

**The influence of operational risk on the sustainability of  
manufacturing Small and Medium Enterprises in the Cape  
Metropole**

by

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**at the Cape Peninsula University of Technology**

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## **DECLARATION**

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Date: \_\_\_\_\_

## ABSTRACT

South African Small and Medium Enterprises (SMEs) are regarded as the driving force of economic growth and play a particularly critical role in developing countries because they contribute to a country's gross domestic product (GDP), create jobs and reduce poverty. Nevertheless, most SMEs face different types of risk that are detrimental to their sustainability, which, in turn, negatively affect economic growth. One of these major risks that SMEs face is operational risk. Since operational risk causes are growing sporadically and can harm the trustworthiness, status and finances of a business, it is essential to equip business entities with the necessary knowledge and skills to recognise and manage risk effectively to attain business objectives. To shed light on the preceding phenomenon, this research study aimed to identify the extent to which operational risk influences the sustainability of SMEs operating within the manufacturing sector in the Cape Metropole

The research fell within the ambit of the positivistic research paradigm. This approach was realised by conducting a literature review to aid in the construction of a survey in order to conduct empirical research by accumulating quantitative data from owners and/or managers of SMEs in the manufacturing industry. Non-probability sampling methods, particularly that of purposive sampling and convenience sampling, were used to select a representative sample size of respondents. The survey comprised qualitative and quantitative questions to evaluate the influence of operational risk on the sustainability of SMEs within the Cape Metropole manufacturing industry. The quantitative data obtained was analysed using descriptive and inferential statistics.

Based on the analysed data, it was discovered that most SMEs did not perceive themselves to be facing operational risk, and consequently, they did not implement ORM. Almost half of the respondents was not *au fait* with the term "operational risk". Most of the respondents agreed with statements relating to achieving business objectives and not encountering any of the listed operational risks. Only some businesses indicated that they were adversely influenced by operational risk factors, which did not seem to affect the sustainability of their business because all of them had been in existence for about 15 years. Four major operational risk factors were found to influence SME sustainability in all the SMEs that implemented ORM: people, systems, processes and external risk.

Stemming from the above results, it is evident that the data gleaned from manufacturing SME managers and/or owners is not in congruence with existing academic literature.

Therefore, it is recommended that further research be conducted to determine why manufacturing SMEs have good sustainability rates despite not being fully aware of operational risk and ORM. To increase ORM implementation in SMEs to mitigate the average operational risk factors that adversely affect these business, it is proposed that educational programmes are offered to assist SME owners and/or managers to recognise and mitigate operational risk because this action could contribute to and/or increase business sustainability.

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## **DEDICATION**

This thesis is dedicated to my late mother, Justine Shipanga, who passed away two months after I started my studies. You have been a source of motivation and strength throughout my education. You were my pillar of strength who taught me to work hard and always strive for success in every opportunity I am given. Thank you for your undying love, prayers, sacrifices, and support. Mamma, this is for you, and I wish we could celebrate together in the way we used to celebrate our successes as a family, no matter how small they were.

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## LIST OF ABBREVIATIONS

Abbreviation	Meaning
BCBS	Basel Committee on Banking Supervision
BER	Bureau for Economic Research
BIS	Bank for International Settlements
COSO	Committee of Sponsoring Organisations of the Treadway Commission
CPA	Certified Practising Accountant
DTI	Department of Trade and Industry
ERM	Enterprise Risk Management
GDP	Gross Domestic Product
ISO	International Standards Organization
IRMSA	The Institute of Risk Management South Africa
IT	Information Technology
ORM	Operational Risk Management
ORX	Operational Riskdata eXchange Association
SEDA	Small Enterprise Development Agency
SME	Small and Medium Enterprise
Stats SA	Statistics South Africa
VAT	Value Added Tax
WSDBA	Water Street District Business Association

## **CHAPTER 1: INTRODUCTION TO THE RESEARCH STUDY**

### **1.1 BACKGROUND TO THE RESEARCH PROBLEM**

Small and Medium Enterprises (SMEs) are known as drivers of economic growth, are important in reducing poverty (Morongwa, 2014), creating employment, contributing to the Gross Domestic Product (GDP) (Lekhanya & Mason, 2014), and play a particularly important role in developing countries (Morongwa, 2014). Therefore, it is essential that SMEs function sufficiently efficiently and effectively to grow within their sectors (Dladla, 2016). The SME manufacturing sector is a primary contributor to the South African GDP, of which small businesses in the Western Cape contribute the most (Statistics South Africa – Stats SA, 2013). However, most SMEs face several obstacles hampering their sustainability, which, in turn, negatively affect their economic growth (Phaho & Pouris, 2008; Allen, 2016).

There are various types of risks that SMEs face, should recognise, and manage effectively to achieve the objectives of a business (Anderson & Terp, 2006). One of these major risks that business entities face is operational risk (Engle, 2009). This type of risk is inherent in every human activity and ascends from activities such as acts of fraud, errors, negligence, violations, technological failure events, process deficiencies, system flaws, acts of terrorism and vandalism, as well as natural disasters such as floods, earthquakes etc. (Hussain & Shafi, 2014).

There is sparse literature dealing with operational risk within South African manufacturing SMEs and, most importantly, these SMEs are characterised as being ineffective and inefficient because they suffer from various internal and external influences such as people, internal processes, technological systems and external events, which generate operational risks. These risks adversely affect business sustainability, causing the failure of some of these SMEs. Hence, this study seeks to determine the influence of operational risk on the sustainability of manufacturing SMEs in the Cape Metropole, South Africa.

Research findings could add to the existing body of knowledge regarding operational risks and provide useful guidelines to SME owners and/or managers on how they can manage operational risk effectively to improve the sustainability of their businesses.

The content of Chapter 1, along with the relative positioning of the various topics, which will be addressed therein, is graphically depicted in Figure 1.1 (see overleaf).

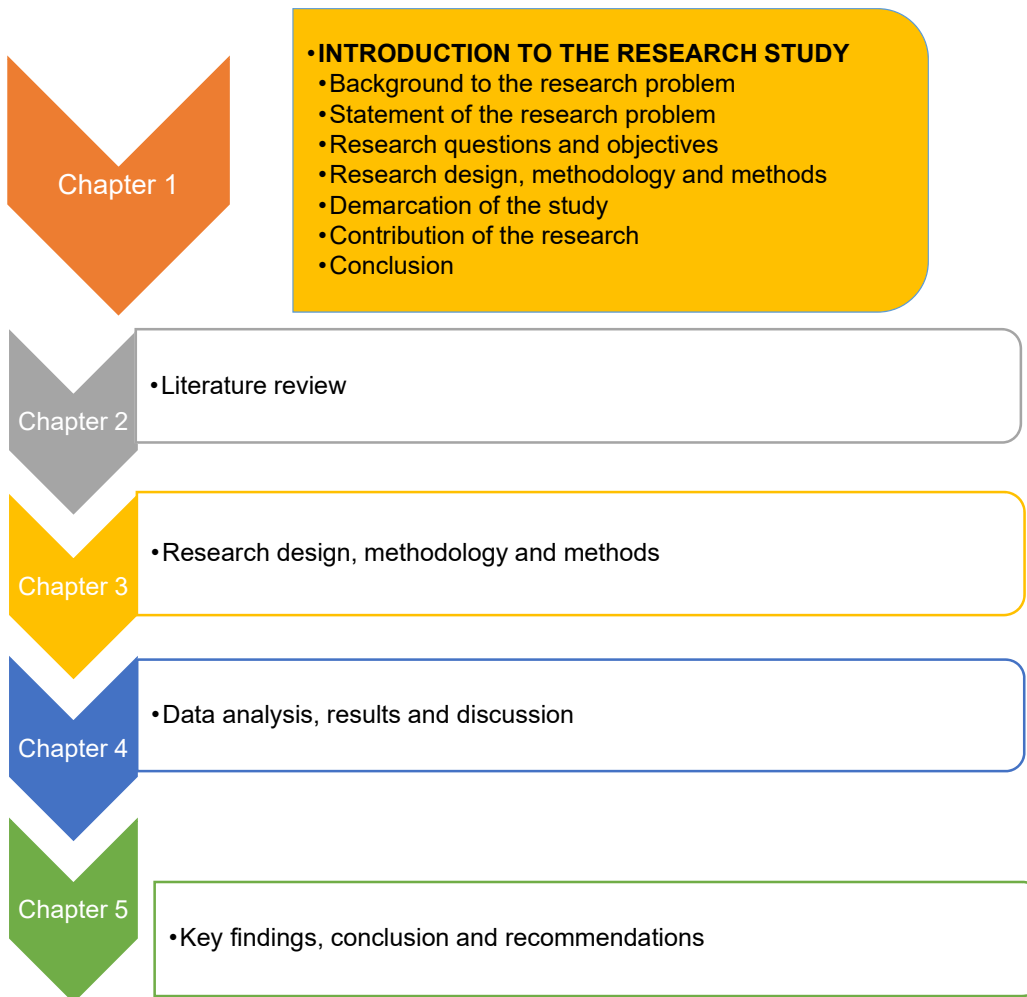
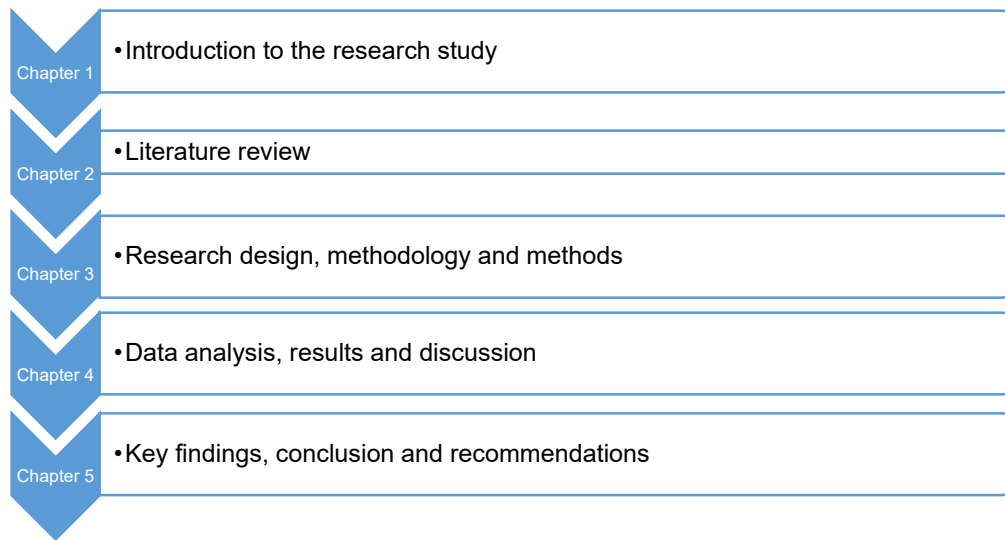


Figure 1.1: Detailed layout of Chapter 1 – Introduction to the research study

## **1.2 STATEMENT OF THE RESEARCH PROBLEM**

SMEs play a pivotal role in economic development, especially in developing countries, through providing employment opportunities, contributing to the GDP and representing a considerable portion of South African formal business entities (Lekhanya & Mason, 2014). Despite SMEs' significant contribution, it is noted that in South Africa, in particular, SMEs are not achieving their relevant social- and economic goals. SME growth and existence are exposed to various impediments that might be present in the operations and management functional areas of businesses (Chimucheka & Mandipaka, 2015). Small to medium businesses are exposed to risks, which influence their daily processes, reduce proceeds and/or increase overheads (Certified Practising Accountant (CPA) Australia, 2018). Furthermore, SMEs are faced with various operational risk factors influencing their efficiency and effectiveness (Naude & Chiweshe, 2017). Many South African businesses fail, especially SMEs, which are adversely influenced because of operational risk. Most South African studies have only focused on risk management practices within SMEs and not operational risk management (ORM) within SMEs. Since operational risk causes are growing sporadically and can harm the trustworthiness, status and finances of a business (Mohammed, 2015), it is essential to determine the influence of operational risk on the sustainability of SMEs.

Against the background to the research problem elaborated upon above, the research problem is stated as follows:

*Operational risk adversely influences the sustainability of SMEs.*

## **1.3 RESEARCH QUESTIONS AND OBJECTIVES**

This research study aims to determine the extent to which operational risk influences the sustainability of SMEs operating in the manufacturing sector in the Cape Metropole, South Africa.

### **1.3.1 The primary research question and objective**

Stemming from the above, the primary research question of this study is:

*To what extent does operational risk influence the sustainability of manufacturing SMEs in the Cape Metropole?*

Therefore, the main research objective is to determine the extent to which operational risk influences the sustainability of manufacturing SMEs in the Cape Metropole.

### **1.3.2 The research sub-questions and objectives**

The research sub-questions that relate to the main research question are:

- What is operational risk?
- What operational risks do manufacturing SMEs face?
- To what extent is ORM implemented within manufacturing SMEs?
- What operational risk factors influence the sustainability of manufacturing SMEs?

The secondary objectives of this study are:

- To determine what operational risk is.
- To determine the operational risks that manufacturing SMEs encounter.
- To determine the extent to which ORM is implemented within manufacturing SMEs.
- To determine what operational risk factors influence the sustainability of manufacturing SMEs.

## **1.4 RESEARCH DESIGN, METHODOLOGY AND METHODS**

This research study was quantitative in nature and fell within the positivistic research paradigm to obtain primary (numerical) data from respondents concerning the identified research problem. A positivist research design relies profoundly on quantitative findings and establishing statistical significance (Alessandrini, 2012). Positivism embraces the belief that the scientific method is the only way to truth and objective reality. Therefore, the positivistic research paradigm is believed to be the most relevant for this research study because it is based on a real and objective interpretation of the data and highlights the importance of conducting quantitative research, such as large-scale surveys, to obtain an overall impression of humanity.

The research study constituted survey research. Survey research acquires information such as people's opinions, characteristics, attitudes and/or previous experiences through inquiring and presenting the results (Bitso, 2011). This research design is appropriate for this study, because it offers the researcher a clear research framework, guides the methods and decisions and lays the basis for interpretation (Williams, 2007).

Primary data was collected using a quantitative research method (questionnaire). According to Creswell and Poth (2017), quantitative research quantifies, collects and analyses numerical data, and emphasises links among a smaller number of attributes across several cases. Each questionnaire comprised mostly closed-ended questions and was disseminated to manufacturing SME owners and/or managers in the Cape Metropole who are involved in the daily activities of their business.

Non-probability sampling methods, particularly that of purposive sampling and convenience sampling, were used to select a representative sample size of respondents (i.e. SME owners and/or managers) all of whom had to adhere to the following strict delineation criteria:

- Respondents must be owners and/or managers of their businesses.
- Respondents must be actively involved in the daily operations of the business.
- Respondents' SMEs must adhere to the South African definition of SMEs as stipulated in the National Small Enterprise Act of 2019.
- Respondents' SMEs must employ 11 to 250 employees.
- Respondents' SMEs must be non-franchised.
- Respondents' SMEs must operate in the manufacturing industry in the Cape Metropole.
- Respondents' SMEs must have been in existence for at least three years.

Descriptive statistics were used to describe and present the basic features of the collected data. The research design, research methodology and research methods employed in this study are elaborated on in Chapter 3 below.

## 1.5 DEMARCATION OF OF THE STUDY

This study was conducted in the Cape Metropole, South Africa and the population was limited to manufacturing SMEs within this metropole (see Figure 1.2 below).



**Figure 1.2: Cape Metropole**  
**Source:** Municipalities (2021:Online)

## **1.6 CONTRIBUTION OF THE RESEARCH**

The significance of this research study is focused on making SME owners and managers aware of the various operational risk factors that influence the effectiveness of SMEs, which, in turn, sustainability affect their business. Consequently, results from this study will provide recommendations to SME owners and/or managers on how they can effectively address operational risk to improve the sustainability of their businesses.

## **1.7 CONCLUSION**

This chapter introduced the reader to the research problem, after which it informed the reader of the aims and objectives of the research study. Furthermore, a summary of the research design, methodology and methods employed in this study were provided, while also stating the demarcation of the research study and its contribution to the existing body of related knowledge.

**Chapter 2 – Literature review:** Chapter 2 provides a comprehensive literature review of SMEs, particularly those within the manufacturing sector, the sustainability of SMEs and the different types of risks that SMEs face. Insight is provided on operational risk factors and the management thereof in both a general and South African SME dispensation. The chapter concludes with a discussion on operational risk controls that can be implemented to mitigate operational risks.

**Chapter 3 – Research design, methodology and methods:** This chapter discusses the research design, methodology and research methods, ethical consideration, validity and reliability, data collection method used and survey design applicable to this research study. The chapter concludes by stating the limitations of the study.

**Chapter 4 – Data analysis, results and discussion:** Chapter 4 addresses the approach followed to analyse, interpret, present, and discuss the data collected.

**Chapter 5 – Key findings, conclusion and recommendations:** This concluding chapter revisits critical aspects of this research study, whereafter results are brought into the context of the main research problem, conclusions are drawn, recommendations are made and avenues for further research are provided.



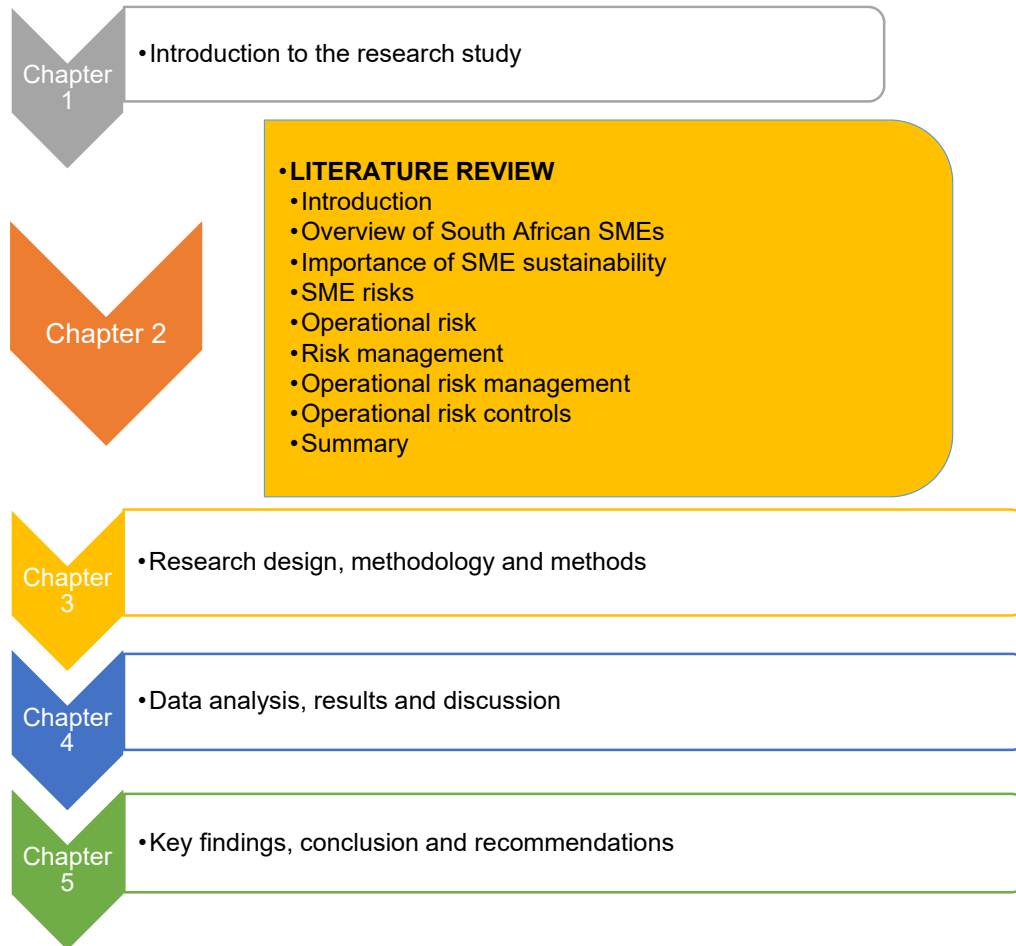
## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 INTRODUCTION**

In this chapter, a literature review is conducted. According to De Los Reyes and Kazdin (2008), the main purpose of a literature review is to help readers understand the existing body of available research on a topic by making them aware of the advantages and disadvantages of studies within that body. The literature review aims to determine if a topic is researchable, reports the results of closely related studies, and establishes the importance of the current study in relation to previous studies (Creswell, 2014). Therefore, it is an ongoing discussion in the literature, which fills gaps in existing research and extends prior studies (Marshall & Rossman, 2016), thus discerning whether an idea is worth pursuing. The investigation of previous studies helps the researcher identify and address areas of need (Rhoades, 2011).

This chapter aims to address the main research question, namely, to establish the extent to which operational risk influences the sustainability of manufacturing SMEs operating within the Cape Metropole, South Africa. An in-depth discussion is provided on SMEs and the sustainability of these businesses, the various risks they face, especially that of operational risk, and the management thereof.

The literature reviewed in this research study is expanded upon under the following headings: Overview of South African SMEs, Importance of SME sustainability, SME risks, Risk management, Operational risk, Operational risk management, Operational risk controls, and Summary (see Figure 2.1 overleaf).



**Figure 2.1: Detailed layout of Chapter 2 –Literature review**

## **2.2 OVERVIEW OF SOUTH AFRICAN SMEs**

In South Africa, SMEs have been operating since the 1990s (Visagie, 1997). SMEs were formally recognised and introduced by the national government of South Africa through the publication of the National Small Enterprise Act (Act No. 102 of 1996) to alleviate poverty, create jobs and boost the national economy (Joubert, Schoeman & Blignaut, 1999).

A South African small business is defined as:

A separate and distinct business entity, together with its branches or subsidiaries, if any, including cooperative enterprises, managed by one owner or more predominantly carried on in any sector or subsector of the economy" (South Africa, 2019:110).

The definition of SMEs includes a vast range of business, some of which include formally registered-, informal-, and non-Value Added Tax (VAT) registered organisations (The Department of Trade and Industry (DTI), 2008).

Since this research study focuses on South African SMEs operating in the manufacturing sector, a summary of the National Small Enterprise Act's (South Africa, 2019) manufacturing classification criteria is depicted in Table 2.1 below.

**Table 2.1: Criteria for the classification of South African SMEs in the manufacturing industry**

Industry	Classification	Number of full-time employees	Annual turnover (R)
Manufacturing	Medium	51 – 250	< 170 million
	Small	11 – 50	< 50 million
	Micro	0 – 10	< 10 million

**Source:** South Africa (2019:111)

The manufacturing sector is known to be the bedrock of the South African economy and a key driver of growth and development (Naidoo & Urban, 2010). South Africa's manufacturing sector has an annual turnover of less than R163 million (Statistics South Africa, 2017). More so, the manufacturing sector is the fourth largest industry contributor to the country's GDP (14%) and within the sector, the food and beverages sector is the most crucial player in the industry contributing 25% to the total manufacturing value added (Kreuser & Newman, 2018; Stats SA, 2018; South African Market Insights, 2019), which has the potential to reduce the high unemployment rate and enhance national economic growth (Abor & Quartey, 2010; Kongolo, 2010; Olawale & Garwe, 2010). Rodseth (2020) mentions that manufacturing remains the engine of growth for South Africa's economy.

As shown in Table 2.1 above, the National Small Enterprise Act (South Africa, 2019) lists three categories of South African manufacturing businesses. It uses two proxies (the total full-time equivalent of paid employees and total annual turnover) to define enterprises:

1. **Medium enterprise:** These enterprises are often characterised by the decentralisation of power to an additional management layer. The maximum number of employees is 51 or 250 for the various sectors.
2. **Small enterprise:** These enterprises exhibit more complex business practices. The upper limit is 50 employees.
3. **Microenterprise:** Enterprise turnover is less than the VAT registration limit (R150 000 per year). These enterprises (e.g. spaza shops, minibus taxis and household

industries) typically lack formality in terms of registration and employ no more than ten people.

There is no single all-encompassing definition of a small business (Gale & Brown, 2013). SME definitions vary across various sectors, according to country and are based on the number of employees and annual turnover. Despite the differences in defining SMEs, employment serves as the most common basis for each definition (Ayyagari, Demirgüç-Kunt & Beck, 2003).

SMEs are known as the lifeblood of the national economy (Naicker, Le Roux, Bruwer & Bruwer, 2017) due to their potential to assist with attaining core socio-economic objectives. As previously indicated, SMEs were officially introduced to the national economy by the South African government with the main intention of creating jobs, alleviating poverty, and stimulating the national economy (Smit & Watkins, 2012). The South African government has given considerable attention to SMEs during the past decade by creating and promoting financial institutions and support organisations to help these entities attain their legally imposed objectives (Bruwer, Masama, Mgidi, Myezo, Nqayi, Nzuzwa, Phangwa, Sibanyoni & Va, 2013).

Stemming from the above comments, this research study, therefore, focuses on South African manufacturing SMEs in the Cape Metropole that employ 11 to 250 employees to determine the influence of operational risk on the sustainability of these businesses.

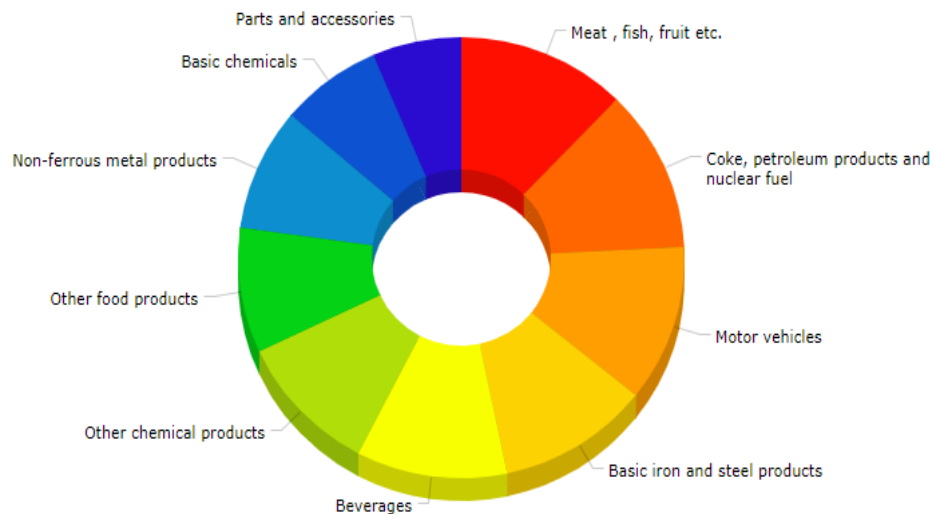
### **2.2.1 SMEs in the South African manufacturing sector**

Manufacturing is the process of converting raw materials, parts and components into finished merchandise using manual labour and/or machines (Markus, 2019). The finished goods can be sold directly to consumers, other manufacturers to produce more complex products or wholesalers who distribute the goods to retailers (Markus, 2019). Timings (2006:10) defines manufacturing as "the conversion of raw materials into useful articles by means of physical labour or the use of power-driven machinery".

South Africa has a large and diverse manufacturing sector, which is a major contributor to the country's GDP with the greatest potential to generate employment opportunities and enhance national economic growth (Brand South Africa, 2018; DTI, 2018; Kreuser & Newman, 2018). The South African manufacturing sector is the fourth largest industry in the country, contributing between 13 to 14 per cent to the GDP (Kreuser & Newman, 2018; Stats SA, 2018; South African Market Insights, 2019). Gauteng is the major contributor to this sector (34.94%), followed by KwaZulu-Natal (16.04%) and the Western Cape (13.86%). The manufacturing sector employs more than 1,6 million people and is among the top three multiplier sectors in terms of value addition, job creation, export earnings and revenue generation for every rand

invested (Rodseth, 2018). The main objectives of manufacturing SMEs are profitability maximisation and risk exposure minimisation (Mulu, 2013). The manufacturing sector offers the greatest potential to create jobs at respectable pay levels for unskilled and semi-skilled workers (Mosai, 2018), and provides a locus for stimulating the growth of other activities, such as services, and achieving specific outcomes, such as employment creation and economic empowerment (Brand South Africa, 2018).

Figure 2.2 below provides an overview of the top ten divisions within the South African manufacturing industry.



**Figure 2.2: Top ten manufacturing divisions**

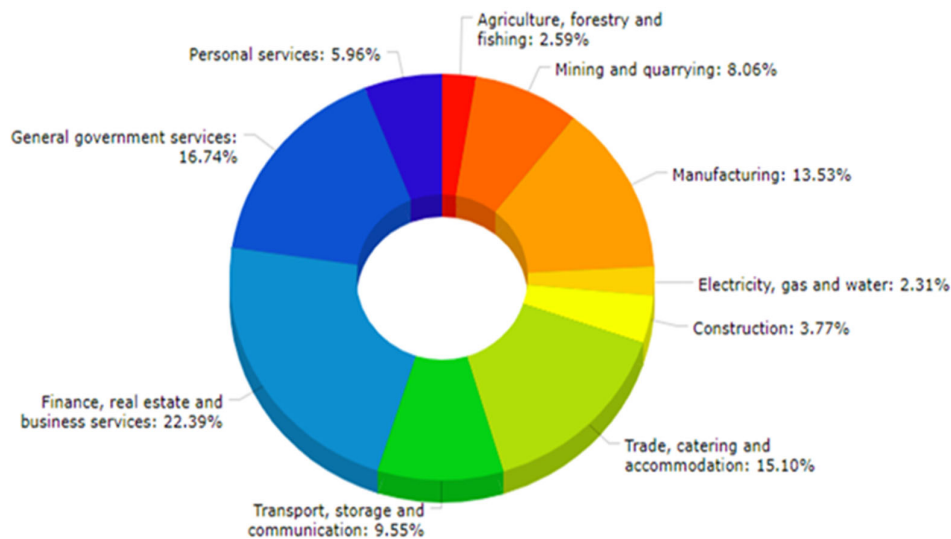
**Source:** South African Market Insight (2019:Online)

The food and beverages division is the largest within the South African manufacturing industry, contributing 25 per cent to the total manufacturing activity of which the manufacturing of meat, fish, fruit etc., makes up 7.20 per cent. In January 2018, the top ten manufacturing divisions accounted for 58.68 per cent of total manufacturing in the country (South African Market Insights, 2019).

The food and beverages division is closely followed by petroleum and chemical products, and a distant third place goes to basic iron and steel products. These three divisions alone comprise almost 70 per cent of the total manufacturing industry in South Africa. Despite the figures mentioned above, the South African manufacturing industry shows a decline in production (Fedderke, 2014; South African Market Insights, 2019). According to Dlodla (2019), the South African manufacturing sector is deminishing, with manufacturing production decreasing by 2.4 per cent yearly. The South African manufacturing sector was harshly

impacted by the 2008 – 2009 international financial crisis, losing almost R31 billion in GDP contributions. In addition, the manufacturing sector also lost more than 200 000 job opportunities during this financial crisis (Stats SA, 2014a). Unfortunately, this continuous downward trend is worsening due to constant load shedding, as ESKOM, South Africa's electricity public utility, struggles to provide sufficient power for manufacturers to keep producing goods (South African Market Insights, 2019) and the worldwide Covid-19 pandemic. According to the South African Reserve Bank (2020a), the manufacturing sector, which assists in maintaining employment growth rates in advanced economies, was the worst affected by the COVID-19 pandemic compared to other sectors.

The manufacturing sector contributed 13.53 per cent of real value added to the GDP for the year 2018 (see Figure 2.3 below). The manufacturing industry accounts for 13 per cent of activity, considering both the national GDP and number of SME enterprises. Nationally, manufacturing accounts for between 13 and 24 per cent of the total turnover in the SME sector (South African Market Insight, 2019).

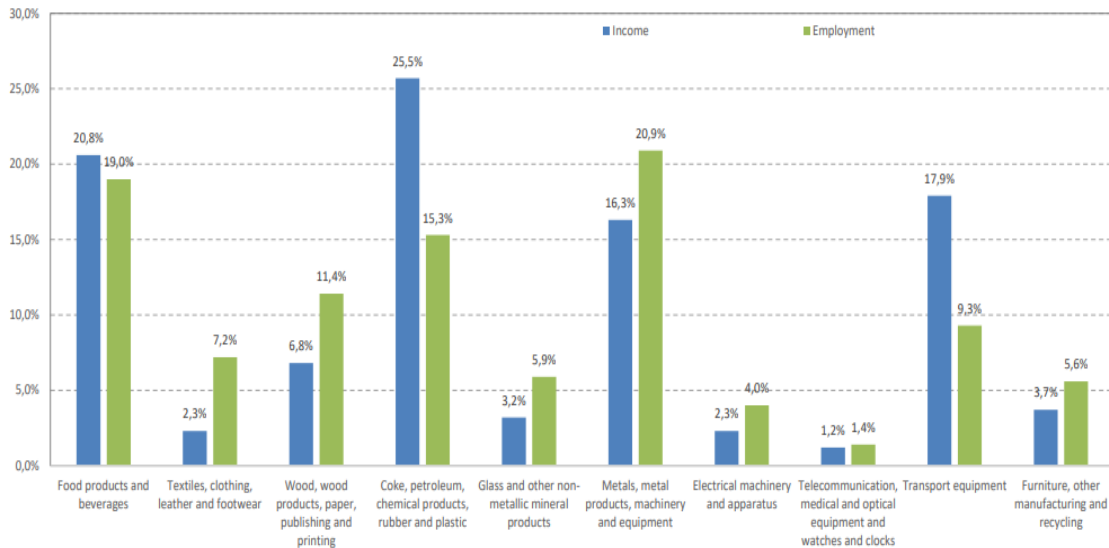


**Figure 2.3: South African GDP by main economic sector**

**Source:** South African Market Insight (2019:Online)

The manufacturing sector has been offering the greatest potential to create jobs at respectable pay levels for unskilled and semi-skilled workers (Mosai, 2018), however, it has been declining in terms of its contribution to economic growth and employment. As mentioned previously, the South African manufacturing industry's contribution to the country's overall economy has been declining steadily over the last two decades, resulting in a loss of 105 000 jobs in the latest quarter of 2017 (Macpherson, 2018).

Figure 2.4 (below) shows the contribution to income and employment in South Africa's manufacturing sector.



**Figure 2.4: 2019 Contribution to income and employment**

**Source:** South African Market Insight (2019:Online)

As graphically depicted in Figure 2.4 above, the division with the highest level of employment compared with its proportion of income is textiles, clothing, leather and footwear (7.2% of employment and 2.3% of income), followed by glass and other non-metallic mineral products (5.9% of employment and 3.2% of income), and electrical machinery and apparatus (4.0% of employment and 2.3% of income) (South African Market Insights, 2019).

Even though the coke, petroleum, chemical products, rubber and plastic division contributed 25.5 per cent of the total income of the manufacturing industry, its input to employment was only 15.3 per cent. The transport equipment division had the highest level of income compared to its proportion of employment (based on the ratio of the proportions) (17.9% of income and 9.3% of employment) (South African Market Insights, 2019).

Rodseth (2018) indicated that a thriving manufacturing division is vital in boosting sustainable employment growth in South Africa as well as for driving sustainable, job-rich growth in South Africa. Asaleye, Adama and Ogunjobi (2018) state that the manufacturing sector is an important solution to resolving the problems of unemployment and sustainable economic growth. Hence, the growth and sustainability of South Africa's manufacturing SMEs are essential (Mutoko & Kapunda, 2017).

## **2.3 IMPORTANCE OF SME SUSTAINABILITY**

Sustainability is the ability to continue, keep abreast, maintain and ensure in a particular state (Becker, 2011). According to PricewaterhouseCoopers (2002), sustainability is about managing, reducing and removing risks responsibly and investing in building resilience. Sustainability has become ever more critical for businesses (Kleindorfer, Singhal & Van Wassenhove, 2005; Govindan, Khodaverdi & Jafarian, 2013) and is an essential component for a business' long-term success (Eccles, Ioannou & Serafeim, 2012). The sustainability of SMEs is vital to the economic success of a country (Olawale & Garwe, 2010); hence, business operations and activities should contribute towards the long-term sustainability and development of small businesses (Luetkenhorst, 2004).

SMEs are considered to play an essential role in promoting economic growth and reasonable, sustainable development. These entities play a vital role in creating jobs, alleviating poverty, and enhancing the overall economy (Bruwer, 2012). On the other hand, SMEs play a vital role by strengthening the country's economy against economic stagnation (Fatoki & Odeyemi, 2010). The role of SMEs is well-known throughout the world in terms of social development, employment and economic growth (Rungani & Potgieter, 2018). Several research studies indicate that SMEs play numerous roles within an economy by creating jobs and contributing to the GDP (Lekhanya & Mason, 2014; Ogoi, 2016; Brand South Africa, 2018).

SMEs are not only known as the main driver for employment and GDP, but are also recognised as being engines of growth, necessary for poverty reduction, playing a vital role in developing countries and essential for a competitive and efficient market (Makakane, 2014). Abor and Quartey (2010) opine that SMEs perform useful roles in ensuring income stability, growth and employment. These enterprises play a crucial role in the economy, thus, it is essential that they operate efficiently and effectively. However, several authors noted that South African SMEs have the worst sustainability rates in the world (Fatoki, 2014; Wiese, 2014; Ogoi, 2016).

South African SMEs make up 91 per cent of formalised businesses, employ about 60 per cent of the labour force, and total economic output accounts for roughly 34 per cent of the GDP (The Banking Association South Africa, 2019). According to the Small Enterprise Development Agency (SEDA) (2019), South African SMEs (including the owners) accounted for 10.8 million in the first quarter of 2019, contributing 66 per cent to economy-wide employment. In addition, these entities contribute more than 40 per cent to the country's total remuneration (Makakane, 2014).

However, according to SEDA (2018), 70 to 80 per cent of SMEs fail within their first two years of existence, resulting in millions of Rand being lost to the national economy. In addition, 75



per cent of newly established SMEs in South Africa close after having operated for approximately two years (Fatoki & Asah, 2011). South African SMEs are forced to operate in a harsh economic environment, which affects business sustainability (Bruwer & Coetzee, 2016). Qeke and Dubihlela (2018) likewise state that manufacturing SMEs in South Africa face various challenges that affect business viability, leading to business failure (Qeke, 2019). Therefore, it is apparent that there is a high failure rate among South African SMEs, which, in turn, has a negative impact on the country's economy. Consequently, it is essential to maintain the long-term sustainability of these businesses.

Various factors affect SME sustainability. SMEs are faced with numerous internal- and external challenges hampering their ability to contribute to the country's economic growth and employment levels (Fatoki, 2014; Long, 2016; Sitharam & Hoque, 2016; Sifumba, Mothibi & Ezeonwuka, 2017). Internal factors include access to finance, management skills, networking, investment information technology and the cost of products. External factors include economic environments, markets, infrastructure, crime, corruption and labour (Fatoki & Garwe, 2010). Factors such as a lack of skills, competition from other businesses, inflation, high interest rates, lack of guidance on business development, high labour costs, lack of customer demand, government regulations, lack of performance measurement systems, limited access to appropriate technologies and other non-financial resources are also possible factors preventing SME success (Lekhanya & Mason, 2014). Various authors identified a lack of management skills (Fatoki & Garwe, 2010; Naidoo & Urban, 2010; Lekhanya & Mason, 2014; Kambwale, Chisoro & Karodia, 2015), financial support and business training as major causes of SME failure. Smit and Watkins (2012) revealed another factor hindering the progress of SMEs, namely that business owners/managers fail to identify risk elements that could harm their business activities. Hence, to help with the development of the economy, it is vital to be *au fait* with the above challenges impacting small business success or failure (Sitharam & Hoque, 2016).

Stemming from the above, it is evident that the current harsh South African economic landscape is not very conducive for businesses, especially SMEs, to operate in, because it provides an likely environment for risk to materialise in. When considering the brutal economic landscape in which South African SMEs operate, it is evident that these business entities are exposed to various risks, which are believed to influence SMEs' sustainability adversely.

## **2.4 SME RISKS**

Risks are inherent in every business (Culp, 2001) and can positively or negatively impact business operations and, thus, require proper management controls and oversight. The description and classification of risk have evolved over the years and been implemented in

various business management programmes. In particular, small businesses are exposed to several risks, threatening their existence as a going concern (Naicker & Rajaram, 2018). When risks materialise within a small business, the overall sustainability of the respective business will become uncertain (Siwangaza, Smit, Bruwer & Ukpere, 2014).

#### **2.4.1 Definition of risk**

Risk is the possibility that an event, either expected or unexpected, may create an unfavourable effect on an organisation (Anderson & Terp, 2006; Ranong, 2009; Duong, 2013). One characteristic often used in the definition of risk relates to the type of effect that uncertainty might have on objectives if it occurs (Hillson, 2011). Risk is the uncertain situation whereby an event negatively affects the functioning of the organisation and may affect the performance and sustainability of the business or process in the short or long term (Di Gravio, Costantino & Tronci, 2013; Hillson, 2011). According to Yang (2011), risk refers to the probability of an event occurring that will damage the business. Jenkins, Ahem, Lewis, Nield, MacKenzie and Pink (2010) define risk as a probability occurring that will cause damage, resulting in a loss in operations. It is also an activity having direct and powerful effects on the results of that activity (Bucur, 2010).

Other definitions of risk indicate a condition in which a specific exposure exists. Risk is an incident, for example, a fire, fraud, reputational damage, a lawsuit or something that could cause an adverse outcome (Samad-Khan, Rheinbay & Le Blevec, 2006). Risk is the level of exposure to uncertainties that the business must understand and effectively manage as it carries out its strategies to achieve its business objectives and create value (Li & Zeng, 2014). Ritchie and Brindley (2007) support that risk refers to potential events that impact the effectiveness and efficiency of operations, influencing an organisation's ongoing performance.

Henschel (2008) noted that risk could be divided into internal- and external risk. Internal risk is caused by infrastructure, human resources, processes and technology because they are within the business. External risk is caused by entities such as economic-, environmental-, social-, political- and technological changes (Committee of Sponsoring Organisations of the Treadway Commission (COSO), 2004; Scheve, 2006). Internal- and external risks especially threaten the existence of the small business sector as a going concern (BER, 2020).

Section 2.4.2 describes the different types of risks that businesses face.

#### **2.4.2 Types of risks**

There are many types of risks that business entities face. Some risks are controllable, some are not, some are foreseeable while others are unforeseeable. Some risks have minimal

impact on the business, while others threaten the sustainability of a business (Prinsloo, Walker, Botha, Bruwer & Smit, 2015; Sifumba, Mothibi & Ezeonwuka, 2017).

According to the COSO (2004) , risk can be identified as:

- **Inherent risk:** This type of risk is intrinsic to the organisation's business – the susceptibility of material misstatement, assuming that no related internal control procedures are in place.
- **Control risk:** Refers to the risk of material misstatement occurring and not being prevented or detected timeously by internal controls.
- **Detection risk:** Refers to the risk that an internal or external auditor will not detect material misstatement.

There are many risks that small businesses face. The most prominent risks include:

- **Market risk:** Refers to the market acceptance of the product, the potential actions of competitors, and general market conditions, e.g. understanding customer needs, who competitors are, the products they offer, their advantages, any potential and future competitors, the inability to identify future market needs, failure to design new products, and retention of market share (Waters, 2009). Jarrow (2008:2) defines market risk as:

A loss due to unanticipated price movements in financial securities or asset values, and it includes price fluctuations due to either equities, interest rates, commodities, or foreign currencies.

Four main factors contribute to market risk, namely 1) interest rate, 2) foreign exchange, 3) equity price risk and 4) commodity risk (Gallati, 2003).

- **Technical risk:** Refers to product design, production technology, and intellectual property. Under technical risks, the framework includes risks such as failure to identify, design and launch new products, which will result in a lack of growth and possible loss of market share (Kim & Vonortas, 2014).
- **Credit risk:** Refers to the risk of economic loss from the failure of the counterparty to fulfil its contractual obligations (Crouhy, 2010) or their refusal to settle an obligation in full, either when due or at any time after that. In exchange for value systems, the risk is generally defined to include replacement risk and principal risk (The Basel Committee, 2001).
- **Strategic risk:** Refers to those risks associated with operating in a particular industry (Entrepreneurs, 2020). Strategic risks are specific risks, including changes in customer priorities, threats from the traditional competitors, emerging changes in the brand perception, changes in access to financial capital, human capital, new developments in technology, the global movement of economic and geopolitical factors, legal

changes and regulation (Gallati, 2003). Strategic risks relate to factors such as competition, customer preferences, technological innovation and regulatory/political issues (Yusuf & Dansu, 2013).

- **Financial risk:** Refers to the tangible value investors lose if the business fails, as well as the financial aspects of a business (Kim & Vonortas, 2014). It is the risk associated with commercial and business performance (Islam & Tedford, 2012). It comprises all financial transactions, including payments, costs, prices, sourcing of funds, profit and loss to the business should legal claims be lodged, and when a customer declares insolvency resulting in irrecoverable sales. This type of risk should also cover customers' debtors book (Waters, 2009). Financial risk comprises potential losses due to fluctuations in the operations of the various financial markets such as capital markets, foreign exchange markets and commodity markets (Yusuf & Dansu, 2013).
- **Economic risk:** Includes changes in the interest rates, exchange rates, commodities, shares and other property as well as credit and other liquidity risks (Yusuf & Dansu, 2013). Furthermore, according to Smit and Watkins (2012), economic risk includes labour, competition and currency devaluation.
- **Operational risk:** Deals with the internal organisation and management of the operations team for development, production, supply and distribution. This type of risk encompasses the production, warehousing, distribution, staff challenges, systems, and business processes (Islam & Tedford, 2012). Operational risk is also associated with direct or indirect losses due to failures in internal systems, processes, people, or external factors (Islam & Tedford, 2012). Operational risk is associated with human error, system failure, fraud and inadequate procedures and controls (Cruz, Coleman & Salkin, 1998).

This research study focuses on operational risk because this aspect is viewed as a significant risk inherent in every business, making smaller businesses especially vulnerable to business failure. Furthermore, sparse literature exists on operational risk because it is often overlooked, especially within an SME dispensation. Consequently, as discussed in Chapter 1, Section 1.6, this research study strives to fill this research gap by contributing to the existing body of knowledge by determining the influence of operational risk on the sustainability of manufacturing SMEs operating within the Cape Metropole, and making recommendations to the SME owners/managers of these businesses with regard to how they can effectively address operational risk to improve business sustainability.

## **2.5 OPERATIONAL RISK**

### **2.5.1 Overview of operational risk**

Various research studies have been conducted to determine the leading causes and effects of operational risk. According to Islam, Tedford and Haemmerle (2008), enterprises encounter various internal- and external events that put them at risk. Operational risk is one of the most challenging risks to anticipate (Lewis, 2004) and arises from unwanted setbacks such as machine breakdowns, material shortages, accidents and absenteeism (Mital & Pennathur, 2004); human mistakes, theft, fraud, process failures, system errors and external hazards, such as fires and floods (Islam & Tedford, 2012); lack of sincerity of employees, the inappropriate flow of information, incorrect information, lack of skills, employee turnover and conflict in priority settings (Islam, Bagum & Rashed, 2012). Yusuf and Dansu (2013) found that operational risk arises from several situations such as product development, product failure, information technology, management fraud and employee agitation. Cipriano, Zulkeflee and Shahudin (2018) opine that operational risk occurs because of the failure in systems, processes, people and/or external events. These events (operational risks) are the single major cause of business failures (Mulu, 2013). These risks are known to negatively influence a business's performance and day-to-day operations and, evidently, the attainment of applicable operational objectives (Smit, 2012; Bruwer, Petersen, Bruwer & Le Roux, 2018; Siwangaza & Smit, 2018;). In light of the above facts, operational risk will have a major influence on the sustainability of the manufacturing sector.

