

FINANCIAL PERFORMANCE MEASUREMENT OF MANUFACTURING SMALL AND  
MEDIUM ENTERPRISES IN PRETORIA: A MULTIPLE EXPLORATORY CASE STUDY

By

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## DECLARATION

I declare that:

“Financial performance measurement of manufacturing small and medium enterprises in Pretoria: a multiple exploratory case study” is my own work, and that all sources that I have used or quoted have been indicated and acknowledged by means of a complete list of references.

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Signature

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Date

## **ASBTRACT**

Small and Medium Enterprises (SMEs) contribute substantially in economies around the world and in South Africa in particular. This study aimed to explore and describe the financial performance measures currently used by manufacturing SMEs in Pretoria. Semi-structured interviews were conducted at the participant SMEs' premises in order to gather the information.

It was found that most of the respondents use financial ratios, but to a limited extent, when measuring their financial performance. The use of bankruptcy prediction models is totally absent among the participants.

It has been recommended that SMEs use more ratios from the literature that have been proven to be the best financial measures, and the six ratios that have worked well for some of the participants in the study. It is also recommended that SME owners enrol their financial staff for training in bankruptcy prediction models, and use financial software packages if they can afford them.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 BACKGROUND

The contribution of Small and Medium Enterprises (SMEs) around the globe is unquestionable and especially in developing countries, where development in this sector is seen as a key strategy for economic growth, job generation and poverty reduction (Agupusi, 2007:2). According to Mutezo (2005:1), Japan's SME sector accounts for the bulk of the country's business establishment, proving vital support for employment, for regional economies and by extension for the day-to-day life of the Japanese people. In Taiwan the SME sector generates 98 percent of the economy's GDP.

In South Africa, the SME sector may be more important because of the country's history, which has left most people poor, and with no formal education or training (Klasen, 1997:51-94). Abor and Quartey (2010:218) point out the importance of SMEs in South Africa stating that "it is estimated that 91% of the formal business entities are SMEs. They also contribute between 52 to 57% to GDP and provide about 61% of employment".

In light of the significant contribution of SMEs to the global economy, and to South Africa in particular, the researcher would like to explore and describe the financial measures which manufacturing SMEs in Pretoria use to measure their financial performance. According to Jacobs (2001:2) this is the art and science of managing money. Financial performance management forms an important part of the business management field and financial measurement is also crucial for the survival of businesses. Are manufacturing SMEs in Pretoria using the available tools (*i.e.* financial ratio analyses and bankruptcy prediction models) that have been used for years? Huck and McEwen (1991:490-492), Schwenk and Shrader (1993:53-64), McMahon and Davies (1994:9-17) highlight the importance of financial performance as follow:

Successful financial performance in SMEs has a positive association with the capacity to manage financial issues effectively. There is evidence of a positive association between

financially related activities such as planning, maintenance of financial records, obtaining external finance and professional finance advice, and the successful performance of an SME.

Many authors (Twala & Phaladi, 2009:534-539; Al Berry, Magali, Rashad, Kesper, Rajaratnam & Dirk, 2002:39; Mbonyane, 2006:18) find that obstacles to access to finance by SMEs is the main cause of their failure, but it appears that not enough studies on how these businesses measure and manage their financial performance have been undertaken.

Studies such as those of Christian (2008:61-81) and Mbonyane (2006:12), disclose that lack of managerial skills (which include financial performance measurement skills) and training is one of the most prevalent causes of general business failure amongst SMEs in South Africa. Christian (2008), for example, reports that, a 2005 survey found that 90 percent of a sample of 1000 entrepreneurs “believe that small businesses fail due to the lack of managerial skills”. In light of this, the problem may become more acute when it comes to the specific financial performance management used in the SME sector, and whether SMEs are using the available tools (financial ratio analyses and bankruptcy prediction models mentioned earlier) for the purposes of performance management. In this regard, Mosalake (2007:232) finds that top South African companies do not use the available arsenal (the tools mentioned above) to measure their financial performance. The study undertaken here deals specifically with financial performance measurements for SMEs which are also part of the general performance management of organisations, and whether these businesses are using the available tools mentioned above.

It must be noted though that financial measures alone are not enough to measure companies’ performance since a number of non-financial performance measures also play an important role in their overall performance. However, this study will focus on financial measures only.

