	155,738	0,242
SecBF2	Equal variances assumed	4,216	0,041	1,195	219	0,233
	Equal variances not assumed			1,133	137,791	0,259
SecCF1	Equal variances assumed	1,427	0,234	3,105	219	0,002
	Equal variances not assumed			3,025	149,369	0,003
SecCF2	Equal variances assumed	0,227	0,634	4,162	219	0,000
	Equal variances not assumed			4,268	173,636	0,000

SecCF3	Equal variances assumed	4,303	0,039	-0,148	219	0,883
	Equal variances not assumed			-0,140	138,285	0,889
ExfacF1	Equal variances assumed	6,291	0,013	2,650	219	0,009
	Equal variances not assumed			2,841	195,301	0,005
ExfacF2	Equal variances assumed	0,057	0,811	0,462	219	0,645
	Equal variances not assumed			0,469	168,646	0,640

The results are shown in Table 5.8.

Table 5.8: Test statistics

	SecBF1	SecBF2	SecCF1	SecCF2	SecCF3	ExfacF1	ExfacF2
Kruskal-Wallis H	12,512	19,382	10,765	18,912	9,660	19,141	6,694
Df	4	4	4	4	4	4	4
Asymp. sig.	0,014	< 0,001	0,029	< 0,001	0,047	< 0,001	0,153

a. Kruskal-Wallis test

b. Grouping variable: Edu_adj

The results indicate that there is a statistically significant difference at the 5% level of significance between the education groups for all the factors (p values < 0,05), except for “Governmental and political impact” (ExfacF2). The mean ranks, presented in

Table 5.9, indicate the trend of responses. For example, for section BF1, those with a bachelor's degree tend to agree the least while those with a postgraduate degree tend to agree the most with the statements.

Table 5.9: Ranks

	Edu_adj	N	Mean rank
SecBF1	1,00	17	129,56
	2,00	29	106,90
	3,00	86	113,11
	4,00	63	94,44
	5,00	28	142,71
	Total	223	
SecBF2	1,00	17	86,26
	2,00	29	113,83
	3,00	86	111,49
	4,00	63	98,67
	5,00	28	157,27
	Total	223	
SecCF1	1,00	17	115,88
	2,00	29	122,00
	3,00	86	109,35
	4,00	63	96,52
	5,00	28	142,27
	Total	223	
SecCF2	1,00	17	131,18
	2,00	29	121,07
	3,00	86	111,84
	4,00	63	87,75
	5,00	28	146,02
	Total	223	
SecCF3	1,00	17	138,85
	2,00	29	131,16

	3,00	86	105,59
	4,00	63	114,07
	5,00	28	90,89
	Total	223	
ExfacF1	1,00	17	88,21
	2,00	29	101,86
	3,00	86	130,40
	4,00	63	90,37
	5,00	28	129,09
	Total	223	
ExfacF2	1,00	17	96,79
	2,00	29	113,41
	3,00	86	123,92
	4,00	63	98,72
	5,00	28	113,04
	Total	223	

5.8 Discussion of findings

The research topic, research questions and objectives, literature evaluation, research methods, and significant findings will all be connected by this section of the study. The respondents were divided into groups according to age distribution, the age of the company, the respondents' function within the company, their understanding of internal and external factors, their attitude towards the company's use of technology production management tools, and their educational attainment in these studies.

According to the results, a sizable majority of the respondents (more than 70%) are between the ages of 25 and 39. On the other hand, the proportion of respondents who are 60 years of age or older is quite low. This discrepancy could be explained, in part, by the different degrees of technological competence among age groups. The lower adoption rate of digital platforms among older adults may have been a contributing factor to their lower participation rate, particularly in cases when the survey was sent via email or other digital means (Smith & Anderson, 2018). It was also discovered that, statistically speaking, there are no appreciable disparities in schooling between age

groups; this finding is connected to each of the seven characteristics that were observed (refer to Table 5.9).

There will be a summary, a conclusion, and suggestions for more research in the following chapter.

CHAPTER 6: SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

The previous chapter reported and discussed the research findings and made comparisons to the literature review. This chapter explains how the study's aims and objectives were met. The chapter also contains conclusions and limitations of the study, as well as recommendations for future research.

6.1.1 Overview of the study

The competitive business climate in which the South African SMME sector operates presents obstacles to business operations, and in order to survive or grow competitiveness, technology and innovative solutions are required (Lebusa, 2013). SMMEs face intense competition, which makes them need to adopt competitive strategies in order to thrive and grow. Additionally, as 90% of SMMEs fail within ten years of its founding, those that are unable to adjust competitively in the tough business environment run the risk of not only failing but also becoming part of the statistics on SMME failure. (Wolmarans and Meintjes, 2015). This is why the study concentrated on manufacturing SMMEs. As a crucial link in the value chain of the manufacturing industry, the manufacturing sector of SMMEs makes a substantial contribution to GDP growth, tax income, and job creation (Small Enterprise Development Agency, 2012).

Notably, manufacturing SMMEs provide employment opportunities to thousands from marginalized and previously disadvantaged communities. While there are challenges, including health and safety concerns and potential vulnerabilities to criminal activities, the sector's positive economic impact cannot be understated. It's essential to view manufacturing SMMEs not just in isolation but as a vital component within the larger manufacturing ecosystem. As a result, manufacturing SMMEs help to create jobs and generate tax revenue and GDP. In this sense, thousands of people from marginalised and formerly disadvantaged communities work in manufacturing SMMEs. Given the significance of SMMEs in providing a source of income for many South Africans, research in this area has become essential and valuable (Mrasi, 2016).