Operational risk affects all business units within an organisation, not just those engaged in specific activities (Hemrit & Arab, 2012). Operational risk exists in every organisation (Kenett & Raanan, 2011) and, thus, businesses are vulnerable to losses resulting from operational failures. According to Mitra, Karathanasopoulos, Sermpinis, Dunis and Hood (2015), operational risk is different from other risks, such as credit or market risks. The improper management of these risks can result in significant losses (Weeserik & Spruit, 2018).

The Basel Committee on Banking Supervision (BCBS, 2020:2) defines operational risk as "the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events." This definition includes legal risk but excludes strategic- and reputation risk. In addition, the definition is based on the primary causes of operational risk (Finance Train, 2019), which the Basel Committee believed was appropriate for risk management. According to Fimarkets (2019), operational risk is any event that disrupts the normal flow of business processes and which generates financial loss or damage. It relates to small errors in the daily business processes that occur frequently and cause relatively low losses, as well as large-scale frauds and natural disasters that rarely occur but result in high losses (Li, Zhu, Chen,

Gao, Feng, Wu & Sun, 2014). When operational failures result in losses, they are referred to as operational loss events.

Operational loss events include events ranging from unintentional transaction and execution errors, system failures and acts of nature to conscious violations of law and regulation, as well as direct and indirect acts of excessive risk-taking (Canadian Institute of Actuaries, 2011). Operational risk events include equipment/technology failures, internal and external fraud, improper business practices, product flaws, employment discrimination, losses due to ineffective management processes, information technology (IT) system disruptions, employee errors, natural disasters and terrorism (Cruz, 2002; De Jongh, De Jongh, De Jongh & Van Vuuren, 2013). According to COSO (2004), these events can have either a negative or positive impact, or both. Events with a negative impact represent risks, which can prevent value creation or erode existing value. Events with a positive impact may offset negative impacts or represent opportunities.

ORM is essential during the processing of financial transactions, which includes risks caused by deliberate actions, non-deliberate actions, or errors and gaps in trading systems (Petria & Petria, 2009). ORM strives to identify why a loss occurs and is associated with direct or indirect losses due to failures in internal systems, processes, people and/or external factors (Islam & Tedford, 2012).

Abdullah, Alobaidi and Raweh (2018) argue that operational risks are the outcome of the people in charge, financial systems in place, the financial process applied or other external events affecting a financial institution. Over the years, operational failures have made dramatic results leading to collapse (Aparicio & Keskiner, 2004) and, consequently, negative losses. An operational risk loss can arise only from an actual operational risk event. Further, operational losses stem from weak management, outsourcing nonstrategic activities or external factors (Coleman, 2010). Many of the greatest losses occur when operational failures are present at the most senior level within an organisation (Operational risk advisory & Towers Perrin, 2009).

Operational risks are broad yet unique to each organisation. Typical operational risks include (Caldwell, 2012:34):

- Customer dissatisfaction
- Product and service quality
- Technological and cost competitiveness
- Capacity constraints

- Potential prolonged disruption at a key facility or with computer-based systems and networks
- Vendor and distribution dependencies
- Input quality and cost

Table 2.2 below shows operational risk by cause, including the causes (risk sources), their categories and examples. People risk can include internal fraud (such as embezzlement and money laundering), disclosure-related issues (concealing losses) and employment, health, and safety issues (such as employee actions and compensation disputes). The causes of operational risk events are vast and complex, generally including internal procedures, employees, systems and external events (BCBS, 2001).

**Table 2.2: Operational risk by cause**

Risk	Category	Examples
People Risk	Disclosure-related issues	<ul style="list-style-type: none"> <li>• Concealing losses</li> <li>• Misuse of important information</li> <li>• Non-disclosure of sensitive issues</li> </ul>
People Risk	Employment, health and safety	<ul style="list-style-type: none"> <li>• Employee actions</li> <li>• Compensation disputes</li> <li>• Employee defection</li> <li>• Labor disputes</li> <li>• Strikes</li> <li>• Employee illness</li> <li>• Employee injury</li> <li>• Forced retirement</li> <li>• Promotions related disputes</li> <li>• Discrimination and harassment issues</li> <li>• Infliction of distress</li> </ul>
People Risk	Internal fraud	<ul style="list-style-type: none"> <li>• Embezzlement</li> <li>• Money laundering</li> <li>• Unauthorized fund transfers</li> <li>• Accounting fraud</li> </ul>
Process Risk	Errors and omissions	<ul style="list-style-type: none"> <li>• Employee error</li> <li>• Inadequate quality control</li> <li>• Inadequate security</li> <li>• Inadequate supervision</li> <li>• Failure to file a proper report</li> </ul>
Process Risk	Transaction and business process risk	<ul style="list-style-type: none"> <li>• Inadequate account reconciliation</li> <li>• Inadequate transaction completion</li> <li>• Inadequate transaction execution</li> <li>• Inadequate transaction settlement</li> <li>• Lack of proper due diligence</li> <li>• Loss of critical information</li> </ul>
Technology Risk	General technology problems	<ul style="list-style-type: none"> <li>• New technology failure</li> <li>• Technology-related operational errors</li> </ul>

Technology Risk	Hardware	<ul style="list-style-type: none"> <li>• System failure</li> <li>• Outdated hardware</li> </ul>
Technology Risk	Security	<ul style="list-style-type: none"> <li>• Computer virus</li> <li>• Data security</li> <li>• Hacking</li> </ul>
Technology Risk	Software	<ul style="list-style-type: none"> <li>• Inadequate testing</li> <li>• System failure</li> <li>• Incompatible software</li> </ul>
Technology Risk	Systems	<ul style="list-style-type: none"> <li>• Inadequate systems</li> <li>• System maintenance</li> </ul>
Technology Risk	Telecommunications	<ul style="list-style-type: none"> <li>• Fax</li> <li>• Internet</li> <li>• E-mail</li> <li>• Telephone</li> </ul>
External Risk	External fraud	<ul style="list-style-type: none"> <li>• Burglary</li> <li>• External misrepresentation</li> <li>• External money laundering</li> <li>• Robbery</li> </ul>
External Risk	Natural disasters	<ul style="list-style-type: none"> <li>• Flooding</li> <li>• Hurricane</li> <li>• Blizzard</li> <li>• Earthquake</li> </ul>
External Risk	Non-natural disasters	<ul style="list-style-type: none"> <li>• Arson</li> <li>• Bomb threat</li> <li>• Explosion</li> <li>• Plane crashes</li> <li>• War</li> </ul>

**Source:** Basel Committee on Banking Supervision – BCBS (2002:24)

From Table 2.2 above, it is evident that some risks are difficult to quantify (e.g. incompetence under people risk). In contrast, others lend themselves much easier to quantification (e.g. execution error under transaction risk) (BCBS, 2001).

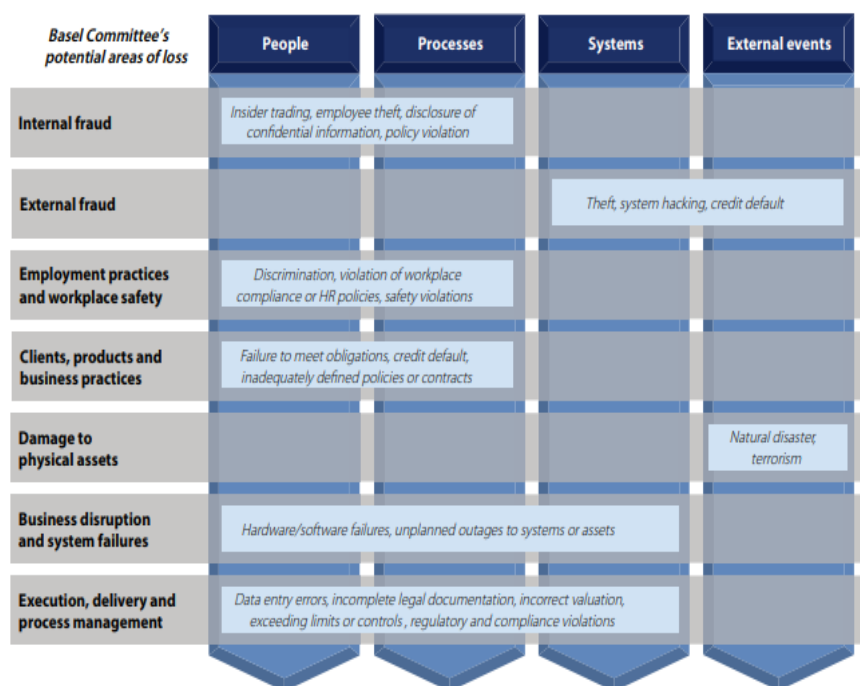
According to De Jongh, *et al.* (2013), the 2008 financial crisis was seen as the worst crisis ever from an operational risk viewpoint because of the size and impact of the loss for all the events that it has caused. Even though the last global financial crisis has been characterised as a liquidity crisis, operational risk and its associated factors played a significant role in the length and severity of the crisis (De Jongh, *et al.*, 2013) because operational risk losses were almost four times greater than those observed in 2007 (Abdullah, *et al.*, 2018).

Recently, the COVID-19 pandemic is known to be the most significant disruption to the global economy since the bankruptcy of Lehman Brothers in 2008 (Bureau for Economic Research – BER, 2020). The Operational Riskdata eXchange Association (ORX) (2020) reported the five largest operational risk loss events in March 2020, which had resulted from the impact of the COVID-19 pandemic. These include 1) potential operational disruptions (Financial Stability Board, 2020); 2) shrinkage of the global economy by up to one per cent (The Economic Times, 2020); 3) a sharp rise in credit risk and, consequently, 4) operational risk adding to vulnerabilities, as well as 5) businesses taking the necessary precautions against the COVID-



19 pandemic that threatens the resilience and sustainability of their businesses (Australian standards information and compliance organisation, SAI Global, 2020).

Basel II projected the following seven types of operational risks for which there are several contributory factors (source of the risk) for each, with typical examples (BCBS, 2001; Chernobai, Rachev & Fabozzi, 2008; Bessis, 2010; Mohammed, 2015) as depicted in Figure 2.5 below.



**Figure 2.5: Types of operational risks: Potential areas of loss**

**Source:** Shochat & Fallen (2012:Online).

Figure 2.5 above shows a list of operational loss events with their contributory factors (the sources of risk) and examples. As graphically depicted in Figure 2.5, operational risk event types, having the potential to result in substantial losses, include the following:

**Internal fraud:** Losses due to acts intended to defraud, misappropriate property or circumvent regulations, the law or business policy, which involve at least one internal party (De Jongh, *et al.*, 2013). Acts of fraud committed internally in an organisation, going against its interests. Losses can result from intent to defraud, tax non-compliance, misappropriation of assets, forgery, bribes, deliberate mismarking of positions and theft (BCBS, 2017). Examples of internal fraud include (BCBS, 2017):

- Transactions not reported (intentional)
- Mismarking of position (intentional)

- Fraud/credit fraud/worthless deposits
- Theft/extortion/embezzlement/robbery
- Misappropriation of assets
- Malicious destruction of assets
- Forgery
- Check kiting
- Smuggling
- Account take-over/impersonation/etc.
- Tax non-compliance/evasion (wilful)
- Bribes/kickbacks
- Insider trading (not on the organisation's account)

**External fraud:** Losses due to acts of a type intended to defraud, misappropriate property or circumvent the law by a third party, (BCBS, 2003). Theft, cheque fraud and breaching system security, such as hacking or acquiring unauthorised information, are amongst the most frequently encountered practices under external fraud (BCBS, 2003). External fraud may be committed in collusion with business staff and, therefore, in some cases, internal- and external fraud may coexist. In most cases, fraud involves actions carried out independently by third parties, external to the institution, but fraud detection systems have greatly affected the mitigation of operational risk (Bolancé, Ayuso & Guillén, 2012). Examples of external fraud include (BCBS, 2003):

- Theft/Robbery
- Forgery
- Check kiting
- Hacking damage
- Theft of information (with monetary loss)

**Employment practices and workplace safety:** Losses arising from acts inconsistent with employment, health or safety laws or agreements, payment of personal injury claims or diversity/discrimination events (BCBS, 2003). Non-compliance to employment or health and safety laws and regulations are grave operational hazards in any organisation. Incompetent maintenance of employee relations takes a toll on employees, resulting in their claiming well-deserved compensation and benefits. Unethical termination criteria and discrimination are other operational risks that subject institutions to severe financial and reputational damage (Mohammed, 2015). Examples of employment practices and workplace safety include (BCBS, 2003):

- Compensation, benefit, termination issues
- Organised labour activity
- General liability (slip and fall, etc.)
- Employee health and safety rules events
- Workers compensation
- All discrimination types

**Clients, products and business practice:** Losses arising from an unintentional or negligent failure to meet a professional obligation to specific clients (including fiduciary and suitability requirements) or the nature or design of a product (BCBS, 2003). Examples of clients, products, and business practice abuses include (BCBS, 2003):

- Fiduciary breaches/guideline violations
- Retail consumer disclosure violations
- Breach of privacy
- Aggressive sales
- Account churning
- Misuse of confidential information
- Lender liability
- Improper trade/market practices
- Market manipulation
- Unlicensed activity
- Money laundering
- Product defects (unauthorised, etc.)/Model errors

**Damage to physical assets:** Losses incurred by damages caused to physical assets due to natural disasters or other events such as vandalism and terrorism. Rapid and unexpected changes in climatic conditions have been a constant cause of concern in the business world for more than a decade in recent history (Mohammed, 2015). Examples of damage to physical assets include (BCBS, 2003):

- Natural disaster losses
- Human losses from external sources (vandalism, terrorism,

**Business disruption and systems failures:** Losses arising from the disruption of business or system failures. Supply-chain disruptions and business continuity have always been major challenges for banks. System failures (hardware or software), disruption in telecommunication

and/or power failure can result in an interrupted business and financial loss (Mohammed, 2015). Examples of business disruption and systems failures include (BCBS, 2003):

- Hardware failures
- Software failures
- Telecommunications disruptions
- Utility outage/disruptions

**Execution, delivery, and process management:** Losses from failed transaction processing or process management, from relations with trade counterparties and vendors. Failure in delivery, transaction or process management is an operational risk that can result in loss to a business (Mohammed, 2015). Examples of execution, delivery and process management risks include (BCBS, 2003):

- Miscommunication
- Data entry, maintenance or loading error
- Missed deadline or responsibility
- Accounting error/entity attribution error
- Delivery failure
- Collateral management failure
- Outsourcing
- Vendor disputes
- Unapproved access given to accounts
- Incorrect client records (loss incurred)
- Negligent loss or damage to client assets
- Client permissions/disclaimers missing
- Legal documents missing/incomplete

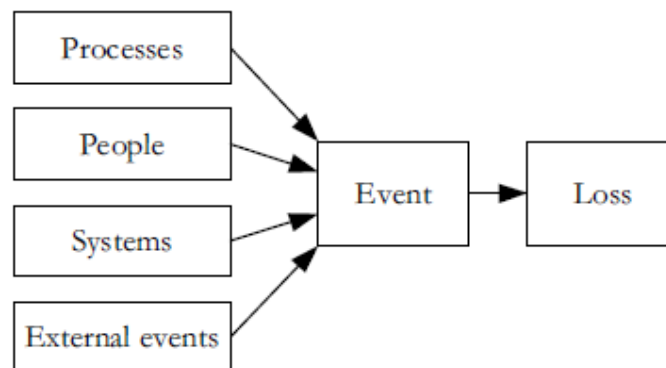
Operational risk events are growing extensively and organisations need to develop ways to mitigate them. Operational risks can be mitigated efficiently if organisations learn the core operational vulnerabilities of their businesses and set the risk indicators accordingly. The correct way of dealing with these problems is to educate employees to analyse and manage operational risks daily (Mohammed, 2015).

### **2.5.2 Operational risk factors**

Every organisation faces factors that can influence its operations that can negatively affect its sustainability (Smit, 2012). Risk events are caused by external factors (economic-,

environmental-, social-, political- and technological aspects) or internal factors (infrastructure, human resources, processes, and technology used by a business) (COSO, 2004).

Operational risk factors, thus, may be internal or external to the business and are usually generated by people, processes and/or systems (Beers, 2018). The definition of operational risk is based on the underlying causes of such risks and seeks to identify why an operational risk loss happened (Cruz, 2002). Experts can use a causal based definition to identify, assess, and manage operational risk (Van den Brink, 2002). Figure 2.6 graphically depicts the dimensions of operational risk – a loss that is caused by an operational event, which, in turn, is caused by four different factors: processes, people, systems and external events (Van den Brink, 2002; BCBS, 2003; Van Grinsven, 2009; Islam & Tedford, 2012; South African Reserve Bank, 2020b).



**Figure 2.6: Dimensions of operational risk**

**Source:** Van Grinsven (2009:24)

Every manufacturing organisation faces undesirable events and unwanted setbacks (internal and external) in its day-to-day operations (Islam, *et al.*, 2012). Internal factors involve people, products or services offered, as well as operational systems. On the other hand, external factors are the causes from which operational risk may arise from external events (Global Association of Risk Professionals, 2016).

Many factors influence the consequences of a failure or an event occurrence, impacting the outcome (Sousa, Nunes & Lopes, 2015). Identifying operational risks in organisations helps to identify the risk factors that are most important because this process helps to set priorities when it comes to measuring, analysing and managing operational risk (McPhail, 2003). According to De Jongh, *et al.* (2013), operational risk factors are vital, and organisations must carefully monitor them due to the high level of operational risks in the past.

Manufacturing SMEs in South Africa have a variety of operational risk factors that, if not controlled, could have an adverse impact on the sustainability of these businesses (Oseifuah & Gyeke, 2013). Manufacturing organisations encounter hazards and frequent setbacks, such as machine breakdowns, material shortages, accidents and absenteeism, making the system unreliable and inconsistent (Oseifuah & Gyeke, 2013).

There are two types of determinant factors for the operational risk that generate losses or the achievement of the estimated loss, namely: 1) internal factors and 2) external factors (Chernobai, Rachev & Fabozzi, 2008; Radu & Olteanu, 2009; Megh, 2020). These factors are expanded upon below.

### **2.5.2.1 Internal factors**

According to Van Grinsven (2009), internal factors are losses due to internal failures such as fraud, human errors, system failures, legal liability and compliance costs. Internal risks are faced by a company from within itself and arise during the company's normal operations. These risks can be forecasted with some reliability and, therefore, a company has a good chance of reducing internal business risk (Beers, 2018). For example, receiving a penalty notice for filing documents late, employee embezzlement, missing customer records, inadequate development of some internal activities, staff unpreparedness and improper systems, among others (Radu & Olteanu, 2009; Coleman, 2010; Megh, 2020).

There are three types of internal risk factors, namely: 1) people, 2) system factors and 3) process factors. Each of these internal risk factors is discussed below.

1. **People risk:** Factors relating to people include errors due to incompetence, negligence or lack of experience, mobbing, fraud, collusion and other criminal activities, violation of laws, concentration problems, overtime, insufficient knowledge of products or procedures and fraud by employees, regulations, codes of conduct and ethical standards (Harmantzis, 2003; Birindelli & Ferretti, 2017).

Bagherzadeh and Jöehrs (2015) support that people risk comprises the risk of loss associated with errors and illegal actions of employees, lack of qualifications and improper work organisation. Furthermore, people risk involves human error, insufficient training and personnel management, lack of segregation of duties, inexperience, lack of honesty and integrity and fraud (they are recorded as destructions, false information or hidden information) (Radu & Olteanu, 2009). According to Prashant (2020), organisations are vulnerable when staff levels are inadequate in either number or quality. Even a single negligent or de-motivated staff member can commit errors that may become an existential threat to the organisation.

Megh (2020) alluded that incompetence occurs when employees lack the skills and knowledge to perform their jobs effectively. The absence of professional training and development would cause human errors. In addition, fraudulent activities, such as theft, can be attributed to dishonesty within a company. The frequency with which employees miss work will directly impact an organisation and incur direct costs and reduced productivity (Megh, 2020). Knežević (2013) mentions that unintentional errors are caused by workers who become fatigued due to daily operations. Also, when a business is expanding, there is a growing number of workers. Thus, there is a high risk of insufficient employee training, which eventually increases accidental errors.

According to the Bank for International Settlements (BIS, 2020), a pandemic, such as the COVID-19 pandemic crisis, could lead to significant absenteeism rates that may affect the critical functions necessary to deliver essential business, causing potential operational disruptions (Financial Stability Board, 2020). Therefore, it is important to identify the critical functions and employees who support essential business services and ensure employees' safety. Mabwe's research study (2015) on investigating ORM with special emphasis on people mentions that people are a critical part of the defence. People risk factors include, for example, union strikes, employee dishonesty, ineffective management or leadership, failure on the part of external producers or suppliers and delinquency or outright failure to pay on the part of clients and customers.

Factors related to personnel include appropriate staffing levels, staff qualifications and staff efficiency. Personnel issues may pose operational challenges, e.g. staff who become ill or injured and, as a result, are unable to work, can decrease production (Beer, 2018). A business may need to hire or replace personnel that are key to the business success. Strikes can force a business to close on a short-term basis, leading to a loss in sales and revenue. Improving personnel management can help reduce internal factors by boosting employee morale through adequate compensation and empowerment. A motivated and happy employee tends to be more productive (Beers, 2018).

Jalasto (2016) opines that operational risks caused by humans are the most common and hard to control. These risks arise because people can make various mistakes and businesses accept them. Therefore, operational risks caused by systems or people are more common in everyday tasks than risks caused by external risks or processes (Jalasto, 2016).

2. **System risk:** System risks are known as the risks of losses due to imperfect technology such as the lack of systems capacity, their inadequacy in relation to the

ongoing operations, inappropriate data processing methods, poor quality or the inadequacy of data used (Bagherzadeh & Jöehrs, 2015). Losses from systems are caused by breakdowns in existing systems or technology (Harmantzis, 2003).

Beers (2018) lists three examples of system risks that businesses face: 1) outdated operating systems that decrease production ability, 2) disruptions in supplies, and 3) disruptions in inventory. System risk could also include the non-investment in IT staff to support business systems. Furthermore, server and software problems that lead to equipment downtime can increase the risk of production shortfalls and financial costs due to less revenue and idle workers (Beers, 2018). Finally, a poorly functioning system causes minor operational risks every day (Jalasto, 2016).

Factors related to systems include malfunctions and errors in the information system, programming errors in the applications, interruptions and corruptions in the network structure and failure in telecommunication systems. System failures are usually caused by hardware failure, software or power failures (Chernobai, Rachev & Fabozzi, 2008; Birindelli & Ferretti, 2017). Abdullah *et al.*, (2018) mention that poorly and complex designed systems can ultimately lead to a rise in operational risk due to malfunction. The range of problems is experienced when they fail due to fraud, processing errors and/or data security failures. The BIS (2020) avers that a pandemic could lead to an increase in cyber attacks due to the extensive use of financial institutions' IT infrastructure, as well as third-party and client-facing online services. Therefore, businesses entities' cyber resilience processes should remain vigilant to identify and protect vulnerable systems. These processes should also be able to detect and respond to cyber-attacks (BIS, 2020).

3. **Process risk:** Process risk is the risk of loss associated with errors during operations and calculations, accounting, reporting and pricing (Bagherzadeh & Jöehrs, 2015). Factors related to processes include events concerning transaction risk (accounting errors, recording errors and errors linked to the documentation of transactions), security risk (violation of information security due to a poor system of internal controls), and settlement errors (errors in the regulation of transactions linked to securities and currencies with resident and non-resident counterparties) (Birindelli & Ferretti, 2017; Leone & Porretta, 2018).

According to Abdullah, *et al.* (2018), operational risk within the banking sector is inherent to the internal processes, and sometimes, it can be difficult to differentiate the risk caused by people and those that are caused due to the failure of internal processes. Knežević (2013) avers that failures and omissions in the bank's internal



operations can be unintentional due to a minor misunderstanding of the process or intentional to gain more profits by exposing the institution to higher risks. Furthermore, the overlapping of responsibilities with the bank can lead to a failure in the internal processes (Knežević, 2013). Losses made in the process result from the errors that people make or failure to follow an existing procedure (Harmantzis, 2003).

#### *2.5.2.1.1 Managing internal risk*

Internal operational failures can be prevented with appropriate internal management practices such as tightened controls and personnel management. In addition, these methods can help avoid employee errors and internal fraud, and improved telecommunication networks can prevent some technological failures (Chernobai, Rachev & Fabozzi, 2008).

#### **2.5.2.2 External factors**

External risk is the risk of loss associated with changes in the environment within an organisation. Changes in legislation, politics, economics and the risk of external physical interference in organisational activities are other major examples of external risk (Bagherzadeh & Jöehrs, 2015). Van Grinsven (2009) state that external risk includes losses due to an uncontrollable external event such as terrorism and natural disasters. According to Radu and Olteanu (2009), external factors include the necessity to develop, in a short period, a high volume of transactions, the necessity of using the electronic funds transfer and other telecommunication systems to transfer the property of large amounts of money, developing operations in different regions, managing a high volume of monetary elements, monitoring, and solving important exposures.

External risk is caused by economic events arising from outside of the corporate structure and is beyond its influence or control (Beers, 2018). Sources of these risks include natural and political disasters and major macroeconomic shifts. These factors have stressed the need to strengthen controls over operational risk, especially in the financial area, and use indicators for monitoring the trends of risk exposure (Birindelli & Ferretti, 2017).

External events include vandalism, theft and market failures (Abdullah, *et al.*, 2018). Knežević (2013) mentions that, in banks, there is a high possibility of customer forgeries and fraud. Banks operate in a working environment characterised by corruption, and it is no surprise that some clients attempt to forge documentation on their financial results.

External risks are outside the organisation and cannot be controlled as internal factors (Mohammad, Ghwanmeh & Al-Ibrahim, 2014). External events can be traced back to failures or criminal activities of external subjects (thefts, acts of terrorism and vandalism), political and military affairs and natural disasters (earthquakes, fires, floods) (Birindelli & Ferretti, 2017).

There are three types of external risk, namely; 1) economic risk, 2) natural risk and 3) political risk. These three types of external risks are expanded on below.

1. **Economic risk:** This risk includes changes in market conditions; for example, an overall economic downturn could lead to a sudden, unexpected revenue loss. Companies can respond to economic risks by cutting costs or diversifying their client base so that revenue is not solely reliant on one segment or geographic region. Increases in interest rates can lead to higher borrowing costs by increasing the interest expense for short-term and long-term debt. For example, if a business issues a bond, a debt offering, to raise funds while interest rates rise, the business will need to pay a higher interest rate to attract investors. Business credit lines issued by banks are also used by businesses to tap into working capital. However, credit lines are typically variable-rate products. As interest rates rise in the overall market, the rates also rise for variable-rate credit products. Rising rates also increase the cost of business credit cards (Beers, 2018).
2. **Natural risk:** This risk includes natural disasters that affect normal business operations. For example, an earthquake may affect the ability of a retail business to remain open for several days or weeks, leading to a sharp decline in overall sales for the month. It could also cause damage to the building and merchandise being sold. Companies often have insurance to help cover some of the financial losses because of natural disasters. However, the insurance funds might not be sufficient to cover the loss of revenue due to being shut down or operating at a reduced capacity (Beers, 2018). In addition, pandemics such as swine flu disrupt employees' attendance or may cause markets to shut down, reducing demand for the products. Extreme weather conditions such as the 2005 floods in Mumbai can cause all types of disruptions and losses. The latest and most serious threat to financial organisations comes in the form of cyber-attacks that can steal billions in monetary terms in a matter of seconds (Prashant, 2020).
3. **Political risk:** This risk comprises changes in the political environment or governmental policy related to financial affairs. Changes in import and export laws, tariffs, taxes and other regulations may negatively affect a business (Beers, 2018). Since external risks cannot be foreseen accurately, it is difficult for a business to reduce these three risk factors. However, some credit insurance types can protect a business against political events in other countries, such as war, strikes, confiscation, trade embargoes and changes in import-export regulations (Beers, 2018).

#### 2.5.2.2.1 *Managing external risk*

External risk lies mostly outside the control of the business. Companies should focus on identifying them, assessing their potential impact and calculating how best to mitigate their effects should they occur (Kaplan & Mikes, 2012). External losses are difficult to prevent. However, it is possible to design insurance or other hedging strategies to reduce or eliminate externally inflicted losses (Chernobai, Rachev & Fabozzi, 2008).

## **2.6 RISK MANAGEMENT**

### **2.6.1 The concept of risk management**

Risk is inherent in all business activities and affects all managerial levels (Bowling & Rieger, 2005). However, to effectively manage or control risk, both the probability of occurrence and impact of risk need to be determined (Smit, 2012). Risk management is a structured and continuous process (COSO, 2004) that helps to identify, analyse and address risks that an organisation face (Gallati, 2003; Head, 2009; Info Entrepreneurs, 2020) and, as a result, help to minimise losses, increase profitability (Aris, *et al.*, 2009), and achieve business objectives (Henschel, 2008; Mohamud & Salad, 2013; Info Entrepreneurs, 2020). According to Hubbard (2009:10), risk management:

... is the identification, assessment, and prioritisation of risks followed by coordinated and economical application of resources to minimise, monitor, and control the probability and/or impact of unfortunate events.

Furthermore, risk management consists of dealing with unknown events that may influence company goals or process outputs (Sousa, Nunes & Lopes, 2015). The essence of risk management is to minimise the effect of risk (Anderson & Terp, 2006; Ranong, 2009; Broker Link, 2020). Risk management focuses on mitigating all potential negative influences of risks (identification, assessment and treatment) across all levels of a business as undertaken by management. The primary intent is to provide reasonable assurance surrounding the attainment of relevant business objectives (COSO, 2004). More so, risk management has the task of identifying risks, measuring the probability and the possible impact of events, and treating risks, eliminating or reducing their effect with the minimum investment of resources (Verbano & Venturini, 2013). In essence, risk management aims to reduce the number of threats that materialise into problems and minimise the effect of those challenges that occur (Hillson, 2009).

Risks are managed through various management frameworks such as ORM, Enterprise Risk Management, and Financial Risk Management (International Standards Organization - ISO 31000, 2009). A risk management framework helps identify risks, measures their probable impact, mitigates these risks and eliminates or reduces their effect with the minimum

investment of resources (Verbano & Venturini, 2013). Taticchi, Cocca and Alberti (2010) claim that it is pivotal for small businesses to have risk management frameworks within their business, even if it is a shortened version of a framework developed for larger businesses. These frameworks should remain comprehensive and straightforward, not be too demanding in terms of resources, and guide the owner-manager towards action or improvement. It is essential that SMEs adopt a formal risk management strategy as a tool to survive and grow (Naude & Chiweshe, 2017).

Despite the importance of managing risk, especially in SMEs, sparse literature exists on ORM within SMEs in South Africa (Ekwere, 2016). Most SMEs do not have a risk management framework due to a lack of expertise and the high cost of implementation (Oseifuah & Gyekye, 2013; Samugwede & Masiyiwa, 2014). Therefore, this research study focuses on the influence of operational risk on the sustainability of manufacturing SMEs in the Cape Metropole and suggests how ORM can be used to mitigate these risks, because it can make or break a business from a profitability or liquidity perspective (COSO, 2004).

### **2.6.2 The ISO 31000 standard for risk management**

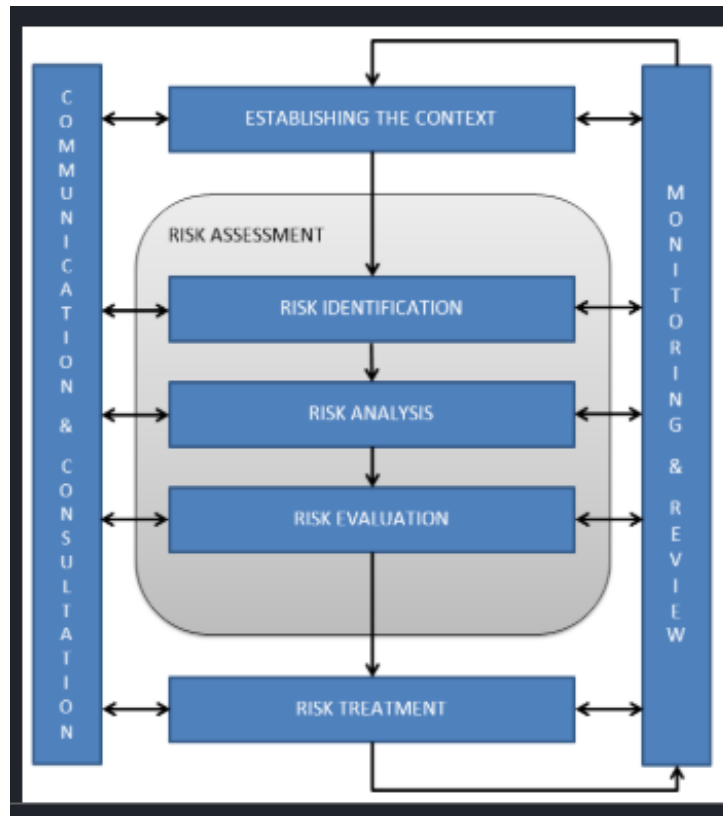
Risk management is defined by ISO 31000, a family of standards relating to risk management codified by the ISO, as the:

Process systematic application of management policies, procedures and practices to the activities of communicating, consulting, establishing the context, and identifying, analysing, evaluating, treating, monitoring and reviewing risk, (ISO, 2009a:3).

The ISO 31000 (2009) can be used by any type of business implementing risk management for any purpose required, especially small businesses that cannot afford risk management processes. The ISO 31000 can also be used in any situation and organisation whereby there is a necessity for risks to be managed (ISO 31000, 2009). The process starts with establishing the context, including internal and external factors, objectives and risks. Then, the risk assessment should be performed using the following steps (ISO 31000, 2009):

- Risk identification
- Risk analysis and risk evaluation
- Risk treatment
- Process monitoring, review, and communication.

Weeserik and Spruit (2018), as well as ISO 31000 (2009), identified seven principles of risk management, namely: 1) establish the context, 2) risk assessment risk identification, 3) risk analysis, 4) risk evaluation, 5) risk treatment, 6) monitoring review and 7) communication and consultation. These principles are represented and expanded upon in Figure 2.7 (see below):



**Figure 2.7: Details of the risk management process**

**Source:** ISO 31000 (2009:14).

**Establish the context:** The first step in the process is to establish or investigate the context of the application (ISO 31000, 2009). The organisation must identify the scope, objectives, and parameters of the business activities that require risk management (i.e. identifying assets and people being exposed to risks and identifying factors). The main aim of the scope is to evaluate internal and external influences on the organisation (Di Gravio, Costantino & Tronci, 2013). All resources needed to do the risk assessments are considered, such as responsibilities and the strategies used. This practice is known as the ‘approach plan’ of the risk management process. Furthermore, the organisation needs to determine who will be involved in the risk management process, whom risk should be communicated to inside and outside of the organisation, and how each step of the risk management framework will be approached.

**Risk identification:** The primary process goal of risk identification is to identify the business risks, which would reduce or remove the likelihood of the business reaching its objectives and opportunities, enhancing business performance (Chapman, 2011). Risk identification is the process of finding, recognising and recording operational risks (ISO 31000, 2009). According to Kozarevic and Kozarevic (2016), the ORM process starts with identification as it is a crucial

stage that needs to lead to a proactive instead of reactive influence on risk. The main aim of identification is to find the operational risk exposure and to document it. In addition, appropriate identification is the assumption of developing an efficient and sustainable system for operational risk control and monitoring (Kozarevic & Kozarevic, 2016).

Tcankova (2002) asserts that this step reveals and determines the potential risks, and other events, that occur very frequently. Risk is investigated by looking at the activity of organisations in all directions and attempting to introduce the new exposure, which will arise in the future from changing the internal and external environment. Correct risk identification ensures risk management effectiveness (Tcankova, 2002).

The identification of operational risk starts with risk awareness. The international organisation for standardisation describes three different approaches for risk identification within ISO 31010 (ISO, 2009c), namely:

- **Evidence-based methods** which are based on historical facts or legislation, i.e. checklists, incident and loss data and (physical) inspections.
- **Systematic team approaches** that include group sessions to explore potential risk events, i.e. brainstorming sessions, workshops and interviews.
- **Inductive reasoning techniques** that identify events based on an iterative process of logical reasoning, i.e. scenario analysis, process and (work) flows analysis, hazard and operability studies and failure-mode effect analysis.

Identification is one of the most important areas of managing risk and failure to identify risk will mean that no action is taken to manage that risk (Chartered Institute of Management Accountants – CIMA, 2008).

**Risk analysis:** According to Weeserik (2017), the main goal of operational risk analysis is to further assess the identified operational risks by placing them into categories and gain an understanding of the level of risk (also known as risk profile). Risk analysis is usually performed by determining the likelihood of a risk occurring and estimating the consequence to determine the level of risk. During the risk analysis process, existing mitigating measures (controls) are considered, and their effectiveness can be deducted from the level of risk (Weeserik, 2017).

**Risk evaluation:** In the operational risk evaluation stage, the significance of operational risk resulting from the analysis is compared and judged based on predefined thresholds and criteria. The goal is to prioritise major and minor operational risks that require a form of further

treatment. This step is also intended for filtering small risks with low likelihood and little impact, such as operational risk that requires no additional attention at this moment (Weeserik, 2017).

**Risk treatment:** All operational risks that fall outside the tolerable risk criteria should be considered a form of treatment. The risk treatment process starts with selecting a treatment option described by ISO 31000 (ISO, 2009a), followed by planning and implementing the selected treatment.

The risk treatment that has been determined needs to be assessed to establish the level of risk tolerability. If the risk treatment results in a tolerable risk level, conduct the treatment. If the risk treatment is insufficient to make the risk level acceptable, change the risk treatment or create a new one until a tolerable risk level is reached (Weeserik, 2017). It is expected that the implementation of risk treatment, which is treated, shared, retained, and/or avoided, will result in better performance (ISO 31000, 2009).

**Monitoring and review:** The ORM function within an organisation is responsible for continuously monitoring ORM, internal and external environment, risks and mitigating measures (controls) for its performance and possible changes. These functions should be within operational risk profile criteria related to an organisation's risk appetite. Risk appetite is defined by the ISO (2009b:7) as "a type of risk that an organisation is prepared to pursue or retain". According to Zurich (2013), it is pivotal to have a risk appetite statement in a business; however, few businesses have it in place. Risk appetite helps business management make the relevant decisions and set business goals to sustain their businesses (COSO, 2012).

Operational risks and controls should be continuously monitored over time and kept within the set limits of the risk appetite. The ORM function should coordinate action when an operational risk threatens to exceed the risk appetite boundaries and, when necessary, escalate such action to the board or operational risk committee (ISO 31000, 2009).

**Communication and consultation:** All ORM activities come together in an ORM framework, which acts as an instrument to support and improve the integration of ORM governance and communication flows. The design of such a framework is a crucial component for implementing, embedding practices and communication within an organisation (Blunden & Thirlwell, 2012). In addition, due to the evolving nature of risk, business processes and the business environment, the risk management process should be reviewed and adapted continuously to safeguard the organisation's resources and comply with the defined risk strategy (Smit, 2012).

### 2.6.3 Risk management in SMEs

Every organisation faces unforeseen circumstances that influence its operations, reputation, and, ultimately, its continuity. Although these adverse events may never be realised, the organisation should provide contingency plans to reduce the severity and variability when the losses do realise (Valsamakis, Vivian & Du Toit, 2004). These actions could be achieved by means of managing risk and implementing controls/measures to mitigate these risks. Therefore, it is imperative for SMEs to consider and implement risk management within their businesses because it increases the chances of their long-term survival strategy (Abdullah, *et al.*, 2018).

Risk management varies among organisations and is dependent on the organisation's risk environment. Anderson and Terp (2006) noted the following objectives of risk management:

- **Greater transparency:** To assist executive management, owners and potential investors, in evaluating the significant organisational exposures and appropriateness of management action in dealing with risk.
- **Increase risk awareness:** To create an organisational culture whereby all managerial decisions incorporate risk awareness, and all employees are conversant in the effective handling of risks in their organisational areas.
- **Control risk environment:** To limit the probability and potential severity of possible losses and ensure adequate financial protection against possible losses. To establish organisational awareness to deal with significant risks effectively. To reduce the total cost of risk.
- **Operate within risk appetite level:** To enhance the probability of achieving organisational goals.

Most SMEs struggle to implement risk management processes within their organisations due to financial constraints. Broker Link (2020) alluded that when businesses face risk events and cannot afford risk management processes, they can draw up a risk management plan that would recognise and address potential risks and threats. These plans do not have to be expensive or time-consuming and can be easily attended to by answering the following questions (Broker Link, 2020):

- **Risk identification** – What can go wrong? (Risks can apply to your workplace or from the particular work you do.)
- **Risk analysis** – How will it affect us? (Consider probability and impact to your operations – is it high or low?)



- **Risk control** – What should we do? (Both to prevent the loss from occurring or recover if the loss does occur.)
- **Risk treatment** – If something does happen, how will you pay for it?

Islam and Tedford (2012) argue that risk management is less utilised within SMEs. SMEs lack proper risk management within their business strategies to identify and mitigate risk (Kagwathi, Kamau, Njau & Kamau, 2014). SMEs are known to be less sustainable and competitive than their larger counterparts due to limited management and business expertise, lack of adequate financing (Gao, Sung & Zhang, 2013; Sunjka & Emwanu, 2015), and business disruptions such as strikes, accidents, earthquakes and floods. Furthermore, organisations do not prioritise risk management (Watt, 2007). According to Sousa, De Almeida and Dias (2012), managerial processes are vital to all functions of the organisation, thus, managing risk should be at the pinnacle of decision-making. SME failure often occurs due to high levels of the non-application of risk management processes, unmanaged risk, worst-case scenarios, and the inability to manage risks (Sifumba, Mothibi, Ezeonwuka, Qeke & Matsoso, 2017).

According to Dubihlela and Nqala (2017), most SMEs in the manufacturing industry do not use risk management because they consider it to be used by larger enterprises. Similarly, various studies suggest that within SMEs a risk management framework should be simplified and embedded into normal business activities, such as operations, planning, budgeting processes and organisational culture (Leu, 2010; Neneh & van Zyl, 2012). Jocumsen (2004) argues that manufacturing SMEs are known to be vulnerable and, thus, less likely to have in-house capacity for sound control and risk management systems.

Stemming from the above comments, it is evident that risk management should mitigate potential threats, which could adversely affect business sustainability. Most business owners do not apply risk management, leading to a decline in SME sustainability (Terungwa, 2012). SMEs do not assess risk or, if they do, they do not consider properly the risks they are exposed to, leaving them in a vulnerable position (Islam & Tedford, 2012). Therefore, to be sustainable and remain competitive, SMEs need to manage these risks (Sunjka & Emwanu, 2015). Furthermore, limited academic research focuses on operational risk and ORM in manufacturing SMEs in South Africa which are viewed as a deficiency in these businesses (Sunjka & Emwanu, 2015). Therefore, it is essential that SMEs apply ORM to improve business sustainability and their chances of successful longevity (Panigrahi, 2012). Consequently, adopting a risk management framework for SMEs is crucial to assess and manage risk, allowing SMEs to benefit from all their resources and yield a positive return (Smit & Watkins, 2012).

## **2.7 OPERATIONAL RISK MANAGEMENT**

### **2.7.1 The concept of operational risk management**

ORM emphasises managing risks resulting from human actions, failed internal processes, systems and external events (Weeserik, 2017). ORM is a continual cyclic process that includes risk assessment, risk decision-making and the implementation of risk controls, resulting in the acceptance, mitigation or avoidance of risk (Rifaut & Feltus, 2006). An assessment of operational risk aims to provide an understanding of the causes and impact of risk in order adequately to address the consequences and approach to mitigating measures. Operational risk assessment follows the International Organisation for Standardisation (ISO) 31000 (ISO, 2009a) and COSO (COSO, 2004) risk assessment process. It is divided into three steps, namely: 1) risk identification, 2) risk analysis, and 3) risk evaluation, as discussed in Section 2.8.3 below.

ORM plays an essential role in risk management. ORM aims to help managers, leaders and decision-makers consider risk management during planning (Mohammad, Ghwanmeh & Al-Ibrahim, 2014). ORM is about managing risk, specifically preventing operational losses (Samad-Khan, Rheinbay & Le Blevic, 2006). Mohamud and Salad (2013) define ORM as a process of managing or reducing risks appearing from technical- and human errors. According to research conducted by Allen (2016), ORM is a critical success factor in any SME organisation, irrespective of its size and turnover. Therefore, it is vital for SMEs to implement ORM in all business practices and activities (COSO, 2013).

### **2.7.2 Objectives of operational risk management**

The objectives of ORM differ between different types of organisations (Girling, 2013). The most paramount objectives include, but are not limited to (Weeserik & Spruit, 2018):

- Identifying operational risk-related opportunities.
- Improving the control culture, awareness, objectives, transparency and accountability of risk.
- Reducting avoidable losses and insurance costs.
- Protecting and enhancing reputation or credit ratings.
- Increasing the effectiveness and efficiency of controls and the risk management process.
- Calculating and allocating capital for operational risk losses. (The improper management of operational risks can result in significant losses.)

Poor ORM can lead to the following types of damage to a business (Grant Thornton, 2017):

- **Outright loss** – the complete direct cost of a loss event, such as a loss of assets or processing errors.
- **Regulatory overhead** – operational losses are a critical consideration when regulators and external assessors view an organisation. Operational risk events may lead to the need for greater scrutiny and expensive mandated investigations.
- **Reputational damage** – this is a risk of a risk. It arises from operational risks and its impact can be unquantifiable, making it potentially fatal for an organisation.

The above losses occur due to a lack of an ORM framework within the business. For ORM to be effective and combat the losses that arise, an organisation should have a risk framework that translates its strategy into tactical- and operational objectives (Grant Thornton, 2017). The way risks are managed depends largely on their likelihood of realising the risk and its potential impact (Institute of Directors, 2009) because risks can be: avoided (high likelihood of realising and high impact), transferred (low likelihood of realising and high impact), reduced (high likelihood of realising and low impact), or tolerated (low likelihood of realising and low impact).

Operational control involves a controlled way of assuring the achievement of specific performance objectives. Risk helps determine the effect of fluctuations on the performance of a business, and operational risk determines the connection between the fluctuation and business activities. Decreasing operational risk creates a domino effect, whereby reduced earnings generate an increase in value for the business (Culp, 2001).

### **2.7.3 Stages of operational risk management**

According to Pearson (2020), there are different stages to implementing ORM:

- **Risk identification:** Understanding the risks specific to a business is key, but many potential risks affect any kind of business, and businesses need to identify all of them, both those that are recurring and those that can be once-off events. The identification process needs to involve staff from all levels of the business, if possible, bringing various backgrounds and experiences together to achieve a cohesive result. Risks that can be identified by work-floor staff will be very different and no less critical than those identified from the perspective of the boardroom.
- **Risk assessment:** Once the risks have been identified, they need to be assessed. This assessment needs to be undertaken from both a quantitative and qualitative perspective, and factors such as the frequency and severity of occurrence need to be

considered. The assessment needs to prioritise the management of these risks in relation to those factors.