## **1.2 PROBLEM STATEMENT**

The problem to be investigated in this study is the financial performance measures currently used by manufacturing SMEs in Pretoria. The study will mainly explore the financial tools these SMEs use to measure their financial performance. The main objective of any company is the creation of wealth for its stakeholders (although this mostly applies to shareholders). This means that progress needs to be measured. This progress is measured mainly by means of financial

performance measurement since such measurement shows the cash flow, debts, profit, *etc.* of the company. Measurement is done by means of financial ratio analysis and interpretation. Analysis assists in identifying on the one hand the major strengths and opportunities of a business enterprise and on the other hand, weaknesses and threats facing the enterprise. An analysis indicates the level of efficiency, *i.e.* liquidity (cash holdings against obligations), debt management and adequate capital structure (Mosalakae, 2007:15).

### **1.3 SIGNIFICANCE/RATIONALE**

The reason why this study has been undertaken is to evaluate the current financial knowledge of the respondent SMEs, and by means of the study findings and recommendations made, make an impact on small businesses regarding their performance measurement as a whole and financial performance in particular. The researcher also hopes that the study will contribute to filling the gap in the literature regarding financial performance measurement in SMEs.

### **1.4 AIM OF THE STUDY**

The aim of the study is to explore and describe the financial measures that manufacturing SMEs in Pretoria use to measure their financial performance.

### **1.5 OBJECTIVES OF THE STUDY**

The objectives of the study are:

- To identify financial tools currently used by manufacturing SME's in measuring their financial performance;
- To recommend necessary improvements on financial performance measures used by manufacturing SMEs; and.
- To recommend necessary training interventions that would be needed for manufacturing SMEs to successfully measure financial performance.

## 1.6 LITERATURE STUDY

The purpose of the literature study is to acquaint prospective researchers with previous research on a particular topic before they start planning their own research. By compiling a review of research findings on a particular topic that have already been published, researchers can become aware of inconsistencies and gaps that may justify further research. The literature review also enables researchers to indicate exactly where their proposed research fits in (Welman, Kruger, & Mitchell, 2005:39).

SMEs (Small and Medium Enterprises) are defined differently across regions or countries. In South Africa, manufacturing SMEs are defined by the Small Business Act No 102 of 1996, as those businesses employing between 20 and 200 people, with a total annual turnover less than forty millions Rand (Mutezo, 2005:12).

As for the importance of SMEs in the global and South African economy, Naude (2007:4) reports that, according to the South African Reserve Bank, in 2002, SMEs in South Africa represented the backbone of the South African economy, with a value added of between 39% and 42% of Gross Domestic Product (GDP) in 1997. Also, the Small Business and Entrepreneurship council (SBEC) in the US states clearly in its small business survival index 2003, that small businesses and entrepreneurs truly were the backbone of the US economy, and the primary source of job creation (Ferreira, 2007:25).

The importance of SMEs in the economy naturally raises the question of their failure and success, since before contributing to the economy, SMEs must sustain themselves and grow. This sustainability and growth is generally measured by their financial performance, hence the importance of SME financial performance measurement.

Financial performance management forms an important part of the business management field; and it is also crucial for the survival of businesses. The relevant question in this regard is: Are manufacturing SMEs in Pretoria using the available tools (*i.e.* financial ratio analysis and bankruptcy prediction models) that have been used for years? Huck and McEwen (1991:490-492), Schwenk and Shrader (1993:53-64), McMahon and Davies (1994:9-17) highlight the importance of financial performance as follow:

Successful financial performance in SMEs has a positive association with the capacity to manage financial issues effectively. There is evidence of a positive association between financially related activities such as planning, maintenance of financial records, obtaining external finance and professional finance advice, and the successful performance of an SME.

In light of this, the problem becomes more important when it comes to the specific financial performance management used in the SME sector, and whether SMEs are using the available tools (financial ratio analysis and bankruptcy prediction models mentioned earlier) for that purpose. In this regard Mosalaka (2007:232) find that top South African companies do not use the available arsenal (tools mentioned above) to measure their financial performance. This study deals specifically with the financial performance measurement of SMEs which is part of the general performance management of organisations, and whether these businesses use the available tools (mentioned above).

Financial ratio analysis is defined by Lasher (2010:80) as a general technique based on some relatively standard methods used to analyse information, and developed by people who make judgments about businesses by reading their financial statement. Enterprises measure their financial performance differently, but financial ratio analysis is the traditional approach to analysing and interpreting the financial position of an enterprise (Jacobs, 2001:208). Ratios are derived from the financial statements of an enterprise and enable analysts to develop a picture of the financial position of an enterprise.