The theoretical framework of this thesis accepts that there is no single or common production management tool that can be generalised for all organisations. Since

enterprises have different business objectives and diverse characteristics, it is essential that enterprises only incorporate the appropriate production management tool which will assist them in meeting the objectives of their own businesses. Thus, it was beneficial for this research to investigate the key variables affecting the manufacturing SMMEs in Ekurhuleni Municipality's adoption of PMOs. Applying contingency theory to the study's findings yielded insightful conclusions and helpful suggestions that will help close the current research gap in production management for manufacturing SMMEs.

Understanding how manufacturing SMMEs used production management to improve their own competitiveness amid COVID 19 lockout constraints was crucial, especially in light of the latter remark. In the event that similar disruptions happen in the future, the researcher thought it would be crucial to investigate the creation of a framework to direct SMMEs.

6.1.2 Research objectives

The primary aim of the study involved exploring productivity challenges experienced by manufacturing SMMEs during COVID-19 lockdown restrictions in Ekurhuleni Municipality.

To achieve the aims the researcher formulated the following objectives.

- To understand the internal environmental factors affecting the productivity and sustainability of SMMEs within Ekurhuleni Municipality.
- To identify the external environmental factors affecting the productivity and sustainability of SMMEs within Ekurhuleni Municipality.
- To outline production management challenges of manufacturing SMMEs in Ekurhuleni Municipality.
- To identify whether there are interrelationships between attitudes towards access to technological production management tools and knowledge of internal and external factors of the business.
- To ascertain if there are variations between the groupings of (1) the age of the respondents, (2) the roles of respondents and (3) the education levels of respondents regarding their perceptions of access to technological production management tools and their knowledge of internal and external factors of the business.

6.2 Summary and discussion of findings

Based on the study's aims and objectives, a quantitative research method was chosen to explore the productivity challenges experienced by manufacturing SMMEs in Ekurhuleni Municipality during the COVID-19 lockdown and develop a framework to guide SMMEs should similar unexpected circumstances arise in the future. A thorough literature review of the subject areas discussed in Chapters 2 and 3 complemented this approach. The research findings are briefly addressed concerning the aims mentioned above.

6.2.1 Research objective 1

To understand the internal environmental factors affecting the productivity and sustainability of SMMEs within Ekurhuleni Municipality.

In order to achieve this goal, a thorough analysis of the literature was conducted to identify the internal and external factors that impact the productivity and sustainability of manufacturing SMMEs. These factors were then further scrutinised in order to determine the current obstacles preventing the productivity of manufacturing SMMEs in Ekurhuleni Municipality.

The conclusions of the study indicated that the following variables were important. The internal elements that influenced the most of the twelve questions that were asked are covered in the section that below;

- **Skills of owner/manager**

Rickards and Ritsert (2018) highlight that the skills possessed by SMME owners significantly influence manufacturing productivity. Similarly, the findings of this study indicate that about 60,1% of the respondents viewed skills as an essential factor in manufacturing production. This means that manufacturing SMMEs owners, managers or other decision-makers rely heavily on their skills to decide what technological tools to utilise in the manufacturing production and which ones are the most suitable.

The findings further reflect that owners, managers and other decision-makers implement production management to save time, use their scarce resources best,

become more cost-effective and maintain market share. Eniola and Entebang (2015) point out that most SMMEs have experienced obstacles to growth and sustainability because of a lack of skills on the part of the owners, managers or other decision-makers in the business. However, this study challenges those findings. SMME owners and managers use their skills to assist them in determining the most sophisticated production that needs to be adopted within their business operations. Consequently, this study suggests that the skills of manufacturing SMME owners, managers and other decision-makers are sufficient to adopt production management tools ensuring business growth and sustainability.

- **Firm structure**

About 61% of respondents indicated that a firm's structure has an effect on productivity, and this shows that the majority of manufacturing SMMEs in Ekurhuleni are carefully considering the complexity of their enterprise structures when deciding on the type of production management tools that need to be utilised. Otley (2016) explains contingency theory and emphasises that each enterprise needs to assess its own structure when adopting production management tools and ensure that those chosen are fit for purpose. Otley (2016) also found that a significant number of respondents indicated that a firm's structure significantly influences the adoption of production management tools. Therefore, the findings of this study confirm that a company's structure affects productivity.

- **Experience**

In the context of the growing challenges facing manufacturing SMMEs, which often cease to exist after their start-up phase, it has been shown that the level of experience held by the owner, manager or other decision-makers in the business has an impact on the firm's performance, growth and survival (Blair and Marcum, 2015). According to the findings of this study, 53,8% of respondents believe that the level of experience possessed by manufacturing SMMEs' owner, manager or other decision-maker has an influence on the firm's productivity. This means that most manufacturing SMMEs' owners or managers are influenced by their experience to ensure productivity to meet their business objectives. The level of experience acquired could therefore assist in alleviating the existing failure rate amongst SMMEs. Therefore, the level of experience

possessed by manufacturing SMMEs' owners, managers and decision-makers appears to be an essential element that enhances the organisation's productivity. This study therefore concludes that the level of experience possessed by manufacturing SMMEs' owners, managers or other decision-makers plays an important role in its productivity.

- **Change in firm size**

The findings of this study indicated that 64,1% of the respondents regarded changes in the size of a firm as significant for productivity. Most manufacturing SMMEs in Ekurhuleni Municipality agree, therefore, that production needs to support and cater for any structural changes that might take place in the enterprise. This is in line with the findings of Ahmad and Zabri (2015), who conclude that any structural changes in firm size automatically affect productivity and that careful consideration needs to be exercised to accommodate the changes caused by alterations in firm size.

- **Size**

As indicated in the literature and confirmed by this study, a firm's size also influences its performance and functions. One of the critical components of contingency theory classifies the size of a firm as a factor and adds that it significantly influences productivity (as indicated in the literature review). Similarly, the findings of this study support this theory, as 67,3% of respondents indicated that a firm's size affects productivity. This means that most manufacturing SMMEs consider the size of their enterprise when implementing the appropriate production management. Thus, manufacturing SMMEs need to consider the size of their business so that it will be most suitable to fulfil their business needs.