- **Measurement and mitigation:** Mitigating these risks (if not eliminating them) is the next stage, with controls put in place that should limit the business's exposure to the risks and the potential damage caused by them.
- **Monitoring and reporting:** Any ORM plan must have something in place for the ongoing monitoring and reporting of these risks if only to demonstrate how effective the plan has been. Most of all, it is essential to ensure that the solutions implemented continue to be effective in managing the risks.

If businesses follow the above ORM stages, there would be a successful ORM strategy within the organisations. Hence, it is vital to implement effective ORM within the manufacturing industries to avoid financial crises (Pearson, 2020).

#### **2.7.4 Managing operational risk – The three lines of defence**

Tattam (2011) and Sadgrove (2016) revealed that the three lines of defence model is an effective way to manage operational risks. The three lines of defence model (see Figure 2.8 below) introduced by the Institute of Internal Auditors (IIA) in 2013, was designed to enhance risk management and control communication by clarifying essential roles and duties. According to Kenett and Raanan (2011) and Sadgrove (2016), properly managing operational risks is described as a '*three lines of defence*' model. Luburić (2017) mentions the three lines of defence should be reinforced to make ORM more efficient. Doughty (2011) noted that the three lines of defence model is the standard approach which businesses use to manage uncertainty and prevent risks. Anderson and Eubanks (2015) propose that businesses should use this model because it addresses specific duties related to risks and controls that could be assigned and coordinated within an organisation. The three lines of defence are:

**First line of defence:** The first line of defence's main task is to understand the roles and responsibilities and perform correctly and thoroughly daily (Doughty, 2011). He further states that the first line of defence requires the employees to apply internal control in treating the risks associated with individual tasks. According to the IIA (2013), operational managers own and manage risks. They are responsible for implementing corrective actions to address process and control deficiencies. Operational management is responsible for maintaining effective internal controls and executing risk and control procedures on a daily basis. Operational management identifies, assesses, controls and mitigates risks, guides the development and implementation of internal policies and procedures and ensures that activities are consistent with goals and objectives (IIA, 2013).

**Second line of defence:** In the second line of defence, management establishes risk control and compliance functions to help build and monitor the first line of defence controls (Doughty, 2011). The duties of this line's personnel includes reviewing risk monitoring and reporting, participating in risk reporting committees, risk management framework and validating risk compliance (ISACA, 2011). According to the IIA (2013), the specific functions will vary according to organisation and industry, but typical functions in this second line of defence include:

- A risk management function (and/or committee) facilitates and monitors the implementation of effective risk management practices by operational management and assists risk owners in defining the target risk exposure and reporting adequate risk-related information throughout the organisation.
- A compliance function to monitor various specific risks such as noncompliance with applicable laws and regulations.
- A controllership function that monitors financial risks and financial reporting issues.

**Third line of defence:** The third line of defence consists of internal auditors who independently and objectively assume the role of the consultant (Doughty, 2011). They help organisations attain their goals by introducing systematic approaches to effective risk management and procedures, including how the first and second lines of defence achieve risk management and control objectives. (KPMG, 2009). Doughty (2011) also mentions that the third line of defence involves a higher interdependency level than the first and second line.

Establishing the internal audit activity should not only be necessary for larger and medium-sized organisations but also may be equally important for smaller entities, because they may face equally complex environments with a less formal, robust organisational structure to ensure the effectiveness of its risk management processes (IIA, 2013).

Strong risk culture and good communication among the three lines of defence are important characteristics of good operational risk governance (BIS, 2011). The internal auditor evaluates how risks are managed and will assess the quality of risk management processes, internal controls and corporate governance processes across the organisation, and report directly and independently on these processes to the most senior management level (Chartered Institute of Internal Auditors -CIIA, 2017).

Businesses without the three lines of defence delineated above are in danger of being exposed to gaps in risk coverage, such as confusion, less control, increased costs and value reductions. Nonetheless, little research has been conducted on the drawbacks and challenges

when applying this model in the literature and more research needs to be implemented regarding the three lines of defence.



**Figure 2.8: The Three Lines of Defence model**

**Source:** Institute of Internal Auditors – IIA (2013:Online).

All three lines of defence should exist in some form at every organisation, regardless of size or complexity. To be effective, each organisation should implement the model in a suitable way for their industry, size, operating structure and approach to risk management. Risk management is typically strongest when there are three separate and clearly identified lines of defence (IIA, 2013). These three lines should share the same objective: to help the organisation achieve its objectives by effectively managing risk (Anderson & Eubanks, 2015). Furthermore, all role players must know about the roles and responsibilities of each line of defence to ensure the exploitation of each function to its fullest value to the organisation (Young, 2020).

### 2.7.5 Benefits of operational risk management

ORM helps management to determine what factors affect earnings in terms of the overall operation of a business. Management must understand the cause of the risk to effectively manage the risk and obtain the desired balance between risks and return (King & McGrath, 2002). The ORM framework adds value by improving competitive advantage and reducing the level of losses from large events (Gallati, 2003). Auer, van den Brink and Mormann (2019) opine that there are various benefits derived from a well-structured and efficiently run ORM approach, which includes:

- Credit ratings are built on a keen analysis of an organisation's risk management capabilities. Demonstrating high-quality operational risk governance provides for often substantially more favourable credit ratings and corresponding reductions in overall financing costs.
- Operating costs can be significantly reduced by systematically identifying and mitigating potential risks before leading to a loss.
- ORM is necessary to prevent large and unexpected spikes in costs and profits and avoid major hurdles in meeting revenue targets.
- Sophistication in measuring operational risk is vital to ensure that accurate and optimum capital is held.
- Good ORM supports the overall risk culture, which is a critical feature of modern and efficient organisations. Furthermore, a strong sense of ownership of risk management fostered throughout staff has been shown to promote staff engagement and retention. The benefits extend further to the customer base who prefer safely controlled businesses.
- Certain operational risks can be insured, and a careful identification and quantification of these risks can help provide additional guards against the cost of operational events and generate savings in insurance premiums.
- The extent and pace of regulatory change present risks such as overloading all staff with changing processes and control objectives. A sound risk framework is critical to absorbing the impacts of major regulatory and other change projects throughout the organisation.
- Freeing up capital – Capital is a scarce resource, especially under the new Basel III capital requirements. Capital determines the organisation's earnings capacity since each risk taken requires a corresponding level of capital. The more organised an institution is from an operational risk perspective, the more capital it can allocate to income-earning.
- Better decision making – Simulation results can support better decision-making by providing new insights; for example, a simulation can indicate the likely outcome of the bank entering a new market with a different legal system.
- Better regulatory compliance – Regulatory compliance is an indispensable part of doing business and can be a source of competitive advantage. The ORM function has an essential role in helping to assure regulatory compliance.

According to Chapman (2011), the following ORM-related benefits should also be noted:

- Improving the ability to achieve business objectives
- Allowing management to focus on revenue-generating activities rather than:
  - Firefighting one crisis after another.
  - Minimising day-to-day losses.
  - Providing a more robust enterprise risk management (ERM) system.
  - Contributing to establishing a system, which enables the correlation of different classes of risk to be understood and, where appropriate, modelled.

Most large businesses have a risk management department because they realise the importance of risk management in protecting the business from losses. However, small businesses need this type of protection the most but are not able to afford it. They are exposed to operational risk and will suffer losses within their businesses (Water Street District Business Association (WSDBA), 2017; Henderson, 2019). For SMEs to effectively respond to risk, the implementation of a risk management process is of paramount importance to the sustainability of SMEs (Siwangaza, *et al.*, 2014).

## **2.8 OPERATIONAL RISK CONTROLS**

### **2.8.1 Overview of internal control**

Internal control became a major part of ORM in recent years and yields a reasonable assurance to achieve the objectives of the organisation (Bagherzadeh & Jöehrs, 2015). It helps with improvements in the overall quality of risk reporting and managing risk (COSO, 2013). Risk control encompasses techniques designed to minimise risk to which the business is exposed, including risk avoidance and the various approaches to risk reduction through loss prevention and control efforts (Moosa, 2007). Chernobai, Jorion and Yu (2011) noted that most operational risks arise from weak internal control. Therefore, the owners and managers of manufacturing SMEs need to utilise internal controls to mitigate and control risks affecting their businesses (Sifumba, Mothibi, Ezeonwuka, Qeke & Matsoso, 2017). Also, internal controls are crucial to the sustainability of business enterprises (Choi, Lee & Sonu, 2013). Various studies support that businesses' internal controls uphold their sustainability (Bruwer & Coetzee, 2016; COSO, 2017; Kaya & Masetti, 2018).

In 1992, COSO developed a model for evaluating internal controls. This model has been adopted as the generally accepted framework for internal control and is widely recognised as the definitive standard against which organizations measure the effectiveness of their systems of internal control. In 2004, COSO introduced internal control enterprise-wide risk management within a framework, including risk management activities playing an essential



part in steering business objectives. Then, in 2013, COSO released a revised Internal Control – Integrated Framework that replaced the original version developed in 1992 (see Section 2.8.2 below). The COSO model defines internal control as ‘a process effected by an entity’s board of directors, management and other personnel designed to provide reasonable assurance of the achievement of objectives’ (COSO, 2013:2). These objectives occur in the following categories:

- **Operational effectiveness and efficiency** – Relate to the effectiveness and efficiency of the entity’s operations, including operational and financial performance goals and safeguarding assets against loss.
- **Financial reporting reliability** – Relates to internal and external financial and non-financial reporting and may encompass reliability, timeliness, transparency, or other terms set forth by regulators, recognised standard setters, or the entity’s policies.
- **Applicable laws and regulations compliance** – Relate to adherence to laws and regulations to which the entity is subject.

Internal control is an important part of ORM for businesses when seeking to achieve their objectives (Bagherzadeh & Jöehrs, 2015). An organisation establishes a system of internal control policies and procedures in response to the potential occurrence of events it has identified as posing a risk to its objectives (COSO, 2009:5). Furthermore, according to COSO (2013), internal control helps entities achieve important objectives and sustain and improve performance. The COSO framework (COSO, 2013) describes internal control as being a series of controls designed to ensure that:

- The authority’s policies are put into practice.
- The organisation’s values are met.
- Laws and regulations are complied with.
- Required processes are adhered to.
- Financial statements and other published information are accurate and reliable.
- Human, financial and other resources are managed effectively and efficiently.

Designing effective internal controls depends heavily on the risk domain being addressed. The BCBS (2010) lists the following general principles of internal control:

- Internal controls are designed to ensure that each identified risk has a policy, process, or another measure, as well as a control, to ensure that such policy, process or other measure is being applied and works as intended.
- Internal controls help ensure process integrity, compliance and effectiveness.

- Internal controls help provide comfort that financial and management information is reliable, timely and complete.
- Internal controls help establish that the firm complies with its various obligations, including applicable laws and regulations.
- Internal controls place reasonable checks on managerial and employee discretion.

According to COSO (2019), sound internal control helps mitigate many of the risks within an organisation. The application of internal control provides the following benefits (ledunote, 2017):

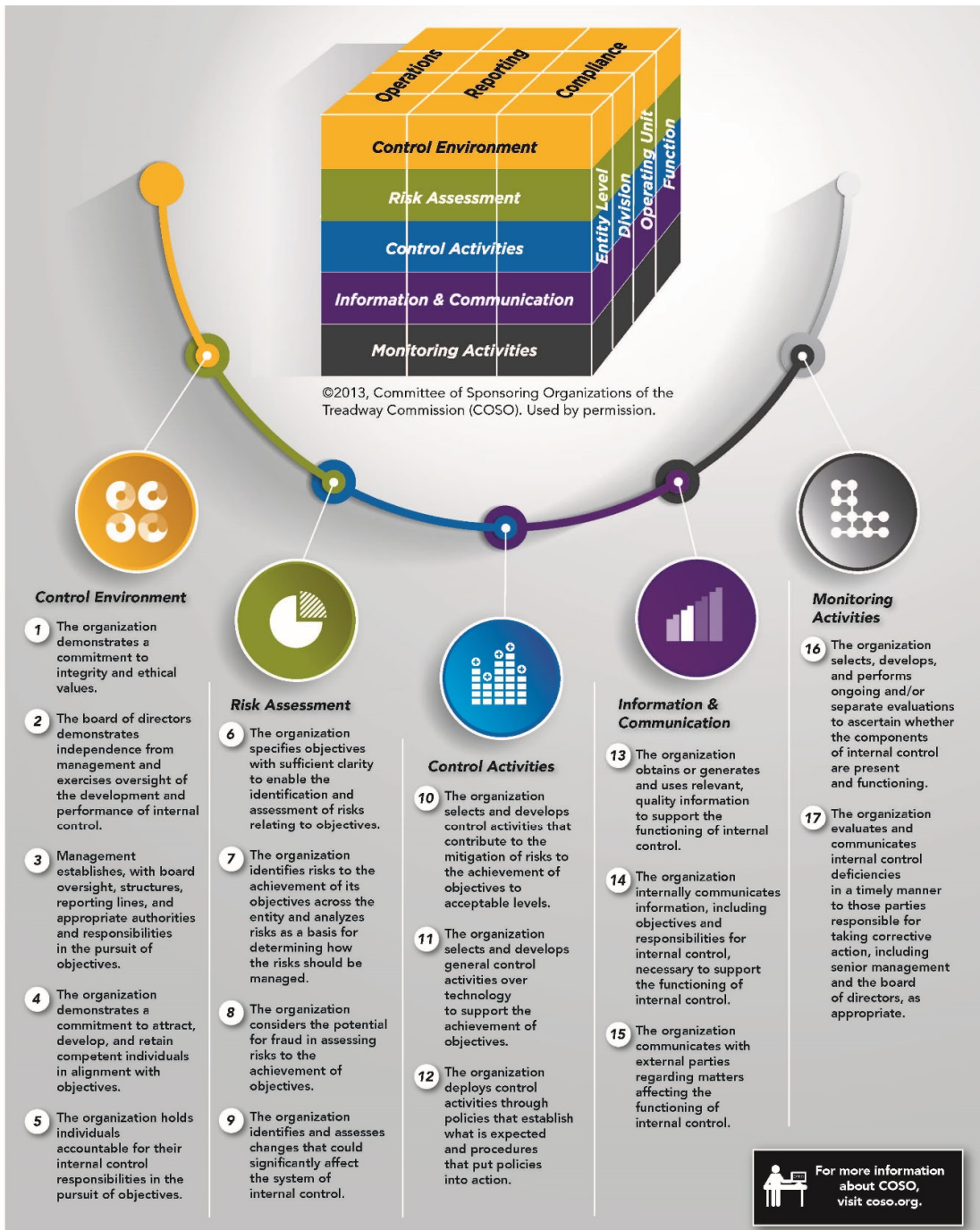
- Protect the assets of the business from misuse, theft, accident, etc.
- Implement management policies to attain corporate goals.
- Assist the auditor to detect all the errors and frauds committed in the books of accounts.
- Increase the accuracy and reliability of financial statements and books of accounts.
- Regulate the work of staff through a division of work among the staff in a scientific manner, which helps make the daily work of staff effective.
- Assist management in preparing and implementing effective plans by providing correct and factual information.
- Help to lessen moral pressure on staff.

### **2.8.2 COSO internal control – Integrated framework (2013)**

COSO released a revised Internal Control – Integrated Framework in 2013, replacing the original version that was developed in 1992. COSO's Internal Control – Integrated Framework enables organisations to effectively and efficiently develop internal control systems that adapt to changing business and operating environments, mitigate risks to acceptable levels and support sound decision-making and governance of the organisation (COSO, 2013).

According to Ramukumba (2014), manufacturing SMEs' internal control systems consist of policies, procedures and activities that strive to promote operational efficiency and reduce the risk of asset loss. In an effective internal control system, five components work to support the achievement of an entity's mission, strategies and related business objectives. These components establish the foundation for sound internal control within the business through directed leadership, shared values and a culture that emphasizes accountability for control. The framework assists management, boards of directors, external stakeholders and others interacting with the entity, in their respective duties regarding internal control without being overly prescriptive (COSO, 2013).

The framework focuses on five integrated components of internal control, which are: 1) control environment, 2) risk assessment, 3) control activities, 4) information and communication, and 5) monitoring activities (see Figure 2.9 overleaf). These components work in tandem to mitigate the risks of an organisation's failure to achieve those objectives (COSO, 2013) and are expanded upon in sub-sections 2.8.2.1 to 2.8.2.5 below. Furthermore, within each integrated framework component, seventeen principles represent the fundamental concepts associated with each component. These principles are drawn directly from the components, and an entity can achieve effective internal control by applying all the principles. All principles apply to operations, reporting and compliance objectives (COSO, 2013). The updated 2013 COSO framework is graphically depicted in Figure 2.9 and expanded upon below.



**Figure 2.9: COSO cube**  
 Source: COSO (2013:Online)

### *2.8.2.1 Control environment*

The control environment is the basis of other elements of all other components of the internal control system (Di Gravio, Costantino & Tronci, 2013). Moral values, managerial skills, employee honesty and managerial direction, etc. are included in the control environment. The control environment sets the tone of an organisation, influencing the control consciousness of its people. It is the foundation for all other internal control components, providing discipline and structure (COSO, 2013). According to COSO (2019), there are five out of the seventeen principles that comprise the control environment in an entity, namely:

1. Demonstrate commitment to integrity and ethical values.
2. Exercise oversight responsibility.
3. Establish structure, authority and responsibility.
4. Demonstrate commitment to competence.
5. Enforce accountability.

The resulting control environment has a pervasive impact on the overall internal control system (COSO, 2013). SME employees and their individual attributes comprise the most important aspect of this system, including integrity, ethical values and competence, and the environment in which they work (Allen, Boudoukh & Saunders, 2009).

### *2.8.2.2 Risk assessment*

Risk assessment is the identification of risks to achieve the entity's objectives. Almost every organisation encounters risk from internal and external sources, which should be assessed and managed (Noorvee, 2006). COSO (2005) stresses that entities should set up business objectives before identifying risk, undermining their achievement and taking actions to manage risks. COSO (2005) also mentions that risk assessment in SMEs is more effective than in large entities because managers are more involved, implying that managers of SMEs assess risks because they have access to the appropriate information and a good understanding of its implications. Management also considers the suitability of the objectives for the entity. Management's risk assessment should include special consideration of the risks that can arise from changed circumstances, such as new areas of business or transactions, changes in accounting standards, new laws or regulations, the rapid growth of the entity and changes in personnel involved in the information processing and reporting functions (COSO, 2013).

According to COSO (2019), four principles comprise risk assessment in an entity, namely:

- i. Specify suitable objectives.
- ii. Identify and analyse risk.
- iii. Assess fraud risk.
- iv. Identify and analyse significant change.

As a component of the internal control framework, risk assessment evaluates a specific risk connected to the preparation of unbiased financial statements (COSO, 2005). SMEs must set objectives that will be integrated within all the different departments of the SME, namely: sales, production, marketing, financial and other activities, so that the SME can operate successfully. SMEs also must establish mechanisms to identify, analyse and manage related risk. Lastly, SMEs should deal with and respond to any risk that is encountered (Allen, *et al.*, 2009).

#### 2.8.2.3 Control activities

Control activities are those policies and procedures that help ensure that management directives are carried out. Management establishes a controlling activities system to prevent the risk associated with every objective. These controlling activities include all those measures that are to be followed by the employees. Control activities ensure that actions are taken to address risks to the achievement of the entity's objectives. Control activities have various objectives and are applied at multiple organisational- and functional levels (COSO, 2013). Control activities relevant to a financial statement audit may be categorised in many ways, such as:

- Information processing controls
- General controls
- Application controls
- Proper authorisation
- Documents and records
- Independent checks
- Segregation of duties
- Physical controls
- Performance reviews

According to COSO (2019), three principles comprise control activities in an entity, namely:

- i. Select and develop control activities.
- ii. Select and develop general controls over technology.
- iii. Deploy control through policies and procedures.

Control policies and procedures must be established and managed within the organisation. This practice will ensure that the actions identified are implemented to address risk and that SMEs achieve their objectives (Allen, Boudoukh & Saunders, 2009).

#### *2.8.2.4 Information and communication*

Information is necessary for the SME to carry out the internal control responsibilities necessary to support its objectives. Relevant information for taking decisions is to be collected and reported in proper time. The events that yield data may originate from internal or external sources (COSO, 2013). Internal control systems and external events information are communicated to all the staff to understand their roles (COSO, 2013). Communication involves providing a clear understanding of individual roles and responsibilities about the internal control structure over financial reporting (Iedunote, 2017). Communication is essential for achieving management goals. The employees are to realise what is expected of them and how their responsibilities are related to the activities of others. Communication between the owners and outside parties, such as suppliers, is also critical (Iedunote, 2017).

According to COSO (2019), three principles comprise information and communication in an entity, namely:

- i. Use relevant information
- ii. Communicate internally
- iii. Communicate externally

SMEs need to have the correct information communicated to managers because this practice will result in their having successful business operations and effective internal controls within the organisation (KPMG, 2013). SME information and communication systems must be able to capture, record and exchange data and information required to conduct, manage and control its operations (Allen *et al.*, 2009).

#### *2.8.2.5 Monitoring activities*

Monitoring is the process that assesses the quality of the internal control structure's performance over time. When the internal control system is in practice, the organisation monitors its operational effectiveness to make necessary changes if any serious problem arises. In addition, monitoring assesses whether the controls in each of the five components are operating as intended (KPMG, 2013). According to COSO (2019), two principles comprise monitoring in an entity, namely:

- i. Conduct ongoing and/or separate evaluations
- ii. Evaluate and communicate deficiencies

Ndungu (2013) opines that the monitoring of operations needs to take place to ensure the effective functioning of internal control systems. Also, monitoring ensures whether employees effectively carry out the procedures and policies implemented by management (Hannah, 2013).

The various risks that businesses face are identified and assessed routinely at all levels and within all functions of the organisation. Control activities and other mechanisms are designed to address and mitigate significant risks. Information critical to identifying risks and meeting business objectives is communicated through established channels across the business. The entire internal control system is monitored continuously, and problems are addressed timeously (Protiviti, 2020).

All five inter-related elements are of vital importance because they aid mitigating risks. Implementing the 2013 COSO framework helps organisations design and implement internal control (COSO, 2013). This framework aids organizations to develop and maintain systems of internal control that will enhance the likelihood of their achieving the entity's objectives and adapting to changes in the business and operating environments effectively and efficiently. The importance of implementing risk management in SMEs is to ensure that organisations achieve their objectives (Aziz & Yazid, 2015).

### **2.8.3 COSO enterprise risk management – Integrated framework**

According to COSO (2004:2), ERM is a process effected by an entity's board of directors, management and other personnel, that is applied in strategy setting and across the enterprise and designed to identify potential events that may affect the entity, to manage risk to be within its risk appetite and to provide reasonable assurance regarding the achievement of entity objectives. This definition focuses on accomplishing the objectives established by a particular entity and provides a basis for defining ERM's effectiveness (COSO, 2004).

ERM provides information about risks affecting the organisation's achievement of its core objectives (Enterprise Risk Management Professional Insights, 2020). To ensure that management monitors internal- and external events that trigger risk opportunities or threats to the business, an integrated ERM process starts with a deep understanding of what is most crucial for the business's short-term and long-term success (Enterprise Risk Management Professional Insights, 2020).

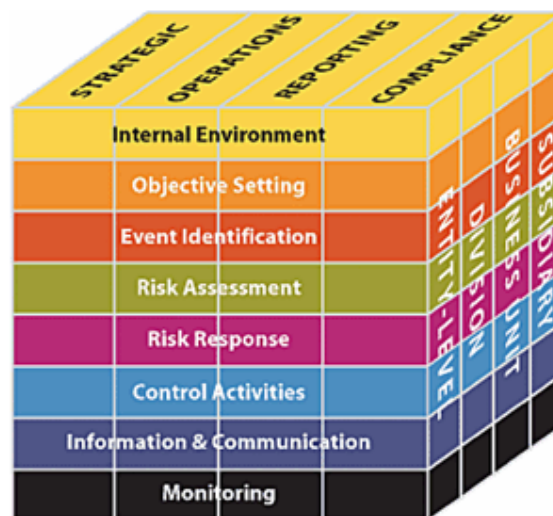
ERM falls under the COSO framework and is created to attain an entity's objectives within four categories: 1) strategic, 2) operations, 3) reporting and 4) compliance (Enterprise Risk Management Professional Insights, 2020). These categories are briefly explained below.



- Strategic – These objectives are high level and are aligned with an entity’s mission.
- Operations – These objectives refer to the effective and efficient use of resources.
- Reporting – These objectives surround an entity’s need for reliable reporting.
- Compliance – These objectives refer to an entity’s need to comply with applicable laws and regulations.

Managing risk in the above four categories within an entity’s risk appetite will aid in creating stakeholder value (Enterprise Risk Management Professional Insights, 2020).

Figure 2.10 below graphically depicts the COSO ERM model that illustrates the links between objectives shown on the top of the framework and the eight components shown on the front, representing what is needed to achieve the objectives. The eight components are expanded below. The third dimension represents the organisation’s units, which portray the model’s ability to focus on parts of the organisation, as well as the whole (COSO, 2004).



**Figure 2.10: Eight key components of the COSO ERM framework**

**Source:** Association of Chartered Certified Accountants – ACCA (2020:Online)

As mentioned above, the ERM framework consists of eight key components that represent what is needed to achieve the objectives (strategic, operational, reporting and compliance) (COSO, 2004). Each of these components is discussed in more detail below.

### 2.8.3.1 *Internal environment*

The internal environment establishes the tone of the organisation, influencing risk appetite, attitudes towards risk management and ethical values (ACCA, 2020). Management sets a philosophy regarding risk and establishes a risk appetite. The internal environment forms the

basis for how risk and control are viewed and addressed by an entity's personnel. Upper management must express the importance of ERM throughout all entity levels (COSO, 2004).

#### *2.8.3.2 Objective setting*

Objectives must exist before management can identify potential events affecting their achievement. ERM ensures that management has a process in place for setting objectives and that the chosen objectives support and align with the entity's mission and are consistent with its risk appetite (COSO, 2004).

#### *2.8.3.3 Event identification*

Risk identification is typically performed via risk and controls self-assessment at a departmental level by analysing internal audit reports and checking lists of key risk indicators (Chapelle, Crama, Hubner & Peters, 2004). Internal and external events that might have an impact on the entity must be identified. Event identification involves identifying potential events from internal or external sources affecting the achievement of objectives. It includes distinguishing between events that represent risks, those that represent opportunities, and those that may include both aspects (COSO, 2004).

These processes focus on management, identifying risks that impact the success of each of the key value drivers. Identifying risks affecting the current core business drivers and new strategic initiatives helps keep management's ERM focus on important risks to ensure the short-term and long-term viability of the enterprise (Enterprise Risk Management Professional Insights, 2020).

#### *2.8.2.4 Risk assessment*

Risks are analysed to form a basis for determining how they should be managed. Risks are associated with objectives that may be affected and are assessed on both an inherent and residual basis, with the assessment considering both risk likelihood and impact. Risk assessment needs to be conducted continuously throughout an entity (COSO, 2004). The purpose of risk assessment is to assess how significant risks are to focus management's attention on the most important threats and opportunities and to lay the groundwork for risk response. Risk assessment comprises measuring and prioritising risk so that risk levels are managed within defined tolerance thresholds without being over-controlled or forgoing desirable opportunities (COSO, 2004).

#### *2.8.2.5 Risk response*

Management identifies and evaluates possible risk responses, including avoiding, accepting, reducing and sharing risk. Management selects a set of actions to align risks with the entity's risk tolerances and risk appetite (COSO, 2004).

#### *2.8.2.6 Control activities*

Policies and procedures are established and executed to ensure that the risk responses management selects are effectively carried out (COSO, 2004).

#### *2.8.2.7 Information and communication*

Relevant information is identified, captured and communicated in a form and timeframe that enable personnel to carry out their responsibilities. Information is needed at all levels of an entity to enable staff to identify, assess and respond to risk (COSO, 2004).

#### *2.8.2.8 Monitoring*

Monitoring defines whether policies and procedures designed and implemented by management are being conducted effectively by employees. Monitoring also helps to ensure that significant control deficiencies are identified timeously and then rectified. In addition, monitoring helps to identify these new risks and the need for new control procedures (Oseifuah, & Gyekye, 2013). The entirety of the ERM is monitored and necessary modifications are made to enable the business to react dynamically and appropriately as conditions warrant (COSO, 2004). The ERM is a multidirectional, iterative process in which almost all components can and do influence one another (COSO, 2004).

According to COSO (2004) and COSO (2017), ERM has various benefits and organisations that integrate ERM throughout the entity can realise many benefits, such as:

- Promoting a broader understanding of risks.
- Implementing a process to highlight the key risks, what practices are being enacted and by whom.
- Bringing to light emerging risks timeously.
- Enabling organisational alignment to manage the risks and control the cost of compliance.
- Allowing organisations to take on and effectively manage risks that competitors cannot.
- Increasing the range of opportunities by considering all possibilities, both positive and negative aspects of risk management can identify new opportunities and unique challenges associated with current opportunities.
- Identifying and managing risk entity-wide. Every entity faces myriad risks that can affect many parts of the organisation. Sometimes risk can originate in one part of the entity but impact a different part. Consequently, management identifies and manages these entity-wide risks to sustain and improve performance.
- Increasing positive outcomes and advantages while reducing negative surprises. ERM allows entities to improve their ability to identify risks and establish appropriate

responses, reducing surprises and related costs or losses while profiting from advantageous developments.

- Reducing performance variability. For some, the challenge comprises dealing with variability in performance rather than with surprises and losses. Performing ahead of schedule or beyond expectations may cause as much concern as performing short of scheduling and expectations. ERM allows organisations to anticipate the risks that would affect performance and enable them to put in place the actions needed to minimise disruption and maximise opportunity.
- Improving resource deployment. Every risk could be considered a request for resources. Obtaining robust risk information allows management, in the face of finite resources, to assess overall resource needs, prioritise resource deployment, and enhance resource allocation.
- Enhancing enterprise resilience. An entity's medium- and long-term viability depends upon its ability to anticipate and respond to change in order to survive, evolve and thrive. This process is, in part, enabled by effective ERM. ERM becomes increasingly important as the pace of change accelerates and business complexity increases.

The above benefits highlight that risk should not be viewed solely as a potential constraint or challenge to setting and carrying out a strategy. Rather, the change that underlies risk and the organisational response to risk gives rise to strategic opportunities and key differentiating capabilities (COSO, 2017).

This research study focused on control activities since operational risks constitute the major cause of business failures (Mulu, 2013). Consequently, these risks need to be managed effectively to achieve business sustainability and objectives.

## **2.9 SUMMARY**

This chapter aimed to address the main research question, namely, to determine the influence of operational risk on the sustainability of manufacturing SMEs operating within the Cape Metropole, South Africa. The literature review started with an introduction to the research study, followed by an overview of South African SMEs, particularly focusing on small and medium businesses in the manufacturing industry. Furthermore, the importance of SME sustainability was discussed because most of these businesses are faced with various types of risks that adversely influence their sustainability. Next, the different types of risk, especially that of operational risk, were discussed in detail. The concept of risk management, particularly operational risk management, was discussed since operational risks are the single major cause of business failures. Consequently, these risks need to be managed effectively to achieve business objectives and, thus, sustainability. Therefore, the chapter concluded by

providing insights concerning operational risk controls that owners and/or managers of manufacturing SMEs need to implement and utilise to mitigate and control risks challenging the sustainability of their businesses.

## CHAPTER 3: RESEARCH DESIGN, METHODOLOGY AND METHODS

### 3.1 INTRODUCTION

Chapter 3 provides detailed information regarding the research design, methodology and methods used within this research study. This chapter holds relevance to the following research problem, as discussed in Chapter 1, Section 1.2:

*Operational risk adversely influences the sustainability of SMEs.*

To address the research problem above, the following main research question was asked (see Chapter 1, Section 1.3.1 above):

*To what extent does operational risk influence the sustainability of manufacturing SMEs in the Cape Metropole?*

Based on the primary research question, the primary objective of this study was (see Chapter 1, Section 1.3.1 above):

*To determine the extent to which operational risk influences the sustainability of manufacturing SMEs in the Cape Metropole.*

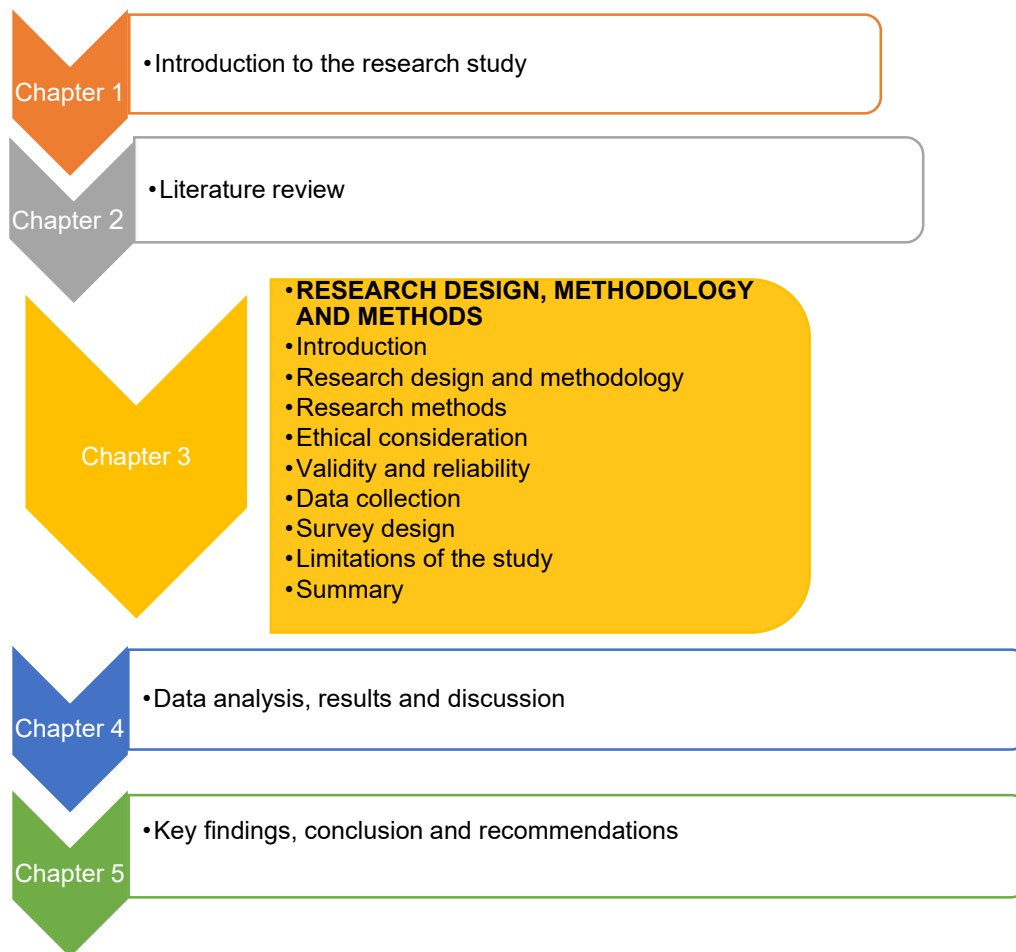
This primary research objective was achieved by asking three research sub-questions (see Chapter 1, Section 1.3.2 above):

- *What is operational risk?*
- *What operational risks do manufacturing SMEs face?*
- *To what extent is ORM implemented within manufacturing SMEs?*
- *What operational risk factors influence the sustainability of manufacturing SMEs?*

A literature review was conducted (see Chapter 2) to help answer the research questions and consequently achieve the research objectives. A survey (see Appendix A) was developed to conduct empirical research by collecting primary quantitative data to be analysed and discussed in detail (see Chapter 4 of this research study) with the intent of answering and addressing the research questions and achieving the research objectives (see Chapter 5 of this study).

The remainder of this chapter comprises a discussion of the following issues: Research design and methodology, Research methods, Ethical consideration, Validity and reliability, Data collection, Survey design,; Limitations of the study and Summary.

The contents of Chapter 3, along with the relative positioning of the various topics addressed therein, is graphically depicted in Figure 3.1 below.



**Figure 3.1: Detailed layout of Chapter 3 – Research design, methodology and methods**

### **3.2 RESEARCH DESIGN AND METHODOLOGY**

This study aimed to determine the extent to which operational risk influences the sustainability of manufacturing SMEs in the Cape Metropole. Research design is a plan for selecting subjects, research sites and data collection procedures to answer the research question(s) (MacMillan & Schumacher, 2001). Research design guides the researcher regarding how to conduct the study (what data is required and what methods will be used to collect and analyse data) to answer the research questions (Bryman & Bell, 2015). Furthermore, research design provides answers related to questions such as what techniques will be used to gather data, what kind of sampling will be used, and how time- and cost constraints will be dealt with (Cooper & Schindler, 2003; Welman, Kruger, & Mitchell, 2007). Research design can be

categorised into empirical- and/or non-empirical research, primary and/or secondary data collection, numerical- and/or textual data collection, and the control level of the data collection tools used (Mouton, 2006).

There are three types of research designs, namely: 1) quantitative research, 2) quantitative research, and 3) mixed-methods research. Usually, researchers select a combination of quantitative or/and qualitative research methods, commonly referred to as mixed-methods research, based on the nature of the topic, research questions, research aim, and objectives to identify, collect, and analyse information to increase understanding of an issue/problem at hand. Table 3.1 below provides a comparative view of the different types of research designs (Creswell, 2014).

**Table 3.1: Different types of research designs – quantitative-, qualitative-, and mixed-methods approaches**

Tend to or Typically ...	Qualitative Approaches	Quantitative Approaches	Mixed Methods Approaches
<ul style="list-style-type: none"> <li>Use these philosophical assumptions</li> <li>Employ these strategies of inquiry</li> </ul>	<ul style="list-style-type: none"> <li>Constructivist/ transformative knowledge claims</li> <li>Phenomenology, grounded theory, ethnography, case study, and narrative</li> </ul>	<ul style="list-style-type: none"> <li>Positivist knowledge claims</li> <li>Surveys and experiments</li> </ul>	<ul style="list-style-type: none"> <li>Pragmatic knowledge claims</li> <li>Sequential, concurrent, and transformative</li> </ul>
<ul style="list-style-type: none"> <li>Employ these methods</li> </ul>	<ul style="list-style-type: none"> <li>Open-ended questions, emerging approaches, text or image data</li> </ul>	<ul style="list-style-type: none"> <li>Closed-ended questions, predetermined approaches, numeric data</li> </ul>	<ul style="list-style-type: none"> <li>Both open- and closed-ended questions, both emerging and predetermined approaches, and both quantitative and qualitative data and analysis</li> </ul>
<ul style="list-style-type: none"> <li>Use these practices of research as the researcher</li> </ul>	<ul style="list-style-type: none"> <li>Positions him- or herself</li> <li>Collects participant meanings</li> <li>Focuses on a single concept or phenomenon</li> <li>Brings personal values into the study</li> <li>Studies the context or setting of participants</li> <li>Validates the accuracy of findings</li> <li>Makes interpretations of the data</li> <li>Creates an agenda for change or reform</li> <li>Collaborates with the participants</li> </ul>	<ul style="list-style-type: none"> <li>Tests or verifies theories or explanations</li> <li>Identifies variables to study</li> <li>Relates variables in questions or hypotheses</li> <li>Uses standards of validity and reliability</li> <li>Observes and measures information numerically</li> <li>Uses unbiased approaches</li> <li>Employs statistical procedures</li> </ul>	<ul style="list-style-type: none"> <li>Collects both quantitative and qualitative data</li> <li>Develops a rationale for mixing</li> <li>Integrates the data at different stages of inquiry</li> <li>Presents visual pictures of the procedures in the study</li> <li>Employs the practices of both qualitative and quantitative research</li> </ul>

**Source:** Creswell (2014:18)

- Quantitative research:** Quantitative research involves numerical data measurement and applying statistical tests (Collis & Hussey, 2003; Singh, 2006; Goertz & Mahoney, 2012). Burns and Grove (1997:777) define quantitative research as “a formal, impartial, systematic process to define and assess relationships and examine cause and effect interactions among variables.” Quantitative research commences with a problem statement and consists of forming a hypothesis, literature review and quantitative data analysis (Williams, 2007). Moreover, a quantitative approach allows easier comparison of data and simplifies the processing of a large amount of data (Martin & Bridgmon, 2012).



- **Qualitative research:** Qualitative data is non-numerical data that are used to identify configurations in the data. According to Patton (2001:39), qualitative research is:

An approach that uses a naturalistic approach which seeks to understand phenomena in context-specific settings, such as real world settings, where the researcher does not attempt to manipulate the phenomena of interest...it is any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification, but instead the kind of research that produces findings derived at from real-world settings where the phenomena of interest unfold naturally.

Thus, the qualitative method allows the researcher to explore and better understand the complexity of a phenomenon (Williams, 2007).

- **Mixed-methods research:** According to Creswell (2003), mixed-method research includes collecting or analysing data from the quantitative and qualitative research approaches in a single research study. Meaning, the researchers collect or analyze numerical data for quantitative research and narrative data for qualitative research in order to address the research question(s) defined for a particular research study (Johnson & Onwuegbuzie, 2004). The main reason for using the mixed-methods approach in a research study is to draw from the strengths and minimise the weaknesses of the quantitative and qualitative research approaches (Johnson & Onwuegbuzie, 2004).

This research study was empirical in nature and fell within the positivistic research paradigm. Research studies conducted within the positivistic paradigm are based purely on facts and consider the world to be external and objective (Wilson, 2014). Therefore, this paradigm is believed to be the most relevant for this research study because it is based on a real and objective interpretation of the data and highlights the importance of conducting quantitative research, such as large-scale surveys, to obtain an overall impression of humanity.

A quantitative research methodology was followed within the ambit of this research study. The research methodology focuses on the research procedure and the kind of tools and procedures to be used. The research methodology commences with specific tasks (data collection or sampling) at hand. It is based on a particular phase of the research study, for example, which questions to pose in a survey. This approach “focuses on the individual (not linear) steps in the research process and the most “objective” (unbiased) procedures to be employed” (Babbie & Mouton, 2001:75). To effectively employ the research methodology, appropriate research methods had to be employed (refer to Section 3.3 below for more detailed information on the research methods used within this research study).

A survey (see Appendix A at the end of this research study) was used for conducting empirical research by collecting data from a targeted population group (owners and/or managers of manufacturing SMEs operating in the Cape Metropole). These owners and/or managers of manufacturing SMEs were invited to participate in the study (refer to Chapter 1, Section 1.5 above), of which a total of 85 participated in this research study. Since all the owners and/or managers mentioned above were invited to participate in the study, the sampling method used was twofold and included both convenience sampling and purposive sampling, which are expanded upon in Section 3.3 below. The owners and/or managers participated in the study out of free will (voluntary participation) and could withdraw from the study at any time and without any consequences. However, to justify a valid response, all the respondents had to adhere to strict delineation criteria as set out in Chapter 1, Section 1.4 above. Furthermore, all the owners and/or managers had to acknowledge their participation in the study based on the conditions stipulated in Chapter 1, Section 1.4 above, as well as Section 3.4 below.

All the data obtained from the respondents were captured using Microsoft Excel and analysed by means of SAS (Statistical Analysis System) software. Data analysis summarises collected data. These results provided valuable insight into the influence of operational risk on the sustainability of manufacturing SMEs in the Cape Metropole.

### **3.3 RESEARCH METHODS**

Research methods are the tools and techniques used for conducting research; they provide ways to collect, sort and analyse information so that conclusions can be drawn (Walliman, 2017).

For this study, primary data was collected from 85 respondents (SME owners and/or managers involved in the day-to-day activity of their manufacturing businesses in the Cape Metropole) through means of a survey. A survey was used because it was the most cost-effective and suitable method for obtaining the data for this research study. To justify a valid response, all respondents had to adhere to strict delineation criteria, as stipulated in Chapter 1, Section 1.4 above. To ensure that relevant data was collected, all aspects of the survey were linked to measuring data related to the posed research questions (see Section 3.6 below).

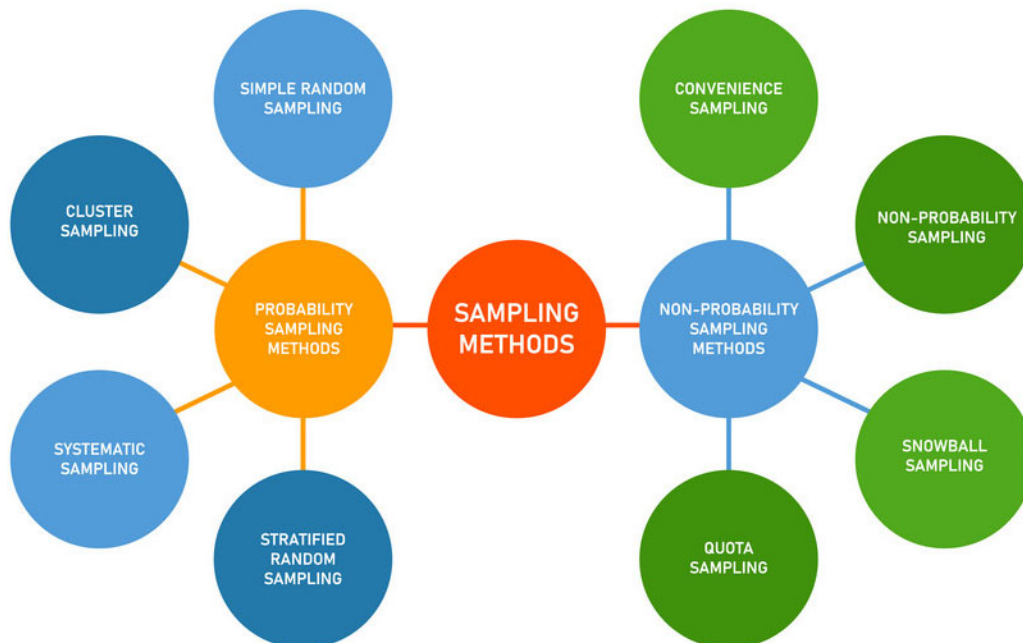
Respondents were approached through the deployment of non-probability sampling methods. Sampling occurs when a particular part of the population is selected to represent the entire population. According to Baran and Jones (2016:109):

Sampling is the act, process, or technique of selecting a suitable sample, or a representative part of a population for the purpose of determining parameters or characteristics of the whole population.

In this research study, a combination of purposive sampling and convenience sampling was used.

- **Purposively sampling** is defined as the sampling of a population who are most likely to provide the best information to satisfy the goal of a research study and is used for the identification and selection of information-rich cases for the most effective use of limited resources (Patton, 2002; Welman, Kruger & Mitchell, 2007). Purposively sampling was used because the size of the targeted population (manufacturing SME owners and/or managers in the Cape Metropole) was unknown to the researcher.
- **Convenience sampling** refers to researching subjects of the population who are easily accessible to the researcher to address the identified research problem (Remenyi & Heafield, 1996; Given, 2008). Convenience sampling was used since the SME owners and/or managers that were invited to partake in the study were conveniently accessible to the researcher.