The importance and contribution of SMEs in the global economy seems limitless in light of the preceding sections, hence the relevance of the study on how they perform, and precisely, for the purpose of this study, how they measure their financial performance.

After this brief discussion of the importance and contribution of SMEs in the world economy, and in South Africa's in particular, the discussion will shift toward the financial performance of SMEs, which in fact is the focus of the study.

### **1.6.1 Financial management, performance measurement, and financial performance measurement.**

According to Jacobs (2001:2), financial management can be defined as the art and science of managing money; and finance in its broader sense is concerned with the process, institution, markets and instruments involved with the transfer of money. This author goes on to say that this is an area that requires knowledge, skills and experience and whose goals include: maximising profits, sales, capturing a particular market share, minimising staff turnover and internal conflicts, survival of the firm, and maximising wealth. Performance measurement can be split into financial and non-financial measures.

Financial performance measurement generally looks at firms' financial ratios (derived from their financial statements) such as liquidity ratios, activity ratios, profitability ratios, and debt ratios. Non-financial performance measurement is more subjective and may look at customer service, employee satisfaction, perceived growth in market share, perceived change in cash flow, and sales growth (Haber & Reichel, 2005: 260).

### **1.6.2 Ratio analysis**

It is necessary to be able to assess whether or not a company has performed well over a certain period of time. From its profit and loss account, analysts can observe the profit it has generated. It is also necessary to know if a company is in a good short-term financial position, and if it is in a good financial position for long-term growth. One of the most common means of analysing accounts is the use of financial ratios. According to Jacobs (2001:208), a ratio is the simplest mathematical expression of two magnitudes which are meaningfully related, and which are expressed in relation to each other (as a quotient). McLeary (as quoted by Mosalake: 2007:5) defines a financial ratio as "an expression of a relationship between any two figures or group of figures in the financial statements of an undertaking". Ratio analysis and interpretation can be used by many different stakeholders; especially those outside of the organisation who want to invest. Ratios can also be used to compare an enterprise's current position with its past positions. Jacobs (2001:210-230) highlights commonly used ratios, which are classified into the following four main categories:

- Liquidity: this is an enterprise's ability to pay its short term debts when they are due. It refers to the solvency of the enterprise's total financial position.
- Activity ratios: these measure how quickly various accounts are converted into money or sales.
- Debt ratios: these measure the extent of debt in relation to total assets
- Profitability: the various criteria for measuring profit relate the enterprise's earnings to sales, assets, owner's equity and share value.

### **1.6.3 Business failure and bankruptcy prediction models**

Company's failure/bankruptcy is not a new phenomenon in the world of business. Recently the failure of Lehman Brothers in the USA followed by many others such as General Motors and Chrysler sent shock waves around the globe and caused many other businesses to fail and declare bankruptcy as well. According to Statistics South Africa (Statistics of liquidations..., 2006), the number of voluntary and compulsory liquidations in 2006 was 262, down 1.1% from 2005. Africa Business Review's Jennifer Denby (2010:1) reports that the total number of liquidations recorded for the first quarter of 2010 decreased by 6.3%, from 1008 to 944, compared with the first quarter of 2009. This is an increase of about 360% compared to 2006, meaning that bankruptcy is a serious and acute problem for businesses today.

Mosalakae (2007:8) defines a bankruptcy prediction model as a tool that can be used to assess whether or not a firm will still be able to continue its operations. These models form part of the available tools for measurement of financial performance. A number of researchers have tried to predict company failure based on the company's financial ratios. Ratios have been used to develop bankruptcy prediction models for this purpose. Amongst the writers on this topic are: Altman; Mervin; Deakin; and Gitman; just to mention a few. South African authors have also contributed to this field and developed various models. These include: Daya; Strebel and Andrews; Garbers and Uliana; and Naido, amongst others. This study will use bankruptcy prediction models as a framework in the analysis of financial ratios and their interpretation.

All of the above and other related topics, including ratio analysis and interpretation, problems with ratio analysis, business management, financial management, including performance measurement, investment management and creditors will be discussed in more details in Chapter Two.