The research findings provided evidence that the following factors are significant but are not the most influential factors for productivity: an SMME owner, manager or other decision-maker's level of education, the availability of resources, staff training and post-training, the availability of time and enterprise strategies. This was indicated by their (29,3%) response rate for these statements. Conversely, other factors such as skills, structure of the firm, level of experience and the size of a firm were identified as critical factors that influence decision-makers' approach to production management.

These factors all received a positive (agree or strongly agree) response rate of more than 70%. Therefore, even though education and other factors have been identified as influential in other studies, they were less significant to the respondents of this study.

6.2.2 Research objective 2

To identify the external environmental factors affecting the productivity and sustainability of SMMEs within Ekurhuleni Municipality.

The following external environmental factors were identified as having the most impact on the productivity of manufacturing SMMEs in Ekurhuleni Municipality.

- **Competition**

Figure 5.9 indicates that 71,7% of manufacturing SMMEs in Ekurhuleni Municipality supported the idea that competition significantly influences productivity in their enterprises. This implies that manufacturing SMMEs must keep up with the latest technological advances in order to maintain a competitive edge. As the Fourth Industrial Revolution (4IR) escalates market challenges for the enterprises in this sector, they will have to develop more strategic avenues to develop product innovations, diversify and benefit from technology (Ocloo et al. 2018).

- **Market innovations**

The study's findings revealed that 81,2% of respondents agreed that market innovations influenced the productivity of their enterprises. This is in line with the conclusion reached by Azudin and Mansor (2017) that market innovation affects productivity and significantly assists management in optimising business performance. Ahmad and Zabri (2015) highlighted the need for more research in production management, specifically focusing on market innovation as a strategy to enhance the productivity of newer SMMEs. However, many scholars, government departments and supporting agencies have recognised innovation as essential in economic growth and an important mechanism for sustaining businesses. Overall, therefore this study agrees with the results of the survey conducted by Ngibe and Lekhanya (2019), which found that radical technological innovations imposed by manufacturing SMMEs will enable them to instigate innovations that can support sustainable growth.

- **Market success**

About 79,4% of the respondents indicated that their firm's productivity influenced their success in the market. These findings suggest that market success for manufacturing SMMEs depends on productivity to promote planning and control and to enhance sound decision-making. These findings support those of Johnson (2015), who found that SMMEs' productivity improves their business performance and sustainability. This also indicates that productivity can enhance their competitive edge amongst other manufacturing SMMEs and will promote innovative strategies that allow for radical transformation.

- **Networking with other enterprises**

One of the core responsibilities of an owner or manager is to establish and maintain good working relationships with others (including both internal and external parties). This can help to optimise business performance, according to Sefiani et al. (2018). Networking with other enterprises was identified as an essential element for sharing productivity knowledge and allowing owners, managers or other decision-makers to upgrade to more sophisticated or compatible production. The findings of this study also agree with these conclusions, as close to 80% of respondents indicated that networking with others in their sector influenced productivity. This suggests that owners and managers understand the importance of sharing knowledge regarding productivity with others in their industry. The findings also indicated that, in order for manufacturing SMMEs to survive in this rapidly changing environment, networking could provide businesses with the necessary strategies that can assist them to develop and become sustainable.

- **Technology**

With the technological "industrial revolution", continuous technological advances are being introduced, and these changes require more refined production software, which is more cost-effective than older software and ensure that more accurate information is generated for decision-making purposes. The use of technology by manufacturing SMMEs was identified as an influential factor by 75,3% of respondents. These findings show that the effective use of technology can reinforce a firm's competitive edge and

is an essential tool in promoting product innovation (Bharati and Chaudhury, 2015; Pillay, 2016) These findings indicate that manufacturing SMMEs should continuously upgrade to the latest technologies compatible with more sophisticated production tools that can accelerate product innovation.

While prior literature indicated that external factors such as an uncertain environment, climate change, economic changes, the influence of government and other supporting agencies, and political influences were all regarded as influential for manufacturing SMMEs' productivity, the findings of this study largely disagreed, shedding new light on the opinions of the respondents concerning external factors. This is illustrated in Figure 5.7, which shows that less than half of the respondents supported the idea that those factors were significant for productivity in their enterprises.

6.2.3 Research objective 3

To outline production management challenges of manufacturing SMMEs in Ekurhuleni Municipality.

The productivity management procedures used by an organisation to outperform its competitors were discussed in Chapter 2. As a result, competitive issues like globalisation and potential solutions like implementing innovation-focused practices in the SMME environment were identified. The production management procedures in SMMEs were explored in section 2.3.3, and it became clear that SMMEs evaluate their competitiveness using both financial and non-financial metrics, including customers and profitability.

The manufacturing sector of SMMEs was found to use both technological and non-technological manufacturing instruments. This study also discovered that 42,2% of SMMEs in the manufacturing sector indicated their innovations were radical in nature because they were completely new and did not already exist, while 41,7% of manufacturing SMMEs indicated that their business has acquired the necessary production management tools. Moreover, about 41,7% of respondents agree that they have difficulties accessing those tools. In terms of types of innovation, the study also discovered that manufacturing SMMEs tended to conduct service and product innovations more frequently than business model and process innovations.

The literature review provided a roadmap for establishing the third and fourth research objectives, which involved determining how well participants understood production management in manufacturing SMMEs and the support provided to SMMEs in Ekurhuleni Municipality.

6.2.4 Research objective 4

To identify whether there are interrelationships between attitudes towards access to technological production management tools and knowledge of internal and external factors of the business.