Figure 3.2 below depicts the different types of probability- and non-probability sampling.



**Figure 3.2: Different types of probability- and non-probability sampling**

Source: VectorStock (2021:Online).

### 3.4 ETHICAL CONSIDERATION

According to Gratton and Jones (2010), all researchers, regardless of the research design, sampling techniques and choice of methods, are subjected to ethical considerations. For the purpose of this research study, ethical clearance was required before the commencement of the study. Official letters were distributed by the researcher among the owners and/or managers of manufacturing SMEs in the Cape Metropole. In the letter, the purpose of the study was explained, and participants were assured of the confidentiality of the information provided. The participants were also informed that feedback would be provided regarding the outcome of the study, should they require it.

Research ethics comprise four subsections, namely: (Saunders, Lewis & Thornhill, 2000):

- The data analysis and reporting phases.
- The design phase and initial access phase.
- The data collection phase.
- The research process in general.

The following ethical aspects were adhered to in this research study:

- **Informed consent:** All respondents will be given full disclosure of the nature of the study before becoming involved with the research study.
- **Protection from harm:** All respondents will be safeguarded from physical harm.
- **Right to privacy:** All information provided by respondents will be kept strictly confidential, and the anonymity of respondents will be guaranteed.
- **Voluntary participation:** All respondents will be informed that participation in the research project is voluntary and requested to sign a consent letter confirming their willingness to participate in the research project..
- **Right to refuse:** Participation in the study is voluntary, therefore, respondents were informed they can decide to withdraw from this study at any stage without being discriminated against.

### 3.5 RELIABILITY AND VALIDITY

In quantitative research, reliability and validity are known as the two criteria for sound measurement (Baumgarten, 2012; Mohajan, 2017). David and Sutton (2011) opine that reliability is the degree to which the indicator or test is a consistent measure over time, or simply, whether the participants give the same responses at a different time. Reliability deals with the consistency, stability and repeatability of results (Bashir, Afzal & Azeem, 2008).

On the other hand, validity refers to the extent to which the measurement process is free of both systematic and random error or bias (Mohajan, 2017). Validity is the extent to which a quantifying tool truly measures and defines its intended purpose (David & Sutton, 2011). This study used content validity and construct validity, which are explained in Chapter 4. In addition, a descriptive analysis was performed to confirm the validity of the information obtained (see Chapter 4) below.

### **3.6 DATA COLLECTION**

Primary data (original information gathered directly from research participants) was collected from 85 SME owners and/or managers from October 2019 to September 2020 using a survey. Participants had to be involved in the daily activities of their manufacturing businesses operating in the Cape Metropole.

Paper surveys were distributed among the participants because this method is likely to generate a much higher response rate compared to electronic questionnaires. Furthermore, most respondents believe that printed surveys are more anonymous than electronic surveys, which, in turn, may result in respondents being more honest when completing printed surveys (PaperSurvey, 2021). However, between March 2020 and September 2020, the researcher was forced to use an electronic survey because most manufacturing SMEs were not operating due to the global COVID-19 pandemic.

A cover letter accompanied each survey requesting respondents' consent to partaking in the research study. This letter also provided them with a brief overview of the purpose of the research study and informed participants how the researcher intends to use the information collected through the survey as well advising them that they could opt-out of the research study at any time without incurring a penalty.

The survey comprised six sections containing closed-ended questions, one open-ended question, multiple-choice questions, and predominantly Likert scale questions (see Appendix A below). Copeland (2017) provides the following advantages of using closed-ended questions:

- They are easier and quicker for people to answer.
- Less articulate or less literate respondents are not at a disadvantage in answering closed-ended questions.
- Respondents are more likely to answer questions related to sensitive topics.
- They inspire fewer irrelevant or clouded answers.
- Respondents' answers are easier to analyse.

- The answers of different respondents are easier to compare.
- They allow the interpreter to assess respondents' prior knowledge base and feelings.

Section A of the questionnaire consisted of eight questions related to the demographical information of the participant (the owner and/or manager of a manufacturing SME) and the business. Section B addressed business sustainability using a five-point Likert scale of one (1 – strongly disagree) to five (5 – strongly agree) and allowed participants to freely express their opinions within set boundaries (Cooper & Emory, 1995). Sections C and D provided various statements whereby the respondent had to rate, using a Likert scale, whether certain types of general risk and operational risk negatively influence the attainment of their business objectives. Section E consisted of various closed-ended questions and one open-ended question that looked at risk management within the business. In Section F, respondents were thanked for their participation in the study and invited to complete this voluntary section should they wish to receive the results and findings in the future.

All data gathered was captured in Microsoft Excel and analysed with SAS software. Using SAS, relevant descriptive statistics and inferential statistics were performed (see Chapter 4 below).

Descriptive statistics were used to display all the collected data in an understandable manner by using tables and/or graphs (indicating means, medians, totals, standard deviations, etc.). Descriptive statistics were performed on Sections A to E of the survey. Inferential statistics were performed to assess the relationship between operational risk and business sustainability evident in South African manufacturing SMEs in the Cape Metropole with the main intent to address the relevant research questions and achieve its associated research objectives. For this research study, Spearman rank correlations were performed. Spearman rank correlation is a non-parametric test performed to summarise the direction and size between two variables (e.g. the relationship between operational risk and SME sustainability in South African manufacturing SMEs) (Hauke & Kossowski, 2011). The results performed by Spearman rank correlation ranges within a scale of 1.00 (positive) and -1.00 (negative).

The statistical analyses performed within the ambit of this study, along with the relevant discussion, are covered in more depth in Chapter 4 below.

### **3.7 SURVEY DESIGN**

As mentioned in Section 3.6 above, a survey was used in this research study to answer the relevant research questions and achieve its associated research objectives. The survey was created in Microsoft Word. In the survey, the following three measurement scales were used:

- Scale A: 1 = Yes, 2 = No.
- Scale B: 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor Disagree, 4 = Agree, 5 = Strongly agree.
- Scale C: 1 = Very little, 2 = Little, 3 = Average, 4 = Much, 5 = Very Much

The three scales were coded using numbers ranging from one (1) to five (5) to improve construct validity. The survey was overseen by a statistician and the researcher’s supervisor (both holding a PhD) to ensure that all the questions were structured clearly, reasonably and explicitly.

As discussed earlier, six sections (A to F) were included in the survey; they are all listed below and subsequently discussed thoroughly:

- **Section A:** Demographic information relating to South African manufacturing SMEs operating in the Cape Metropole and their owners and/or managers.
- **Section B:** Business sustainability relating to South African manufacturing SMEs.
- **Section C:** General risks within South African manufacturing SMEs.
- **Section D:** Operational risks affecting South African manufacturing SMEs.
- **Section E:** Risk management of South African manufacturing SMEs.
- **Section F:** Word of thanks.

Section A focused on the demographic information of both respondents (the owners and/or managers) and their businesses (manufacturing SMEs operating in the Cape Metropole). This section allows the researcher to better understand certain background characteristics of the respondents, their education level, their tenure at the business and whether manufacturing SMEs adhere to the predetermined delineation criteria.

Section A consisted of eight questions, of which five questions were multiple-choice questions, and the remaining three were ratio questions (see Table 3.2).

**Table 3.2: Section A as shown in the survey**

Question no.	Question type	Question
A1	Multiple-choice	1. Do you have decision-making power within the business?
A2	Multiple-choice	2. What is your position in the business?
A3	Ratio	3. How long have you been in this position?
A4	Ratio	4. How long has your business been in existence?
A5	Ratio	5. How many full-time employees do you employ?
A6	Multiple-choice	6. Which of the options below best describe your business?
A7	Multiple-choice	7. What is your highest level of education?
A8	Multiple-choice	8. Do you make use of cash sales and/or credit sales?

According to Bansal and DesJardine (2014:71), business sustainability is defined “as the ability of firms to respond to their short-term financial needs without compromising their (or

others') ability to meet their future needs". Hence, Section B's design consisted of two Likert scale questions (see Table 3.3 below). These questions were centred around the achievement of business objectives from which a conclusion can be made regarding the overall sustainability of manufacturing SMEs. Respondents were provided with a list of possible answers and had to rate their level of agreement or disagreement with the statement.

**Table 3.3: Section B as shown in the survey**

Question no.	Question type	Question
B9	Likert scale	9. Rate the following statements with regard to your own business situation, which start with the base sentence below: "In this business ..."
B10	Likert scale	10. Based on your answers provided in Question 9, how would you describe the overall achievement of your business's objectives?

In Section C, respondents were asked about the type of general risks that usually occur and would affect the achievement of their business objectives. The main purpose of asking these questions was to ascertain the common general risks that adversely influence the attainment of South African manufacturing SMEs' business objectives. The information gathered assisted the researcher in drawing conclusions about the sustainability of these businesses. Likert scale questions were used, and respondents had to rate their level of agreement or disagreement with various statements related to general risk (see Table 3.4)

**Table 3.4: Section C as shown in the survey**

Question no.	Question type	Question
C11	Likert scale	11. Rate the following statements with regard to your own business situation, which start with the base sentence below: "The following risks negatively influence the attainment of my business objectives ..."
C12	Likert scale	12. How severely do these risks influence your business's overall attainment of objectives (see Question 11)?

Section D (see Table 3.5 below) addressed the core of the research study, as respondents were asked about the type of operational risk events that occur in their respective businesses under the following categories:

- Execution, delivery and process management inaccuracies
- Internal fraud
- Employment practices and workplace safety
- Damage to physical assets
- Clients, products and business practice abuses
- Business disruption and system malfunction
- External fraud



Furthermore, respondents were asked to rate the influence these operational risks events have on achieving their manufacturing SMEs' objectives. In addition, respondents were also asked to indicate the operational risks they have encountered and rate their severity in relation to operational losses. Lastly, they had to indicate which factors are the cause of these risk events and then rate the impact of each factor. The data collected from this section allowed the researcher to establish which factors were the major cause of operational risk events and how they influence the sustainability of manufacturing SMEs in the Cape Metropole.

**Table 3.5: Section D as shown in the survey**

Question no.	Question type	Question
D13	Likert scale	13. Rate the following statements with regard to your own business situation, which start with the base sentence below: "The following operational risks negatively influence the attainment of my business objectives ..."
D14	Likert scale	14. How severely do these risks influence your business' overall attainment of objectives (see Question 13)?
D15	Likert scale	15. What operational risks have you encountered in your company?
D16	Likert scale	16. To what extent does your organisation face various operational risk and losses?
D17	Likert scale	17. What is your level of agreement with the following aspect of operational risk and losses in the organisation?

Section E (depicted below) gaged manufacturing SMEs operating in the Cape Metropole's awareness of operational risks and their ability to mitigate them by determining the operational risk management strategies they have in place together with its implementation. Six out of the seven questions were asked in a Likert scale format, and the other was an open-ended question (see Table 3.6)

**Table 3.6: Section E as shown in the survey**

Question no.	Question type	Question
E18	Likert scale	18. Is the term 'operational risk' familiar to you?
E19	Likert scale	19. If yes, please explain what operational risk is in your own words.
E20	Open-ended	20. Is an operational risk management process implemented in your company?
E21	Likert scale	21. If yes, what are the reasons for implementing operational risk management processes?
E22	Likert scale	22. Who is responsible for operational risk management in your company?
E23	Likert scale	23. Where is operational risk management related information documented?
E24	Likert scale	24. What kind of risk management tools does your company use?

Finally, the completion of Section F (depicted below) was voluntary and thanked participants for their time and effort in partaking in the survey. This section also allowed participants to provide their contact details should they wish to receive e-mail feedback regarding the results and findings of the study.

Overall, to achieve business sustainability, manufacturing SMEs need to implement operational risk management strategies within their businesses. In addition, internal control is an important part of operational risk management, which provides assurance to achieve organisational objectives (Bagherzadeh & Jöehrs, 2015).

### **3.8 LIMITATIONS OF THE STUDY**

This research study faced two limitations:

- Only the owners and/or managers of manufacturing SMEs operating in the Cape Metropole were considered to participate in this research study.
- Access to SMEs was limited during the data-gathering phase due to the COVID-19 pandemic that reached South African shores in March 2020. In response to this pandemic, drastic measures were taken by the South African government to contain the spread of the virus and, consequently, save lives. As a result, an initial 21-day national lockdown was announced to commence on 27 March 2020. As a result, all non-essential businesses and services were to close down. All employees of such businesses and citizens of the country remained at home and could only go out for supplying and/or purchasing essential goods. This unprecedented time affected data collection from March 2020 to September 2020. Most of the targeted SMEs were closed, according to law, during this period. This took away the advantage of meeting with the respondents (owners and/or managers of manufacturing SMEs), which would have built trust among the researcher and respondents. This approach would also have allowed participants to ask any questions related to the research study and questionnaire. The researcher instead was obliged to disseminate electronic questionnaires via email.

### **3.9 SUMMARY**

This chapter provided a thorough discussion of the research design and methodology, research methods, ethical consideration, validity and reliability, data collection, survey design and limitations relevant to this research study. This research study aimed to determine the influence of operational risk on the sustainability of manufacturing SMEs in the Cape Metropole, as defined in Chapter 1, Section 1.3 above.

In achieving the above objectives, a sound research design and methodology had to be implemented. In this research study, primary quantitative data were gathered using a survey to answer the main- and relevant research sub-questions and, consequently, achieve the pertinent research objectives stipulated in Chapter 1, Section 1.3 above. The survey was used to accumulate data from respondents (South African manufacturing SME owners and/or

managers operating in the Cape Metropole) by presenting questions in relation to the recognised research problem. An in-depth literature review was carried out to assist with the development of the survey. The research study was quantitative in nature, and fell within the positivistic research paradigm. Non-probability sampling, in particular convenience sampling and purposive sampling, were used to select a representative sample size of respondents. The target population had to adhere to strict delineation criteria for their response to qualify as being valid.

The data were analysed using the SAS software that is used for advanced analytics, multivariate analyses, business intelligence, data management and predictive analytics. Data analysis and the results obtained are discussed in the next chapter (Chapter 4).

## CHAPTER 4: DATA ANALYSIS, RESULTS AND DISCUSSION

### 4.1 INTRODUCTION

This chapter discusses the data analysis, results, and discussion of the survey to determine the extent to which operational risk influences the sustainability of manufacturing SMEs in the Cape Metropole.

The secondary research objectives of the study were to determine:

- What is operational risk?
- What operational risks do manufacturing SMEs face?
- To what extent is ORM implemented within manufacturing SMEs?
- What operational risk factors influence the sustainability of manufacturing SMEs?

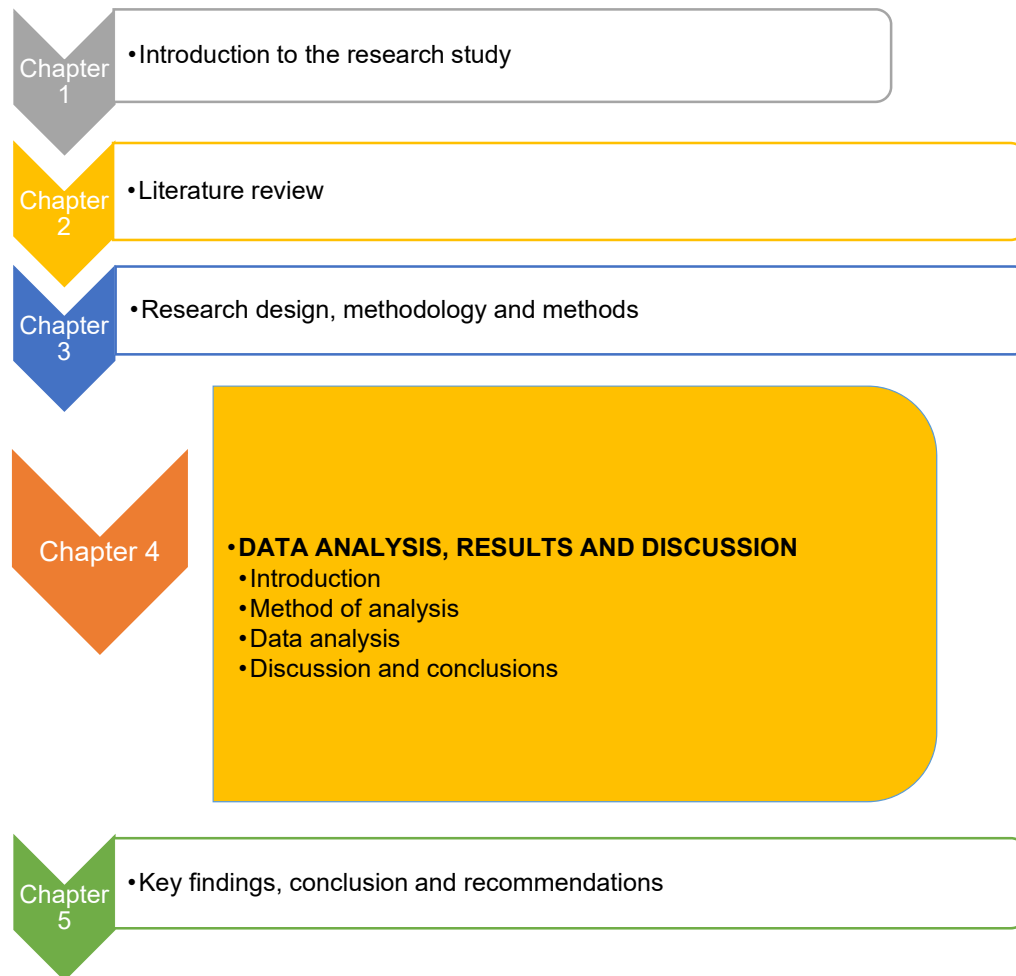
Data analysis is “the process of bringing order, structure and meaning to the mass of collected data” (De Vos, 2002:339). The data obtained from the completed questionnaires is presented and analysed in this chapter by using various form of analyses (uni-variate, bivariate and multivariate). In the majority of social research studies, the analysis entails three key steps undertaken in the following order:

1. **Preparation:** Cleaning and organising the collected data.
2. **Descriptive statistics:** Describing the collected data.
3. **Inferential statistics:** Testing the assumptions made through hypothesis and modelling.

SAS software was used for advanced analytics, multivariate analyses, business intelligence, data management and predictive analytics.

For the remainder of this chapter, the discussion takes place under the following headings: Method of analysis, Data analysis and Discussion and conclusions.

The content of Chapter 4, along with the relative positioning of the various topics addressed therein, is graphically depicted in Figure 4.1 below.



**Figure 4.1: Detailed layout of Chapter 4 – Data analysis, results and discussion**

## **4.2 METHOD OF ANALYSIS**

### **4.2.1 Data validation and validation survey results**

When using a structured questionnaire, it is imperative to determine whether the measurements are valid and reliable (previously outlined in Chapter 3 above). Validity is concerned with whether what is measured is actually what is intended to be measured (Rose & Sullivan, 1996). Joppe (2000:1) defines reliability as:

The extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable.

For this study, only content- and construct validity are clarified. Content validity is concerned with the representativeness or sampling adequacy of the content (e.g. topic or items) of a measuring instrument (De Vos, 2002). Construct validity refers to the extent to which a

measuring instrument can be shown to measure a particular hypothetical construct (Strauss & Smith, 2009). Construct validation can only be taken to the point at which the questionnaire measures what it is intended to measure and should only be addressed in the planning phases of the survey and when it is constructed. The questionnaire used within this research study measured the operational risk factors that influence the sustainability of manufacturing SMEs in the Cape Metropole.

A descriptive analysis of the survey results is reflected upon below. The responses obtained from the survey are indicated in table format for ease of reference. Each variable was tested to ensure that it falls within the required boundaries. Data validation refers to the process of ensuring that an analytical program operates on clean, correct and useful data (Arkady, 2007).

#### **4.2.2 Data format**

The data was captured in a Microsoft Excel spreadsheet by the researcher and then imported into SAS through the SAS ACCESS module. The two data sets were compared to ensure no capturing mistakes had occurred, which is a validation process to confirm that the data is correct. Appendix E below provides the naming conventions of the variables (statements/questions) for the questionnaire used in this research study.

The following scales, with their associated coding, were used for the original data set:

##### **Scale 1** (categorical [dichotomous] scale):

- “Yes” is coded as 1.
- “No” is coded as 2.

##### **Scale 2** (categorical scale):

- “Owner” is coded as 1.
- “Manager” is coded as 2.
- “Owner and Manager” is coded as 3.

##### **Scale 3** (categorical scale):

- “Micro” is coded as 1 – 10.
- “Small” is coded as 11 – 50.
- “Medium” is coded as 51 – 250.

##### **Scale 4** (categorical scale):

- “Clothing and textiles” is coded as 1.

- “Wood” is coded as 2.
- “Leather” is coded as 3.
- “Paper” is coded as 4.
- “Chemicals” is coded as 5.
- “Plastic” is coded as 6.
- “Electronics” is coded as 7.
- “Computers” is coded as 8.
- “Transportation” is coded as 9.
- “Food production” is coded as 10.
- “Metal” is coded as 11.
- “Petroleum” is coded as 12.
- “Other” is coded as 13.

**Scale 5** (categorical scale):

- “Lower than Grade 12” is coded as 1.
- “Grade12/Senior Certificate/Matric” is coded as 2.
- “National Higher Certificate/Higher Certificate/National Certificate” is coded as 3.
- “Higher Diploma/Diploma/National Diploma” is coded as 4.
- “Bachelor’s Degree/Advanced Degree” is coded as 5.
- “Honours Degree/Postgraduate diploma” is coded as 6.
- “Master’s Degree” is coded as 7.
- “Doctoral Degree” is coded as 8.

**Scale 6** (categorical scale):

- “Cash sales only” is coded as 1.
- “Credit sales only” is coded as 2.
- “Cash sales and credit sales” is coded as 3.

**Scale 7** (Likert scale):

- “Strongly disagree” is coded as 1.
- “Disagree” is coded as 2.
- “Neither agree nor disagree” is coded as 3.
- “Agree” is coded as 4.
- “Strongly agree” is coded as 5.

**Scale 8** (Likert scale):

- “Very good” is coded as 1.
- “Good” is coded as 2.
- “Unsure” is coded as 3.
- “Bad” is coded as 4.
- “Very bad” is coded as 5.

**Scale 9** (Likert scale):

- “Very much” is coded as 1.
- “Much” is coded as 2.
- “Average” is coded as 3.
- “Little” is coded as 4.
- “Very little” is coded as 5.

**Scale 10** (categorical [dichotomous] scale):

- “Selected” is coded as 1.
- “Not selected” is coded as 2.

For use during the analysis and interpretation of data, it is important to note that the coding was performed in accordance with the references provided in the questionnaire.

#### **4.2.3 Preliminary analysis**

Reliability testing was conducted on the variables (statements) within the questionnaire and are discussed in Section 4.3.1 below. Descriptive statistics were performed on all the variables, displaying means, standard deviations, frequencies, percentages, cumulative frequencies and cumulative percentages. These descriptive statistics are discussed in Section 4.3.2 below (refer to Appendix C for detailed analysis and results).

#### **4.2.4 Inferential statistics**

The following inferential statistics were performed on the data:

- ***Chi-square goodness-of-fit test:*** a non-parametric test that is used to compare the observed sample distribution with the expected probability distribution. A Chi-square goodness-of-fit test determines how well theoretical distribution (such as normal, binomial or Poisson) fits the empirical distribution.



- **Chi-square test:** a test to determine the association between biographical variables. Cross-tabulation and Chi-square-based measures of association, a technique for comparing two or more classification variables, were used. These tables were constructed for statistical testing and are referred to as contingency tables. Statistical tests determine whether the classification variables are dependent. Percentages were used for two reasons, namely: 1) to simplify analysis by reducing all numbers to a range of 0 to 100 and 2) to translate the data into a standard form, with a base of 100, for relative comparisons. The Chi-square (two-sample) test is one of the most widely used nonparametric tests of significance for tests involving nominal data. These tests can be used for higher scales, as well as for cases in which persons, events or objects are grouped in two or more nominal categories, e.g. 'yes-no' or cases A, B, C or D. This technique is used to test for significant differences between the observed distribution of data among categories and the expected distribution, based on the null hypothesis. The results must be calculated with actual counts rather than percentages (Cooper & Schindler, 2001).
- **Cronbach Alpha test:** Cronbach's Alpha is an index of reliability associated with the variation accounted for by the true score of the "underlying construct". Constructs refer to the hypothetical variables that are being measured (Cooper & Schindler, 2001). Thus, Cronbach's Alpha measures how accurately a set of items (or variables) measures a single unidimensional latent construct.
- **Kruskal-Wallis test:** a test used for interval data with more than two independent samples. The Kruskal-Wallis one-way analysis of variance by ranks is a non-parametric method for testing the equality of population medians among groups. Intuitively, it is identical to a one-way analysis of variance with the data replaced by their ranks. It extends the Mann-Whitney U test (Wilcoxon two-sample test), which compares two groups to three or more groups. Since it is a non-parametric method, the Kruskal-Wallis test does not assume a normal population, unlike the analogous one-way analysis of variance. However, the test assumes an identically shaped and scaled distribution for each group, except for any difference in medians. **[Do you need to give the source of this information as you have done for the two previous tests?]**

#### 4.2.5 Technical report with graphical displays

A written report containing explanations of all the variables and their outcomes was compiled. A cross-analysis of variables (where necessary) was performed, attaching statistical

probabilities to indicate the magnitude of differences or associations. All inferential statistics are discussed in Section 4.3.3 below.

### 4.3 DATA ANALYSIS

In total, 85 questionnaires were completed by the selected owners and/or managers of manufacturing SMEs operating in the Cape Metropole, South Africa. Since the Small Enterprise Development Agency (SEDA) could not indicate the actual size of the target populations, it was difficult to draw a representative sample from the target population. Thus, the realisation of the sample could not be calculated.

#### 4.3.1 Reliability of the research instrument

Reliability tests (Cronbach's Alpha Coefficient) were conducted on all the statements contained within the survey, which measure the operational risk factors that influence the sustainability of manufacturing SMEs in the Cape Metropole.

All the variables (statements) with a Likert scale or rating scale were subjected to a Cronbach's Alpha test for the different dimensions (sections) in the questionnaire. Section D13 consisted of different aspects/dimensions of the operational risk that negatively influences the attainment of business objectives. Consequently, Cronbach's Alpha Coefficients were also calculated for these different aspects. It should be noted that many items entered into the Cronbach's Alpha test would yield a high alpha value and that these items are highly correlated. A summary of the results are shown in Tables 4.1 and 4.2 below. The computer printouts for each of the tests are shown in Appendix B at the end of this research report.

**Table 4.1: Cronbach's Alpha Coefficients for Section A – D in the survey**

No.	Section	Variables entered	Raw Cronbach's Alpha Coefficient	Standardised Cronbach's Alpha Coefficient
1.	Section B: Business sustainability	B09_01 to B09_16	0.9336	0.9408
2.	Section C: General risk	C11_01 to C11_24	0.9715	0.9719
3.	Section D: Operational risk negatively influences the attainment of business objectives	D13_01 to D13_43	0.9737	0.9769
4.	Section D: Operational risks encountered in the business	D15_01 to D15_15	0.9453	0.9494
5.	Section D: Aspects of operational risks	D17_01 to D17_04	0.8922	0.9033

**Table 4.2: Cronbach's Alpha Coefficients for the sub-sections of D13**

No.	Section	Variables entered	Raw Cronbach's Alpha Coefficient	Standardised Cronbach's Alpha Coefficient
1.	Execution, delivery, and process management inaccuracies	D13_01 to D13_06	0.8906	0.8936
2.	Internal fraud	D13_07 to D13_17	0.9090	0.9023
3.	Employment practices and workplace safety	D13_18 to D13_23	0.8981	0.9052
4.	Damage to physical assets	D13_24 to D13_29	0.8527	0.8637
5.	Clients, products and business practice abuses	D13_30 to D13_33	0.8590	0.8762
6.	Business disruption and system malfunction	D13_34 to D13_38	0.9101	0.9182
7.	External fraud	D13_39 to D13_43	0.8933	0.9109

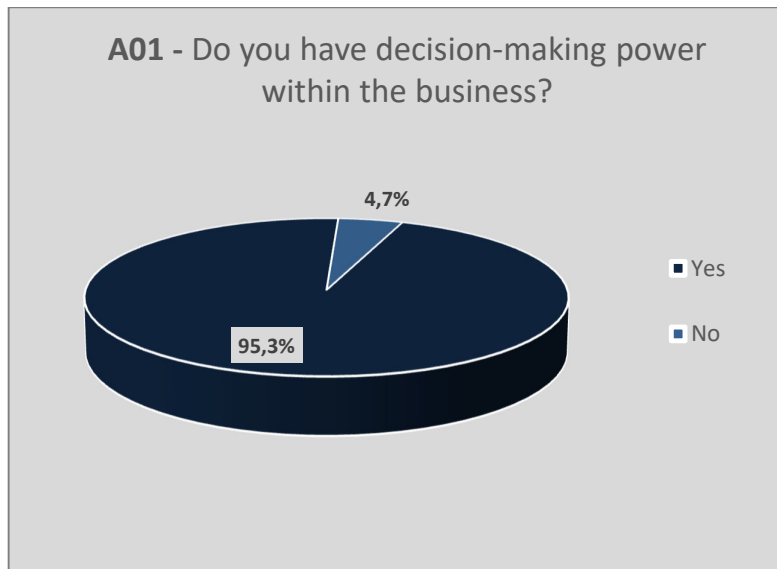
In the printouts (see Appendix B below) results show the correlation between the respective item (statement) and the total sum score (without the respective item), as well as the internal consistency of the scale (coefficient alpha) if the respective item was to be deleted. All the items (variables) for each section proved reliable and consistent because the Cronbach's Alpha Coefficients have values above 0.70, which is an acceptable level, according to Nunnally (1978).

#### **4.3.2 Descriptive statistics**

This section includes graphs and a discussion of the descriptive statistics for all the variables in the questionnaire, based upon the total sample of the survey. If no answer was given for a statement, it was indicated as "unknown" in the descriptive statistics. Summary tables delineating the frequencies in each category and the percentage out of the total number of questionnaires completed, as well as the number of respondents, means, standard deviation, median, minimum/maximum rates and the range of values for all the continuous and ordinal variables are displayed in Appendix C below.

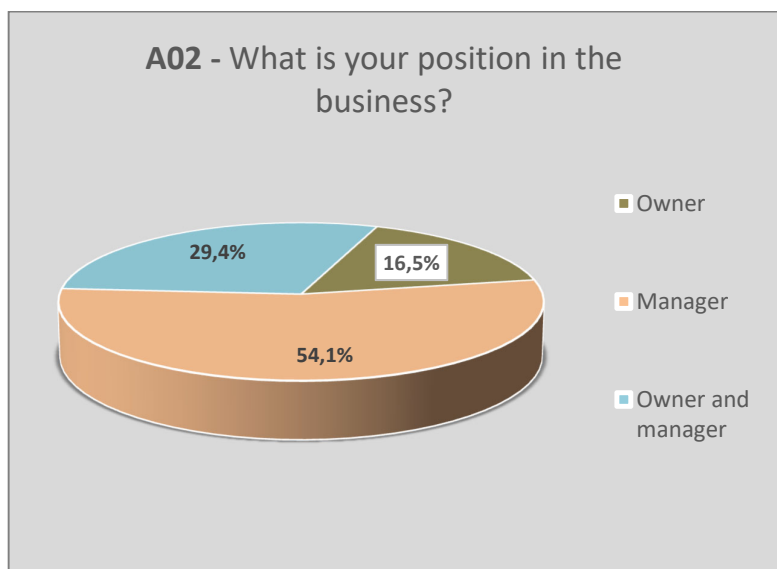
Central tendency was calculated for continuous- and ordinal variables. Tables containing means and standard deviations can be found in Appendix C below.

**4.3.2.1 Descriptive statistics: Categorical demographic variables**



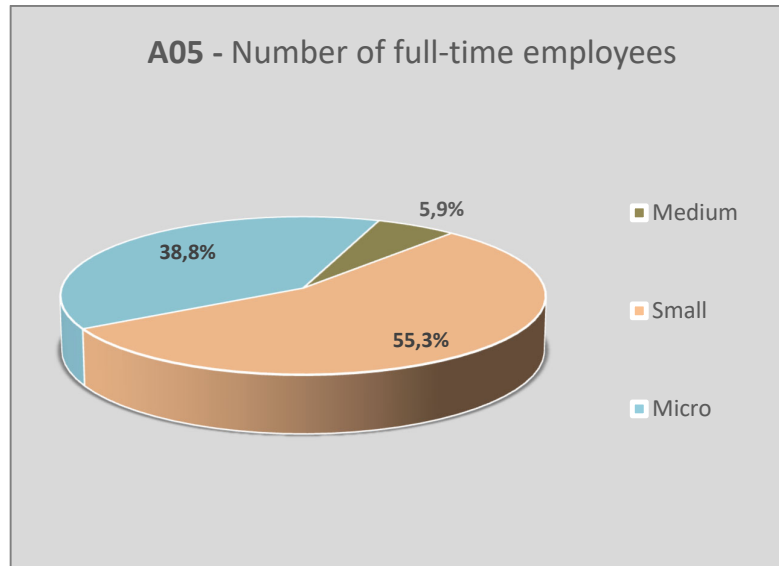
**Figure 4.2: Pie chart for Question A01 (Section A, Question 1) reflecting the decision-making power of respondents within the business**

Most of the respondents (95.3%) had decision-making power within their respective manufacturing businesses. The goodness-of-fit test shows that statistically significant more respondents have decision-making power within their business than those who do not have such power (see Figure 4.2 above).



**Figure 4.3: Pie chart for Question A02 (Section A, Question 2) reflecting the position distribution of respondents**

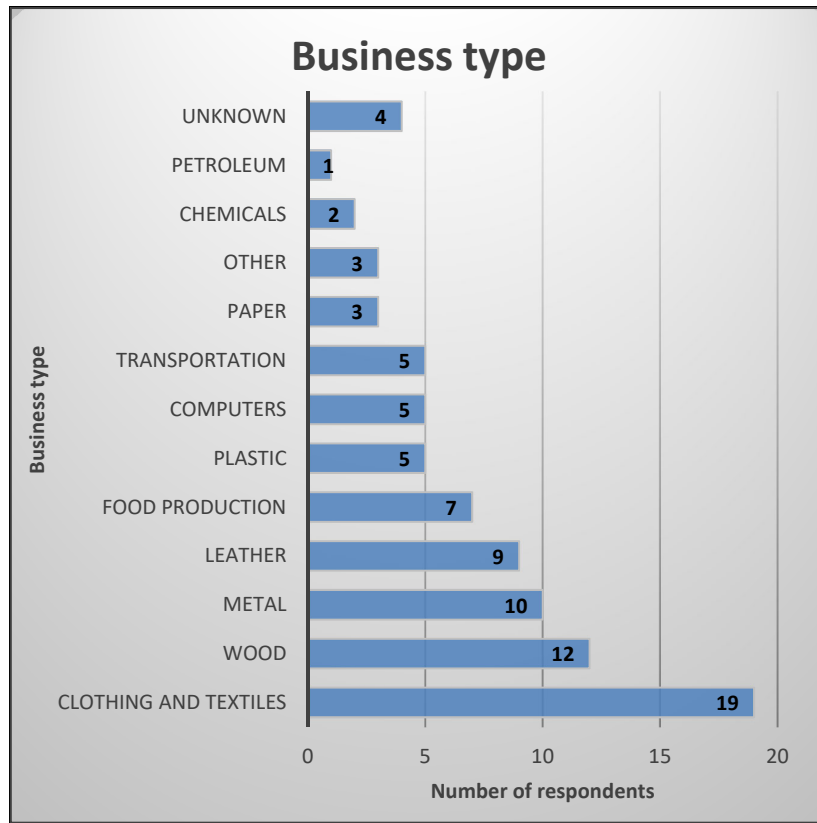
As graphically depicted in Figure 4.3 above, 16.5% of the respondents acted as the owner of their manufacturing business, 54.1% acted as the business manager, and 29.4% acted as both the owner and manager of the business. Statistically significant more respondents were acting as managers compared to those who acted as owner or both the owner and manager of the business.



**Figure 4.4: Pie chart for Question A05 (Section A, Question 5) showing the number of full-time employees within the business**

The manufacturing businesses targeted in this research study employed, on average, 21 full-time employees with a standard deviation of 24. The number of full-time employees was treated as a continuous variable. According to the South African Small Enterprise Act (South Africa, 2019), the size of an enterprise is determined (in conjunction with other factors) by the number of full-time personnel the business employs.

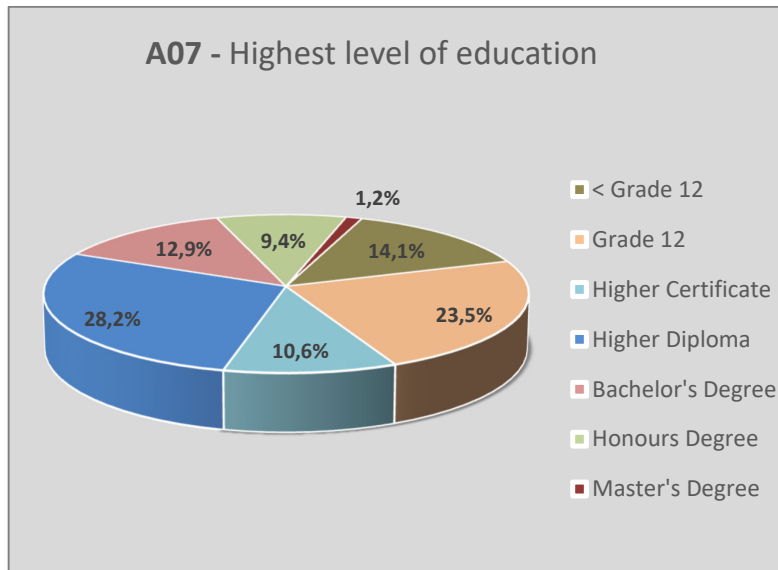
Based on the data gathered from the completed questionnaires, 38.8% of the respondents' businesses fell under micro-enterprises, 55.3% fell under small enterprises and the remaining 5.9% were medium enterprises (see Figure 4.4 above). (Later in this chapter, these size classifications will be used for comparative analysis.) The goodness-of-fit test also shows that statistically significant more respondents work for micro- and small enterprises than those who work for medium-sized enterprises.



**Figure 4.5: Bar chart for Question A06 (Section A, Question 6) showing the business type distribution**

Figure 4.5 above shows that 22.4% of the respondents who completed the survey acted as the owner and/or manager of a clothing and textile business, followed by 14.1% in wood businesses and 11.8% in metal businesses. The smallest number of respondents operate paper businesses (3.5%), chemical businesses (2.4%) and petroleum businesses (1.2%). A total of 4.7% of the respondents did not respond to this question and, thus, their type of business was indicated as “unknown”. Three of the respondents who selected “other” to indicate their business type described their business as packaging, paint and pottery businesses respectively.

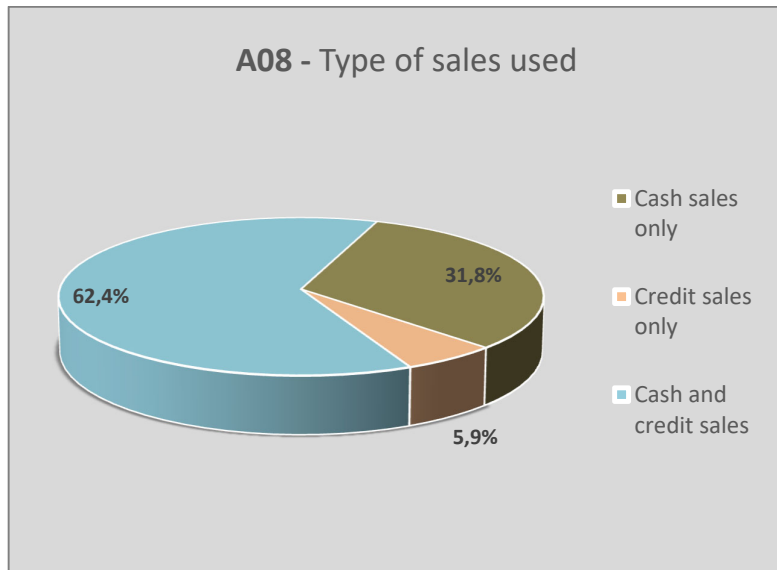
The results of the goodness-of fit-test show that the various types of businesses were not equally distributed amongst the survey participants.



**Figure 4.6: Pie chart for Question A07 (Section A, Question 7) reflecting the highest education level distribution**

As graphically depicted in Figure 4.6 above, 14.1% of the respondents' highest level of education was lower than Grade 12, while the other respondents had the following qualifications: 23.5% – Grade 12/Senior Certificate/Matric, 10.6% – National Higher Certificate/Higher Certificate/National Certificate, 28.2% – Diploma/Higher Diploma/National Diploma, 12.9% – Bachelor's Degree/Advanced Degree, 9.4% – Honours Degree/Postgraduate Diploma and 1.2% – Master's Degree.

The above statistics indicate that the respondents were not equally distributed in terms of their highest level of education.



**Figure 4.7: Pie chart for Question A08 (Section A, Question 8) reflecting the type of sales distribution**

In total, 31.8% of the respondents' businesses made use of cash sales only, 5.9% made exclusive use of credit sales while and 62.4% used both cash and credit sales. The respondents were not equally distributed over the types of sales groups utilized (see Figure 4.7 above).

#### 4.3.2.2 Descriptive statistics: Continuous demographic variables

Question A03 (Section A, Question 3): The respondents had been in their positions for an average of 9.2 years with a standard deviation of 5.8 (see Appendix A below).

Question A04 (Section A, Question 4): The respondents' businesses had been in existence for an average of 15.4 years, with a standard deviation of 10.5 years. These results are in sharp contrast with reviewed existing literature, which states that most South African SMEs fail within their first three years of existence, because the majority of SMEs that participated in this research study have survived for more than the stipulated period without implementing ORM. No studies could be found that substantiate why SMEs can survive for lengthy periods despite grossly neglecting ORM. The researcher believes that this anomaly could be attributed to SMEs receiving little or no attention from researchers in the area of sustainability due to their size (Revell, Stokes & Chen, 2009; Bos-Brouwers, 2010; Williams & Schaefer, 2013; Horisch, Johnson, & Schaltegger, 2015). Therefore, the researcher recommends that more research should be conducted to ascertain whether the result of this study is unique or if there are unknown reasons why these particular SMEs have remained operational for so long a period despite having neglected ORM.



4.3.2.3 Descriptive statistics: Measuring variables

For the Likert scaled variables (B9, C11, D13 and D15), a score was calculated for each of the statements by weighing “strongly disagree” with the lowest weight and “strongly agree” with the highest weight. The sum of these scores was then ranked from the lowest (the respondent disagrees more with a statement) to the highest (the respondent agrees more with a statement) and presented graphically. For the Likert scaled variable D17, where “very much” has the lowest value and “very little” has the highest value, the result implies that the higher the score calculated, the less the organisation is affected by a particular risk or loss, and the lower the score, the more the organisation is affected by that risk or loss.

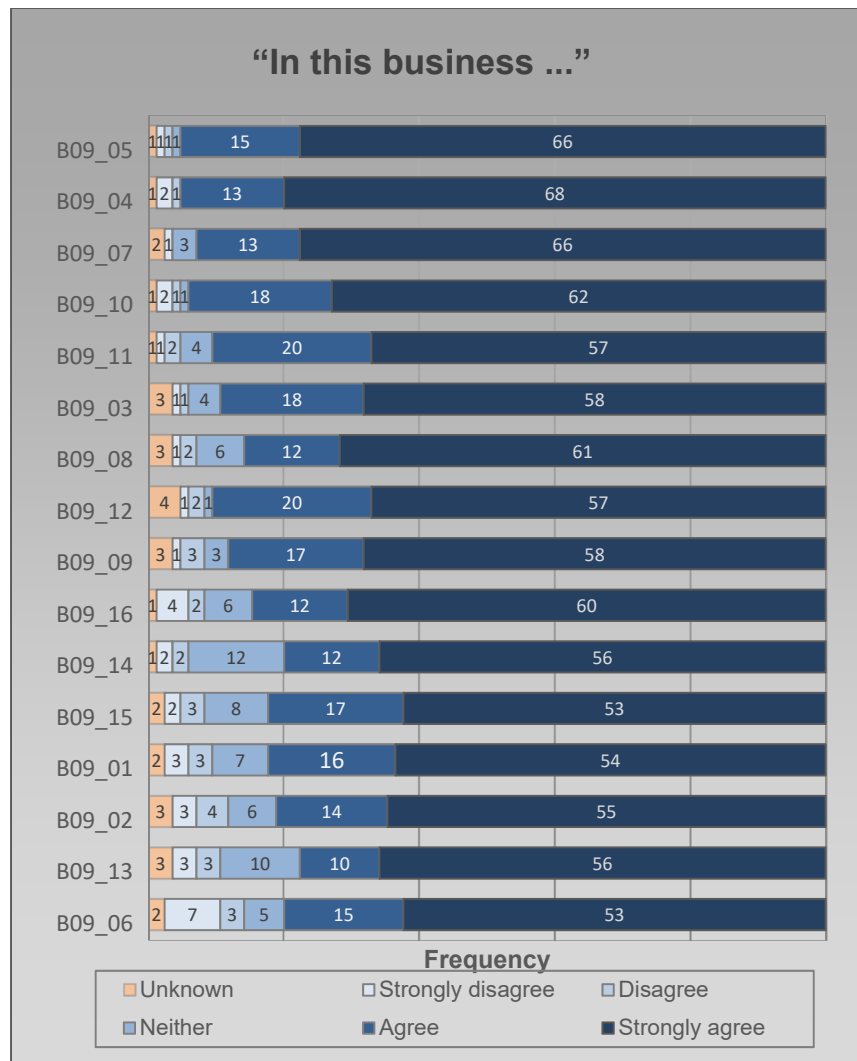


Figure 4.8: Bar Chart for Question B09 (Section B, Question 9) showing the business situation distribution

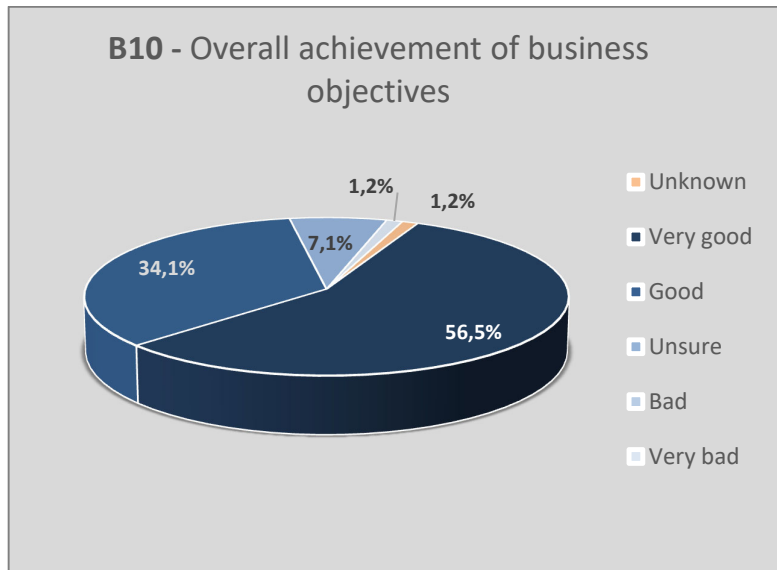
With regard to the business situation of respondents' businesses (see Figure 4.8 above), the respondents mainly strongly agreed with all the statements provided in Question 9 of the survey (see Appendix A below). The results of the frequency distributions are as follows:

- Question B09 (Section B, Question 9.5): Good relationships are maintained with suppliers (77.7% of respondents strongly agree, 17.7% agree, 1.2% neither agree nor disagree, 1.2% disagree and 1.2% strongly disagree).
- Question B09 (Section B, Question 9.4): Good relationships are maintained with customers (80.0% of respondents strongly agree, 15.3% agree, 0.0% neither agree nor disagree, 1.2% disagree and 2.4% strongly disagree).
- Question B09 (Section B, Question 9.7): Customer loyalty is strived towards (77.7% of respondents strongly agree, 15.3% agree, 3.5% neither agree nor disagree, 0.0% disagree and 2.4% strongly disagree).
- Question B09 (Section B, Question 9.10): Employees are competent (72.9% of respondents strongly agree, 21.2% agree, 1.2% neither agree nor disagree, 1.2% disagree and 2.4% strongly disagree).
- Question B09 (Section B, Question 9.11): Employees are trustworthy (67.1% of respondents strongly agree, 23.5% agree, 4.7% neither agree nor disagree, 2.4% disagree and 1.2% strongly disagree).
- Question B09 (Section B, Question 9.3): Assets are greater than liabilities (68.2% of respondents strongly agree, 21.2% agree, 4.7% neither agree nor disagree, 1.2% disagree and 1.2% strongly disagree).
- Question B09 (Section B, Question 9.8): Innovation is strived towards (71.8% of respondents strongly agree, 14.1% agree, 7.1% neither agree nor disagree, 2.4% disagree and 1.2% strongly disagree).
- Question B09 (Section B, Question 9.12): Integrity is strived towards (67.1% of respondents strongly agree, 23.5% agree, 1.2% neither agree nor disagree, 2.3% disagree and 1.2% strongly disagree).
- Question B09 (Section B, Question 9.9): Employees are self-motivated (68.2% of respondents strongly agree, 20.0% agree, 3.5% neither agree nor disagree, 3.5% disagree and 1.2% strongly disagree).
- Question B09 (Section B, Question 9.16): Paper is used sparingly (70.6% of respondents strongly agree, 14.1% agree, 7.1% neither agree nor disagree, 2.4% disagree and 4.7% strongly disagree).
- Question B09 (Section B, Question 9.14): Water is used sparingly (65.9% of respondents strongly agree, 14.1% agree, 14.1% neither agree nor disagree, 2.4% disagree and 2.4% strongly disagree).