## **1.7 RESEARCH METHODOLOGY**

This is the section in which the plan and procedure for the research project are described. The section consists of topics as discussed below:

### **1.7.1 Research design**

There are two types of research: quantitative and qualitative. The purpose of quantitative research is to evaluate objective data consisting of numbers while qualitative research deals with subjective data that are produced by the minds of respondents or interviewees *i.e.* human beings (Welman, et al.2001:8). This study is based on an exploratory case study approach and qualitative research. However, a mixed qualitative-quantitative method will be in data analysis. Mixed-method research works particularly well for case study research since it allows the researcher to take the rich empirical data yielded from case studies and apply either quantitative or qualitative methods to the data (Kitchenham, 2009:1). Kitchenham goes on to say that in this manner, qualitative data can be quantified or quantitative data can be qualified to extract meaning from the data sets that might otherwise be hidden.

### **1.7.2 Population, units of analysis, and units of observation**

The population consists of the study's subjects, which are individuals, groups, organisations, humans, products, and events, or the conditions to which they are exposed (Welman, *et al.* 2005:52). The units of analysis are the members or elements of the population, and are in this case manufacturing Small and Medium Enterprises in Pretoria. The units of observation are the people who were interviewed, which were the managers or owners of the manufacturing SMEs.

### **1.7.3 Sample selection**

Taking into account that there is no complete list of SMEs in South Africa, a list of businesses in Pretoria from the Department of Trade and Industry (DTI) database was to be used to draw a



sample. A list of manufacturing SMEs in Pretoria, registered between 2000 and 2005 was requested from the DTI. The reason for this choice was that, these businesses (if still running), have been around long enough to provide useful and recent information for the study. Judgment (purposive) sampling (a non-probability form of sampling) was used to select a sample. Judgment sampling is a common non-probability method. The researcher selects the sample based on judgment. This is usually an extension of convenience sampling. For example, a researcher may decide to draw the entire sample from one "representative" city, even though the population includes all cities (Statpac, 2011).

The objective of the study was to interview between six and twelve SME managers or owners. At the end ten SMEs participated in the study. Owners or managers of the selected SMEs were called and asked whether they were willing to participate in the study, and arrange for a meeting in order to explain to them the aim of the study and eventually set a date for the interview. The sample was not representative of manufacturing SMEs in Pretoria, because of the size, method of sampling, and case study approach.

#### **1.7.4 Data collection**

Semi-structured interviews were used to collect data at the premises of the participant SMEs, using an interviewer-administered questionnaire. Zikmund, Babin, Carr and Griffin (2010:151) describe this method as follow:

Semi-structured interviews usually come in written form and ask respondents for short essay responses to specific open questions. Respondents are free to write as much or as little as they want. The questions would be divided into sections, typically, and within each section, the opening question would be followed by some probing.

SMEs owners or managers were called to request an appointment for the interview, they had to agree to participate, and the purpose of the study was then briefly explained to them. During the interview, the researcher had the opportunity to take notes while asking clarification on some responses or explaining others that the respondent may have had difficulties understanding. This method even though costly, saves time compared to sending questionnaires by post, since the participants may not see any urgency in completing and sending them back.

### **1.7.5 Data analysis**

Information from the interviewed SMEs was gathered, analysed and interpreted. The tools and methods described in the study to assess the financial position of companies were compared to those of the SMEs interviewed. Data analysis was textual and used frequencies (*e.g.*  $n$  participants use tool A, while  $n+1$  use tool B *etc.*). Given the information sought, thematic content analysis appeared to be the most appropriate analysis technique. The basic technique involves counting the frequencies and sequencing of particular words, phrases or concepts in order to identify themes (Welman, 2005:221).

## **1.8 GENERALISATION, VALIDITY AND RELIABILITY**

“Generalisation of the case study so that it contributes to theory is important” Rowley (2002:20). Though, she adds that the method of generalisation for case studies is not a statistical generalisation, but analytical generalisation in which a previously developed theory is used as a template with which to compare the empirical results of the case study.

Internal validity describes the degree to which changes in the dependant variable are indeed due to changes in the independent variable rather than to something else, and is concerned with experimental research. This study is an empirical study, therefore will be concerned with external validity only. External validity is twofold:

Population validity which refers to the degree to which the findings obtained for a sample may be generalised to the total population to which the research hypothesis applies. As far as this study is concerned, population validity cannot be guaranteed, since the study cannot be generalised to the whole population of manufacturing SMEs, because of the case study approach and method of sampling.