This goal's main objective was to determine whether "Attitude towards access to technological production management tools of the business" and "Knowledge of internal and external factors of the company" are related in manufacturing SMMEs. It was also designed to ascertain the extent to which technological production management tools were employed during the COVID-19 lockdown, and, lastly, to assess the respondents' comprehension of both internal and external business factors and the extent to which these tools would aid in the achievement of their objectives. The components are clarified by the study's conclusions:

Regarding access to technological production management tools, the study found a relationship between the factors "Knowledge of internal and external factors of the company" (Figures 5.8 and 5.9) and "Attitude towards access to technological production management tools for the business" (Figure 5.7). The inferential analysis carried out for this study verified that a comparatively high proportion of neutral opinions were noted, given that the rate of neutral responses varied from 17% to 65%. The overall agreement rate was 32,3%, while the range of people who agreed or strongly agreed with these claims was 29,6% to 65%. Merely 29,6% of participants expressed agreement or strong agreement with the statement, "Our company presently employs production management tools to their fullest extent." Because they were familiar with the day-to-day realities of running a manufacturing company, this suggests that they had a more realistic understanding of the production management tools available to their company. However, as this was not tested in a real-world

company setting, it suggests that the managers and owners of SMMEs may have inflated expectations for the capabilities of their production management tools.

6.2.5 Research objective 5

To ascertain if there are variations between the groupings of (1) the age of the respondents, (2) the roles of respondents and (3) the education levels of respondents regarding their perceptions of access to technological management tools and their knowledge of internal and external factors of the business.

In order to meet this objective, parametric independent t- tests were conducted for (1) and (2), and the nonparametric Kruskal-Wallis test for (3), due to some groups having a small sample size. It was found that there is a statistical significant difference between the respondents in the age group 20 to 39 and those in the age group 40 to 59 with regard to each of the seven identified factors. In addition, there is a statistical significant difference between the levels of education with regard to each of the seven identified factors.

6.3 Limitations

This study focused on manufacturing SMMEs located in Ekurhuleni Municipality. Hence, the findings of this study are based only on views expressed by respondents whose businesses are found in that area. In addition, the researcher met with difficulties during the data-collection process, as some of the participants struggled to return the completed questionnaires on time. Therefore, the findings can only be generalised – and cautiously so – to other manufacturing SMMEs in regions with similar demographics to Ekurhuleni Municipality, since the characteristics of those in other areas may differ.

6.4 Recommendations for future research

Based on the findings of the study, the following possible future research areas have been identified.

The study only focused on manufacturing SMMEs and did not focus on other SMMEs. Therefore, it is recommended that future studies consider other sectors within the SMME sphere and investigate the competitiveness of those enterprises. The findings

of this study showed that traditional production management is still regarded as relevant and is adopted by many manufacturing SMMEs despite the rapidly changing environment. This implies that comparable research should be conducted to investigate the relevance of traditional production management to the business performance achieved in other sectors during the COVID-19 lockdown.

Since the study focused on factors that influence productivity and did not investigate the implications for their future growth and sustainability, it is recommended that a study be conducted to investigate the impact of manufacturing SMMEs' productivity on their business performance, growth and sustainability.

The study applied a quantitative research method. Therefore, it is proposed that another study could apply a mixed methods approach in order to gather a broader spectrum of data to expand the body of knowledge in this field.

It would also be of value to conduct a study to quantify the contribution of technological production systems to manufacturing SMMEs in the South African context. The literature is replete with the benefits of these technological production systems, but does not quantify their contribution to businesses, particularly SMBs engaged in manufacturing. Ideally, all business owners, managers and key decision-makers have a common objective, which is to maximise profits and increase stakeholders' value while assuring the sustainable growth of the business. This means that these stakeholders need to adopt the most relevant technological production tools with the most appropriate functions for improving and maintaining their business performance. In order to remain relevant and constantly upgrade their manufacturing processes in the ever-changing present environment, it is important that firms incorporate contemporary technological production tools within their business strategies. This will help to enhance their business performance, strengthen their competitive edge and improve their market value, allowing the firm's stakeholders to formulate better strategies for ensuring sustainable growth and thus helping to reduce the currently unacceptably high failure rate among SMMEs.

6.5 Recommendations for SMMEs

The following recommendations were derived from a careful consideration of the findings and conclusions of this study.

It is recommended that SMMEs should incorporate both traditional and contemporary production methods in their enterprises in order to effectively and efficiently plan, organise and control their business operations. However, newer production methods should be adopted whenever possible as they are designed to improve strategies and business performance that will sustain these enterprises.

The study recommends that SMME owners and managers should consider engaging in learning programmes that will teach them the fundamentals of productivity so that they can enhance their understanding and fully optimise their capacity.

This study recommends that SMMEs should place more emphasis on developing or acquiring new knowledge dealing with productivity, particularly by those individuals who currently have little or no knowledge of traditional and contemporary production management.

In order to remain relevant in this changing business environment, a constant upgrading of skills is recommended for manufacturing SMMEs' owners, managers and other decision-making stakeholders, in order for them to gain more knowledge and experience in adapting to contemporary production management.

Regarding the availability of resources for training, it is recommended that manufacturing SMMEs invest more time and resources into staff training, which can be sourced from supporting agencies who can provide training to staff, so that SMMEs can effectively integrate productivity into their business operations. SMME owners and managers should carry out regular follow-ups in order to identify any gaps in the staff's productivity that still require improvement. This will ensure that all staff are properly trained and have a solid understanding of the different production tools available for the specific functions of the enterprise.

The findings also showed that the age of the firm was not regarded as a significant factor in productivity, and it is therefore recommended that manufacturing SMMEs should start utilising proper technological production tools in their operations as early as possible in order for them to be sustainable and grow towards maturity. The integration of productivity at the inception phase not only strengthens the internal processes of an enterprise but also enhances business performance, allowing a smooth transition of the business life cycle.