- Question B09 (Section B, Question 9.15): Electricity is used sparingly (62.4% of respondents strongly agree, 20.0% agree, 9.4% neither agree nor disagree, 3.5% disagree and 2.4% strongly disagree).
- Question B09 (Section B, Question 9.1): Income is greater than expenses (63.5% of respondents strongly agree, 18.8% agree, 8.2% neither agree nor disagree, 3.5% disagree and 3.5% strongly disagree).
- Question B09 (Section B, Question 9.2): There is sufficient cash on hand (64.7% of respondents strongly agree, 16.5% agree, 7.1% neither agree nor disagree, 4.7% disagree and 3.5% strongly disagree).
- Question B09 (Section B, Question 9.13): We have a green footprint (environmentally friendly) (65.9% of respondents strongly agree, 11.8% agree, 11.8% neither agree nor disagree, 3.5% disagree and 3.5% strongly disagree).
- Question B09 (Section B, Question 9.6): Good relationships are maintained with competitors (62.4% of respondents strongly agree, 17.7% agree, 5.9% neither agree nor disagree, 3.5% disagree and 8.2% strongly disagree).

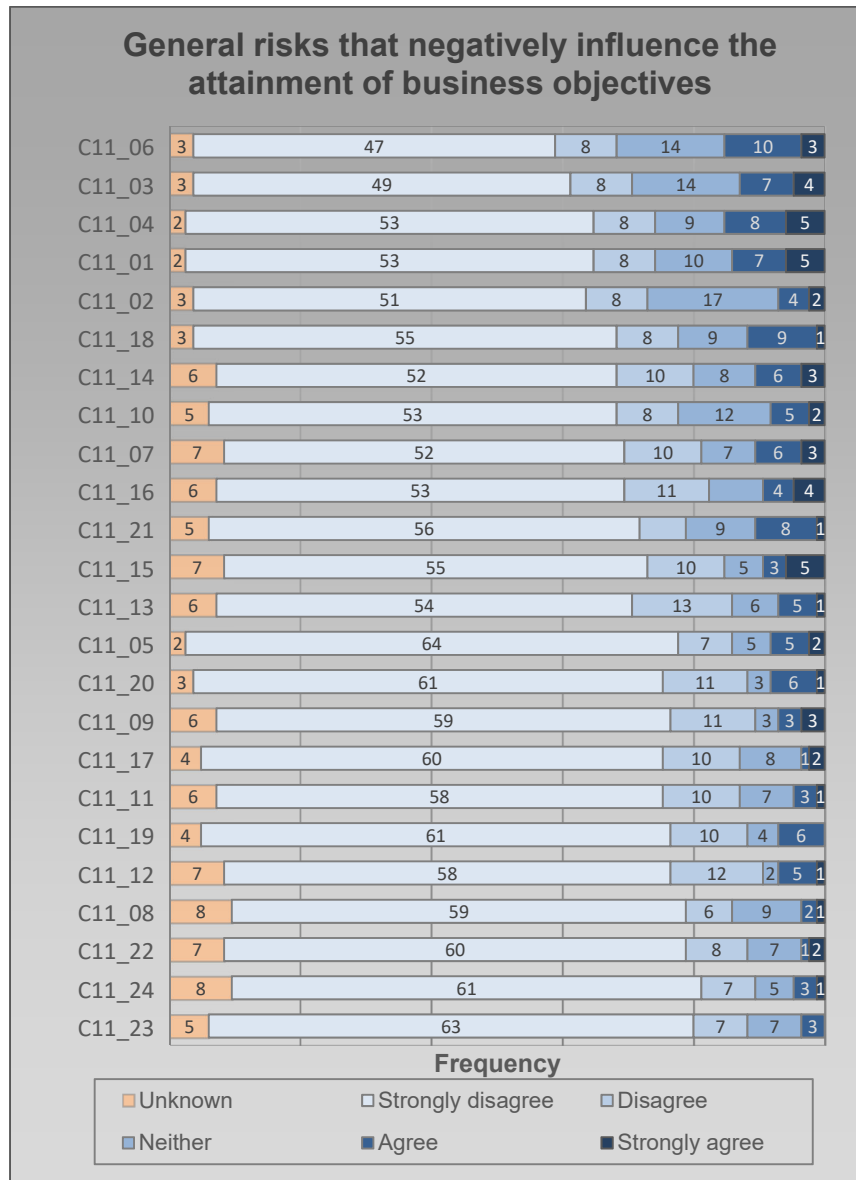
The goodness-of-fit test results (see Figure 4.8 above) depict that most of the participating manufacturing SMEs experience a high level of sustainability because statistically significant more respondents strongly agreed to the attainment of relevant economic objectives, social objectives and/or environmental objectives, which, in turn, should enable the business to remain in operation in future (Question 9). This fact means that the majority of respondents from the sampled SMEs perceived that they had accomplished their respective business objectives.

The above results are substantiated by Question 10, which relates to the overall achievement of business objectives, and ranges between good and very good (see Figure 4.9 below).



**Figure 4.9: Pie chart for Question B10 (Section B, Question 10) showing the overall achievement of business objectives distribution**

Figure 4.9 above shows the response distribution of Question 10 in Section B. A total of 56.5% of the respondents strongly agreed that their overall attainment of business objectives (in general) is very good while 34.1% indicated that it is good, which implies that most of the respondents are experiencing a high level of sustainability. This fact is in sharp contrast with the experience of most South African SMEs, the majority of which fail within their first three years of existence due to the harsh economic landscape in South Africa. Hence, it is extremely probable that respondents perceive their businesses to be 'doing well' in contrast to actual business performance. Furthermore, 7.1% of respondents indicated that they were unsure, and the remainder (1.2%) indicated that their overall attainment of business objectives was very modest. The respondents were not equally distributed over the responses.



**Figure 4.10: Bar chart for Question C11 (Section C, Question 11) showing the general risks that negatively influence the attainment of business objectives distribution**

In terms of the various general risks that negatively influence the attainment of business objectives (see Figure 4.10 above), the respondents mainly strongly disagreed with the 24 statements provided in Question 11. The results are as follow:

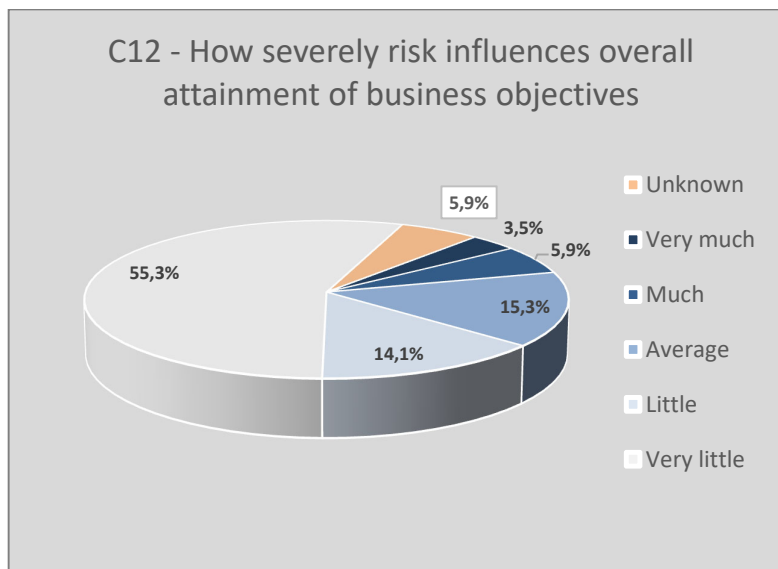
- Question C11 (Section C, Question 11.6): Competition (stemming from competitors) (3.5% of respondents strongly agree, 11.8% agree, 16.5% neither agree nor disagree, 9.4% disagree and 55.3% strongly disagree).

- Question C11 (Section C, Question 11.3): Relationship between management and/or employees (4.7% of respondents strongly agree, 8.2% agree, 16.5% neither agree nor disagree, 9.4% disagree and 57.7% strongly disagree).\*\*
- Question C11 (Section C, Question 11.4): Limited skills (competence) of employees (5.9% of respondents strongly agree, 9.4% agree, 10.6% neither agree nor disagree, 9.4% disagree and 62.4% strongly disagree).
- Question C11 (Section C, Question 11.1): Leadership style of management and/or supervisors (5.9% of respondents strongly agree, 8.2% agree, 11.8% neither agree nor disagree, 9.4% disagree and 62.4% strongly disagree).
- Question C11 (Section C, Question 11.2): Internal communication (e.g., interpersonal relationships, training materials, newsletters, and/or policies). (2.4% of respondents strongly agree, 4.7% agree, 20.0% neither agree nor disagree, 9.4% disagree and 60.0% strongly disagree).
- Question C11 (Section C, Question 11.18): Delays in supply chains (1.2% strongly agree, 10.6% agree, 10.6% neither agree nor disagree, 9.4% disagree, and 64.7% strongly disagree).
- Question C11 (Section C, Question 11.14): Frequent changes in customer needs. (3.5% of respondents strongly agree, 7.1% agree, 9.4% neither agree nor disagree, 11.8% disagree and 61.2% strongly disagree).
- Question C11 (Section C, Question 11.10): Limited open-mindedness of employees to embrace innovation (2.4% of respondents strongly agree, 5.9% agree, 14.1% neither agree nor disagree, 9.4% disagree and 62.4% strongly disagree).
- Question C11 (Section C, Question 11.7): Fluctuating interest rates (3.5% of respondents strongly agree, 7.1% agree, 8.2% neither agree nor disagree, 11.8% disagree and 61.2% strongly disagree).
- Question C11 (Section C, Question 11.16): Too strict government regulations (e.g., employment, health, and safety, etc.) (4.7% of respondents strongly agree, 4.7% agree, 8.2% neither agree nor disagree, 12.9% disagree and 62.4% strongly disagree).
- Question C11 (Section C, Question 11.21): Substitute products and/or services (1.2% of respondents strongly agree, 9.4% agree, 10.6% neither agree nor disagree, 7.1% disagree and 65.9% strongly disagree).
- Question C11 (Section C, Question 11.15): Limited demand for products and/or services (5.9% of respondents strongly agree, 3.5% agree, 5.9% neither agree nor disagree, 11.8% disagree and 64.7% strongly disagree).

- Question C11 (Section C, Question 11.13): Weak employee productivity (1.2% of respondents strongly agree, 5.9% agree, 7.1% neither agree nor disagree, 15.3% disagree and 63.5% strongly disagree).
- Question C11 (Section C, Question 11.5): Political disruptions such as protests (2.4% of respondents strongly agree, 5.9% agree, 5.9% neither agree nor disagree, 8.2% disagree and 75.3% strongly disagree).
- Question C11 (Section C, Question 11.20): Loss of skilled (competent) employees (1.2% of respondents strongly agree, 7.1% agree, 3.5% neither agree nor disagree, 12.9% disagree and 71.8% strongly disagree).
- Question C11 (Section C, Question 11.9): Negative publicity (reputation) (3.5% of respondents strongly agree, 3.5% agree, 3.5% neither agree nor disagree, 12.9% disagree and 69.4% strongly disagree).
- Question C11 (Section C, Question 11.17): Too strict internal policies and/or procedures (2.4% of respondents strongly agree, 1.2% agree, 9.4% neither agree nor disagree, 11.8% disagree and 70.6% strongly disagree).
- Question C11 (Section C, Question 11.11): Weak employee morale (1.2% of respondents strongly agree, 3.5% agree, 8.2% neither agree nor disagree, 11.8% disagree and 68.2% strongly disagree).
- Question C11 (Section C, Question 11.19): Loss of experienced employees (0.0% of respondents strongly agree, 7.1% agree, 4.7% neither agree nor disagree, 11.8% disagree and 71.8% strongly disagree).
- Question C11 (Section C, Question 11.12): Faulty information technology (IT) systems (1.2% of respondents strongly agree, 5.9% agree, 2.4% neither agree nor disagree, 14.1% disagree and 68.2% strongly disagree).
- Question C11 (Section C, Question 11.8): Unrealistic revenue targets (1.2% of respondents strongly agree, 2.4% agree, 10.6% neither agree nor disagree, 7.1% disagree and 69.4% strongly disagree).
- Question C11 (Section C, Question 11.22): Limited creditworthiness of customers (2.4% of respondents strongly agree, 1.2% agree, 8.2% neither agree nor disagree, 9.4% disagree and 70.6% strongly disagree).
- Question C11 (Section C, Question 11.24): Unethical behaviour by customers (1.2% of respondents strongly agree, 3.5% agree, 5.9% neither agree nor disagree, 8.2% disagree and 71.8% strongly disagree).
- Question C11 (Section C, Question 11.23): Unethical behaviour by employees (0.0% of respondents strongly agree, 3.5% agree, 8.2% neither agree nor disagree, 8.2% disagree and 74.1% strongly disagree).

In Figure 4.10 above, the goodness-of-fit test indicated that statistically significant more respondents strongly disagreed compared to with respondents who strongly agreed, agreed, neither agreed nor disagreed and/or disagreed with all the statements showing the various general risks which negatively influence the overall achievement of business objectives. This result implies that manufacturing SMEs face numerous risks, of which limited skills, the leadership style of management and/or supervisors and limited demand for products and/or services are amongst the top three risks that negatively influence the participating SMEs' attainment of their business objectives.

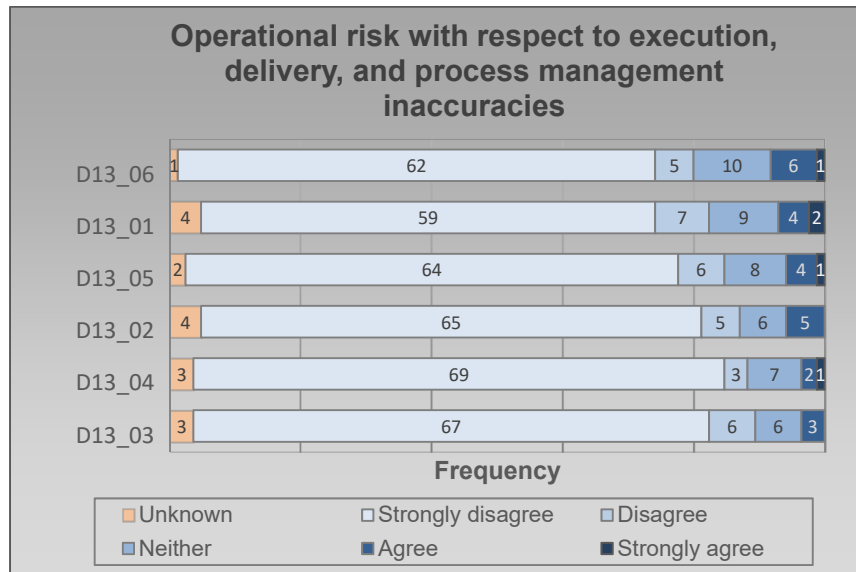
The results delineated in Figure 4.11 below substantiate the participants' responses to the next statement (Question 12) which mostly indicated that the various risks that influence the overall attainment of business objectives have little or very little effect within their businesses.



**Figure 4.1: Pie chart for Question C12 (Section C, Question 12) showing the severity of risks in influencing the overall attainment of business objectives distribution**

Figure 4.11 above graphically depicts that all the listed general risks had little negative influence on the participating SMEs' overall attainment of business objectives. This result is supported by the fact that 55.3% of the respondents indicated that they had been affected very little by these risks, and 14.1% indicated little influence with a mean score of 1.42. However, some respondents indicated their businesses had been affected much and very much, which reflects the influence of these risks on the majority of South African SMEs given the harsh economic landscape of the country. The respondents were not equally distributed in terms of their responses.





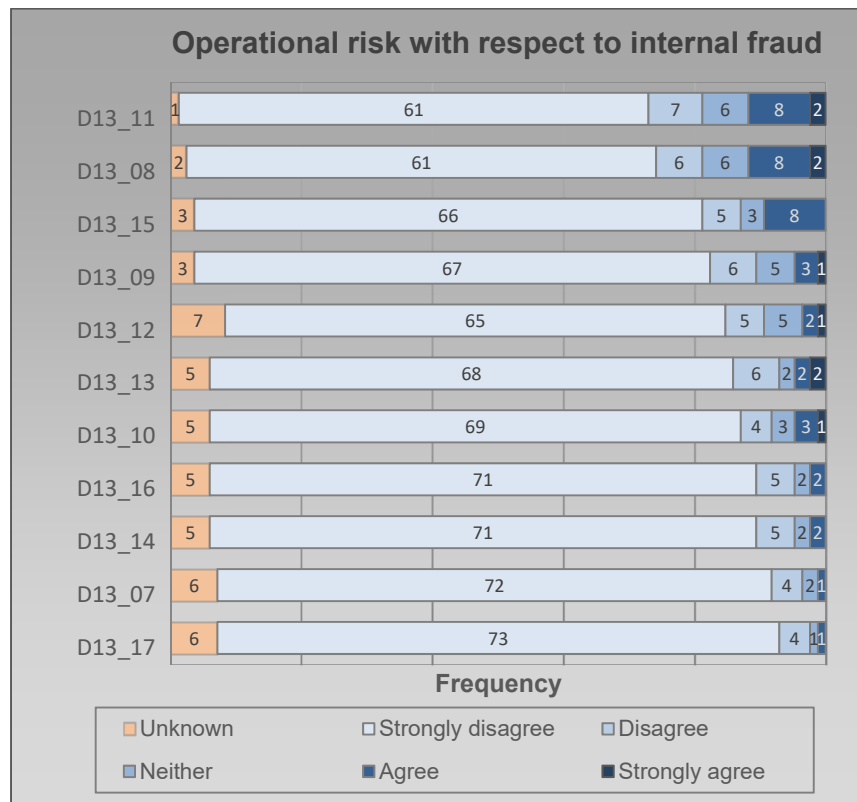
**Figure 4.2: Bar chart for Questions D13\_01 to D13\_06 (Section D, Questions 13.1 – 13.6)**

For operational risk with respect to execution, delivery and process management inaccuracies that negatively influence the attainment of business objectives, the respondents mainly strongly disagreed with all the statements (see Figure 4.12 above). The results obtained are as follow:

- Question D13 (Section D, Question 13.6): Delivery failure (1.2% of respondents strongly agree, 7.1% agree, 1.8% neither agree nor disagree, 5.9% disagree and 72.9% strongly disagree).
- Question D13 (Section D, Question 13.1): Data entry errors (2.4% of respondents strongly agree, 4.7% agree, 10.6% neither agree nor disagree, 8.2% disagree and 69.4% strongly disagree).
- Question D13 (Section D, Question 13.5): Vendor disputes (1.2% of respondents strongly agree, 4.7% agree, 9.4% neither agree nor disagree, 7.1% disagree and 75.3% strongly disagree).
- Question D13 (Section D, Question 13.2): Settlement-processing errors (0.0% of respondents strongly agree, 5.9% agree, 7.1% neither agree nor disagree, 5.9% disagree and 76.5% strongly disagree).
- Question D13 (Section D, Question 13.4): Incomplete legal documentation (1.2% of respondents strongly agree, 2.4% agree, 8.2% neither agree nor disagree, 3.5% disagree and 81.2% strongly disagree).

- Question D13 (Section D, Question 13.3): Collateral management failures (0.0% of respondents strongly agree, 3.5% agree, 7.1% neither agree nor disagree, 7.1% disagree and 78.8% strongly disagree).

The goodness-of-fit test indicated that statistically significant more respondents strongly disagreed with experiencing risks that pertain to execution, delivery and process management inaccuracies (Figure 4.12), which negatively influence the attainment of business objectives. This result implies that these businesses are able to attain their business objectives because they strongly disagreed that they had encountered risks that usually hinder the attainment of business objectives. Only 2.4% of the respondents indicated that data entry errors adversely influence their businesses – this result is supported by the mean score of 1.47.



**Figure 4.13: Bar chart for Questions D13\_07 to D13\_17 (Section D, Questions 13.7 – 13.17)**

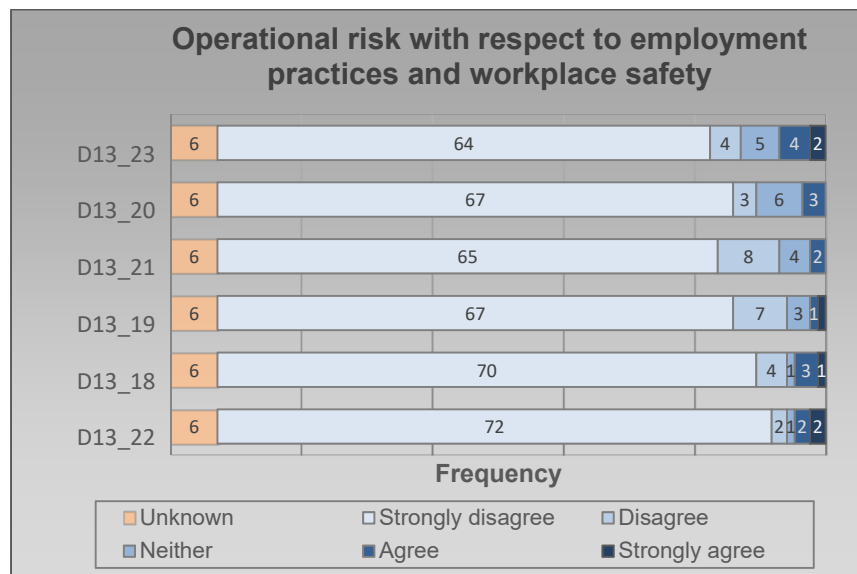
For operational risk, with respect to internal fraud, which negatively influences the attainment of business objectives, the respondents mainly strongly disagreed with all the statements (see Figure 4.13 above). The results obtained are as follow:

- Question D13 (Section D, Question 13.11): Robbery (2.4% strongly agree, 9.4% of respondents agree, 7.1% neither agree nor disagree, 8.2% disagree and 71.8% strongly disagree).
- Question D13 (Section D, Question 13.8): Employee theft (2.4% strongly agree, 9.4% of respondents agree, 7.1% neither agree nor disagree, 7.1% disagree and 71.8% strongly disagree).
- Question D13 (Section D, Question 13.15): Unauthorised activity (0.0% of respondents strongly agree, 9.4% agree, 3.5% neither agree nor disagree, 5.9% disagree and 77.7% strongly disagree).
- Question D13 (Section D, Question 13.9): Smuggling (1.2% of respondents strongly agree, 3.55% agree, 5.9% neither agree nor disagree, 7.1% disagree and 78.8% strongly disagree).
- Question D13 (Section D, Question 13.12): Forgery (1.2% of respondents strongly agree, 2.4% agree, 5.9% neither agree nor disagree, 5.9% disagree and 76.5% strongly disagree).
- Question D13 (Section D, Question 13.13): Computer hacking (2.4% of respondents strongly agree, 2.4% agree, 2.4% neither agree nor disagree, 7.1% disagree and 80.0% strongly disagree).
- Question D13 (Section D, Question 13.10): External fraud (1.2% of respondents strongly agree, 3.5% agree, 3.5% neither agree nor disagree, 4.7% disagree and 81.2% strongly disagree).
- Question D13 (Section D, Question 13.16): Check kitting (0.0% of respondents strongly agree, 2.4% agree, 2.4% neither agree nor disagree, 5.9% disagree and 83.5% strongly disagree).
- Question D13 (Section D, Question 13.14): Bribes/Kickbacks (0.0% of respondents strongly agree, 2.4% agree, 2.4% neither agree nor disagree, 5.9% disagree and 83.5% strongly disagree).
- Question D13 (Section D, Question 13.7): Intentional misreporting of positions (0.0% of respondents strongly agree, 1.2% agree, 2.4% neither agree nor disagree, 4.7% disagree and 84.7% strongly disagree).
- Question D13 (Section D, Question 13.17): Embezzlement (0.0% of respondents strongly agree, 1.2% agree, 1.2% neither agree nor disagree, 4.7% disagree and 85.9% strongly disagree).

The goodness-of-fit test indicated that statistically significant more respondents strongly disagreed than those who strongly agreed, agreed, neither agreed nor disagreed or disagreed

with all the statements indicating operational risk concerning internal fraud, which negatively influence the attainment of business objectives.

Based on the above results, it is evident that the participating SMEs have some form of structure that safeguards their businesses from internal fraud risks, despite the majority of them not implementing ORM. The top five internal fraud risks highlighted include 1) robbery (mean score of 1.5), 2) employee theft (mean score of 1.5), 3) unauthorised activity (mean score of 1.4), 4) smuggling (mean score of 1.3) and 5) forgery (mean score of 1). Thus, the inference could be made that these SMEs are not affected by internal fraud risk.



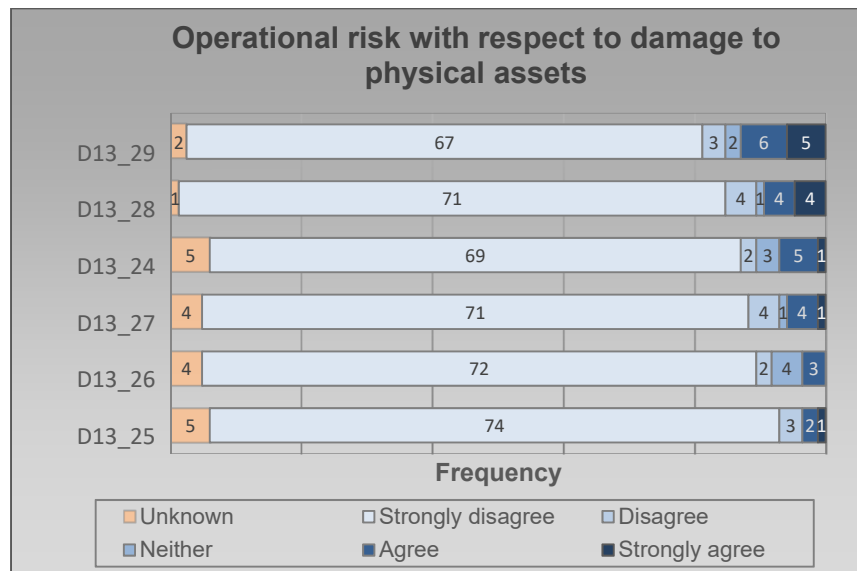
**Figure 4.3: Bar chart for Questions D13\_18 to D13\_23 (Section D, Questions 13.8 – 13.23)**

For operational risk with respect to employment practices and workplace safety, which negatively influences the attainment of business objectives, the respondents mainly strongly disagreed with all the statements (see Figure 4.14 above). The results obtained are as follow:

- Question D13 (Section D, Question 13.23): Duplication of work when correcting human errors (2.4% of respondents strongly agree, 4.7% agree, 5.9% neither agree nor disagree, 4.7% disagree and 75.3% strongly disagree).
- Question D13 (Section D, Question 13.20): Other personnel costs (0.0% of respondents strongly agree, 3.5% agree, 7.1% neither agree nor disagree, 3.5% disagree and 78.8% strongly disagree).

- Question D13 (Section D, Question 13.21): Losses arising from poorly trained staff and agents (0.0% of respondents strongly agree, 20.4% agree, 4.7% neither agree nor disagree, 9.4% disagree and 76.5% strongly disagree).
- Question D13 (Section D, Question 13.19): Harassment and discrimination claims (1.2% of respondents strongly agree, 1.2% agree, 3.5% neither agree nor disagree, 8.2% disagree and 78.8% strongly disagree).
- Question D13 (Section D, Question 13.18): Workers compensation claims (1.2% of respondents strongly agree, 3.5% agree, 1.2% neither agree nor disagree, 4.7% disagree and 82.4% strongly disagree).
- Question D13 (Section D, Question 13.22): Higher overtime payments due to poor job allocation (2.4% of respondents strongly agree, 2.4% agree, 1.2% neither agree nor disagree, 2.4% disagree and 84.7% strongly disagree).

In light of the results shown in Figure 4.14 above, it is evident that the goodness-of-fit test showed statistically significant more respondents were certain that their businesses were not negatively influenced by operational risks pertaining to employment practices and workplace safety. It is important to note that these businesses might have good employment practices and workplace safety practices that mitigate the impact of these risks. This view is particularly supported by the mean scores for all line items, which ranged between 1.2 and 1.4 ratings – neither agree nor disagree and disagreed. Therefore, it can be inferred that these types of operational risks did not affect similar SME’s attainment of business objectives.

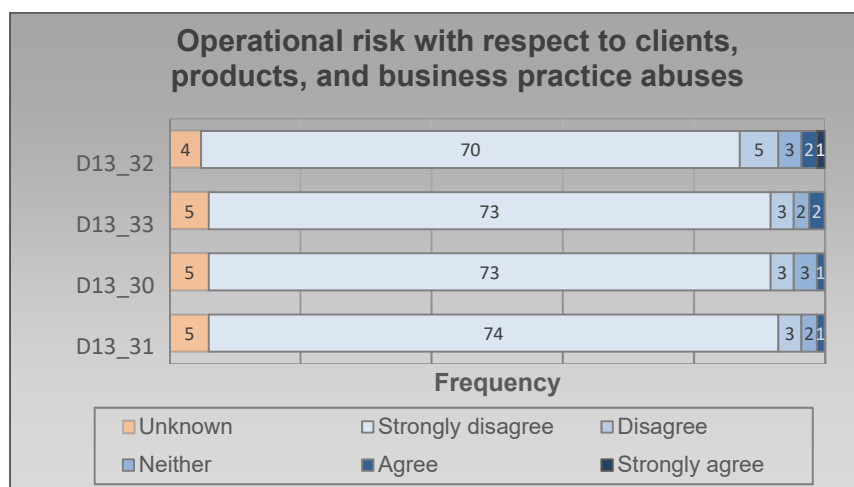


**Figure 4.4: Bar chart for Questions D13\_24 to D13\_29 (Section D, Questions 13.24 – 13.29)**

For operational risk with respect to damage to physical assets, which negatively influences the attainment of business objectives, the respondents mainly strongly disagree with all the statements (see Figure 4.15 above). The results obtained are as follow:

- Question D13 (Section D, Question 13.29): Dust (5.9% of respondents strongly agree, 7.1% agree, 2.4% neither agree nor disagree, 3.5% disagree and 78.8% strongly disagree).
- Question D13 (Section D, Question 13.28): Pollution (4.7% of respondents strongly agree, 4.7% agree, 1.2% neither agree nor disagree, 4.7% disagree and 83.5% strongly disagree).
- Question D13 (Section D, Question 13.24): Vandalism (1.2% of respondents strongly agree, 5.9% agree, 3.5% neither agree nor disagree, 2.4% disagree and 81.2% strongly disagree).
- Question D13 (Section D, Question 13.27): Fire (1.2% of respondents strongly agree, 4.7% agree, 1.2% neither agree nor disagree, 4.7% disagree and 83.5% strongly disagree).
- Question D13 (Section D, Question 13.26): Floods (0.0% of respondents strongly agree, 3.5% agree, 4.7% neither agree nor disagree, 2.4% disagree and 84.7% strongly disagree).
- Question D13 (Section D, Question 13.25): Hurricanes (1.2% of respondents strongly agree, 2.4% agree, 0.0% neither agree nor disagree, 3.5% disagree and 87.1% strongly disagree).

Figure 4.15 above shows that the goodness-of-fit test indicated statistically significant more SMEs disagreed with being negatively influenced by operational risks, with respect to damage to physical assets, which negatively influence the attainment of business objectives. It could be argued that most of the respondents disagreed because natural disasters mostly cause these risks. In addition, their businesses might not be susceptible to these risks due to the environment in which their businesses are operating. Therefore, the inference could be made that operational risks, with respect to damage to physical assets, do not hinder the majority of similar SMEs from attaining their business objectives.

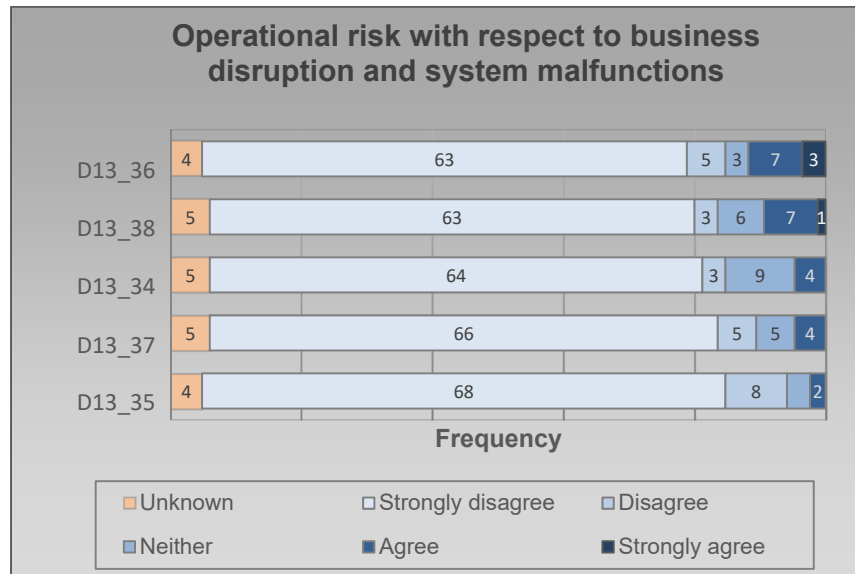


**Figure 4.5: Bar chart for Questions D13\_30 to D13\_33 (Section D, Questions 13.30 – 13.33)**

For operational risk with respect to clients, products and business practice abuses, which negatively influence the attainment of business objectives, the respondents mainly strongly disagreed with all the statements (see Figure 4.16 above). The results obtained are as follow:

- Question D13 (Question 13.32): Sale of unauthorised products (1.2% of respondents strongly agree, 2.4% agree, 3.5% neither agree nor disagree, 5.9% disagree and 82.4% strongly disagree).
- Question D13 (Question 13.33): Unapproved access given to client accounts (0.0% of respondents strongly agree, 2.4% agree, 2.4% neither agree nor disagree, 3.5% disagree and 85.9% strongly disagree).
- Question D13 (Question 13.30): Money laundering (0.0% of respondents strongly agree, 1.2% agree, 3.5% neither agree nor disagree, 3.5% disagree and 85.9% strongly disagree).
- Question D13 (Question 13.31): Misuse of confidential customer information (0.0% of respondents strongly agree, 1.2% agree, 2.4% neither agree nor disagree, 3.5% disagree and 87.1% strongly disagree).

From Figure 4.16 above, it is evident that statistically significant more respondents strongly disagreed than those who strongly agreed, agreed, neither agreed nor disagreed or disagreed with all the statements indicating operational risk with respect to clients, products and business practice abuses, which negatively influence the attainment of business objectives. This finding is supported by 80 – 90% of the respondents that disagreed with being negatively influenced by these risks. Hence, it can be concluded that these risks did not negatively influence respondents.



**Figure 4.17: Bar chart for Questions D13\_34 to D13\_38 (Section D, Questions 13.34 – 13.38)**

For operational risk with respect to business disruption and system malfunctions, which negatively influence the attainment of business objectives, the majority of respondents strongly disagreed with all the statements (see Figure 4.17 above). The results obtained from the listed questions are as follow:

- Question D13 (Question 13.36): Losses due to disruptions and utility outages (3.5% of respondents strongly agree, 8.2% agree, 3.5% neither agree nor disagree, 5.9% disagree and 74.1% strongly disagree).
- Question D13 (Question 13.38): Poor service quality due to delayed transactions (1.2% of respondents strongly agree, 8.2% agree, 7.1% neither agree nor disagree, 3.5% disagree and 74.1% strongly disagree).
- Question D13 (Question 13.34): Hardware and software failures (0.0% of respondents strongly agree, 4.7% agree, 10.6% neither agree nor disagree, 3.5% disagree and 75.3% strongly disagree).
- Question D13 (Question 13.37): Inefficiencies caused by system failures (0.0% of respondents strongly agree, 4.7% agree, 5.9% neither agree nor disagree, 5.9% disagree and 77.7% strongly disagree).
- Question D13 (Question 13.35): Telecommunication problems (0.0% of respondents strongly agree, 2.4% agree, 3.5% neither agree nor disagree, 9.4% disagree and 80.0% strongly disagree).



The goodness-of-fit test (see Figure 4.17 above) indicated that statistically significant more respondents strongly disagreed than those who strongly agreed, agreed, neither agreed nor disagreed or disagreed with all the statements indicating operational risk with respect to business disruption and system malfunctions, which negatively influence the attainment of business objectives. This result shows that the participating SMEs were able to achieve their business objectives without any hindrance.



**Figure 4.18: Bar chart for Questions D13\_39 to D13\_43 (Section D, Questions 13.39 – 13.43)**

For operational risk with respect to external fraud, which negatively influences the attainment of business objectives, the respondents mainly strongly disagreed with all the statements (see Figure 4.18 above). The results obtained are as follow:

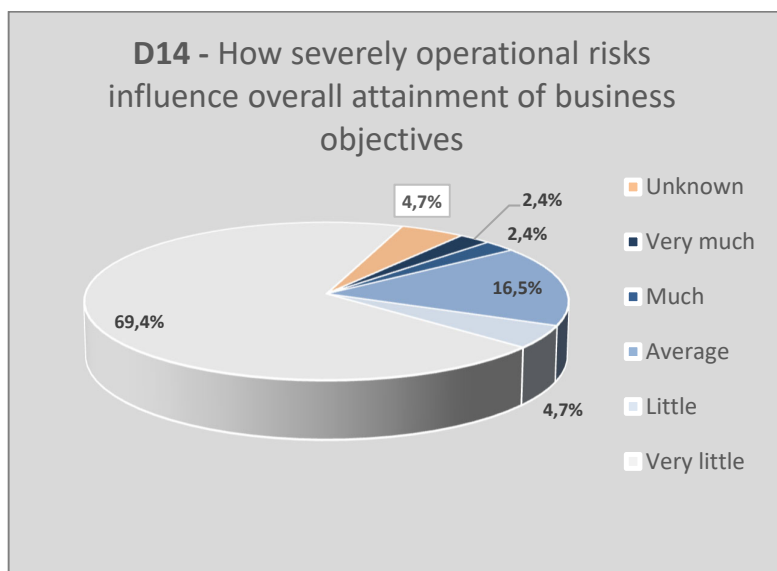
- Question D13 (Question 13.42): Robbery/Theft (1.2% of respondents strongly agree, 4.7% agree, 8.2% neither agree nor disagree, 2.4% disagree and 76.5% strongly disagree).
- Question D13 (Question 13.41): Credit default (0.0% of respondents strongly agree, 1.2% agree, 5.9% neither agree nor disagree, 5.9% disagree and 78.8% strongly disagree).
- Question D13 (Question 13.40): System hacking (1.2% of respondents strongly agree, 2.4% agree, 3.5% neither agree nor disagree, 2.4% disagree and 82.4% strongly disagree).
- Question D13 (Question 13.43): Check kiting (1.2% of respondents strongly agree, 1.2% agree, 2.4% neither agree nor disagree, 4.7% disagree and 83.5% strongly disagree).

- Question D13 (Question 13.39): Theft of information (0.0% of respondents strongly agree, 1.2% agree, 4.7% neither agree nor disagree, 3.5% disagree and 81.2% strongly disagree).

The goodness-of-fit test indicated that statistically significant more respondents strongly disagreed than those who strongly agreed, agreed, neither agreed nor disagreed or disagreed with all the statements indicating operational risk with respect to external fraud, which negatively influences the attainment of business objectives.

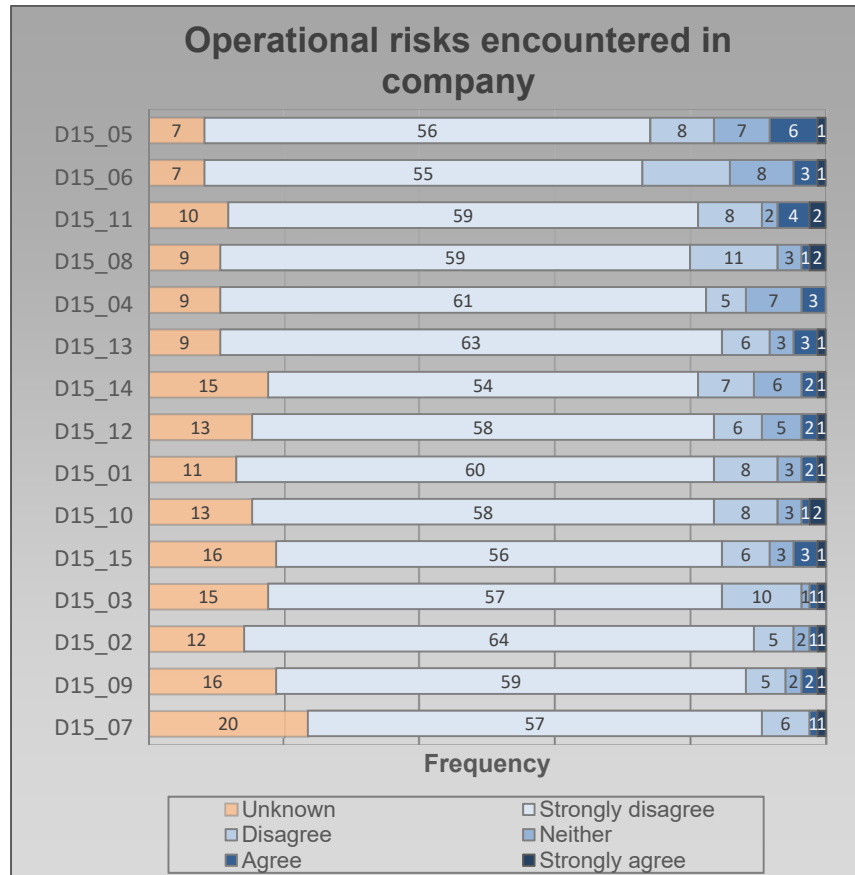
Again, the responses to all the statements regarding the operational risks, which negatively influence the attainment of business objectives, are substantiated by the response to the next statement, namely that the operational risks that influence the overall attainment of business objectives are mainly very little. Therefore, it is clear that the respondents disagreed with all the statements concerning operational risks and, in particular, external fraud. As a result, these SMEs are not adversely influenced by external fraud risk and, thus, can achieve their business objectives.

Thus, in summary, stemming from Figures 4.11, 4.12, 4.13, 4.14, 4.15, 4.16 and 4.18 presented above, most of the participating SMEs have not been adversely influenced by the mentioned operational risks. There is a clear indication that they strongly disagreed with all statements. This result indicates that in terms of the external fraud component of operational risk and how the other risks influence the attainment of business goals, the respondents perceive themselves as not experiencing them.



**Figure 4.69: Pie chart for Question D14 (Section D, Question 11.14)**

As graphically depicted in Figure 4.19 above, 69.4% of the respondents indicated that these operational risks have very influence on their overall attainment of business objectives, 4.7% indicated little, 16.5% indicated average, 2.4% indicated much and 2.4% indicated very much influence. The respondents were not equally distributed over the responses.



**Figure 4.20: Bar chart for Questions D15\_01 to D15\_15 (Section D, Questions 15.1 – 15.15)**

With respect to the operational risks the companies encountered, the respondents mainly strongly disagreed with all the statements (see Figure 4.20 above). It should also be noted that several respondents did not answer this question. The results obtained are as follow:

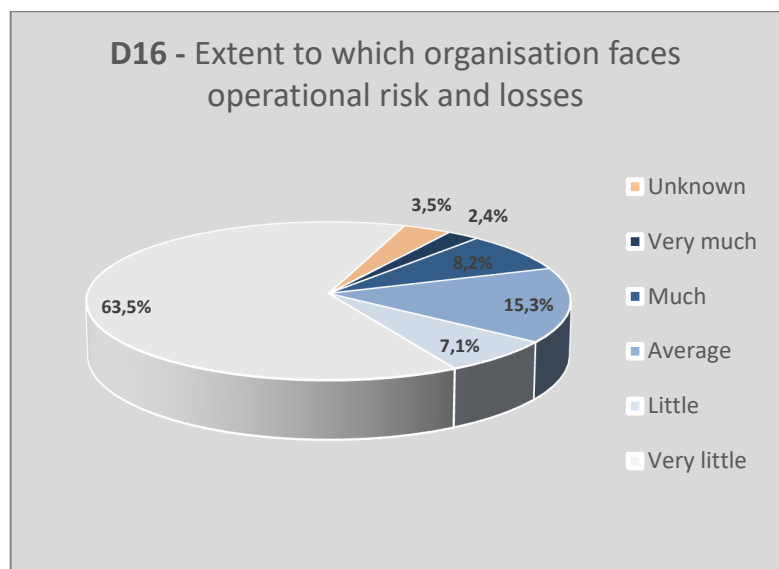
- Question D15 (Question 15.5): Staff errors and omission (1.2% of respondents strongly agree, 7.1% agree, 8.2% neither agree nor disagree, 9.4% disagree and 65.9% strongly disagree).