The ecological validity of the obtained results refers to the degree to which they may be generalised to all circumstances that are implied by the research hypothesis. Because this study is a field study (interviews conducted at SMEs premises), the ecological validity may not be threatened.

## **1.9 SPECIAL ETHICAL CONSIDERATION**

Only participants who freely consented to being part of the study were included. No harm or offence was caused to any participant. Others' data or ideas without due acknowledgement and permissions were not used. Finally, the researcher endeavoured to be honest and objective in the presentation of the research results and findings. Businesses or business owners' names have not been disclosed anywhere in the study in order to preserve their anonymity.

## **1.10 CONTRIBUTION/VALUE OF THE STUDY**

The study may benefit managers and entrepreneurs in the SME sector in that they might reconsider their current financial performance measurement tools, should their SMEs be struggling to survive. They may be willing to try the tools and methods explored in the study and may feel the need for training for the purposes of improvement of their businesses with regard to general and financial performance measurement. The study might also complement that of Mosalaka, which focuses on the financial performance measurement of top South African companies but also complement the many studies that have focused on the obstacles to access to finance. It may also serve as an important exposition of the role of SMEs in the economy.

This study, if taken seriously by SMEs may serve to preserve many of them from failure in the sense that it could raise awareness for the need for training and the use of the available tools described in the study to measure financial performance. SMEs might then be able to foresee failure and change the course of their actions in time to prevent it. The study may also benefit the subject field by raising awareness of the importance of studying financial management (as a whole) with regard to SMEs and also ring the bell for researchers to shift the balance from obstacles to access to finance toward financial performance measurement or financial management as a whole. Finally the study may contribute to filling the gap in the literature pertaining to financial performance measurement.

## **1.11 LIMITATIONS AND EXPECTED PROBLEMS**

Several problems were expected in this study. There was no complete list of SME businesses in South Africa and for this reason a list of businesses around Pretoria was requested from the DTI (Department of Trade and Industry) which could be used to draw a sample. Also some SMEs

might not be willing to participate in the study at all. Furthermore, as mentioned earlier there is little literature on the subject of SME financial performance measurement. This necessitated building the study on a sound theory.

## 1.12 CHAPTER OUTLINE

<p>I. Introduction</p> <p>Chapter One deals with the background to the study: problem statement; rationale or significance; objectives of the study; research methodology <i>i.e.</i> research design, population and sample; contribution of the study; limitations/expected problems; chapter outline and timetable.</p>
<p>II. Literature review</p> <p>Chapter Two deals with the following:</p> <ul style="list-style-type: none"><li>• SMEs and their role in South African economy;</li><li>• Financial management and performance;</li><li>• Financial statement reliability;</li><li>• Business failure;</li><li>• Financial ratio analysis and measures; and</li><li>• Bankruptcy prediction models.</li></ul>
<p>III. Research methodology</p> <p>Chapter Three covers the research design, description of the population, sampling procedure, sample size, data collection and data analysis.</p>
<p>VI. Findings, analysis and interpretations of data</p> <p>In Chapter Four the data collected and results are analysed and interpreted using thematic content analysis</p>

## V. Conclusions and recommendations

Based on the findings and interpretation of data collected, Chapter Five draws the conclusions of the research study and discusses their implications for future research. And recommendations are then given.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

According to Gates (2010), in a capitalist system, business is set up to thrive on profits. Profit is in turn the only motivator for the entrepreneur. This author continues that “take away the ability to make profit and the desire to work is limited to taking care of yourself and immediate family”. Profit is something we all thrive for when we are running a business (Aubuchon, 2010). Goessl (2010) states that “at the centre of most business operations, lies the desire and pursuit of higher revenue. Businesses operate with the primary mission to increase value for shareholders and to turn a profit”. To determine how well an enterprise is doing, one can check how well the enterprise achieves its goals. Goals are expressed in terms of both financial and non-financial measures. Financial goals refer to the economic performance of the enterprise, which is associated with survival and growth. These goals include profitability, management and credit goals, management of investments and performance measurement. Non-financial goals include customer and employee satisfaction, human resource practices and quality management.