The research findings indicate that manufacturing SMMEs in Ekurhuleni Municipality need to make more use of government interventions and other supporting agencies. These SMMEs' failure to make use of this type of support could be one of the causes of the high business failure rate in the area. Therefore, the study shows that business owners and managers must register with government databases to utilise the various support avenues that the government provides. These support avenues may include, but are not limited to, assistance with finance, training, mentorship, market access, technological support, networking and other facilities.

The study recommends that manufacturing SMMEs should assess their inherent business risk so that they can pinpoint exactly which technological production tools can be implemented to curb risk and enable them to sustain their business activities.

Due to climate change, many manufacturing SMMEs are increasingly affected by environmental issues, which influence their production processes. Therefore, the study recommends that sophisticated or environmental production tools be incorporated to become more economical and ensure environmentally sustainable production and safe, innovative and sustainable growth through enhanced share value.

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APPENDIX A: ETHICAL CLEARANCE CERTIFICATE



COLLEGE OF ECONOMIC AND MANAGEMENT SCIENCE RESEARCH ETHICS REVIEW COMMITTEE

16 August 2022

Dear Mr Murembiwa Justice Mashau

**Decision: Ethics Approval from
2022 to 2025**

NHREC Registration # : (if applicable)
ERC Reference # : 2022_CRERC_038 (FA)
Name: Mr Murembiwa Justice Mashau
Student # : 38684519

Researcher(s): Mr Murembiwa Justice Mashau; 38684519@mylife.unisa.ac.za ; 0736593779
College of Economic and Management Sciences
Department of Operations Management
University of South Africa

**"An Exploratory Study into the Productivity Challenges Experienced by
Manufacturing SMMEs during Lockdown in South Africa: Gauteng"**

Qualification: MCOM

Thank you for the application for research ethics clearance by the Unisa College of Economic and management Sciences Research Ethics Review Committee for the above-mentioned research. Ethics approval is granted for 3 years from **16 August 2022 until 15 August 2025**.

*The **low risk application** was **reviewed** by the College of Economic and management Sciences Research Ethics Review Committee on **14 June 2022** in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.*

The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the

College of Economic and management Sciences Research Ethics Review Committee.

3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.
7. No field work activities may continue after the expiry date **(15 August 2025)** Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.
8. Permission is to be obtained from the university from which the participants are to be drawn (the Unisa Senate Research, Innovation and Higher Degrees Committee) to ensure that the relevant authorities are aware of the scope of the research, and all conditions and procedures regarding access to staff/students for research purposes that may be required by the institution must be met.
9. If further counselling is required in some cases, the participants will be referred to appropriate support services.

Note:

*The reference number **2022_CRERC_038 (FA)** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,



Dr Vaola Sambo
Chairperson, CRERC
E-mail: Esambovt@unisa.ac.za
Tel: 012 429 4355



Prof Goonasagree Naidoo
Acting, Deputy Executive Dean: CEMS
E-mail: Naidog@unisa.ac.za
Tel: 012 429 6746

APPENDIX B: PARTICIPATION INFORMATION SHEET AND INFORMED CONSENT FORM



PARTICIPANT INFORMATION SHEET

Ethics clearance reference number:

Research permission reference number (delete if not applicable):

March 2022

Title: An Exploratory Study into the Productivity Challenges Experienced by Manufacturing SMMEs during Lockdown in South Africa: Gauteng

Dear Prospective Participant

My name is Murembiwa Justice Mashau (Student Number: 38584519) and I am conducting research under the supervision of Mr S Mpanza, who is a research supervisor and Mr. BD Tshabalala, a research co-supervisor, School of Business Management at the University of South Africa. I hereby invite you to participate in a study entitled "An Exploratory Study into the Productivity Challenges Experienced by Manufacturing SMMEs during Lockdown in South Africa: Gauteng".

WHAT IS THE PURPOSE OF THE STUDY?

I am conducting this research in order to:

- to explore productivity challenges faced by manufacturing SMMEs during lockdown in Ekurhuleni Municipality
- To explore the internal environment factors affecting the productivity and sustainability of small and medium enterprises within Ekurhuleni Municipality.
- To identify the external environment factors affecting the productivity and sustainability of small and medium enterprises within Ekurhuleni Municipality.
- To establish the support offered to small and medium enterprises within Ekurhuleni Municipality.

WHY AM I BEING INVITED TO PARTICIPATE?

I obtained your contact details from your chamber during our conversation regarding this study. You are cordially invited to participate in this study because you either work for SMMEs Manufacturing sector in Ekurhuleni Municipality . Another reason for you to be invited as a



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participant is that you participate in Manufacturing company decision-making process. You are either a Director, Manager, Senior manager, Junior manager or supervisory officials.

In this study, SMMEs manufacturing sector in Ekurhuleni were purposively selected to identify participants. We are targeting a minimum of 150 participants to be participate in this study. The information that you will provide will help us to develop an intergraded framework that will be used to explore productivity challenges faced by manufacturing SMMEs during lockdown in Ekurhuleni Municipality.

WHAT IS THE NATURE OF MY PARTICIPATION IN THIS STUDY?

The study involves the use of Multiple-choice questions, which require the respondents to provide their own personnel opinions and answers to the questions. Multiple-choice questions, which require the respondent to choose an answer or alternative answer from a list provided within the questionnaire to collect data from the selected participants. The survey questions will allow the participants to express their views on production manufacturing sector. The duration for each survey will not exceed fifteen (15) minutes.

CAN I WITHDRAW FROM THIS STUDY EVEN AFTER HAVING AGREED TO PARTICIPATE?

Participation in this study is voluntary and you are under no obligation to consent to participate. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a written consent form. You are free to withdraw before any data collection session without giving a reason.

WHAT ARE THE POTENTIAL BENEFITS OF TAKING PART IN THIS STUDY?