- Question D15 (Question 15.6): System processing errors (1.2% of respondents strongly agree, 3.5% agree, 9.4% neither agree nor disagree, 12.9% disagree and 64.7% strongly disagree).
- Question D15 (Question 15.11): Inadequate auditing procedures (2.4% of respondents strongly agree, 4.7% agree, 2.4% neither agree nor disagree 9.4% disagree, and 69.4% strongly disagree).
- Question D15 (Question 15.8): Inadequate segregation of duties (2.4% of respondents strongly agree, 1.8% agree, 3.5% neither agree nor disagree, 12.9% disagree and 69.4% strongly disagree).
- Question D15 (Question 15.4): Failed systems and transactions (0.0% of respondents strongly agree, 3.5% agree, 8.2% neither agree nor disagree, 5.9% disagree and 71.8% strongly disagree).
- Question D15 (Question 15.13): Poor systems design (1.2% of respondents strongly agree, 3.5% agree, 3.5% neither agree nor disagree, 7.1% disagree and 74.1% strongly disagree).
- Question D15 (Question 15.14): Poor Human Resources policies (1.2% of respondents strongly agree, 2.4% agree, 7.1% neither agree nor disagree, 8.2% disagree and 63.5% strongly disagree).
- Question D15 (Question 15.12): Inadequate security measures (1.2% of respondents strongly agree, 2.4% agree, 5.9% neither agree nor disagree, 7.1% disagree and 68.2% strongly disagree).
- Question D15 (Question 15.1): Internal and external frauds (1.2% of respondents strongly agree, 2.4% agree, 3.5% neither agree nor disagree, 9.4% disagree and 70.6% strongly disagree).
- Question D15 (Question 15.10): Lack of management supervision (2.4% of respondents strongly agree, 1.2% agree, 3.5% neither agree nor disagree, 9.4% disagree and 68.2% strongly disagree).
- Question D15 (Question 15.15): Lack of internal control (1.2% of respondents strongly agree, 3.5% agree, 3.5% neither agree nor disagree, 7.1% disagree and 65.9% strongly disagree).
- Question D15 (Question 15.3): Inadequate staff training (1.2% of respondents strongly agree, 1.2% agree, 1.2% neither agree nor disagree, 11.8% disagree and 67.1% strongly disagree).
- Question D15 (Question 15.2): Non-compliance issues (1.2% of respondents strongly agree, 1.2% agree, 2.4% neither agree nor disagree, 5.9% disagree and 75.3% strongly disagree).

- Question D15 (Question 15.9): Insufficient training (1.2% of respondents strongly agree, 2.4% agree, 2.4% neither agree nor disagree, 5.9% disagree and 69.4% strongly disagree).
- Question D15 (Question 15.7): Customer attrition (1.2% of respondents strongly agree, 1.2% agree, 0.0% neither agree nor disagree, 7.1% disagree and 67.1% strongly disagree).

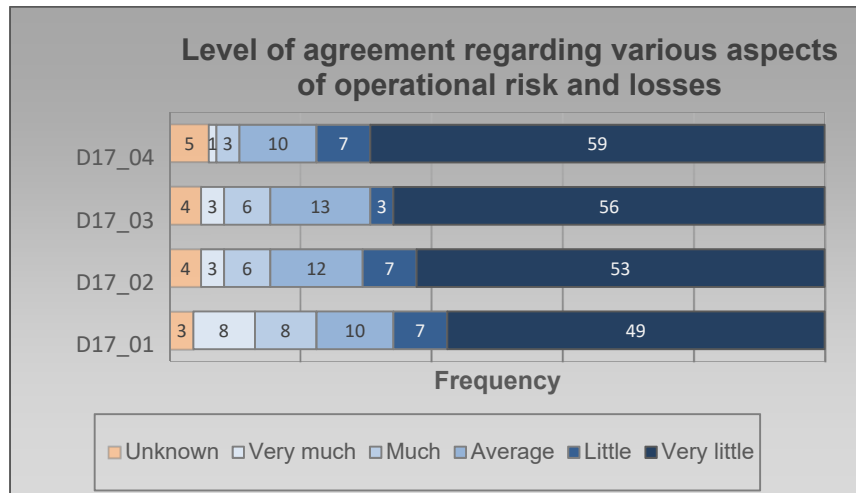
The goodness-of-fit test (see Figure 4.20 above) indicated that statistically significant more respondents strongly disagreed than those who strongly agreed, agreed, neither agreed nor disagreed or disagreed with all the statements indicating various operational risks encountered in their respective companies. Therefore, it is evident that the majority of the respondents do not encounter operational risks. These findings match the average number of years that these businesses have been in existence. Failed systems and transactions, poor systems design, poor human resources policies, inadequate security measures, internal and external fraud are amongst the top five operational risks that the participating SMEs encounter.

This result is substantiated by the next statement, namely that the extent to which the participating organisations face operational risk and losses is mainly very little.



**Figure 4.7: Pie chart for Question D16 (Section D, Question 16)**

In total, 63.5% of the respondents indicated that the extent to which their organisation faces various risks and losses is very little, 7.1% indicated to a little extent, 15.3% indicated to an average extent, 8.2% indicated to a great extent (much) and the remaining 2.4% indicated to a very great extent (very much) (see Figure 4.21 above). The respondents were not equally distributed over the responses.

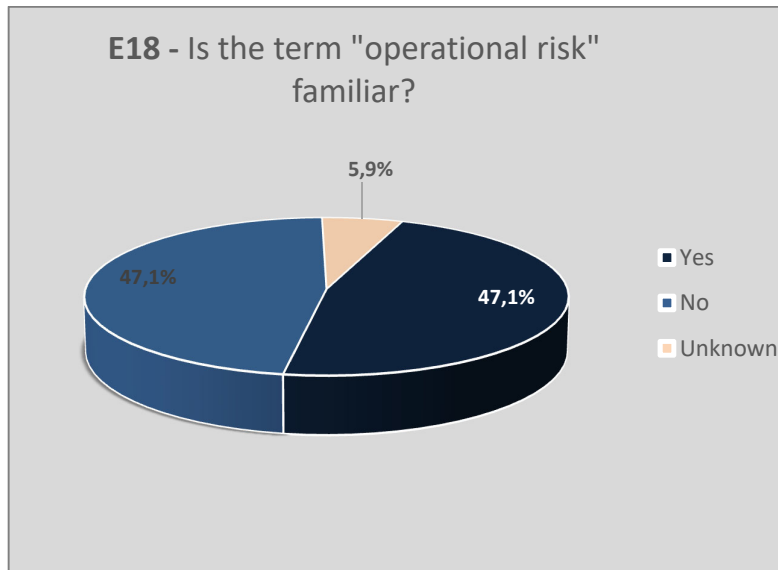


**Figure 4.22: Bar chart for Questions D17\_01 to D17\_04 (Section D, Questions 17.1 – 17.4)**

In response to respondents' level of agreement with various aspects of operational risk and losses in the organisation, they mainly indicated very little agreement with all the statements (see Figure 4.22 above). The results obtained are as follow:

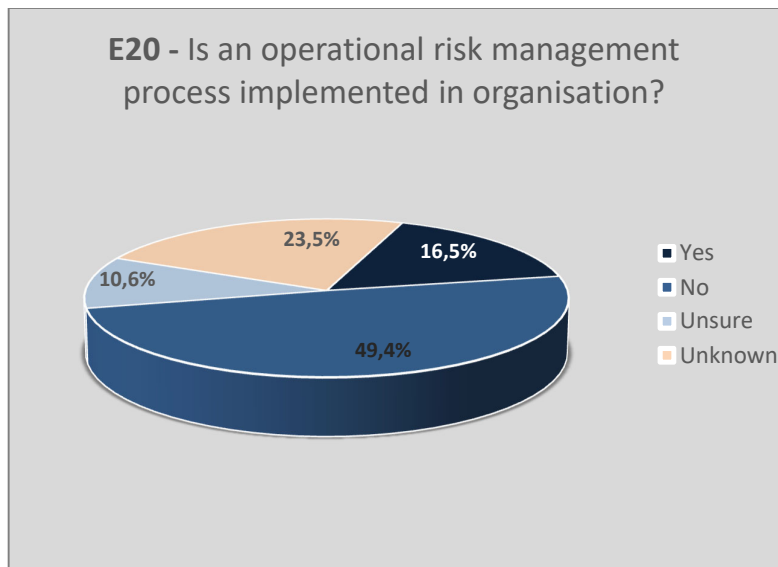
- Question D17 (Question 17.4): External risk (1.2% of respondents indicated very much, 3.5% indicated much, 11.8% indicated average, 8.2% indicated little and 69.4% indicated very little).
- Question D17 (Question 17.3): System risk (3.5% of respondents indicated very much, 7.1% indicated much, 15.3% indicated average, 3.5% indicated little and 65.9% indicated very little).
- Question D17 (Question 17.2): Process risk (3.5% of respondents indicated very much, 7.1% indicated much, 11.8% indicated average, 8.2% indicated little and 62.4% indicated very little).
- Question D17 (Question 17.1): People risk (9.4% of respondents indicated very much, 9.4% indicated much, 11.8% indicated average, 8.2% indicated little and 57.7% indicated very little).

The respondents were not equally distributed over the responses.



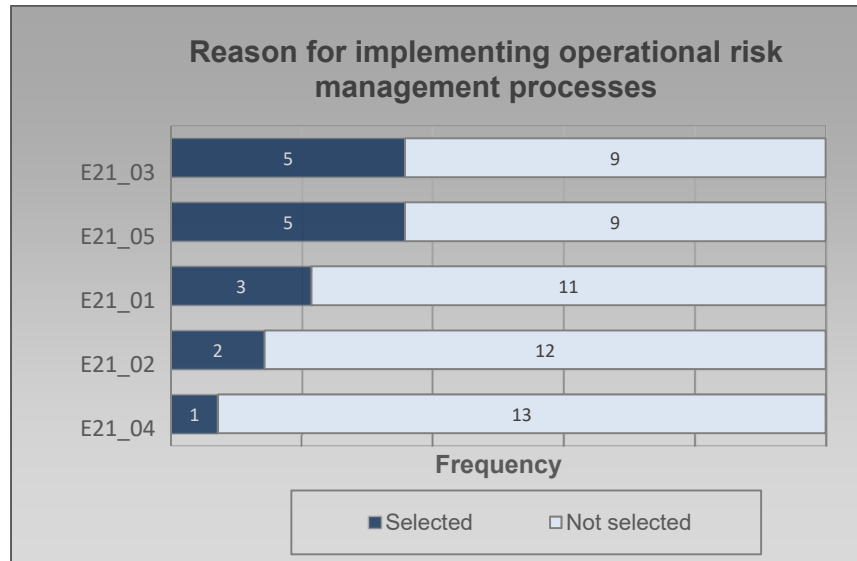
**Figure 4.tt23: Pie chart for Question E18 (Section E, Question 18)**

Figure 4.23 above shows that 47.1% of the respondents were familiar with the term “operational risk”, and 47.1% were not. The remaining 5.9% indicated this term “unknown”. The respondents were equally distributed with respect to whether they are familiar with the term “operational risk” or not.



**Figure 4.24: Pie chart for Question E20 (Section E, Question 20)**

Figure 4.24 above shows that a total of 16.5% of the respondents indicated that an operational risk management process is implemented in their organisation, 49.4% indicated that they did not have an operational risk management process, and 10.6% was unsure. Note should be taken that 23.5% of the respondents did not answer this question (see Figure 4.24 above).

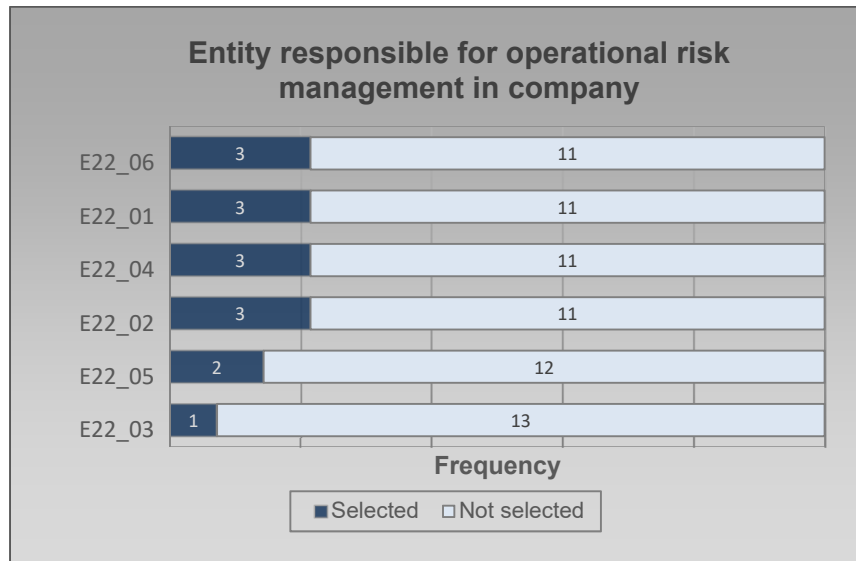


**Figure 4.25: Bar chart for Questions E21\_01 to E21\_05 (Section E, Questions 21.1 – 21.5)**

For those respondents who indicated that their organisation had implemented operational risk management processes, the reasons were as follow (see Figure 4.25 above).

- Question D21 (Question 21.3): Requirements of Credit Institutions, Suppliers, or Customers (35.7% of respondents indicated that their organisation had implemented operational risk management processes). It is important to note that one respondent (who indicated that his/her business had not implemented operational risk management processes) also selected this reason. These responses were omitted, and only respondents who indicated that their company has implemented risk management processes were analysed further.
- Question D21 (Question 21.5): Others (35.7% of respondents indicated that other entities are responsible for operational risk management in their business).
- Question D21 (Question 21.1): Law Requirements of Auditors (21.4% of respondents).
- Question D21 (Question 21.2): Requirements of Supervisor Committee (14.3% of respondents).
- Question D21 (Question 21.4): Experience of the last financials (7.1% of respondents).

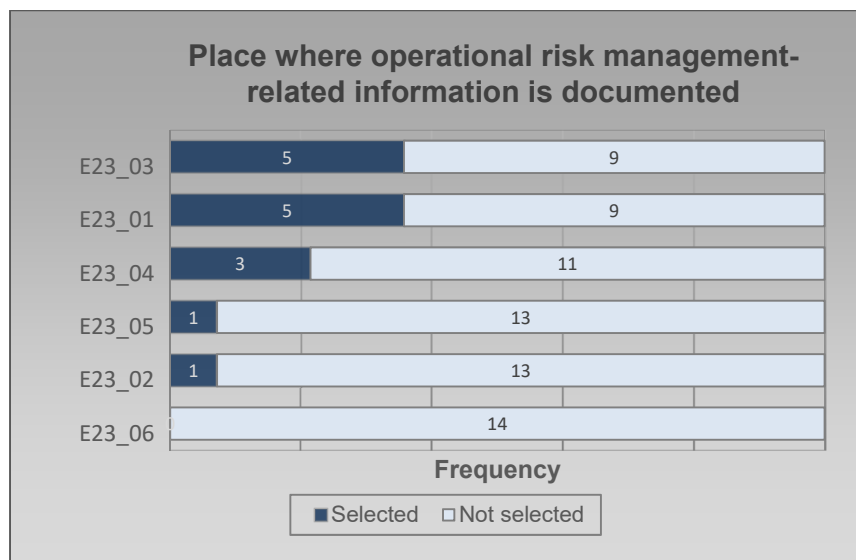




**Figure 4.26: Bar chart for Questions E22\_01 to E22\_05 (Section E, Questions 22.1 – 22.5)**

The entities responsible for operational risk management in businesses that implemented operational risk management are as follow (see Figure 4.26 above):

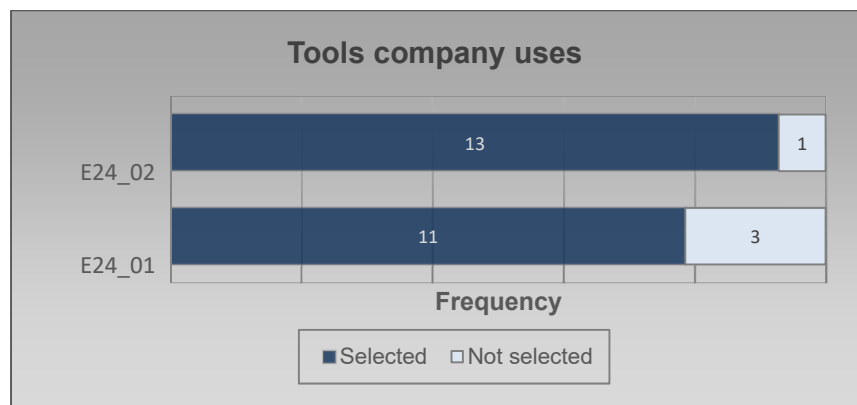
- Question D22 (Question 22.6): Others (21.4% of respondents).
- Question D22 (Question 22.1): Head of Departments (21.4% of respondents).
- Question D22 (Question 22.4): Controlling (21.4% of respondents).
- Question D22 (Question 22.2): Risk management unit (21.4% of respondents).
- Question D22 (Question 22.5): Internal audit (14.3% of respondents).
- Question D22 (Question 22.3): Board of Directors (7.1% of respondents).



**Figure 4.27: Bar chart for Questions E23\_01 to E23\_05 (Section E, Questions 23.1 – 23.5)**

With regards to the section or document in which operational risk management is documented within a SME that has implemented operational risk management, the results are as follow (see Figure 4.27 above):

- Question D23 (Question 23.3): Finance/Controlling (35.7% of respondents).
- Question D23 (Question 23.1): Handbook of risk management (35.7% of respondents).
- Question D23 (Question 23.4): Quality management (21.4% of respondents).
- Question D23 (Question 23.5): No written documentation (7.1% of respondents).
- Question D23 (Question 23.2): Handbook of organisation (7.1% of respondents).
- Question D23 (Question 23.6): Others (0.0% of respondents).



**Figure 4.28: Bar chart for Questions E24\_01 to E24\_02 (Section E, Questions 24.1 – 24.2)**

The different types of tools that are used by SMEs that have implemented operational risk management are as follows (see Figure 4.28 above):

- Question D24 (Question 24.2): Calculation of operational risks (92.9% of respondents).
- Question D24 (Question 24.1): Identification of operational risks (78.6% of respondents).

Stemming from the descriptive results presented above, it is evident that the majority of participating SMEs perceived themselves as not to be facing operational risks and consequently do not implement ORM. A total of 49.4% of the respondents indicated that they do not implement ORM, and an excessively high 47.1% indicated that they are not aware of

the term “operational risk”. The data obtained from participating SME managers and/or owners regarding operational risk that influences the sustainability of their SMEs is, therefore, not in congruence with existing academic literature. Based on these results, it could be argued that most of these SMEs should not be sustainable because they are not *au fait* with operational risk and ORM. Almost half of the respondents perceived their businesses not to experience operational risk and, consequently, ORM is not implemented in these businesses. Only 16.5% of participating SMEs indicated that they experience operational risk, which affects the sustainability of their businesses and, thus, implement ORM. Four major operational risk factors were found to influence SME sustainability, namely: 1) people, 2) systems, 3) processes and 4) external risk in all the SMEs that implemented ORM. Therefore, the question remains: *How can manufacturing SMEs in the Cape Metropole be sustainable despite not implementing ORM and perceiving themselves as not experiencing operational risk?*

### **4.3.3 Inferential statistics**

Sections 4.3.3.1 – 4.3.3.4 provide background information with regard to when the null hypothesis is rejected and when it is not rejected.

SAS computes a p-value (probability value) that measures statistical significance, which is derived from the test values such as the Chi-square. Results are regarded as significant if the p-values are smaller than 0.05 because this value presents an acceptable level on a 95% confidence interval ( $p \leq 0.05$ ). The p-value is the probability of observing a sample value as extreme as, or more extreme than, the value observed, given that the null hypothesis is true. This area represents the probability of a Type 1 error that must be assumed if the null hypothesis is rejected (Cooper & Schindler, 2001).

The p-value is compared to the significance level ( $\alpha$ ), and on this basis, the null hypothesis is either rejected or not rejected. If the p-value is less than the significance level, the null hypothesis is rejected (if  $p\text{-value} < \alpha$ , reject null). If the p-value is greater than or equal to the significance level, the null hypothesis is not rejected (if  $p\text{-value} \geq \alpha$ , do not reject null). Thus, with  $\alpha = 0.05$ , if the p-value is less than 0.05, the null hypothesis will be rejected. The p-value is determined by using the standard normal distribution. The small p-value represents the risk of rejecting the null hypothesis.

A difference in value has statistical significance if there is a good reason to believe that the difference does not represent random sampling fluctuations only. Consequently, results are regarded as significant if the p-values are smaller than 0.05 because this value is used as a cut-off point in most Behavioural Science research.

Only statistically significant differences are discussed in Sections 4.4.1 – 4.4.4 below. Comparison statistics can be found in Appendix D at the end of this research report.

#### 4.3.3.1 Hypothesis testing

The following hypotheses were tested in the case of a Chi-square test:

##### Hypothesis A

- $H_0$  = the proportion of respondents who selected the different categories is equal. ( $p_1 = p_2 = p_3$ )
- $H_1$  = the proportion of respondents who selected the different categories is not equal. ( $p_1 \neq p_2 \neq p_3$ )

Or differently put:

- $H_0$  = In the Chi-square goodness-of-fit test, the null hypothesis assumes no significant difference between the observed and expected values.
- $H_1$  = In the Chi-square goodness-of-fit test, the alternative hypothesis assumes a significant difference between the observed and expected values.

Note should be taken that the goodness-of-fit test of the categorical variables is discussed in the descriptive statistics. Appendix D below shows the comparison between proportions for each variable.

The following hypotheses were tested in the case of the Kruskal-Wallis test:

##### Hypothesis B

- $H_0$  = the mean rank scores for the different groups are equal. ( $\mu_1 = \mu_2 = \mu_3$ )
- $H_1$  = the mean rank scores for the different groups are not equal. ( $\mu_1 \neq \mu_2 \neq \mu_3$ )

It should be noted that only the statistically significant differences are discussed in Sections 4.4.2 to 4.4.4 below.

#### 4.3.3.2 Comparison of demographic variables

##### 4.3.3.2.1 Kruskal-Wallis test

The Kruskal-Wallis test was used to determine whether differences exist between the demographic groups with respect to the number of years respondents have held their current position, the number of years the businesses have been in existence, and the number of full-time personnel have been employed. This test was used to compare the mean rank scores of the groups described above. If the value is statistically significant ( $p$ -value < 0.05), the null

hypothesis is rejected. A statistically significant difference was found between the groups with respect to the above-mentioned variables (see Appendix D below).

#### *4.3.3.2.2 Categorical demographic variables versus number of years in current position*

No statistically significant difference was found between the demographic groups with respect to the number of years the respondents have held their current position at the company.

#### *4.3.3.2.3 Categorical demographic variables versus number of years businesses have been in existence*

No statistically significant difference was found between the demographic groups with respect to the number of years the businesses have been in existence.

#### *4.3.3.2.4 Categorical demographic variables versus number of full-time employees*

No statistically significant difference was found between the demographic groups with respect to the number of full-time employees.

#### *4.3.3.2.5 Chi-square test*

The Chi-square test was used to determine whether differences exist between the categorical demographic groups. If the value is statistically significant ( $p\text{-value} < 0.05$ ), the null hypothesis is rejected; thus, there is a statistically significant difference between the groups (see Appendix D below).

Due to the small number of respondents who registered a response for some groups of the demographic variables, there are expected frequencies of less than five in some cells of the contingency tables (cross-tables for two variables). Certain corrective measures were taken to overcome this problem. Sub-section 4.3.3.4.1 below discusses these measures.

Since most respondents have decision-making power within their respective businesses and only a few (4 out of the 85 respondents) do not have any decision-making power, this variable was not cross analysed with the other demographic variables.

The variable “What is your position in the business” seems equally distributed between three groups and has expected frequencies above five for each position. Furthermore, since the variables “number of years in position”, “number of years the business exists”, and “number of full-time employees” are continuous in nature, the Kruskal-Wallis test was used to compare it with the other demographic groups, as is discussed in Section 4.4.2.1 below.

The variable “which of the options best describe your business” has too many options and was thus not compared to the other demographic variables because the expected frequency for each option was below five.

The highest level of education options was concatenated into three groups: 1) up to Grade 12 group, 2) Certificate and Diploma group and 3) Degree group, to ensure valid comparisons.

The variable “Do you make use of cash and/or credit sales” was not changed, although only five respondents were in the “credit sales only” group. Statistically significant differences, in this case, should be handled with caution since the expected frequencies are less than five in the cells of the contingency tables, which might not be valid.

It is important to note that although the above measures were taken to meet the assumptions of the Chi-square test, there are still comparisons which have expected cells of less than five. These cases should be handled with caution.

#### *4.3.3.2.5.1 Position in the business versus highest level of education*

No statistically significant difference was found between the position in the business and the highest level of education. Thus, it seems that respondents in different positions do not have different highest levels of education.

#### *4.3.3.2.5.2 Position in the business versus type of sales made*

No statistically significant difference was found between the position of a respondent in the business and type of sales the business makes. Thus, it seems that respondents in different positions do not make different types of sales.

#### *4.3.3.2.5.3 Highest level of education versus type of sales made*

No statistically significant difference was found between the highest level of education of a respondent and the type of sales the business makes. Thus, it seems that respondents with different highest levels of education do not make different types of sales.

### *4.3.3.3 Comparison between continuous demographic variables and measuring variables*

#### *4.3.3.3.1 Kruskal-Wallis test*

The Kruskal-Wallis test was used to determine whether differences exist between the responses to the measuring variables and number of years respondents have held their current position, the number of years the businesses are in existence, and the number of full-time employees employed. Sub-section 4.3.3.3.1 discusses only the statistically significant test results.

##### *4.3.3.3.1.1 Number of years occupying current position versus measuring variables*

There are no statistically significant differences between the number of years a respondent has held their current position and the measuring variables. This result implies that despite the number of years the respondents have held their current position, they responded in the same manner on the measuring variables.

4.3.3.3.1.2 *Number of years the business has been in existence versus measuring variables*

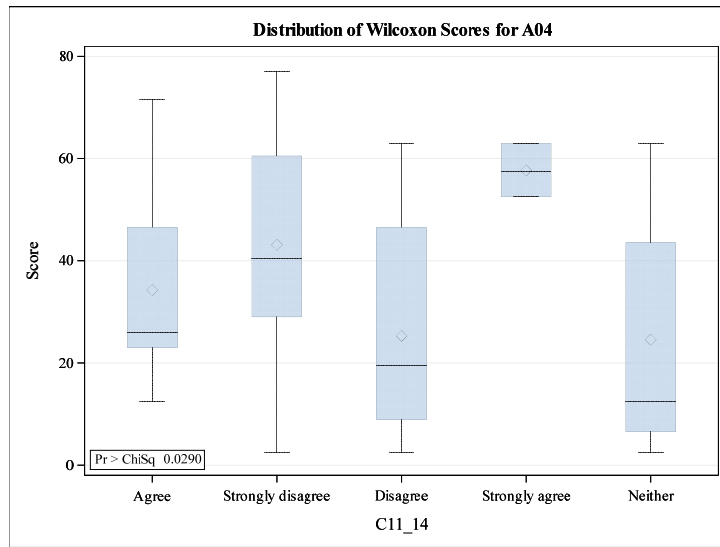
The Chi-square test of independence was used to test whether an association exists between the number of years the business has existed (Question A04) and the measuring variables shown in the first column of Table 4.3 below. This test was conducted to determine whether the number of years that the business has existed has the same distribution concerning the measuring variables.

**Table 4.3: Statistically significant Chi-square tests for Questions C11\_14, D13\_28 and D13\_34**

Question number	Question/Statement	Sample size	Chi-square	DF	Exact p-value
C11_14	Frequent changes in customer needs	77	10.7907	4	0.0290*
D13_28	Pollution	82	10.5144	4	0.0326*
D13_34	Hardware and software failures	78	8.7568	3	0.0327*

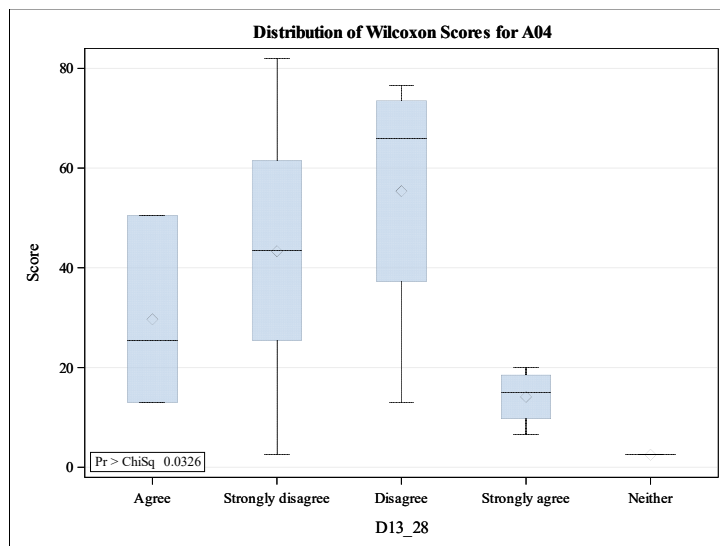
Statistically significant at a significance level of 0.05 \*

Table 4.3 above shows that a statistically significant difference exists for Questions C11\_14, D13\_28, and D13\_34. These disparities are graphically depicted in Figures 4.29 – 4.31 (see below).



**Figure 4.29: Box plot for Questions A04 (Section A, Question 4) versus C11\_14 (Section C, Question 11.14)**

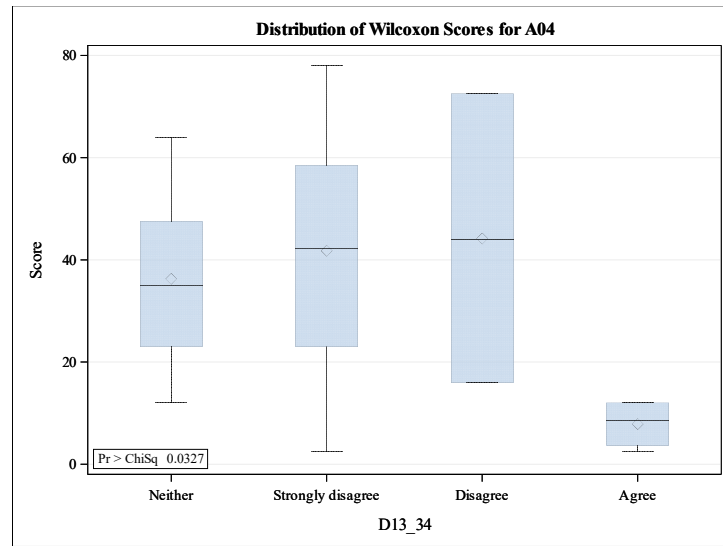
A statistically significant difference exists between the number of years the business has existed (Question A04) and the general risk “Frequent changes in customer needs” (Question C11\_14) (see Figure 4.29 above). Thus, it seems that the businesses of respondents who disagreed or neither disagreed nor agreed with this statement, have been in existence for fewer years compared to respondents who strongly agreed with the statement.



**Figure 4.30: Box plot for Questions A04 (Section A, Question 4) versus D13\_28 (Section D, Question 13.28)**



Figure 4.30 above shows that there is a statistically significant difference between the number of years the participating SMEs have been in existence (Question A04) and the operational risk “Pollution” (Question D13\_28). It seems that the businesses of the respondents who neither disagreed nor agreed with this statement have been in existence for fewer years than the businesses of the respondents who disagreed with the statement.



**Figure 4.8: Box plot for Questions A04 (Section A, Question 4) versus D13\_34 (Section D, Question 13.34)**

In Figure 4.31, a statistically significant difference is shown between the number of years the business is in existence (Question A04) and the operational risk “Hardware and software failures” (Question D13\_34). Thus, it seems that the businesses of the respondents who agreed with this statement have been in existence for fewer years than those of the respondents who disagreed with it.

#### 4.3.3.3.1.3 *Number of full-time employees versus measuring variables*

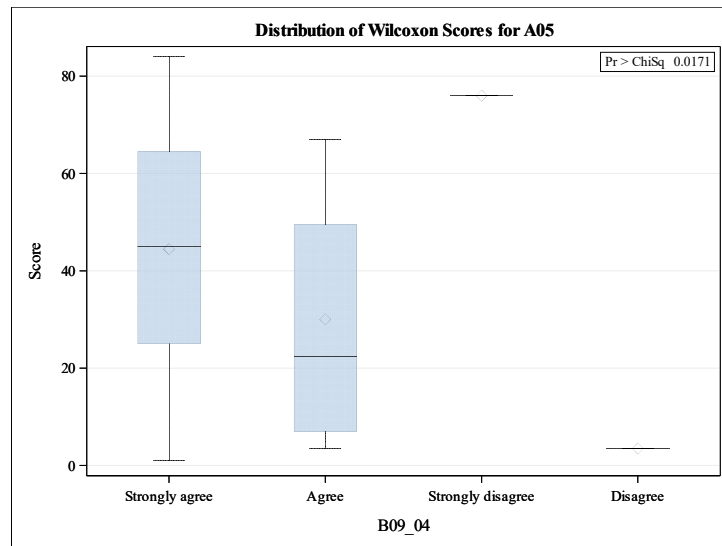
The Chi-square test of independence was used to test whether an association exists between the number of full-time employees within the business (Question A05) and the measuring variables shown in Table 4.4 (see overleaf). This test was conducted to determine whether the number of full-time employees within the business has the same distribution concerning the measuring variables.

**Table 4.4: Statistically significant Chi-square tests for Questions B9\_4, B9\_14, B9\_15, B10, C11\_4, D13\_10, D13\_11, D13\_28, and E18**

Question number	Question/Statement	Sample size	Chi-square	DF	Exact p-value
B9_4	Good relationships are maintained with customers	84	10.1833	3	0.0171*
B9_14	Water is used sparingly	84	10.9256	4	0.0274*
B9_15	Electricity is used sparingly	83	10.8992	4	0.0277*
B10	Overall achievement of the business objectives	84	9.0235	3	0.0235*
C11_4	Limited skill (competence) of employees	83	12.7251	4	0.0127*
D13_10	Limited open-mindedness of employees to embrace innovation	80	11.3732	4	0.0227*
D13_11	Weak employee morale	84	11.9686	4	0.0176*
D13_28	Pollution	84	10.6284	4	0.0311
E18	Is the term "operational risk" familiar?	80	4.7582	1	0.0292

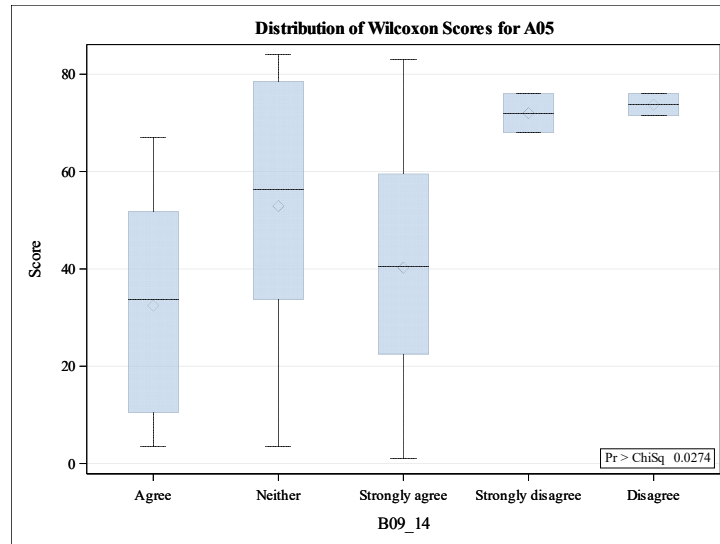
Statistically significant at a level of significance of 0.05 \*

Table 4.4 above shows statistically significant differences for Questions B9\_4, B9\_14, B9\_15, B10, C11\_4, D13\_10, D13\_11, D13\_28, and E18. These disparities are graphically depicted in Figures 4.31 – 4.39 below.



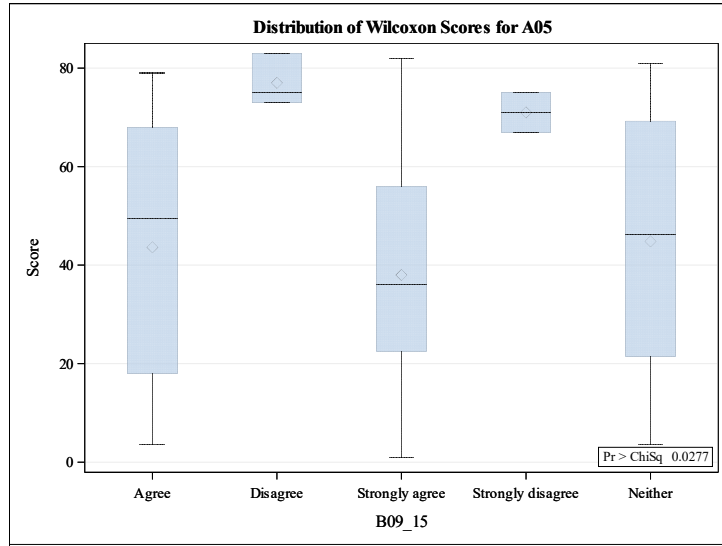
**Figure 4.9: Box plot for Questions A05 (Section A, Question 5) versus B9\_4 (Section B, Question 9.4)**

Figure 4.32 above graphically depicts a statistically significant difference between the number of full-time employees employed by a business (Question A05) and the current situation of the business with regard to “Good relationships are maintained with customers” (Question B9\_4). It seems that the businesses of the respondents who strongly disagreed with this statement have more full-time employees than those SMEs who agreed or disagreed with the statement.



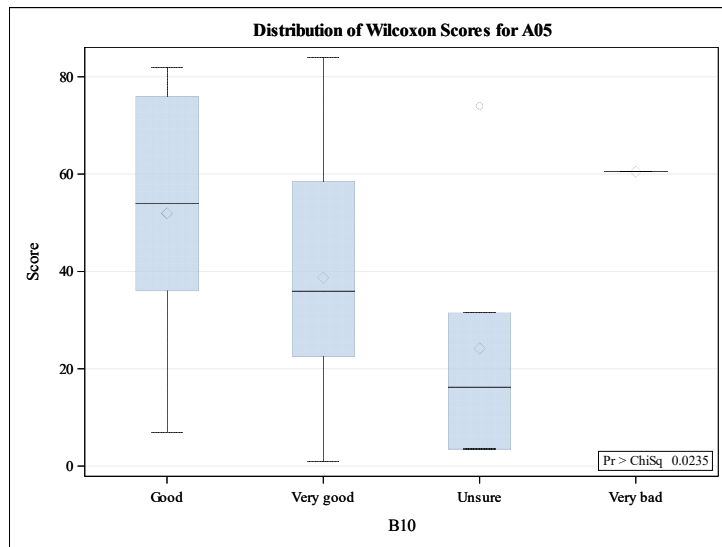
**Figure 4.10: Box plot for Questions A05 (Section A, Question 5) versus B9\_14 (Section B, Question 9.14)**

Figure 4.33 shows a statistically significant difference between the number of full-time employees (Question A05) and the current situation of the business with regard to “Water is used sparingly” (Question B9\_14). It seems that the businesses of the respondents who strongly disagreed/disagreed with this statement have more full-time employees than those who strongly agreed/agreed with the statement.



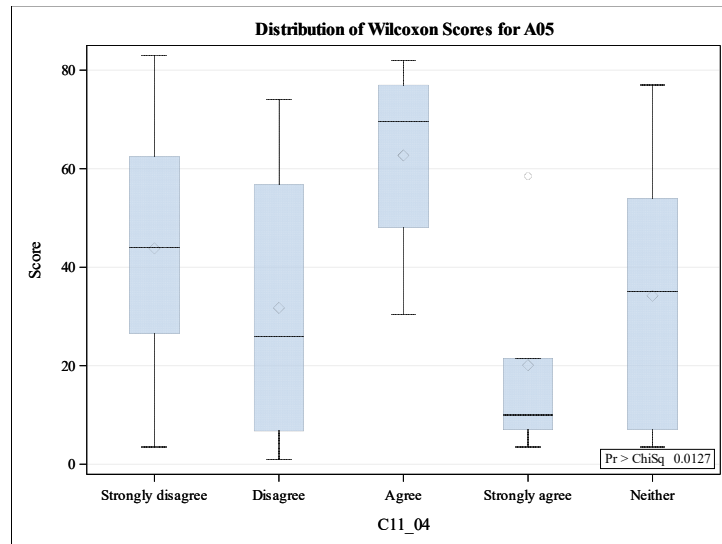
**Figure 4.34: Box plot for Questions A05 (Section A, Question 5) versus B9\_15 (Section B, Question 9.15)**

Figure 4.34 above depicts a statistically significant difference between the number of full-time employees (Question A05), and the current situation of the SMEs with regard to “Electricity is used sparingly” (Question B9\_15). It seems that the businesses of the respondents who strongly disagreed/disagreed with this statement have more full-time employees than those who strongly agreed/agreed with the statement.



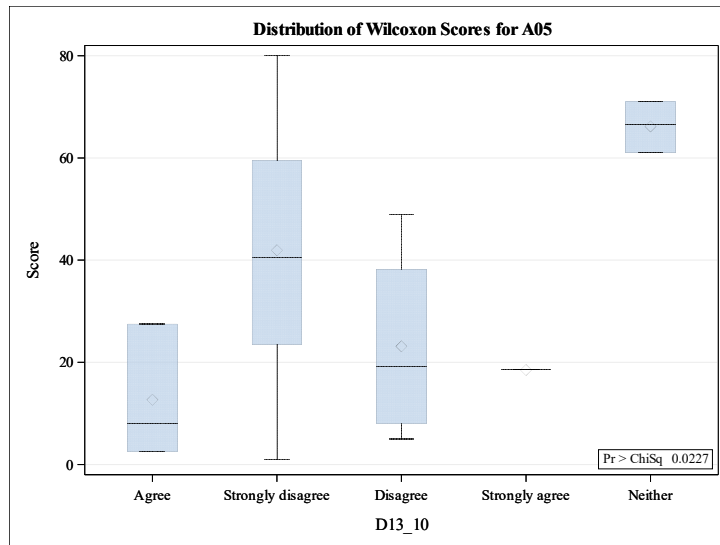
**Figure 4.11: Box plot for Questions A05 (Section A, Question 5) versus B10 (Section B, Question 10)**

In Figure 4.35 above, a statistically significant difference is shown between the number of full-time employees (Question A05) and overall achievement of business objectives (Question B10). It seems that the businesses of those respondents who described the overall achievement of their business's objectives as "very bad", have more full-time employees than those who indicated that they are unsure regarding the achievement of their objectives.



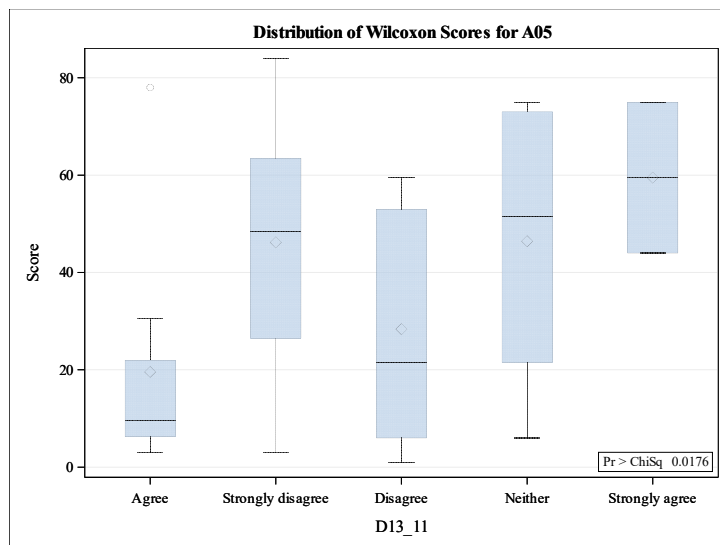
**Figure 4.36: Box plot for Questions A05 (Section A, Question 5) versus C11\_4 (Section C, Question 11.4)**

Figure 4.36 above shows a statistically significant difference between the number of full-time employees (Question A05) and the general risk "Limited skills (competence) of employees" (Question C11\_4). It seems that the businesses of the respondents who agreed with this statement have more full-time employees than those who strongly agreed with it.



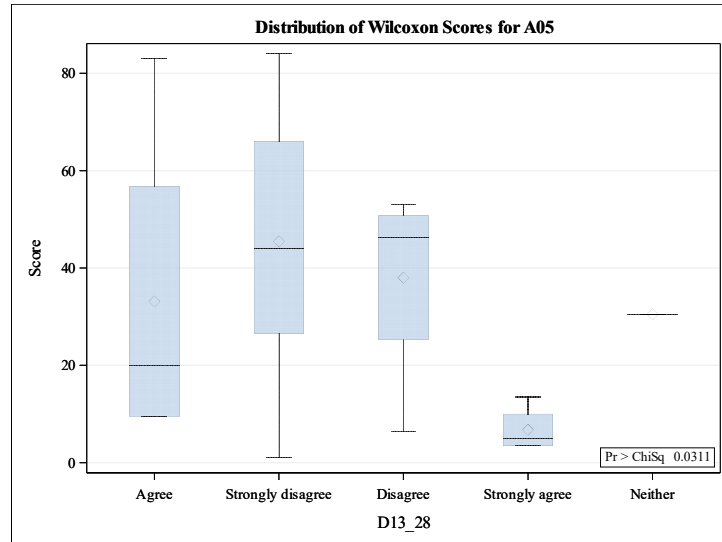
**Figure 4.12: Box plot for Questions A05 (Section A, Question 5) versus D13\_10 (Section D, Question 13.10)**

Figure 4.37 above shows that there is a statistically significant difference between the number of full-time employees (Question A05) and the operational risk “External fraud” (Question D13\_10). It seems that the businesses of the respondents who neither agreed nor disagreed with this statement have more full-time employees than those who agreed with it.



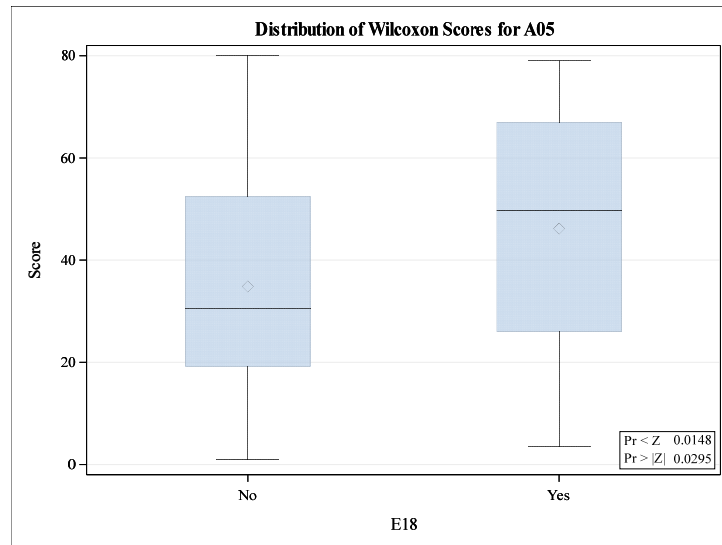
**Figure 4.38: Box plot for Questions A05 (Section A, Question 5) versus D13\_11 (Section D, Question 13.11)**

As shown in Figure 4.38 above, there is a statistically significant difference between the number of full-time employees (Question A05) and the operational risk “Robbery” (Question D13\_11). It seems that the businesses of the respondents who strongly agreed with this statement have more full-time employees than those who agreed with it.