The discussion in this chapter is on the financial performance of the enterprise and as such, focuses on financial goals and their achievement rather than non-financial goals. The success of enterprises is judged by their financial performance, hence the choice to study how SMEs measure financial performance. The chapter reviews the role and contribution of SMEs in the South African economy, followed by their financial goals and how these financial goals and their measurement can guide SMEs in their decision making to facilitate long term survival and growth. The chapter also looks at the discipline of Business Management and its components, and Financial Management, including performance measurement, investment management and creditors. A brief review of non-financial performance measures (as part of Business Management) which are believed to yield a better general business performance, but are not a focus of this study, is given merely as an indication. The main discussions will be on financial performance measures, that is, ratio analysis and its interpretation, using bankruptcy prediction models as a framework for ratios to be discussed. The rationale for this is that bankruptcy

prediction models use a combination of financial ratios to compute a single score that can be used as a more significant measuring tool than the use of individual ratios. This will also spare the study a lengthy discussion of the many ratios found in the literature. The interpretation of that score (from the models) indicates whether a business is doing well or is facing imminent financial failure; hence the use of bankruptcy prediction models as a financial tool. However, a discussion of other ratios that have proved to be valuable measures in the literature, but are not present in the financial statements of firms, because of they are less significant or do not make a contribution when combined with others in the computation of the overall score, may be added as well.

## **2.2 SMES AND THEIR ROLE IN THE SOUTH AFRICAN ECONOMY**

The development of a sound SME sector is a key factor in job creation and economic growth for South Africa. In South Africa, it is estimated that 91% of the formal business entities are SMEs. SMEs also contribute between 52 to 57% to GDP and provide about 61% to employment (Abor & Quartey, 2010: 223). The latter authors also point out that SMEs contribute to a country's national product by either manufacturing goods of value, or through the provision of services to both consumers and/or other enterprises. This encompasses the provision of products and to a lesser extent, services to foreign clients, thereby contributing to overall export performance.

Furthermore, the creation and sustainability of new SMEs are vital to the economic prosperity of South Africa. Without the creation of new SMEs, South Africa risks economic stagnation (Olawale & Garwe, 2010:730). Magda (2010) reports that "Small to medium enterprises play a vital role in the development of the South African economy". The report continues that according to the Policy Board for Financial Services and Regulation (PBFS) at the South African Reserve Bank, "the total economic output of SMEs is approximately 50 per cent of the Gross Domestic Product (GDP). In addition, this sector employs more than 60 per cent of the total labour force". It follows that unemployment which is a serious concern in the economy, can be reduced through the successful promotion of SME output. Lloyd (2002:8) details the importance and characteristics of SMEs in the economy as follows:

The small business sector in any economy must be seen as the ultimate manifestation of a free-market system in a country. It is generally acknowledged that small business has a vast array of important economic and social characteristics linked to it. These include the following:

- Small business is seen as a generator of net new employment opportunities.
- Small business is unique in the extent that it lends itself to inventions and innovations due to the personal initiatives of the entrepreneur.
- Small business provides predominantly to the needs of communities.
- Small business lends itself to economic stability and to a better and more equal distribution of economic activities and opportunities in the economy.
- Small business tends to be more flexible and adaptable.
- Small businesses act as sub-contractors to larger corporations in the economy.
- Small business activities result in a multiplier effect in the socioeconomic activities in the economy.
- Small business is seen as the point of entry to big business in the economy.

Despite the important role and significant contribution of SMEs in the economy, different authors raise various obstacles to the development of SMEs, and some of which are said to be responsible for the failure of SMEs. Abor and Quartey (2010:224) point out that SME development is hampered by a number of factors, including finance, lack of managerial skills, equipment and technology, regulatory issues, and access to international markets, emphasizing that “the lack of managerial know-how places significant constraints on SME development”. United States Aid for International Development (USAID, 2010) singles out the following factors as obstacles to SME development in South Africa:

- SME growth is constrained by a number of factors, including onerous collateral and compliance requirements, limited management capacity, and difficulties in gaining access to much-needed finance.



- Many SMEs rank a lack of access to finance as their greatest barrier to growth. Often SMEs in South Africa get caught in the “missing middle”: the loans they need are too large for micro-loan agencies and too small for banks.
- Financial institutions often struggle with SMEs that are ill prepared for the lengthy process of applying for a business loan.
- Lack of education and business skills results in a limited number of small business owners equipped with the skills necessary to develop a sound business plan with realistic financial statements.
- Entrepreneurs are unaware of the available business development services, which could build their capacity to establish creditworthiness.