By taking part in this study, you will help us to develop an integrated framework that will be used to assess productivity in the manufacturing sector should unforeseen disruption invade the sector in the future. The developed framework may serve as a foundation to manufacturing SMMEs that want to engage in a manufacturing sector. This framework has the potential to assist manufacturing sector in identifying significant components that will need attention before production. The framework can be used by any manufacturing officials who are charged with the responsibilities to implement a productivity concept and it may save them time. In addition, the framework may save manufacturing SMMEs resources towards the implementation of a productivity concept.

ARE THERE ANY NEGATIVE CONSEQUENCES FOR ME IF I PARTICIPATE IN THE RESEARCH PROJECT?



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The only foreseeable risk of harm is the potential for minor discomfort or inconvenience, thus research that would not pose a risk above the everyday norm. The inconvenience might include the time that will be spent during the survey. Please be assured that the information collected or discussed during the data collection process will be used strictly for the purpose of this study and will be treated confidentially.

WILL THE INFORMATION THAT I CONVEY TO THE RESEARCHER AND MY IDENTITY BE KEPT CONFIDENTIAL?

You have the right to request the researcher not to record your name anywhere and that no one, apart from the researcher and identified members of the research team, will know about your involvement in this study. If your name is recorded, it will be given a code number or a pseudonym and you will be referred to in this way in the data, any publications, or other research reporting methods such as conference proceedings.

Your answers may be reviewed by people responsible for making sure that research is done properly, including the transcriber, coder, and members of the Research Ethics Review Committee. Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records.

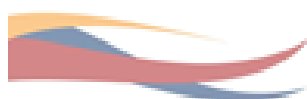
Your anonymous data that will be collected through a survey may be used for other purposes, such as a research report, journal articles and/or conference proceedings. However, participant privacy will be protected in any publication of the information. In any publication, the individual participant won't be identified because the researcher will use pseudonyms to protect their identity.

HOW WILL THE RESEARCHER(S) PROTECT THE SECURITY OF DATA?

All electronic files and folders will be password protected. These electronic data will be stored on a password protected doctoral candidate's computer. A backup of the electronic data will be saved on an external hard drive. The external hard drive will be locked in the cupboard/filing cabinet in the masters student study room at home. Future use of the stored data will be subject to further Research Ethics Review and approval if applicable. After the applicable period, electronic copies will be permanently deleted from the hard drive of the computer through the use of a relevant software programme.

WILL I RECEIVE PAYMENT OR ANY INCENTIVES FOR PARTICIPATING IN THIS STUDY?

There will be no payment or incentives, either in the form of money or gifts. Participants will not be compensated or reimbursed by the researcher for any cost that they may incur to participate in the data collection process.



HA & THE STUDY RECEIVED ETHIC & APPROVAL?

The research was reviewed and approved by the Unisa Research Ethics Review Committee (URERC). The primary researcher, <Murembiwa Justice Mashau>, can be contacted during office hours at <081 773 7327>. The study leader, <Dr Sinakhokonke Mpanza>, can be contacted during office hours at <insert contact details here>. Should you have any questions regarding the ethical aspects of the study, you can contact the chairperson of the < Unisa Research Ethics Review Committee (URERC). >, < - Dr Marianne Engelbrecht: engelmar1@unisa.ac.za >. Alternatively, you can report any serious unethical behaviour at the University's Toll Free Hotline 0800 88 96 93.

HOW WILL I BE INFORMED OF THE FINDING & RESULT & OF THE RESEARCH?

Once the research has been completed, the findings will be available to the participants on request. If you would like to be informed of the final research findings, please contact Murembiwa Justice Mashau on 0736593779 or alternatively send an email to: mjmashau@gmail.com.

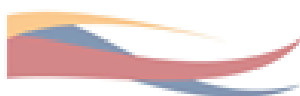
Should you require any further information or want to contact the researcher about any aspect of this study, please contact me, Murembiwa Justice Mashau, on 073 659 3779 or mjmashau@yahoo.com. Should you have concerns about the way in which the research has been conducted, you may contact Mr S Mpanza on 012 429 6641 or mpanzas@unisa.ac.za. Contact the research ethics chairperson of the Unisa School of Business Management if you have any ethical concerns.

Thank you for taking time to read this information sheet and for participating in this study.

Thank you.



Murembiwa Justice Mashau (UNISA Masters Student)



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APPENDIX C: SURVEY QUESTIONNAIRE

AN EXPLORATORY STUDY INTO THE PRODUCTIVITY CHALLENGES EXPERIENCED BY MANUFACTURING SMMEs DURING LOCKDOWN IN SOUTH AFRICA: GAUTENG

CONFIDENTIAL

Principal researcher: ~~Murambwa Justice Mashau~~
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Supervisors: Mr. S Mpanza
012 429 6641
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Co-Supervisors: Mr. B.D. Tshabalala
012 429 3776
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Note: All responses are confidential and neither the individual nor the organisation would be identified in any report or release.

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AN EXPLORATORY STUDY INTO THE PRODUCTIVITY CHALLENGES EXPERIENCED BY MANUFACTURING SMMEs DURING LOCKDOWN IN SOUTH AFRICA: GAUTENG

Dear Respondent

Organisations require partaking vibrantly in the markets worldwide, utilising the most recent technological production manufacturing , continuously innovating and rejuvenating productivity, and position themselves in a manner that will help them gain an edge over the rival organisations in the global markets. However, numerous researchers cited that adoption of information technology in small business organisations remain constrained due to deficiency of technology cognisance.

Small, medium and micro enterprises (SMMEs) have been identified as a critical instrument that contributes to the growth of a nation's economy and this is also the case in those nations that are on a developing phase. Numerous scholars have identified technology as a critical resource that enables SMMEs in both developing and developed countries to grow rapidly and to gain competitive advantage. The primary objective of this study seeks to explore productivity challenges faced by manufacturing SMMEs during lockdown in Ekurhuleni Municipality. The additional aspiration the researcher seeks to achieve through the utilisation of the questionnaire is to assist small businesses to embrace, adopt and use technological production manufacturing tool in order to improve their business operations and to gain a perspective of how small businesses are using current technology and what their needs are in the future.