**Figure 4.13: Box plot for Questions A05 (Section A, Question 5) versus D13\_28 (Section D, Question 13.28)**

Figure 4.39 graphically depicts a statistically significant difference between the number of full-time employees (Question A05) and the operational risk “Pollution” (Question D13\_28). It appears that respondents who strongly disagreed with this statement employ more full-time employees than those who strongly agreed with it.



**Figure 4.40: Box plot for Questions A05 (Section A, Question 5) versus E18 (Section E, Question 18)**

Figure 4.40 above depicts that a statistically significant difference exists between the number of full-time employees (A05) and whether the term “operational risk” is familiar to the respondents (Question E18). It seems that the respondents who indicated that they are familiar with the term “operational risk” employ more full-time employees than those who are not familiar with this term.

#### 4.3.3.4 Comparison between categorical demographic variables and measuring variables

##### 4.3.3.4.1 Chi-square test

The Chi-square test was used to compare the categorical/nominal demographic variables with respect to the measuring variables (dichotomous- and Likert scaled variables). The statistics are summarised in sub-section 4.3.3.4.1 below. Summary tables can be found in Appendix D at the end of this research report.

Due to expected frequencies of less than five in the cells, the categories for the measuring variables were grouped as follows:

- Agree and strongly agree
- Disagree and strongly disagree
- Much and very much
- Little and very little
- Good and very good
- Bad and very bad



However, even after this practice was implemented, there are still expected counts of less than five in the cells. Consequently, Fisher's exact test was performed to overcome this problem.

**4.3.3.4.1.1 Position in business versus measuring variables**

The Chi-square test of independence was used to test whether an association exists between the position the respondent holds within the business (Question A02) and the measuring variables shown in Table 4.5. This test was conducted to determine whether the respondents' position within the business has the same distribution concerning the measuring variables.

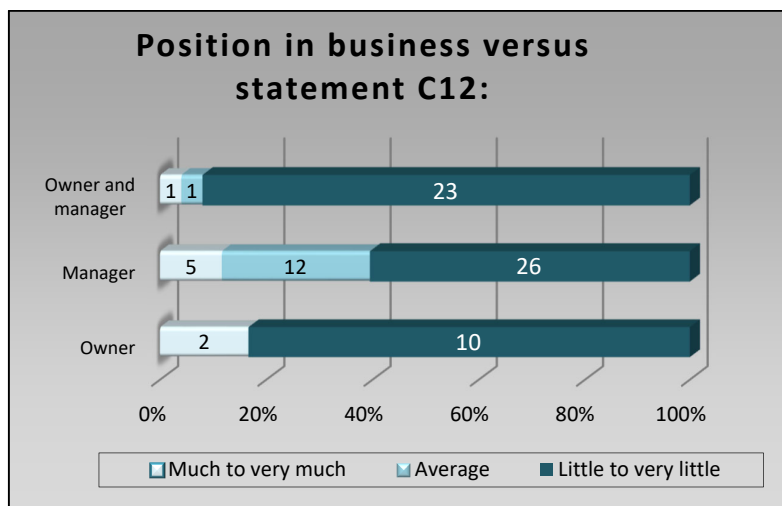
**Table 4.5: Statistically significant Chi-square tests for Questions C12 and E20**

Question number	Question/Statement	Sample size	Chi-square	DF	Exact p-value
C12	How severely do these risks influence your business' overall attainment of objectives?	80	11.7091	4	0.0149*
E20	Is an operational risk management process implemented in your company?	65	9.3451	4	0.0414*

Statistically significant at a significance level of 0.05 \*

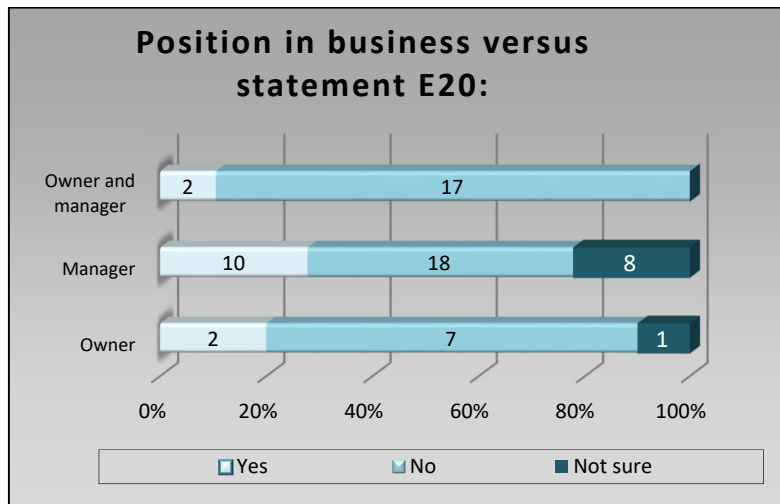
Table 4.5 above shows that there are statistically significant differences between the positions of respondents (Question A02) in their businesses with respect to:

- How severely risks influence their business' overall attainment of objectives (Question C12).
- Whether an operational risk management process is implemented in their company (Question E20).



**Figure 4.41: Position in business (Question A02) versus Question C12 (Section C, Question 12)**

Figure 4.41 above shows that most respondents holding a management position in their SME (Question A02) indicated that general risk influences their business' overall attainment of objectives averagely (Question C12), compared to those within an owner position or an owner/manager position.



**Figure 4.42: Position in business (Question A02) versus E20 (Section E, Question 20)**

In Figure 4.42, more respondents holding a management position (Question A02) indicated that their company had implemented the operational risk management process than the respondents in the owner position or the owner/manager position (Question E20).

#### 4.3.3.4.1.2 Business size versus measuring variables

The Chi-square test of independence was used to test whether an association exists between the size of a respondent's business (Question A05) and the measuring variables shown in Table 4.6 below. This test was conducted to determine whether the size of the business has the same distribution concerning the measuring variables.

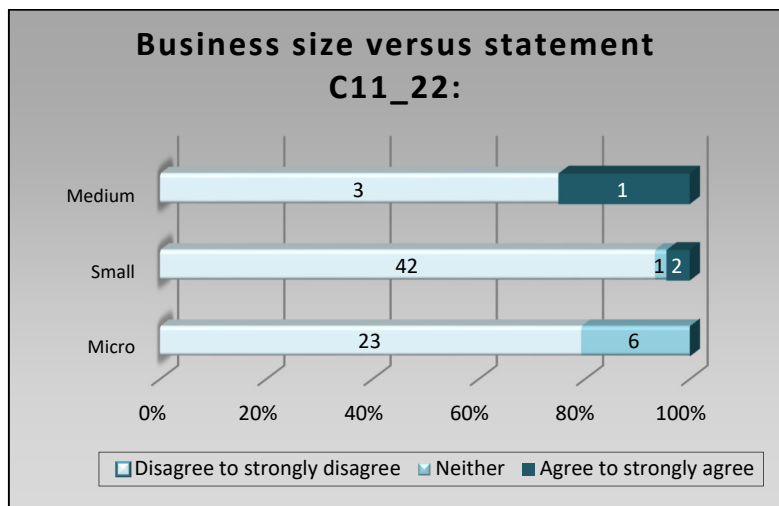
**Table 4.6: Statistically significant Chi-square tests for Questions C11\_22, D13\_28, and D13\_29**

Question number	Question/Statement	Sample size	Chi-square	DF	Exact p-value
C11_22	Limited creditworthiness of customers	78	13.3608	4	0.0140*
D13_28	Pollution	84	13.1871	4	0.0009***
D13_29	Dust	83	8.4715	4	0.0359*

Statistically significant at a significance level of 0.05 \*  
 Statistically significant at a significance level of 0.01 \*\*  
 Statistically significant at a significance level of 0.001 \*\*\*

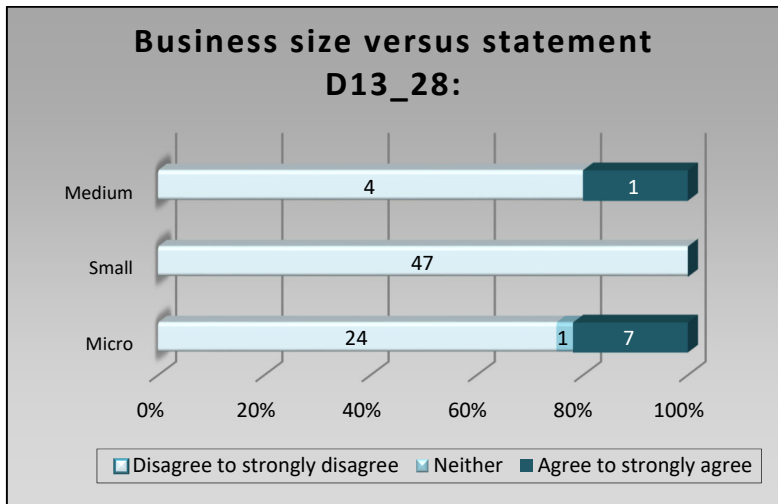
As seen in Table 4.6 above, statistically significant differences are evident between the size of a respondent's business (Question A02) with respect to the following:

- Risk limits the creditworthiness of customers (Question C11\_22)
- Pollution – operational risk (Question D13\_28)
- Dust – operational risk (Question D13\_29)



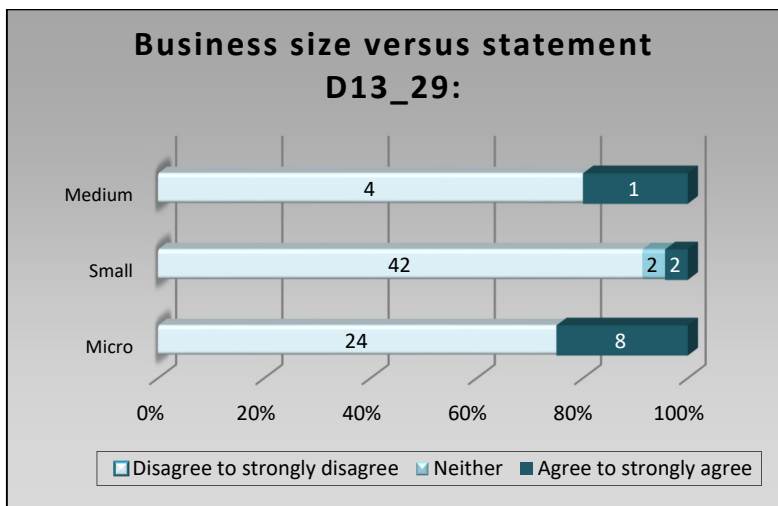
**Figure 4.43: Size of business (Question A05) versus C11\_22 (Section C, Question 11\_22)**

More respondents from the micro-sized businesses neither agreed nor disagreed that risk limited the creditworthiness of customers (Question C11\_12) and that it negatively influences the attainment of business objectives compared to respondents from small and medium-sized businesses (see Figure 4.43 above). Also, more respondents from small businesses disagreed to strongly disagreed with this statement compared to respondents from micro and medium-sized businesses.



**Figure 4.144: Size of business (Question A05) versus Question D13\_28 (Section D, Question 13.28)**

As shown in Figure 4.44 above, more respondents from micro-sized businesses agreed or strongly agreed that pollution as an operational risk (D13\_28) that negatively influences the attainment of business objectives, compared to the respondents from small businesses. Also, more respondents from small businesses disagreed or strongly disagreed with this statement compared to respondents from micro- and medium-sized businesses.



**Figure 4.155: Position in business (Question A05) versus Question D13\_29 (Section D, Question 13.29)**

More respondents from micro-sized businesses agreed to strongly agreed that dust as an operational risk (Question D13\_29) negatively influences the attainment of business objectives compared to respondents from small businesses (see Figure 4.45 above). Also,

more respondents from small businesses disagreed to strongly disagreed with this statement compared to those from micro- and medium-sized businesses.

#### 4.3.3.4.1.3 Highest level of education versus measuring variables

The Chi-square test of independence was used to assess whether an association exists between the highest level of education of a respondent (Question A07) and the measuring variables shown in Table 4.7 below. This test was completed to determine whether the highest level of education of a respondent has the same distribution concerning the measuring variables.

**Table 4.7: Statistically significant Chi-square tests for Questions B9\_1, B9\_11, C11\_4, C11\_8, C11\_11, C11\_17, C11\_22, C11\_23, C11\_24, C12, D13\_10, D13\_21, D13\_28, and E13\_29**

Question number	Question/Statement	Sample size	Chi-square	DF	Exact p-value
B9_1	Income is greater than expenses	83	10.4725	4	0.0087**
B9_11	Employees are trustworthy	84	10.8035	4	0.0129*
C11_4	Limited skills (competence) of employees	83	10.6402	4	0.0311*
C11_8	Unlimited revenue targets	77	10.2304	4	0.0297
C11_11	Weak employee morale	79	8.9517	4	0.0372
C11_17	Too strict internal policies and/or procedures	81	12.6401	4	0.0071**
C11_22	Limited creditworthiness of customers	78	9.1347	4	0.0378*
C11_23	Unethical behaviour by employees	80	9.7091	4	0.0329*
C11_24	Unethical behaviour by customers	77	11.6587	4	0.0112*
C12	How severely do these risks influence your business's overall attainment of objectives?	80	12.3454	4	0.0113*
D13_10	External fraud	80	10.0578	4	0.0286*
D13_21	Losses arising from poorly trained staff and agents	75	11.8268	4	0.0077**
D13_28	Pollution	84	11.2865	4	0.0134*
D13_29	Dust	83	8.9908	4	0.0242*

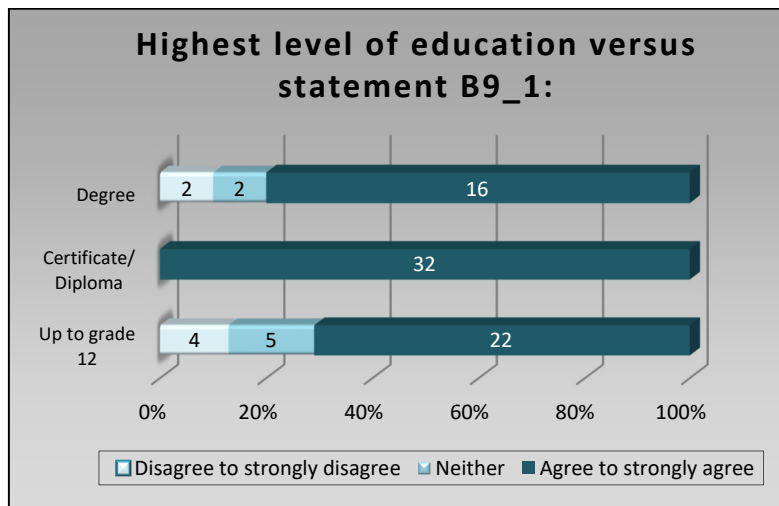
Statistically significant at a significance level of 0.05 \*

Statistically significant at a significance level of 0.01 \*\*

Statistically significant at a significance level of 0.001 \*\*\*

Statistically significant differences have been found between the highest level of education of the respondents (Question A07) with respect to the following statements (see Table 4.7 above):

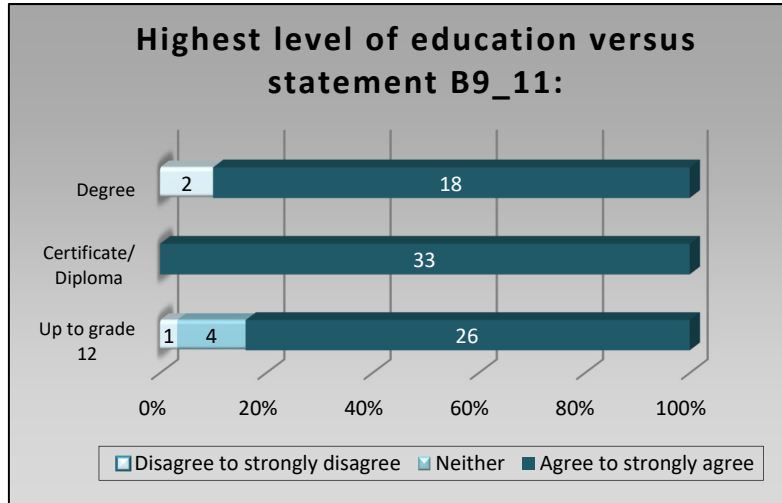
- Income is greater than expenses (Question B9\_1)
- Employees are trustworthy (Question B9\_11)
- Risk limits the skills of employees – general risk (Question C11\_4)
- Unlimited revenue targets – general risk (Question C11\_8)
- Weak employee morale – general risk (Question C11\_11)
- Too strict internal policies and/or procedures – general risk (Question C11\_17)
- Limited creditworthiness of customers – general risk (Question C11\_22)
- Unethical behaviour of employees – general risk (Question C11\_23)
- Unethical behaviour of customers – general risk (Question C11\_24)
- How severely risks influence the overall attainment of business objectives (Question C12)
- External fraud – operational risk (Question D13\_10)
- Losses arise from poorly trained staff and agents – operational risk (Question D13\_21)
- Pollution – operational risk (Question 13\_28)
- Dust – operational risk (Question 13\_29)



**Figure 4.46: Highest level of education (Question A07) versus Question B9\_1 (Section B, Question 9.1)**

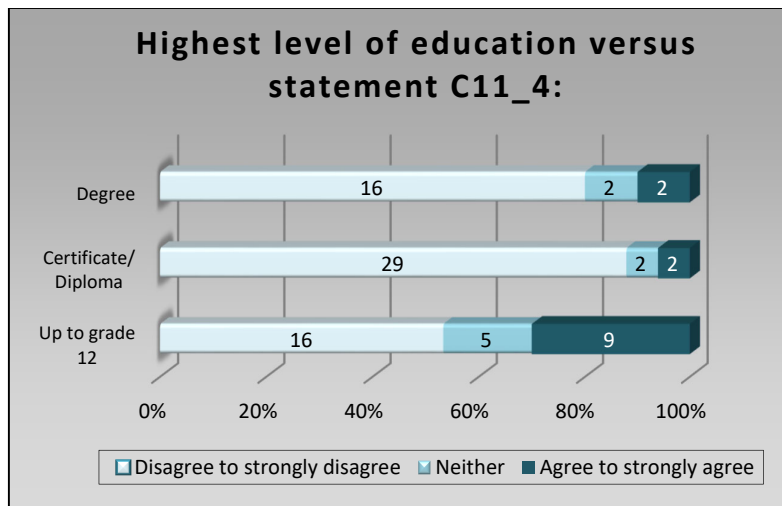
Figure 4.46 above depicts that more respondents with a Certificate or Diploma as their highest level of education (Question A07) agreed to strongly agreed that the income of their business

is greater than the expenses (Question B9\_1) when compared to respondents with a highest level of education of up to Grade 12 and those with a tertiary qualification.



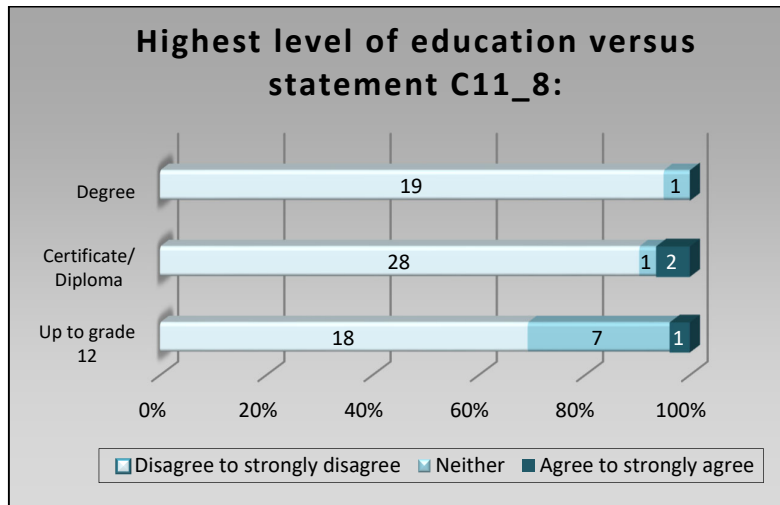
**Figure 4.47: Highest level of education (Question A07) versus Question B9\_11 (Section B, Question 9.11)**

More respondents in possession of a Certificate or Diploma as their highest level of education (Question A07) agreed to strongly agreed that their employees are trustworthy (Question B9\_11) compared to those respondents with their highest education level being up to Grade 12 (see Figure 4.47 above).



**Figure 4.168: Highest level of education (Question A07) versus C11\_4 (Section C, Question 11.4)**

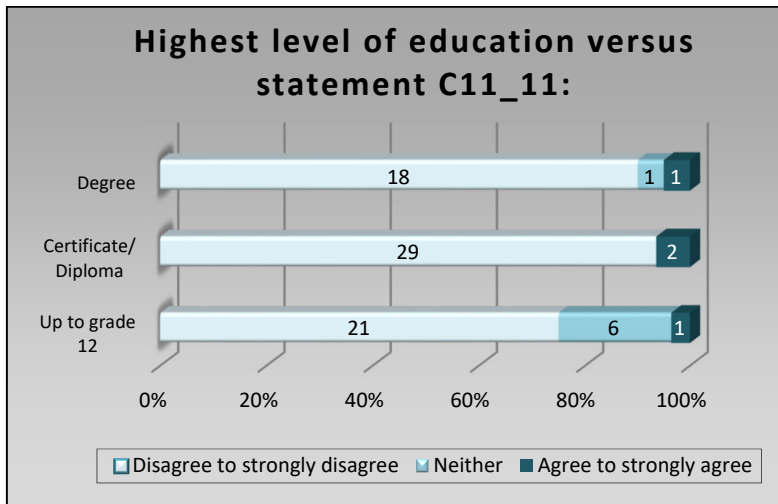
More respondents with up to Grade 12 being their highest level of education (Question A07) agreed to strongly agreed that employees' limited skills (competence) (Question C11\_4) negatively influences the attainment of business objectives when compared to respondents who possess a Certificate/Diploma (see Figure 4.48). In addition, more respondents in possession of a tertiary qualification disagreed to strongly disagreed with this statement, compared to respondents with up to Grade 12 as their highest education level..



**Figure 4.179: Highest level of education (Question A07) versus Question C11\_8 (Section C, Question 11.8)**

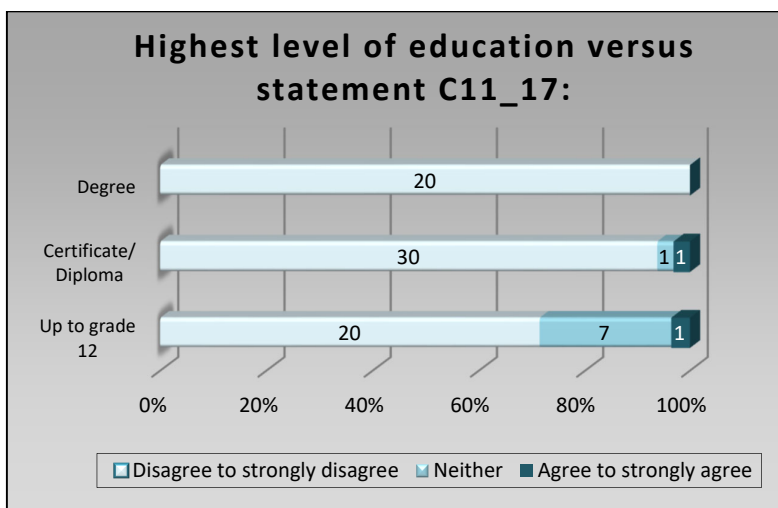
More respondents with up to Grade 12 as their highest education level (Question A07) neither agreed nor disagreed that unrealistic revenue targets (Question C11\_8) negatively influence the attainment of business objectives compared to the respondents with a Certificate/Diploma and/or Degree (see Figure 4.49). More respondents who have a tertiary qualification disagreed to strongly disagreed with this statement than those with up to Grade 12 educational level.





**Figure 4.50: Highest level of education (Question A07) versus Question C11\_11 (Section C, Question 11.11)**

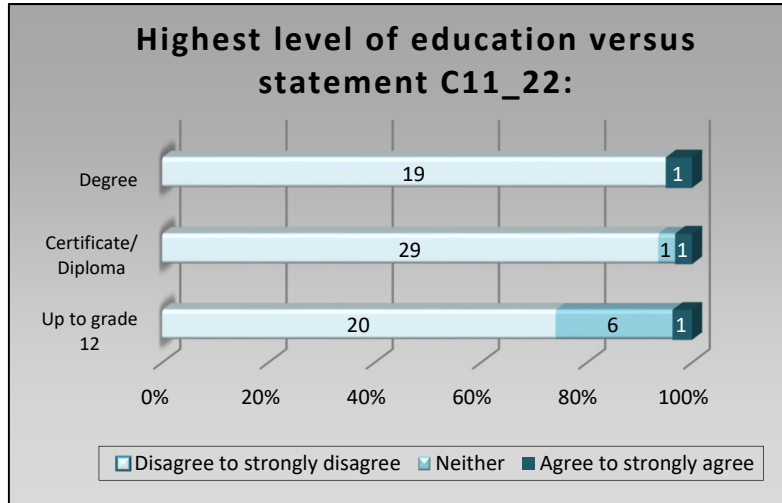
More respondents with up to Grade 12 as their highest education level (Question A07) neither agreed nor disagreed that weak employee morale (Question C11\_11) negatively influences the attainment of business objectives compared to the respondents with a tertiary qualification (see Question 4.50 above). More respondents who have a tertiary qualification disagreed to strongly disagreed with this statement that those with up to a Grade 12 education level.



**Figure 4.51: Highest level of education (Question A07) versus Question C11\_17 (Section C, Question 11.17)**

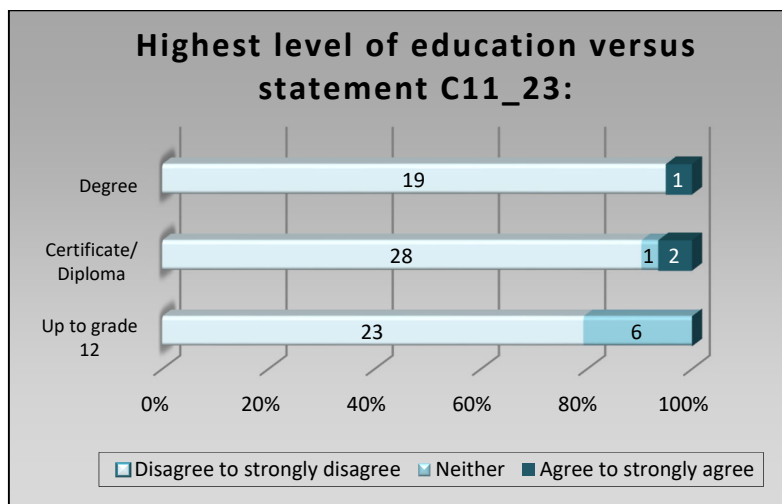
More respondents with up to Grade 12 education level (Question A07) neither agreed nor disagreed that too strict internal policies and/or procedures (Question C11\_17) negatively influence the attainment of business objectives compared to respondents with up to a tertiary

qualification (see Figure 4.51 above). More respondents with a tertiary qualification disagreed to strongly disagreed with this statement than those with up to Grade 12 education level.



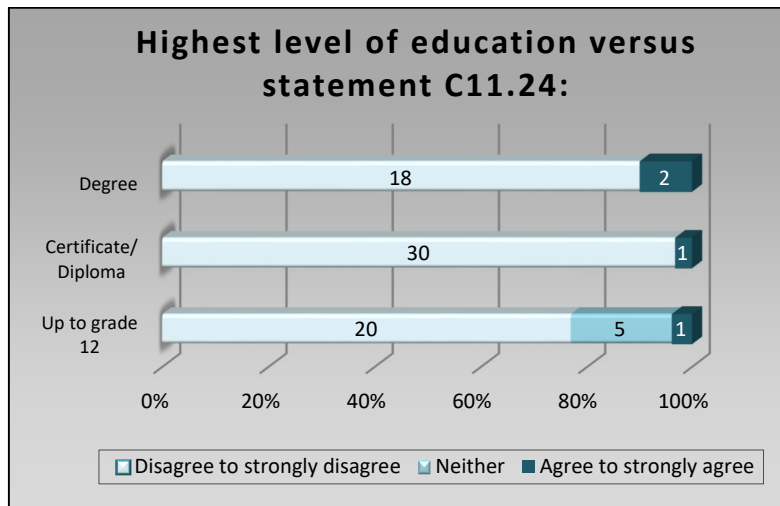
**Figure 4.182: Highest level of education (Question A07) versus Question C11\_22 (Section C, Question 11.22)**

More respondents with up to a Grade 12 level education (Question A07) neither agreed nor disagreed that limited creditworthiness of customers (Question C11\_22) negatively influences the attainment of business objectives compared to those with a tertiary qualification (see Figure 4.52). More respondents with a tertiary qualification disagreed to strongly disagreed with this statement than those with up to Grade 12 as their highest level of education.



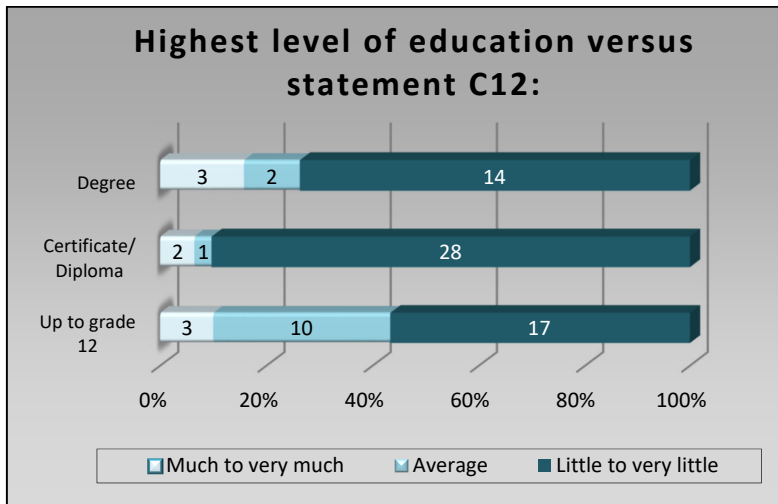
**Figure 4.53: Highest level of education (Question A07) versus Question C11\_23  
(Section C, Question 11.23)**

More respondents with up to Grade 12 as their highest education level (Question A07) neither agreed nor disagreed that unethical behaviour by employees (Question C11\_23) negatively influences the attainment of business objectives compared to those respondents with a tertiary qualification (see Figure 4.53 above). More respondents who have a tertiary qualification disagreed to strongly disagreed with this statement compared to those with up to a Grade 12 education level.



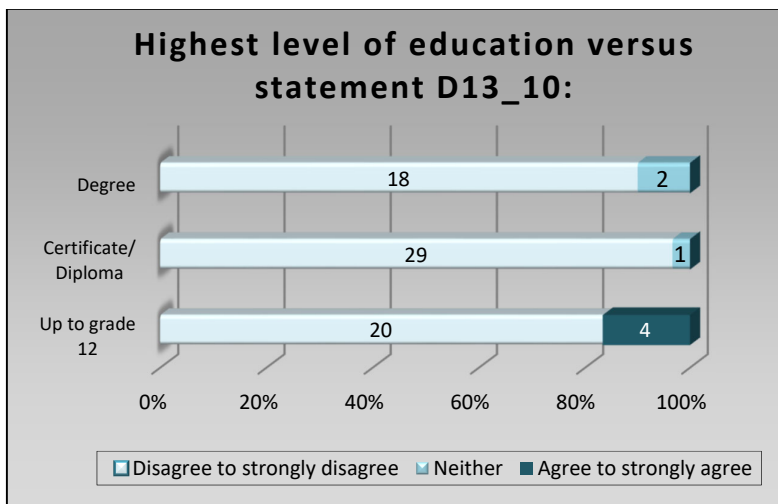
**Figure 4.194: Highest level of education (Question A07) versus Question C11\_24  
(Section C, Question 11.24)**

More respondents with up to Grade 12 as their highest education level (Question A07) neither agreed nor disagreed that unethical behaviour by customers (Question C11\_24) negatively influences the attainment of business objectives compared to those with a tertiary qualification (see Figure 4.54 above). More respondents with a tertiary qualification disagreed to strongly disagreed with this statement than those with up to a Grade 12 education level.



**Figure 4.205: Highest level of education (Question A07) versus Question C12 (Section C, Question 12)**

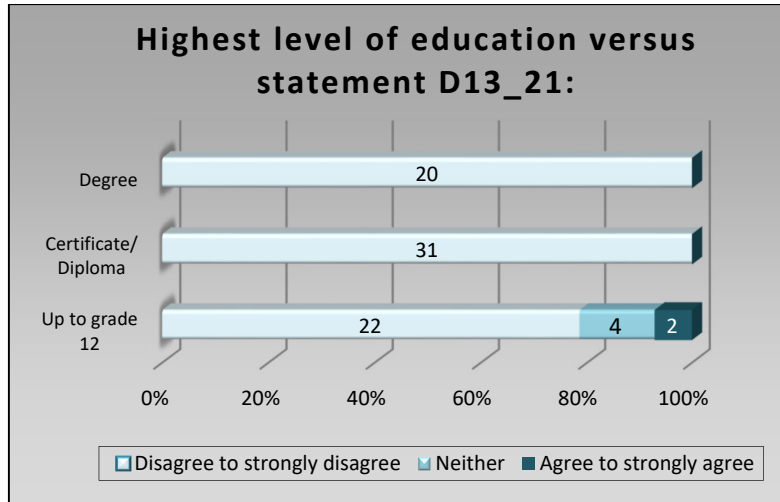
There are more respondents with up to Grade 12 as their highest education level (Question A07) who indicated the severity of the risks, which influence their business's overall attainment of objectives (Question C12), as being average compared, to the respondents with a tertiary qualification (see Figure 4.55 above). More respondents with a tertiary qualification indicated that the severity of the risk, which influences their business' overall attainment of objectives, is little to very little, than those with up to a Grade 12 level of education.



**Figure 4.216: Highest level of education (Question A07) versus Question D13\_10 (Section D, Question 13.10)**

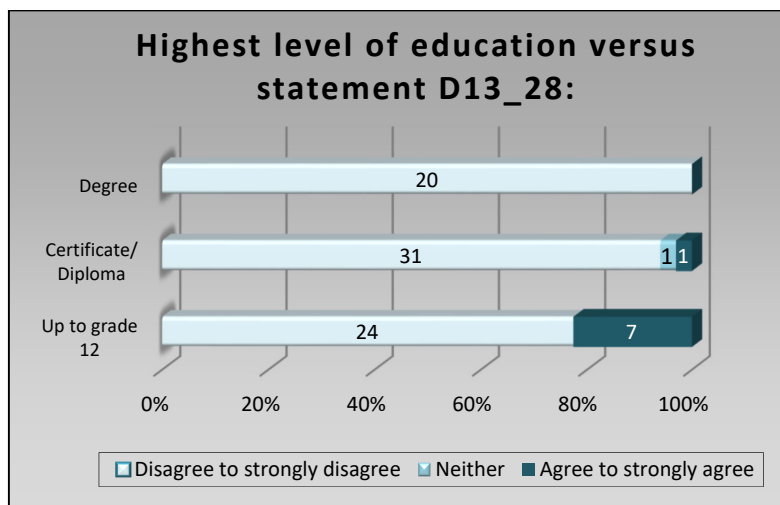
Figure 4.56 above shows that there are more respondents with up to Grade 12 as their highest education level (Question A07) who agreed to strongly agreed that external fraud as an

operational risk negatively influences the attainment of business objectives (Question D13\_10) compared to those with a tertiary qualification. More respondents with a tertiary qualification disagreed to strongly disagreed with this statement than those with up to Grade 12 as their highest education level.



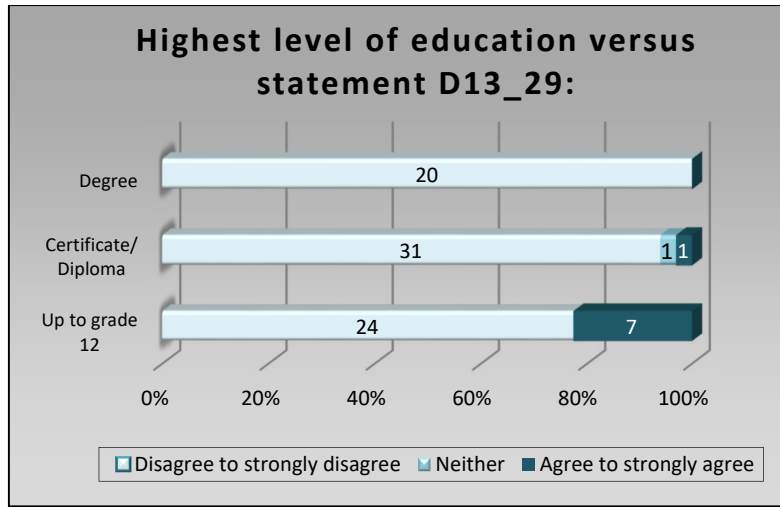
**Figure 4.57: Highest level of education (Question A07) versus Question D13\_21 (Section D, Question 13.21)**

Figure 4.57 above indicates that there are more respondents with up to a Grade 12 education level (Question A07) who neither agreed nor disagreed that losses arising from poorly trained staff and agents (Question 13\_21) as an operational risk that negatively influences the attainment of business objectives compared to respondents with a tertiary qualification. More respondents with a tertiary qualification disagreed to strongly disagreed with this statement than those with up to a Grade 12 education level.



**Figure 4.228: Highest level of education (Question A07) versus Question D13\_28  
(Section D, Question 13.28)**

Figure 4.58 above shows that there are more respondents with up to Grade 12 as their highest education level (Question A07) who agreed to strongly agreed that pollution as an operational risk (Question D13\_28) negatively influences the attainment of business objectives than those with a tertiary qualification. More respondents with a tertiary qualification disagreed to strongly disagreed with this statement than those with up to a Grade 12 education level.



**Figure 4.59: Highest level of education (Question A07) versus Question D13\_29  
(Section D, Question 13.29)**

Based on Figure 4.59 above there are more respondents with up to a Grade 12 as their education level (Question A07) who agreed to strongly agreed that dust as an operational risk (Question 13.29) negatively influences the attainment of business objectives compared to respondents with a tertiary qualification. More respondents with a tertiary qualification disagreed to strongly disagreed with this statement than those with up to a Grade 12 education level.

**4.3.3.4.1.4 Use of cash and/or credit sales versus measuring variables**

The Chi-square test of independence was used to test whether an association exists between the use of cash and/or credit sales within a business (Question A08) and the measuring variables shown in Table 4.8 below. This test was conducted to determine whether cash and/or credit sales within a business have the same distribution concerning the measuring variables.

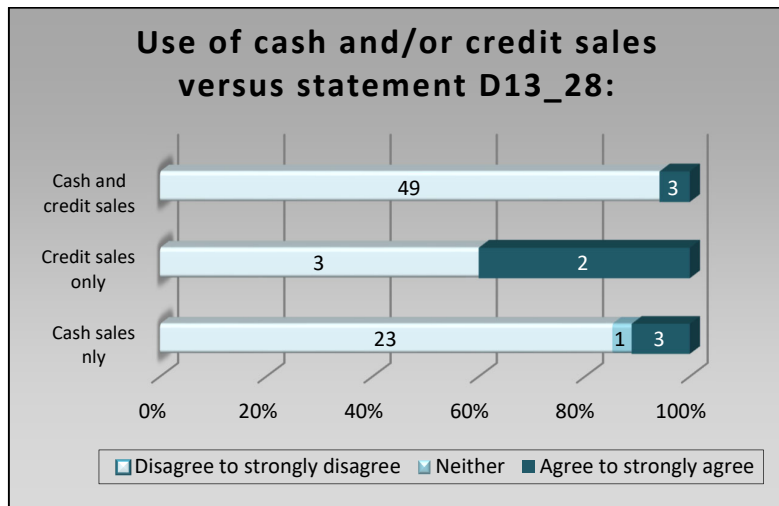
**Table 4.8: Statistically significant Chi-square tests for Questions D13\_28, D14, D17\_1, and D17\_4**

Question number	Question/Statement	Sample size	Chi-square	DF	Exact p-value
D13_28	Pollution	84	8.5020	4	0.0437*
D14	How severely do these operational risks influence your business' overall attainment of objectives?	81	10.6057	4	0.0262*
D17_1	People risk	83	10.6402	4	0.0311*
D17_4	External risk	77	10.2304	4	0.0297

Statistically significant at a significance level of 0.05 \*

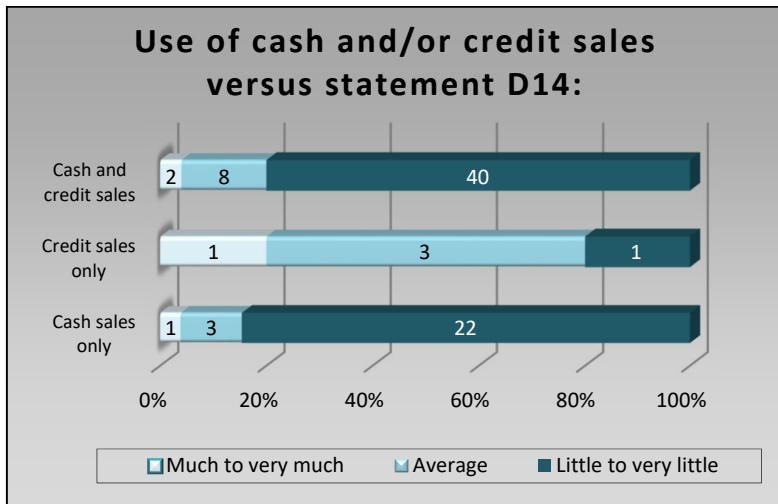
Statistically significant differences were found between whether respondents made use of cash and/or credit sales (Question A08) with respect to the following (see Table 4.8 above):

- Pollution (operational risk) (Question D13\_28)
- How severely operational risk influences business' overall attainment of objectives (Question D14)
- People risk
- External risk



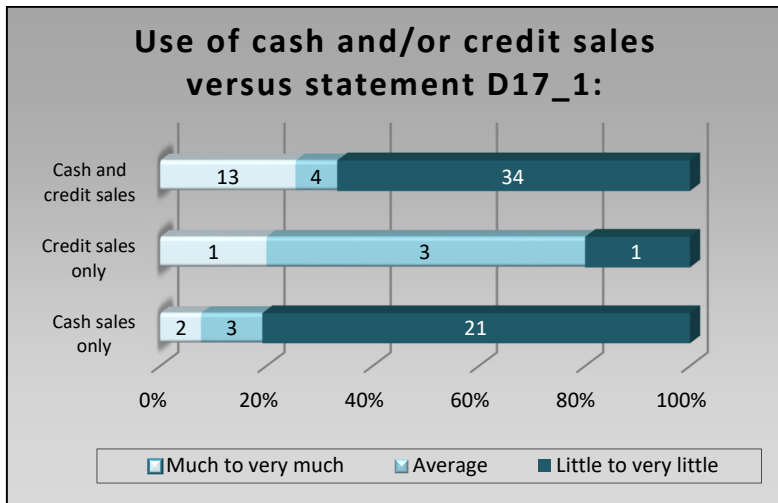
**Figure 4.60: Use of cash and/or credit sales (Question A08) versus Question D13\_28 (Section D, Question 13.28)**

As depicted in Figure 4.60 above, more respondents's SMEs used cash sales only or both cash and credit sales (Question A08) and disagreed to strongly disagreed that pollution as an operational risk (Question D13\_28) negatively influences the attainment of business objectives compared to those SMEs who use credit sales only.



**Figure 4.61: Use of cash and/or credit sales (Question D08) versus Question D14 (Section D, Question 14)**

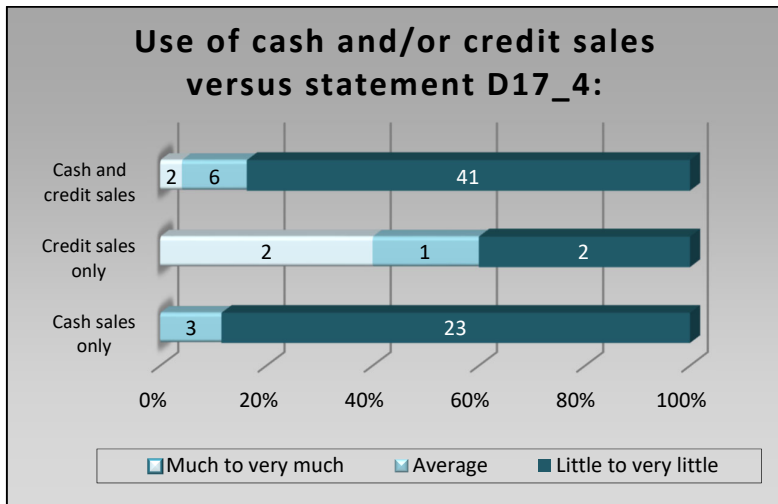
In Figure 4.61, more respondents from SMEs that made use of cash sales only or both cash and credit sales (Question D08) indicated that the severity of the operational risks, which influence their business's overall attainment of objectives (Question 14), is little to very little compared to those SMEs who made use of credit sales only.



**Figure 4.62: Made use of cash and/or credit sales (Question D08) versus Question D17\_1 (Section D, Question 17.1)**

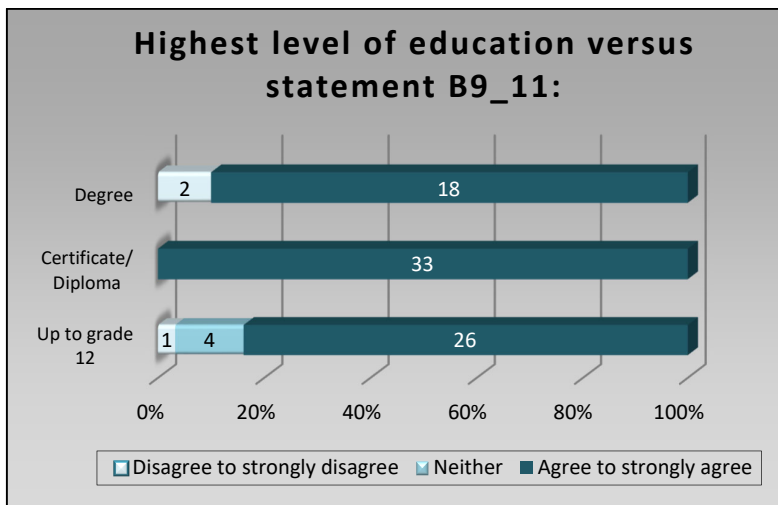
Figure 4.62 shows that there are more respondents from SMEs that made use of cash sales only or both cash and credit sales (Question D08) who indicated that people risk, as an operational risk, (Question D17\_1) affects the organisation little to very little compared to those respondents from businesses who made exclusive use of credit sales.