The field of study falls within the subject discipline of Business management and operations management. This study predominantly focuses on the challenges faced by manufacturing SMMEs during lockdown in Ekurhuleni Municipality and possible future opportunities. Only businesses with less than 200 employees will be taken into account. The study will be carried out on selected product and service suppliers in the region of the Gauteng province in Ekurhuleni municipality.

Only businesses older than one year will be considered during the research process due to the fact that most businesses that have not yet reached the first year is considered to be still under establishment. Your contribution is highly appreciated.

SECTION A: DEMOGRAPHIC INFORMATION

Take note that the purpose of gathering the demographic data is to profile the respondents. It will not be used to make comparisons between groups.

Mark the applicable block with a cross (X). Complete the applicable information.

A1	Indicate your age group.	< 25	25 - 39	40 - 49	50 - 59	60+
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A2	Indicate your highest academic qualification.					
	Lower than matric					
	Matric					
	Certificate					
	Diploma (Technical College or University of Technology)					
	University degree					
	Post graduate degree					

A3	How many permanent employees are employed by the business?

A4	What is the age of the business (years)?

A5	Indicate the role you play in the business.					
	Owner					
	Manager					
	Supervisor					
	Senior Staff					
	Junior Staff					

A8	What is the legal status of the business?			
	Proprietorship	Partnership	Company (private)	Company (public)
	Close Corporation	Co-operative	Business Trust	Franchise
	Other or combination (specify):			

SECTION B: PRODUCTION MANUFACTURING TOOLS

The following statements concern your attitude towards access to technological production manufacturing tools of the business.

Please rate the extent to which you agree or disagree with the following statements by making an "X" over the appropriate number on the 1 to 5 point scale next to the statement.

1 = <i>Strongly disagree</i>	2 = <i>Disagree</i>	3 = <i>Neutral</i>	4 = <i>Agree</i>	5 = <i>Strongly agree</i>
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	STATEMENT	SCALE				
		1	2	3	4	5
B1	Our business currently has production manufacturing tools that are fully utilised.					
B2	Our business has had difficulties getting access to production manufacturing tools required to conduct our business.					
B3	Our business has acquired the necessary production manufacturing tools.					
B4	Funding, infrastructures, internet connection availability, training, etc. are the barriers to gaining access to production manufacturing tools.					
B5	There should be caution in replacing important people-tasks with technology, because new technologies are not reliable.					
B6	Our business regularly introduces new services/products/processes.					
B7	Our business places a strong emphasis on new and innovative products/services.					
B8	Our business is continually pursuing new opportunities.					
B9	The confidence level on our ability to use production manufacturing tools to enhance the smooth running of our business is high.					
B10	In our business there is a strong relationship between the number of new ideas generated and the number of new ideas successfully implemented.					
B11	Our business places a strong emphasis on continuous improvement in products/service delivery.					
B12	Our business has a widely held belief that innovation is an absolute necessity for the business' future.					
B13	Production manufacturing tools are useful and enhance the smooth running of the business by managers/owners.					

SECTION C: INTERNAL AND EXTERNAL FACTORS AFFECTING PRODUCTIVITY AND SUSTAINABILITY

The following statements concern your knowledge towards internal and external factors of the business.

INTERNAL FACTORS

Please rate the extent to which you agree or disagree with the following statements by making an "X" over the appropriate number on the 1 to 5 point scale next to the statement.

1 = <i>Strongly disagree</i>	2 = <i>Disagree</i>	3 = <i>Neutral</i>	4 = <i>Agree</i>	5 = <i>Strongly agree</i>
---------------------------------	------------------------	-----------------------	---------------------	------------------------------

	STATEMENT	SCALE				
		1	2	3	4	5
C1	The education level of the SMMEs owner/manager is relevant for production management.					
C2	My skills as an owner/manager allow me to be productive in the operations of the business.					
C3	My experience as an SMMEs owner/manager is enough to successfully be productive in this enterprise					
C4	Resources such as funds and time are available to allow training of staff in order to successfully be productive in the business.					
C5	Training of staff is frequently conducted in order to provide capacity for productive effectiveness in the business.					
C6	The post training of owner/manager and staff improves productivity in the business.					
C7	The availability of time and money hinder the ability to offer proper training needs in order to be effective productive in this business.					
C8	The age of the enterprise influences the productivity and sustainability.					
C9	The enterprise's strategy influences the productivity and sustainability.					
C10	The firm size has an impact on the productivity and sustainability.					
C11	The change in firm size had an impact on the productivity and sustainability.					
C12	The enterprise structure has an influence in productivity of the enterprise.					

EXTERNAL FACTORS

Please rate the extent to which you agree or disagree with the following statements by making an "X" over the appropriate number on the 1 to 5 point scale next to the statement.

1 = <i>Strongly disagree</i>	2 = <i>Disagree</i>	3 = <i>Neutral</i>	4 = <i>Agree</i>	5 = <i>Strongly agree</i>
---------------------------------	------------------------	-----------------------	---------------------	------------------------------

	STATEMENT	SCALE				
		1	2	3	4	5
C13	The uncertain environment in which the enterprise operated under during lockdown has an influence in productivity.					
C14	The impact of environmental changes has an influence on the productivity in the enterprise.					
C15	The inflation of the economy had an influence in productivity and sustainability of the enterprise.					
C16	Government subsidies (funds) assist in improving capacity for the production and sustainability of the business.					
C17	Supporting agencies have an impact on productivity and sustainability of the enterprise.					
C18	Political and social changes have an effect on the productivity and sustainability of the business.					
C19	Networking with other enterprises has an effect on the productivity and sustainability of the business.					
C20	The use of technology plays a huge role in the productivity of the enterprise.					
C21	The use of technology improves the productivity of the business.					
C22	The competition has an impact on the production and sustainability of the enterprise					
C23	The productivity by the enterprise has an influence on the success of the business in the market.					
C24	Market innovations have an impact on the productivity of the enterprise.					