**Figure 4.63: Made use of cash and/or credit sales (Question D08) versus D17\_4 (Section D, Question 17.4)**

There are more respondents from SMEs that made use cash sales only or both cash and credit sales (Question D08) indicated that external risk (Question D17\_4) affects the organisation little to very little compared to respondents from SMEs that made use of credit sales only (see Figure 4.63 above).



**Figure 4.64: Highest level of education versus B9.11**

More respondents with a tertiary qualification agreed to strongly agreed that these employees are more trustworthy than the respondents with up to Grade 12 and respondents with a Degree as the highest level of education (see Figure 4.64). **[? This statement does not make sense!!]**

All the above statistics are represented in Appendix D below.

#### 4.4 DISCUSSION AND CONCLUSIONS

This chapter focused on the analysis of collected survey data to provide results that stimulated relevant discussions to address the this study's research questions and, as a result, attain the desired research objectives. Before data was analysed, the validity and reliability of the data was first addressed because these criteria form the foundation for presenting acceptable research results. Then, Cronbach's Alpha tests were used to determine the reliability of the gleaned data pertaining to Likert scale questions.

Descriptive statistics were performed on the respondents' and sampled manufacturing SMEs' demographic information and the sustainability of the sampled businesses. Moreover, relevant results and discussions were shared in relation to the operational risk factors influencing the sustainability of manufacturing SMEs in the Cape Metropole, including business sustainability, general risks and ORM.

To adequately address the main research objective of this study, inferential statistics (to perform cross-tabulations for different variables), Chi-square tests, as well as Kruskal-Wallis tests were performed.

With respect to the results of the demographic variables, the following analogies can be drawn:

- The majority of the respondents have decision-making powers within their respective businesses.
- More than half of the respondents are managers in the business, and nearly a third of the respondents are both the owner and manager of their business.
- Following the grouping of full-time employees according to enterprise size, more than half of the respondents come from small enterprises, nearly 40% are from micro-enterprises, and 6% are from medium-sized enterprises.
- Respondents with the highest level of education are represented more than their counterparts. However, depending on the population distribution, the various education groups can still represent all the highest levels of education. [NOT WHAT THIS MEANS]
- Most of the respondents make use of both cash and credit sales, followed by cash sales only, and only a small portion of the participating SMEs make use of credit sales only.
- On average, respondents have been acting in their respective positions in the business for 9.2 years, with a standard deviation of 5.8.

- The businesses represented in this survey, on average, have been in existence for 15.4 years, with a standard deviation of 10.5.
- The average number of full-time employees employed by the surveyed SMEs are 21, with a standard deviation of 24.

With respect to the results of the measuring variables, the following analogies can be drawn:

- The majority of the respondents strongly agree with all the statements with respect to different aspects related to the sustainability of their businesses. Most respondents indicated that the overall attainment of business objectives is good to very good in their businesses.
- Most respondents strongly disagree with all the listed general risks, which negatively influence the attainment of their business objectives. This response substantiates that these risks influence their business' overall attainment of objectives little or very little.
- The majority of respondents strongly disagree with all the listed operational risks, which negatively influence the attainment of their business objectives. This response substantiates that operational risks influence their business' overall attainment of objectives little or very little.
- The majority of respondents strongly disagree that they have encountered any of the listed operational risks. This fact is substantiated by the response that the SME faces very little or little operational risk or losses. All the different risks or losses mentioned also affect the businesses very little.
- Only half of the respondents are familiar with the term "operational risk".
- ORM is implemented in only 16.5% of the SMEs.
- For those companies that have implemented the ORM process, the main reasons include:
  - Requirements of credit institutions, suppliers or customers
  - Others
- The respondents are evenly spread between the listed entities responsible for ORM in their companies.
- ORM related information is mainly documented within the following locations:
  - Finance/Controlling
  - Handbook of risk management
- The tools used by companies include the calculation of operational risks (92.9%) and identification of operational risks (78.6%).

Stemming from the descriptive results delineated above, it is evident that the majority of participating SMEs perceived themselves not to be facing operational risks, and consequently, they did not implement ORM. A total of 49.4% of the respondents indicated that they do not implement ORM, and an alarming 47.1% are not even aware of the term “operational risk”. Most of the participants agreed with statements relating to achieving business objectives and not encountering any of the listed operational risks. Only some of the respondents indicated that they were adversely influenced by operational risk factors, which, at this point, do not seem to affect the sustainability of their business because, on average, all of them have been in existence for 15.4 years. The data gleaned from SMEs managers and/or owners on the operational risk that influences the sustainability of their SMEs are thus not in congruence with existing academic literature. Based on the results of this study, it could be argued that most of these SMEs should not be sustainable, because their owners/managers are not *au fait* with operational risk and ORM – of half the respondents perceived their business not to experience operational risk and, consequently, ORM was not implemented. Only 16.5% of SMEs indicated that they experience operational risk and, as a result, implemented ORM. In this research study, four major operational risk factors influenced SME sustainability in all the SMEs that implemented ORM namely: 1) people, 2) systems, 3) processes and 4) external risk.

Based on the aforesaid information, it is apparent that there is insufficient evidence that operational risk adversely influences the sustainability of manufacturing SMEs in the Cape Metropole of South Africa. Therefore, the question remains: *How can manufacturing SMEs in the Cape Metropole be sustainable despite not implementing ORM and perceiving themselves not to experience operational risk?*

Chapter 5 revisits the identified research problem, relevant research questions and objectives, and conclusions and recommendations are made.

## **CHAPTER 5: KEY FINDINGS, CONCLUSION AND RECOMMENDATIONS**

### **5.1 INTRODUCTION**

This research study aimed to address the research problem (see Chapter 1, Section 1.2) by establishing the extent to which operational risk affects the sustainability of manufacturing SMEs operating within the Cape Metropole, South Africa. This objective was achieved by addressing the research questions (both primary and sub-questions), together with the research objectives (both primary and secondary) (see Section 1.3 above) and conducting an in-depth literature review (see Chapter 2 above) and empirical study by means of a survey (see Chapter 3 above). The literature review focused on operational risk because it is viewed as a significant risk inherent in every business, making smaller businesses especially vulnerable to business failure.

Chapter 1 introduced the reader to the research problem, after which it expanded upon the intentions, aims and objectives of the research study. In addition, a summary of the research design, methodology and methods employed in this study were provided, while also stating the demarcation of the study and the contribution made from the research conducted.

In Chapter 2, the first two research sub-questions were investigated by conducting a comprehensive literature review, particularly those conducted within the manufacturing sector, addressing the importance of SMEs and different types of risks that SMEs face. Insight was provided on operational risk factors, and the management thereof, in both a general and South African SME dispensation. The secondary research objectives were achieved by providing answers to the research sub-questions (see Chapter 3 above).

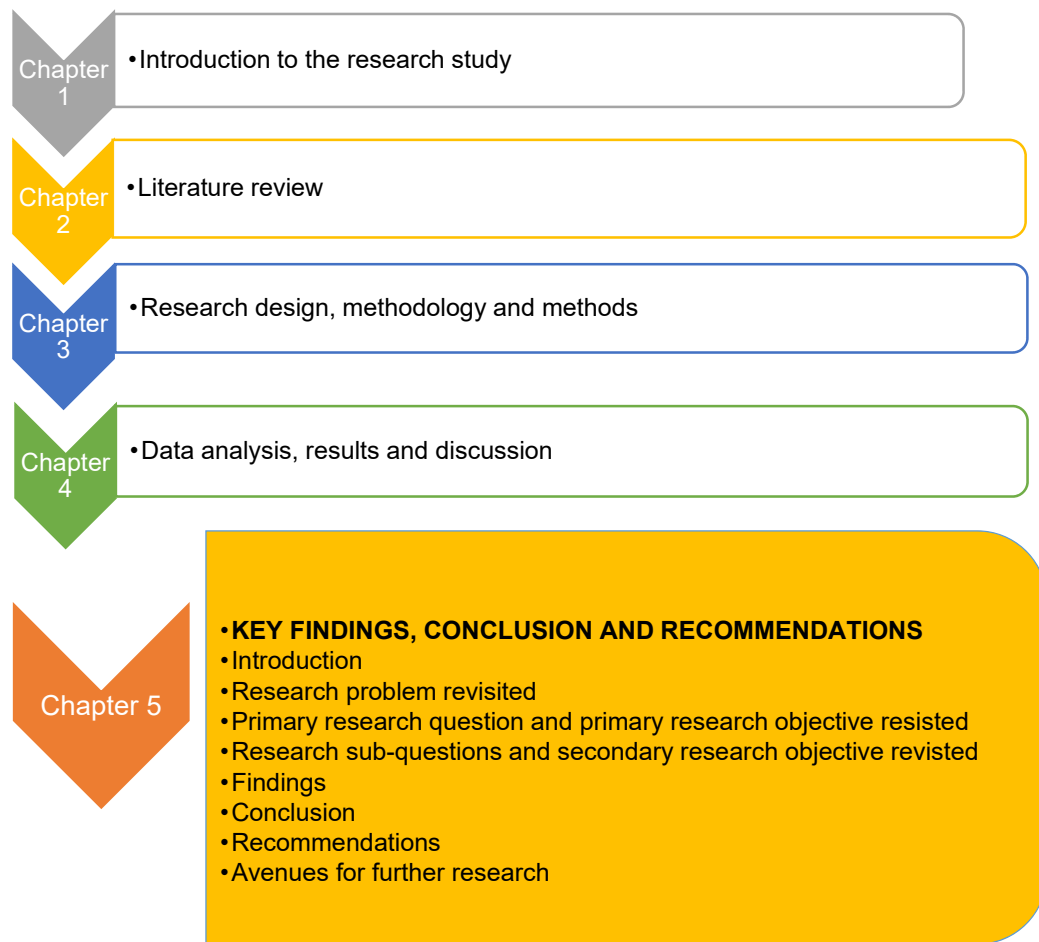
Chapter 3 discussed the research design, methodology, methods, sampling techniques and data collection method used within the ambit of this research study. Furthermore, the ethical considerations, validity and readability, as well as the limitations of the study, were also discussed.

Chapter 4 focused on methods of analysis, data analyses, and the interpretation of the study's research findings. The collected data was analysed using predominantly descriptive statistics and inferential statistics. Tables and graphs were used to present the results in relation to the responses received from the survey participants who were owners and/or managers of manufacturing SMEs in the Cape Metropole.

This chapter (Chapter 5) summarises the research process of the entire study, which includes the conclusions and recommendations constructed on the data gathered and the results of the study. For completeness, recommendations are provided by revisiting the research

problem, main research question, three investigative research questions and three research objectives. Furthermore, conclusions are drawn from the analysis of the results, recommendations are made to assist owners and/or managers of SMEs with valuable knowledge on operational risks and how they can address these risks to ensure business sustainability. Avenues for further research are also discussed.

The analytical process followed thus far is graphically depicted in Figure 5.1 below, which places the chapters in context with the overall research objectives and indicates the relative positioning of this chapter.



**Figure 5.1: Detailed layout of Chapter 5 – Key findings, conclusion and recommendations**

## 5.2 RESEARCH PROBLEM REVISITED

The primary objective of this research study was to solve the following research problem (see Chapter 1, Section 1.2 above):

*“Operational risk adversely influences the sustainability of SMEs.”*

As discussed in the literature review in Chapter 2 above, SMEs face different types of risks within their businesses. Operational risk is one of the major risks that small businesses face, which is inherent and exists in every human activity. This risk, in turn, has a significant impact on the sustainability of SMEs.

Based on the analysed and interpreted data presented in Chapter 4 above, it is evident that most participating SMEs perceived themselves as not to be facing operational risk and, consequently, they did not implement ORM. The majority of these SMEs agreed with statements relating to achieving business objectives and not encountering any of the listed operational risks. Only some businesses indicated that they were adversely influenced by operational risk factors, which appear not to affect the sustainability of their business because, on average, all have been in existence for more than 15 years. Based upon the findings presented in the reviewed literature, it could be argued that most of these SMEs should not be sustainable, because they are not *au fait* with operational risk and ORM – almost half of the respondents perceived their business as not having experienced operational risks and, consequently, ORM was not implemented within their businesses. Only 16.5% of SMEs indicated that they experienced operational risk and, as a result, had implemented ORM. The research results, thus, are in sharp contrast with existing academic literature. Therefore, it is apparent that there is insufficient evidence that operational risk adversely influences the sustainability of manufacturing SMEs in the Cape Metropole of South Africa. Hence, the question remains: *How can manufacturing SMEs in the Cape Metropole be sustainable despite not implementing ORM and perceiving themselves not to experience operational risk?*

A primary research question and research objective were formulated and expanded upon below to address the established research problem, primary research question and research objective, as well as its associated secondary research sub-questions and objectives.

## 5.3 PRIMARY RESEARCH QUESTION AND PRIMARY RESEARCH OBJECTIVE REVISITED

To address the established research problem, the following primary research question was asked (see section 1.3.1 above):

*“To what extent does operational risk influence the sustainability of manufacturing SMEs in the Cape Metropole?”*

In consideration of the above research question, the following primary research objective was formulated in relation to this research study:

*“To determine the extent to which operational risk influences the sustainability of manufacturing SMEs in the Cape Metropole.”*

Using the above as a basis, the researcher sought to answer the research question to achieve the research objective and address the established research problem. Three sub-questions, along with their three related secondary research objectives, were formulated to extensively address and answer the primary research question and to achieve the primary research objective (see Chapter 1, Section 1.3.2 above).

#### **5.4 RESEARCH SUB-QUESTIONS AND SECONDARY RESEARCH OBJECTIVES REVISITED**

For this research study, three research sub-questions were developed, along with three secondary research objectives. Each one of these research sub-questions and their respective secondary research objectives are revisited below.

##### **5.4.1 First research sub-question and its respective secondary research objective revisited**

To answer the primary research question, the first research sub-question read:

*What is operational risk?*

This research sub-question was answered by conducting a literature review (see Chapter 2 above), to achieve the following first secondary research objective:

*To determine what operational risk is.*

##### **5.4.2 Second research sub-question and its respective secondary research objective revisited.**

The second research sub-question stems from the primary research question and reads:

*What operational risks do manufacturing SMEs face?*

This research sub-question was answered by conducting a literature review (see Chapter 2 above), to achieve the following secondary research objective:



*To determine the operational risks that manufacturing SMEs encounter.*

#### **5.4.3 Third research sub-question and its respective secondary research objective revisited.**

The third research sub-question stems from the primary research question and reads:

*To what extent is ORM implemented within manufacturing SMEs?*

This research sub-question similarly was answered by conducting a literature review (see Chapter 2 above), to achieve the following secondary research objective:

*To determine the extent to which ORM is implemented within manufacturing SMEs.*

#### **5.4.4 Fourth research sub-question and its respective secondary research objective revisited.**

The fourth research sub-question stems from the primary research question and reads:

*What operational risk factors influence the sustainability of manufacturing SMEs?*

This research sub-question likewise was answered by conducting a literature review (see Chapter 2 above), to achieve the following secondary research objective:

*To determine what operational risk factors influence the sustainability of manufacturing SMEs.*

### **5.5 FINDINGS**

In this research study, the following analogies were drawn based on the three research sub-questions asked:

#### **5.5.1 What is operational risk?**

In response to the above research sub-question, operational risk was extensively conceptualised in the literature review (see Chapter 2 above). This finding was achieved by looking at different views from various academics regarding the term “operational risk”. Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk but excludes strategic and reputational risk. Operational risk is known to be a major risk that is inherent in every human activity, such as making errors, acts of fraud, negligence, system failure, technology failure and natural disasters such as floods and earthquakes. In business, operational risk is viewed as an incident that interrupts the typical business process flow, resulting in financial loss.

According to the study respondents, operational risks are internal or external factors that prevent an organisation from achieving its objectives. This view was the general understanding of those respondents who indicated their knowledge and understanding of the term 'operational risk'. They also understood operational risk to include all forms of potential damage, affecting all business units and not only the department that performs the activities associated with that risk.

In this research study, operational risk was found to be caused by four factors: 1) processes, 2) people, 3) systems and 4) external events (see Chapter 2, Section 2.6.2 above). The respondents did not indicate any other factors as being the cause of the operational risks they experience in their businesses.

### **5.5.2 What operational risks do manufacturing SMEs face?**

It was imperative to evaluate the importance of SMEs' sustainability, particularly in South Africa, and the risks that adversely affect business sustainability, before this research sub-question could be answered. According to the reviewed literature (see Chapter 2 above), it is apparent that South African SMEs have a high failure rate due to the ineffective management of operational risks that contribute to the failure of these businesses. The South African financial landscape is not conducive for businesses to operate in because it comprises a harsh economic environment in which numerous risks materialise (see Chapter 2, Section 2.4 above). In general, there are various types of risks that businesses face and that threaten their sustainability. This study focused on operational risk, because this threat is known to be one of the most predominant challenges that businesses face.

Research results, based on the feedback received from the survey respondents (managers and/or owners of manufacturing SMEs in the Cape Metropole, (see Chapter 4 above) indicate that the majority of the SMEs showed good sustainability (on average, the respondents' businesses have been in existence for 15.4 years)). Despite the high sustainability rate of the targeted SMEs, some of these businesses are still adversely influenced by various operational risks, such as 1) staff errors and omission, 2) system processing errors, 3) inadequate auditing procedures, 4) failed systems and transactions, 5) poor system designs, 6) lack of internal control and 7) inadequate segregation of duties. The aforesaid risks can mainly be attributed to operational risk factors, such as people risk, process risk and system risk.

In contrast with the above results, it is important to note that 47.1 per cent of the sampled SMEs perceived themselves as having good sustainability and strongly disagreed that they have been adversely affected by the aforesaid operational risks, despite having faced these risks on a continuous basis. It is further important to note that despite owners' and/or

managers' perceived positive view of their business's position, they are not familiar with the term "operational risk". This deficiency raises the question of whether SMEs are indeed aware of the various operational risks they face and, as a result, if they can address these risks through proper risk management and the implementation of operational risk controls.

It can be argued that some SMEs, despite being sustainable, are adversely influenced by operational risk factors and respondents (owners and/or managers) who indicated that they are not familiar with the term "operational risk" and do not implement ORM are greatly susceptible to these risk factors. It seems that SME owners and/or managers' lack of awareness of these risks incapacitates them from implementing ORM in order to identify and manage these risks, a fact which could adversely influence the sustainability of their businesses. A plausible reason for SME respondents' unawareness of either operational risks and ORM could be attributed to the education levels of some owners and/or managers because the data analysis process proved there was a correlation between low education levels and respondents indicating their unawareness of the term "operational risk".

However, the question still remains, namely: How is it possible that these SMEs have such a good sustainability rate but are not familiar with what operational risk entails? One of the major suspected reasons for the success of these businesses is that some of them might be family businesses in which knowledge and skills have been passed continuously from one generation to the next. According to Duh, Belak and Milfelner (2010), family enterprises are more personal, in which employees feel and act as if they are 'part of the family'. Management in these businesses is distinguished by teamwork and participation, and employees show a high level of mutual trust and commitment to their business (Duh, Belak & Milfelner, 2010). This kind of trust and teamwork would surely reduce the level of operational risk induced by people because employees work diligently in situations in which they feel they pay an integral part in the success of the business, especially when leadership comprises mentoring and not micro-management. Ford, Gadde, Håkansson, Lundgren, Snehota and Turnbull (1998) mentioned that these 'family-style' enterprises are able to manage knowledge and promote a culture in which employees find it is to their advantage to learn, share and create knowledge. According to Omotayo (2015), knowledge management improves the staff's ability through practical experience and knowledge sharing, thus, promoting innovation and improving the organisation's performance. Research studies have shown that accurate capturing, storing, and dispersing knowledge throughout an organisation results in greater operational risk control and productivity (Talebi, 2009). Furthermore, Desouza and Awazu (2006) and Cerchione, Esposito and Spadaro (2015) affirm that the success of SMEs is based on effective knowledge management that decreases the occurrence of operational risk. Therefore, it can be argued that the majority of SMEs that participated in this research study have attained this

level of sustainability through mainly knowledge management instead of identifying operational risk factors and implementing ORM.

### **5.5.3 To what extent is ORM implemented within manufacturing SMEs?**

According to research results, the minority of the respondents indicated that an ORM process is implemented in their companies (see Chapter 4 above). For those respondents (16.5%) who indicated that they implement ORM within their businesses, the reasons given include 1) requirements of credit institutions, suppliers or customers, 2) law requirements of auditors, and 3) others. It should be noted that the respondents that chose “other” did not provide a reason for their answer.

It could be argued that the extent to which the participating SMEs implement ORM is very limited (16.5%) due to the low education levels of respondents, their lack of training, plus the perception that ORM is an expensive tool to implement and can only be afforded by large and well-established manufacturing businesses. This low level of ORM implementation, thus, is to be expected because of the high failure rate of South African SMEs.

The minority of participating SMEs that implemented ORM indicated that they remain affected by various operational risks. This comment is expected due to the harsh South African economic landscape, which exposes businesses to operational risks. Therefore, it is evident that implementing ORM in SMEs does not eliminate operational risk but can reduce the adverse influence thereof and, consequently, improve the sustainability of these businesses.

### **5.5.4 What operational risk factors influence the sustainability of manufacturing SMEs?**

It has been frequently stated in this report, that one of the major challenges that South African SMEs face is that of operational risk. In this research study, operational risk was found to be caused by four factors: 1) processes, 2) people, 3) systems and 4) external events, which, in turn, affect business sustainability. Based on the study results, the ‘people factor’ caused the most operational risk. Consequently, this factor, which arose from personnel incompetence or fraud (intentional or unintentional) and exposed these businesses to potential losses, had the most influence on the sustainability of the manufacturing SMEs operating in the Cape Metropole. The ‘systems factor’ and ‘processes factor’ had the second and third most influence on businesses’ sustainability, respectively.

However, implementing ORM can change the influence that these operational risk factors have on the sustainability of businesses because ORM aids SMEs in identifying and mitigating these risks, which reduces loss and improves business sustainability. In addition, ORM

ensures sophistication in measuring the risk factors, thus, helping to accurately identify the risk and optimal capital that a business holds. Preventative measures can be put in place based upon the factors that mostly affect SME's sustainability.

## **5.6 CONCLUSION**

This research study focused on determining the influence of operational risk on the sustainability of manufacturing SMEs in the Cape Metropole.

SMEs in South Africa, as stated previously, are acknowledged as play an important role in the country's economy, such as contributing to the GDP and creating jobs. However, SMEs are known also to have the worst track record in terms of sustainability, because the majority of SMEs fail within the first three years of their existence.

According to the reviewed literature, SMEs are adversely influenced by numerous risks which, in turn, can affect the sustainability of businesses. Furthermore, research studies show that operational risk is one of the main challenges facing SMEs and stem from factors such as people, processes, systems and external risk.

The research findings were based on the data collected from the owners and/or managers of participating manufacturing SMEs in the Cape Metropole. Contrary to the anticipated outcome of this research study, it was found that the majority of these SMEs were sustainable despite being adversely influenced by operational risks. In particular, the following operational risks had a negative influence on the attainment of business objectives: 1) staff errors and omission, 2) system processing errors, 3) inadequate auditing procedures, 4) failed systems and transactions, 5) poor system designs, 6) lack of internal control, and 7) inadequate segregation of duties. As indicated previously, these risks stem from the operational risk factors of people, processes and systems.

Furthermore, it is interesting to note that many of the SME owners/managers who opined that operational risks do not adversely influence their businesses, also indicated that they were not aware of the term "operational risk". A plausible reason for SME respondents' lack of knowledge of this sophisticated business term could be attributed to the education levels of some owners and/or managers, because a correlation was found between low education levels and respondents' ignorance of the term "operational risk". Therefore, it could be argued that the participating manufacturing SMEs do not implement ORM since most of these businesses perceive that they are not influenced by operational risk due to their lack of this concept.

The above research findings are not in congruence with existing reviewed literature because the majority of the participating SMEs have, on average, been in existence for 15.4 years without practising or being aware of ORM. This phenomenon could be attributed to the fact that some of these businesses are family-owned and family-run businesses wherey business knowledge and skills have been passed down from one generation to the next. Since the success of SMEs is based on accurate and effective knowledge management that decreases the occurrence of operational risk, it could be argued that these businesses have attained this level of sustainability through mainly knowledge management as opposed to the identification of operational risk factors and implementing ORM. Furthermore, within these businesses, trust, participation, teamwork and commitment, which are credited to the personal nature in which these these businesses operate, play a critical role in the success of a business. This 'friendly atmosphere' could often lead to exceptional participation and performance from employees because they feel that they are part of the family and the success of the business. Therefore, it could be argued that the level of operational risks that is often induced by people, in such circumstances, is reduced, which, in turn, could assist with the SME's sustainability.

## **5.7 RECOMMENDATIONS**

To address some of the above shortfalls and to increase the implementation of ORM in SMEs to mitigate the average operational risk factors that adversely affect SMEs, the following recommendations are proposed:

- The Institute of Risk Management South Africa (IRMSA) should offer a course on ORM to encourage SME owners and/or managers to improve their ORM knowledge and skills. Such a process could assist them in identifying and addressing operational risks and improving their businesses' sustainability. In addition, the national government should partner with the IRMSA to subsidise these courses and their implementation in SMEs.
- The national government should establish institutions that can assist the IRMSA in offering training/courses on ORM to SMEs.
- SME owners and/or managers should strive to improve their knowledge and understanding of operational risk factors and ORM, by attending ORM training provided by organisations such IRMSA.
- SMME/SME owners and/or managers should ensure that relevant ORM is implemented, monitored and revised continually, to ensure its adequacy and/or effectiveness (soundness) with their businesses.

- SMME/SME owners and/or managers should conduct operational risk identification/assessment continually to evaluate and analyse potential risks facing their businesses.

## **5.8 AVENUES FOR FURTHER RESEARCH**

While this research study was being conducted, new insights were highlighted, which could lead to further research in the near future. The following, among other issues, could serve as possible avenues for further research:

- To conduct studies that focus on operational risk management in SMEs within various South African sectors, using a larger sample size, because research results would provide more accurate/valid information that and can be generalised.
- To determine the impact of operational risk management on the sustainability of South African SMEs.
- To determine why manufacturing SMEs have good sustainability rates despite not being fully aware of operational risk and ORM.

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## APPENDICES

### Appendix A: Research survey

RESEARCHER DETAILS	
Researcher:	Ms Urim Shipanga
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RESEARCH TITLE
The influence of operational risk on the sustainability of manufacturing SMEs in the Cape Metropole

PROBLEM STATEMENT
The sustainability of SMEs is adversely influenced by operational risk factors?

PRIMARY OBJECTIVE OF THIS RESEARCH STUDY
The primary research objective of this study is to determine the operational risk factors that influence the sustainability of manufacturing SMEs in the Cape Metropole.

ETHICAL CONSIDERATIONS
Please note that ALL information provided by any respondent will be kept strictly confidential. The information provided will strictly be used for research purposes only. The participation of respondents is completely voluntary in nature and, as such, the respondent may withdraw from this research study at any time he/she should wish to do so without being discriminated against.

HOW TO COMPLETE THIS SURVEY
This survey comprises mostly closed-ended questions which require the respondent to fill in a numeric digit and/or mark an "x" in the most appropriate box. Clear instructions for each question are given under each section. If at any time the respondent does not understand the question, please feel free to contact the researcher and/or supervisor through the contact information indicated on the front page of this survey.

I confirm that I have given my consent to take part in this research study
Yes [ ] No [ ]

SECTION A: DEMOGRAPHICAL INFORMATION	
1. Do you have decision-making power within the business? (Tick the most appropriate answer.)	
Yes <input type="checkbox"/> No <input type="checkbox"/>	
2. What is your position in the business? (Tick the most appropriate answer.)	
Owner <input type="checkbox"/> Manager <input type="checkbox"/> Owner and manager <input type="checkbox"/>	
3. How long have you been in this position? (in years)	
_____ years	
4. How long has your business been in existence? (in years)	
_____ years	
5. How many full-time employees do you employ? (number)	
_____ employees	
6. Which of the options below best describe your business? (Tick the most appropriate answer.)	
Clothing and Textiles <input type="checkbox"/> Wood <input type="checkbox"/> Leather <input type="checkbox"/> Paper <input type="checkbox"/> Chemicals <input type="checkbox"/> Plastics <input type="checkbox"/> Electronics <input type="checkbox"/> Computers <input type="checkbox"/> Transportation <input type="checkbox"/> Food Production <input type="checkbox"/> Metal <input type="checkbox"/> Petroleum <input type="checkbox"/> Other <input type="checkbox"/>	
If other, please specify: _____	
7. What is your highest level of education? (Tick the most appropriate answer.)	
Lower than Grade 12 <input type="checkbox"/> Grade 12/Senior Certificate/Matric <input type="checkbox"/> National Higher Certificate/Higher Certificate/National Certificate <input type="checkbox"/> Higher Diploma/Diploma/National Diploma <input type="checkbox"/> Bachelor's Degree/Advanced Degree <input type="checkbox"/> Honours degree/Postgraduate diploma <input type="checkbox"/> Master's degree <input type="checkbox"/> Doctoral degree <input type="checkbox"/>	
8. Do you make use of cash sales and/or credit sales? (Tick the most appropriate answer.)	
Cash sales only <input type="checkbox"/> Credit sales only <input type="checkbox"/> Cash sales and credit sales <input type="checkbox"/>	

SECTION B: BUSINESS SUSTAINABILITY	
9. Rate the following statements with regard to your own business situation which start with the base sentence below, by writing a number in the appropriate space (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree).	
Statement: "In this business ..."	RATING
9.1. Income is greater than expenses	
9.2. There is sufficient cash on hand	
9.3. Assets are greater than liabilities	
9.4. Good relationships are maintained with customers	
9.5. Good relationships are maintained with suppliers	
9.6. Good relationships are maintained with competitors	
9.7. Customer loyalty is strived towards	
9.8. Innovation is strived towards	
9.9. Employees are self-motivated	
9.10. Employees are competent	
9.11. Employees are trustworthy	
9.12. Integrity is strived towards	
9.13. We have a green footprint (environmentally friendly)	
9.14. Water is used sparingly	
9.15. Electricity is used sparingly	
9.16. Paper is used sparingly	
10. Based on your answers provided in Question 9, how would you describe the overall achievement of your business's objectives? (Tick the most appropriate answer.)	
Very good <input type="checkbox"/> Good <input type="checkbox"/> Unsure <input type="checkbox"/> Bad <input type="checkbox"/> Very bad <input type="checkbox"/>	

SECTION C: GENERAL RISK	
11. Rate the following statements with regard to your own business situation which start with the base sentence below, by writing a number in the appropriate space (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree).	
Statement: “The following risks negatively influence the attainment of my business objectives ...”	RATING
11.1. Leadership style of management and/or supervisors	
11.2. Internal communication (e.g., interpersonal relationships, training materials, newsletters and/or policies)	
11.3. Relationship between management and/or employees	
11.4. Limited skills (competence) of employees	
11.5. Political disruptions such as protests	
11.6. Competition (stemming from competitors)	
11.7. Fluctuating interest rates	
11.8. Unrealistic revenue targets	
11.9. Negative publicity (reputation)	
11.10. Limited open-mindedness of employees to embrace innovation	
11.11. Weak employee morale	
11.12. Faulty information technology (IT) systems	
11.13. Weak employee productivity	
11.14. Frequent changes in customer needs	
11.15. Limited demand for products and/or services	
11.16. Too strict government regulations (e.g., employment, health, and safety, etc.)	
11.17. Too strict internal policies and/or procedures	
11.18. Delays in supply chains	
11.19. Loss of experienced employees	
11.20. Loss of skilled (competent) employees	
11.21. Substitute products and/or services	
11.22. Limited creditworthiness of customers	
11.23. Unethical behaviour by employees	
11.24. Unethical behaviour by customers	

12. How severely do these risks influence your business’s overall attainment of objectives (see Question 11)? (Tick the most appropriate answer.)	
Very much [ ] Much [ ] Average [ ] Little [ ] Very little [ ]	
SECTION D: OPERATIONAL RISK	
13. Rate the following statements with regard to your own business situation which start with the base sentence below, by writing a number in the appropriate space (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree).	
Statement: “The following <u>operational</u> risks negatively influences the attainment of my business objectives ...”	RATING
<b>Execution, delivery and process management inaccuracies</b> (from failed transaction processing or process management, relations with trade counterparts & vendors)	
13.1 Data entry errors	
13.2 Settlement-processing errors	
13.3 Collateral management failures	
13.4 Incomplete legal documentation	
13.5 Vendor disputes	
13.6 Delivery failure	
<b>Internal fraud</b> (due to acts intended to defraud, misappropriate property, circumvent the law, regulations or corporate policy involving 1 + internal party)	
13.7 Intentional misreporting of positions	
13.8 Employee theft	
13.9 Smuggling	
13.10 External fraud	
13.11 Robbery	
13.12 Forgery	
13.13 Computer hacking	
13.14 Bribes/Kickbacks	
13.15 Unauthorised activity	
13.16 Check kitting	
13.17 Embezzlement	

<b>Employment practices and workplace safety</b> (from violations - acts inconsistent with employment, health or safety laws/agreements, from payment of personal injury claims, or diversity/discrimination events)	
13.18 Workers compensation claims	
13.19 Harassment and discrimination claims	
13.20 Other personnel costs	
13.21 Losses arising from poorly trained staff and agents	
13.22 Higher overtime payments due to poor job allocation	
13.23 Duplication of work when correcting human errors	
<b>Damage to physical assets</b> (from loss of damage to by natural disaster or other events)	
13.24 Vandalism	
13.25 Hurricanes	
13.26 Floods	
13.27 Fire	
13.28 Pollution	
13.29 Dust	
<b>Clients, products, and business practice abuses</b> (from unintentional /negligent failure to meet professional obligations to specific clients / product design)	
13.30 Money laundering	
13.31 Misuse of confidential customer information	
13.32 Sale of unauthorized products	
13.33 Unapproved access given to client accounts	
<b>Business disruption and system malfunction</b> (from disruption of business or system failures, e.g., telecoms, utilities)	
13.34 Hardware and software failures	
13.35 Telecommunication problems	
13.36 Losses due to disruptions and utility outages	
13.37 Inefficiencies caused by system failures	
13.38 Poor quality of service due to delayed transactions	

<b>External fraud</b> (due to acts intended to defraud, circumvent the law by a 3rd party)	
13.39 Theft of information	
13.40 System hacking	
13.41 Credit default	
13.42 Robbery/Theft	
13.43 Check kitting	
14. How severely do these risks influence your business' overall attainment of objectives (see Question 13)? (Tick the most appropriate answer.)	
Very much [ ] Much [ ] Average [ ] Little [ ] Very little [ ]	
15. What operational risks have you encountered in your company?	
15.1 Internal and external frauds	
15.2 Non-compliance issues	
15.3 Inadequate staff training	
15.4 Failed systems and transactions	
15.5 Staff Errors and omission	
15.6 System processing errors	
15.7 Customer attrition	
15.8 Inadequate segregation of duties	
15.9 Insufficient training	
15.10 Lack of management supervision	
15.11 Inadequate auditing procedures	
15.12 Inadequate security measures	
15.13 Poor systems design	
15.14 Poor Human Resources policies	
15.15 Lack of internal control	
16. To what extent does your organisation face various operational risk and losses? (Tick the most appropriate answer.)	
Very much [ ] Much [ ] Average [ ] Little [ ] Very little [ ]	



17. What is your level of agreement with the following aspect of operational risk and losses in the organisation? (Tick the correct column √)					
Statement	Very much	Much	Average	Little	Very little
People risk					
Process risk					
System risk					
External risk					
SECTION E: RISK MANAGEMENT					
18. Is the term operational risk familiar? (Tick the most appropriate answer.)					
Yes [ ] No [ ]					
19. If yes, please explain what operational risk is in your own words.					
20. Is operational risk management process in your company implemented?					
Yes [ ] No [ ] Not sure [ ]					
21. If yes, what are the reasons for implementing operational risk management processes? (Tick in the correct column √)					
21.1 Law Requirements of Auditors					
21.2 Requirements of Supervisor Committee					
21.3 Requirements of Credit Institutions, Suppliers or Customer					
21.4 Experience of the last financial					
21.5 Others					
22. Who is responsible for operational risk management in your company? (Tick the correct column √)					
22.1 Head of Departments					
22.2 Risk management unit					
22.3 Board of Directors					
22.4 Controlling					
22.5 Internal audit					
22.6 Others					

23. Where is operational risk management related information documented? (Tick in the correct column √)	
23.1 Handbook of risk management	
23.2 Handbook of organisation	
23.3 Finance/Controlling	
23.4 Quality management	
23.5 No written documentation	
23.6 Others	
24. What kind of tools do your company use? (Tick the correct column √)	
24.1 Identification of operational risks	
24.2 Calculation of operational risks	
SECTION F: THANK YOU (VOLUNTARILY)	
Thank you for your time and effort in completing this survey for the benefit of academic research in the field of Internal Auditing.	
Details below refer to the respondent:	
Name and surname:	
E-mail:	
Business name:	
Would you like e-mail feedback of this study? (Tick the most appropriate answer.)	
Yes [ ] No [ ]	

## **CD-ROM – SUPPORTING DATA\***

### **CD-ROM – Appendix B: Testing for internal consistency**

- B.1 Cronbach's Alpha Coefficient for all Likert scaled variables per section

### **CD-ROM – Appendix C: Descriptive statistics**

- C.1 Summary table of frequency distribution for all the variables
- C.2 Frequency distribution printout for all the variables in the questionnaire
- C.3 Measures of central tendency with descriptions of variables
- C.4 Measures of central tendency – computer printouts

### **CD-ROM – Appendix D: Inferential statistics**

- D.1 Chi-square goodness of fit tests
- D.2 Kruskal-Wallis tests to compare demographic groups with respect to continuous demographic variables
- D.3 Chi-square testing to compare categorical demographic variables with each other
- D.4 Kruskal-Wallis tests to measuring variables with respect to continuous demographic variables
- D.5 Chi-square testing for measuring variables with respect to categorical demographic variables

\*Refer to the CD-ROM for Appendices B – D.

## Appendix E: Variable naming conventions

No.	Variable description	Variable name
1.	Identification number of questionnaire	ID
2.	1. Do you have decision-making power within the business? (Tick the most appropriate answer.)	A01
3.	2. What is your position in the business? (Tick the most appropriate answer.)	A02
4.	3. How long have you been in this position? (in years)	A03
5.	4. How long has your business been in existence? (in years)	A04
6.	5. How many full-time employees do you employ? (number)	A05
7.	6. Which of the options below best describe your business? (Tick the most appropriate answer.)	A06
8.	If other, please specify: _____	A06_1
9.	7. What is your highest level of education? (Tick the most appropriate answer.)	A07
10.	8. Do you make use of cash sales and/or credit sales? (Tick the most appropriate answer.)	A08
B.	"In this business ..."	
11.	9.1. Income is greater than expenses	B09_01
12.	9.2. There is sufficient cash on hand	B09_02
13.	9.3. Assets are greater than liabilities	B09_03
14.	9.4. Good relationships are maintained with customers	B09_04
15.	9.5. Good relationships are maintained with suppliers	B09_05
16.	9.6. Good relationships are maintained with competitors	B09_06
17.	9.7. Customer loyalty is strived towards	B09_07
18.	9.8. Innovation is strived towards	B09_08
19.	9.9. Employees are self-motivated	B09_09
20.	9.10. Employees are competent	B09_10
21.	9.11. Employees are trustworthy	B09_11
22.	9.12. Integrity is strived towards	B09_12
23.	9.13. We have a green footprint (environmentally friendly)	B09_13
24.	9.14. Water is used sparingly	B09_14
25.	9.15. Electricity is used sparingly	B09_15
26.	9.16. Paper is used sparingly	B09_16
27.	10. Based on your answers provided in Question 9, how would you describe the overall achievement of your business's objectives? (Tick the most appropriate answer.)	B10
C.	"The following risks negatively influence the attainment of my business objectives ..."	
28.	11.1. Leadership style of management and/or supervisors	C11_01
29.	11.2. Internal communication (e.g. interpersonal relationships, training materials, newsletters and/or policies)	C11_02
30.	11.3. Relationship between management and/or employees	C11_03
31.	11.4. Limited skills (competence) of employees	C11_04
32.	11.5. Political disruptions such as protests	C11_05
33.	11.6. Competition (stemming from competitors)	C11_06
34.	11.7. Fluctuating interest rates	C11_07

No.	Variable description	Variable name
35.	11.8. Unrealistic revenue targets	C11_08
36.	11.9. Negative publicity (reputation)	C11_09
37.	11.10. Limited open-mindedness of employees to embrace innovation	C11_10
38.	11.11. Weak employee morale	C11_11
39.	11.12. Faulty information technology (IT) systems	C11_12
40.	11.13. Weak employee productivity	C11_13
41.	11.14. Frequent changes in customer needs	C11_14
42.	11.15. Limited demand for products and/or services	C11_15
43.	11.16. Too strict government regulations (e.g. employment, health and safety, etc.)	C11_16
44.	11.17. Too strict internal policies and/or procedures	C11_17
45.	11.18. Delays in supply chains	C11_18
46.	11.19. Loss of experienced employees	C11_19
47.	11.20. Loss of skilled (competent) employees	C11_20
48.	11.21. Substitute products and/or services	C11_21
49.	11.22. Limited creditworthiness of customers	C11_22
50.	11.23. Unethical behaviour by employees	C11_23
51.	11.24. Unethical behaviour by customers	C11_24
52.	12. How severely do these risks influence your business's overall attainment of objectives (see Question 11)? (Tick the most appropriate answer.)	C12
D.	"The following operational risks negatively influence the attainment of my business objectives ..."	
	Execution, delivery and process management inaccuracies	
53.	13.1 Data entry errors	D13_01
54.	13.2 Settlement-processing errors	D13_02
55.	13.3 Collateral management failures	D13_03
56.	13.4 Incomplete legal documentation	D13_04
57.	13.5 Vendor disputes	D13_05
58.	13.6 Delivery failure	D13_06
	Internal fraud	
59.	13.7 Intentional misreporting of positions	D13_07
60.	13.8 Employee theft	D13_08
61.	13.9 Smuggling	D13_09
62.	13.10 External fraud	D13_10
63.	13.11 Robbery	D13_11
64.	13.12 Forgery	D13_12
65.	13.13 Computer hacking	D13_13
66.	13.14 Bribes/Kickbacks	D13_14
67.	13.15 Unauthorised activity	D13_15
68.	13.16 Check kitting	D13_16
69.	13.17 Embezzlement	D13_17
	Employment practices and workplace safety	
70.	13.18 Workers compensation claims	D13_18
71.	13.19 Harassment and discrimination claims	D13_19

No.	Variable description	Variable name
72.	13.20 Other personnel costs	D13_20
73.	13.21 Losses arising from poorly trained staff and agents	D13_21
74.	13.22 Higher overtime payments due to poor job allocation	D13_22
75.	13.23 Duplication of work when correcting human errors	D13_23
	Damage to physical assets	
76.	13.24 Vandalism	D13_24
77.	13.25 Hurricanes	D13_25
78.	13.26 Floods	D13_26
79.	13.27 Fire	D13_27
80.	13.28 Pollution	D13_28
81.	13.29 Dust	D13_29
	Clients, products and business practice abuses	
82.	13.30 Money laundering	D13_30
83.	13.31 Misuse of confidential customer information	D13_31
84.	13.32 Sale of unauthorized products	D13_32
85.	13.33 Unapproved access given to client accounts	D13_33
	Business disruption and system malfunction	
86.	13.34 Hardware and software failures	D13_34
87.	13.35 Telecommunication problems	D13_35
88.	13.36 Losses due to disruptions and utility outages	D13_36
89.	13.37 Inefficiencies caused by system failures	D13_37
90.	13.38 Poor quality of service due to delayed transactions	D13_38
	External fraud	
91.	13.39 Theft of information	D13_39
92.	13.40 System hacking	D13_40
93.	13.41 Credit default	D13_41
94.	13.42 Robbery/Theft	D13_42
95.	13.43 Check kitting	D13_43
96.	14. How severely do these risks influence your business' overall attainment of objectives (see Question 13)? (Tick the most appropriate answer √)	D14
	15. What operational risks have you encountered in your company?	
97.	15.1 Internal and external frauds	D15_01
98.	15.2 Non-compliance issues	D15_02
99.	15.3 Inadequate staff training	D15_03
100.	15.4 Failed systems and transactions	D15_04
101.	15.5 Staff Errors and omission	D15_05
102.	15.6 System processing errors	D15_06
103.	15.7 Customer attrition	D15_07
104.	15.8 Inadequate segregation of duties	D15_08
105.	15.9 Insufficient training	D15_09
106.	15.10 Lack of management supervision	D15_10
107.	15.11 Inadequate auditing procedures	D15_11
108.	15.12 Inadequate security measures	D15_12

No.	Variable description	Variable name
109.	15.13 Poor systems design	D15_13
110.	15.14 Poor Human Resources policies	D15_14
111.	15.15 Lack of internal control	D15_15
112.	16. To what extent does your organization face various operational risk and losses? (Tick the most appropriate answer ✓)	D16
	17. What is your level of agreement with the following aspect of operational risk and losses in the organisation?	
113.	17.1 People risk	D17_01
114.	17.2 Process risk	D17_02
115.	17.3 System risk	D17_03
116.	17.4 External risk	D17_04
E.		
117.	18. Is the term operational risk familiar? Please tick ✓	E18
118.	19. If yes, please explain what operational risk is in your own words.	E19
119.	20. Is the operational risk management process in your company implemented?	E20
	21. If yes, what are the reasons for implementing operational risk management processes?	
120.	21.1 Law Requirements of Auditors	E21_01
121.	21.2 Requirements of Supervisor Committee	E21_02
122.	21.3 Requirements of Credit Institutions, Suppliers or Customer	E21_03
123.	21.4 Experience of the last financial	E21_04
124.	21.5 Others	E21_05
	22. Who is responsible for operational risk management in your company?	
125.	22.1 Head of Departments	E22_01
126.	22.2 Risk management unit	E22_02
127.	22.3 Board of Directors	E22_03
128.	22.4 Controlling	E22_04
129.	22.5 Internal audit	E22_05
130.	22.6 Others	E22_06
	23. Where is operational risk management related information documented?	
131.	23.1 Handbook of risk management	E23_01
132.	23.2 Handbook of organization	E23_02
133.	23.3 Finance / Controlling	E23_03
134.	23.4 Quality management	E23_04
135.	23.5 No written documentation	E23_05
136.	23.6 Others	E23_06
	24. What kind of tools do your company use?	
137.	24.1 Identification of operational risks	E24_01
138.	24.2 Calculation of operational risks	E24_02

## Appendix B: LANGUAGE EDITOR's CERTIFICATE

### DECLARATION OF LANGUAGE EDITING

of a thesis entitled:

The influence of operational risk on the sustainability of manufacturing Small and Medium Enterprises (SMEs) in the Cape Metropole

by

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