THANK YOU FOR YOUR TIME.

APPENDIX D: REQUEST FOR PERMISSION LETTERS



Appendix D: Request for permission letters

Request for permission to conduct survey with your members for academic purpose

10 March 2022

The President

South African Black Automotive Chamber of commerce and Industry (SABACCI)

521 Twayi Street

Moshoeshoe Section

Katlehong

1432

Dear Mr. DMS Ntuli

I, Murembiwa Justice Mashau, am doing research under the supervision of Mr Sinakhokonke Mpanza and Mr Daniel Tshabalala in the Department of Business Management at UNISA. I am doing a research in the fulfilment of a requirement to a Masters of Commerce Degree in Business Management.

I am requesting your permission to invite members of your organization to participate in a research entitled "**An Exploratory Study into the Productivity Challenges Experienced by Manufacturing SMMEs during Lockdown in South Africa: Gauteng Province**". The aim to explore the productivity challenges experienced by manufacturing SMMEs during the lockdown in Ekurhuleni Municipality.

The information gained from these research will help provide knowledge on unforeseen disruptions that may affect the productivity in manufacturing SMMEs, provide evidence-based analysis aimed at supporting growth and survival of SMMEs and motivate to use production management tool to enhance competitiveness in SMMEs. The results of the research will be used for academic purpose only. Once published, a copy of the research report with summary of the findings will be made available to your organization on request.

The research will be reviewed and approved by the Research Ethics Review Committee of the Department of Business Management, College of Economic and Management Sciences (CEMS), at UNISA. The primary researcher, Mr. Murembiwa Justice Mashau, can be contacted during office hours at 073 659 3779 or 38684519@mylife.unisa.ac.za. My supervisors are, MR S Mpanza, can be contacted during office hours at 012 429 6841 or Mpanza@unisa.ac.za and Mr D Tshabalala. Can be contacted during office hours at 012 429 3776 or dtshabal@unisa.ac.za.

Kind regards,

Mr. Murembiwa Justice Mashau



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APPENDIX E: LETTER OF PERMISSION



521 Twayi Street
Moshoeshe Section
KATLEHONG
1432
GAUTENG PROVINCE

March 27th, 2022

Att. : M J Mashau

Dear Sir

RE: PERMISSION TO INTERVIEW OUR MEMBERS

It is with pleasure to communicate with you regarding your request to conduct research survey with our members . We hereby notify you that you are permitted to conduct online research survey with our members.

South African Black Automotive chamber of commerce and industry is an automotive chamber focusing mainly on SMMEs black automotive entrepreneurs. As a chamber, we welcome your research entitled: ***An Exploratory Study into the Productivity Challenges Experienced by Manufacturing SMMEs during Lockdown in South Africa: Gauteng Province***

The chamber would like to invite you to share with our members your findings and recommendation from your research you have concluded. We are always seeking new knowledge to improve our businesses even our industry. Please feel free to contact the writer hereof any assistance you may need.

We wish you all the best with your research.

Yours Faithfully

A handwritten signature in black ink, appearing to read "D M SNTULI", is written over the typed name.

D M SNTULI

President - 0824278850

APPENDIX F: TURNITIN REPORT

Final

ORIGINALITY REPORT

18% SIMILARITY INDEX	16% INTERNET SOURCES	8% PUBLICATIONS	4% STUDENT PAPERS
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PRIMARY SOURCES

1	uir.unisa.ac.za Internet Source	3%
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4	researchspace.ukzn.ac.za Internet Source	1%
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6	vital.seals.ac.za:8080 Internet Source	1%
7	Submitted to University of South Africa Student Paper	<1%
8	www.researchgate.net Internet Source	<1%
9	Submitted to University of Stellenbosch, South Africa Student Paper	<1%

APPENDIX G: EDITING CERTIFICATE

Dr Kristien Potgieter
Editorial Services
Professional Editors' Guild: Associate Member (Membership no. POT004)
kristienpotgieter@gmail.com
+2760 941 5564
97 Chobe Sands, 1 Alexander Avenue
Douglasdale Ext. 102, 2191

20 September 2023

To Whom It May Concern

I hereby confirm that I carried out a language edit of the thesis "An Exploratory Study into the Productivity Challenges Experienced by Manufacturing SMMEs during lockdown in South Africa's Gauteng Province – Ekurhuleni Municipality" by Murembiwa Justice Mashau (UNISA student number 38684519). The following elements were corrected or, where necessary, a query was raised for the author to resolve:

- General grammar, spelling and punctuation
- General consistency
- Cohesiveness, logic, clarity and flow
- Adherence to formal/academic tone
- Layout and formatting
- Tables, figures and captions
- References and reference list (according to the guidelines provided).

Corrections, suggestions and queries have been indicated throughout using the "track changes" function in Microsoft Word, and it is the responsibility of the author to accept or reject corrections and suggestions and to resolve all queries raised by the editor.

While the editor has made every effort to point out potential errors, inconsistencies or instances of plagiarism, it remains the responsibility of the author to minimise errors and eliminate plagiarism, and the editor cannot be held responsible for any errors, inconsistencies or instances of plagiarism in the edited document. The author accepts this disclaimer upon acceptance of the edited document. The editor suggests that the article is given a final proofread by the author before submission to minimise typos, as the editor cannot guarantee a fully error-free document.

Signed



Kristien Potgieter (Language editor)

20 September 2023

Date