Table 2.1 below is a partial classification by sector of SMEs according to the Small Business Act No 102 of 1996.

Table 2.1 Partial classification by sector of SMEs

Sector or subsectors in accordance with the Standard Industrial Classification	Size or class	Total full-time equivalent of paid employees  Less than	Total annual turnover  Less than	Total gross asset value (fixed property excluded)  Less than
Manufacturing	Medium	200	R40.00 m	R15.00 m
	Small	50	R10.00 m	R 3.75 m
	Very small	20	R 4.00 m	R 1.50 m
	Micro	5	R 0.15 m	R 0.10 m

Source: <http://www.beesknees.co.za/startup/smallbusiness.htm> [accessed 14 December 2010]

The table shows that the manufacturing sector, which is the focal point of this study, classifies medium enterprises as those employing over 50 people and up to 200, with a total annual turnover of less than 40 million Rand. Small enterprises are those employing between 20 and 50 people, with a total annual turnover of less than 10 millions Rand.

Due to the important role SMEs play in the economy, the South African government initiated a number of organisations through the Department of Trade and Industry (DTI) to help the development and growth of SMEs in various sectors. The following are some of these organisations:

- *Khula* is a state-owned development finance institution that was established in 1996 to facilitate access to finance for Small, Micro and Medium Enterprises (SMMEs), by providing finance, mentorship services and small business premises. The Company is a wholesale finance institution, which operates across the public and private sectors, through a network of channels to supply much needed funding to small businesses. These channels include South Africa's leading commercial banks, retail financial institutions, specialist funds and joint ventures, in which Khula itself is a participant. Its primary aim is to bridge the 'funding gap' in the SME market not addressed by commercial financial institutions (DTI, 2010).
- The Small Enterprise Development Agency (Seda) was established in December 2004 as an agency under the Department of Trade and Industry (DTI). Seda provides business development and support services for small enterprises through its national network, in partnership with other role players in small enterprise support. Seda also implements programmes targeted at business development in areas prioritised by the government (DTI, 2010).
- Established in 1940, the Industrial Development Corporation (IDC) is a self-financing, state-owned development finance institution. The IDC develops entrepreneurs through its assistance to Small and Medium Enterprises (SMEs), and through non-financial support to new entrepreneurs (DTI, 2010).

- The overall aim of the Information Technology Association (ITA) SME Development Programme, Phakisa (Sesotho word meaning “accelerate”) is to strengthen the performance and competitiveness of SME’s in the Information and Communication Technology (ICT) industry in order to pave the way for industry growth and thereby add to the creation of increased added value production and additional employment opportunities (ITA, b2010).

This section showed how important SMEs are through their contribution in the economy. The next section explores their business and financial management, since business management is the mother topic of financial management and the latter is the focus of the study.

### **2.3 BUSINESS MANAGEMENT AND FINANCIAL MANAGEMENT**

According to Thachappilly (2011:1), “the goal of business management is to create wealth for business owners by providing some value that consumers need”. He continues that the process of business management involves:

- Researching the market for profitable business opportunities;
- Developing strategies for marketing management, operations management, financial management and human resource management; and
- Implementing the strategies through planning, organizing, motivating and control.

The sections to follow discuss in more detail the topics of business management and financial management and their components. However, before this discussion, an insight into financial performance measurement is given, since the study focus is on that aspect of business management.

According to Codjia (2010), a statement of financial performance is an accounting summary that details a business organisation's revenues, expenses and net income. He goes on to say that “a statement of financial performance is also referred to as statement of profit and loss or statement of income; and a corporation may prepare a statement of financial performance on a monthly, quarterly or annual basis”. As part of Business Management, financial performance measurement

can be one of the biggest challenges faced by businesses in the SME sector, especially with regard to their survival, if management is not trained on how to manage finance and measure performance. Performance measures are the life blood of organisations, since without them, no decisions can be made (Zairi as Quoted by Mosalakae, 2007:2). Small businesses fail because more often than not, cash flow is not properly managed (Dickey as quoted by Mboniyane, 2006:18). Financial performance measurement is reflected in ratio analysis and bankruptcy prediction models detailed in the section to follow.

### **2.3.1 Business management**

For the purpose of this study, this section will only discuss the performance management (non-financial and financial) subtopic of Business Management. As part of Business Management, performance management can be one of the biggest challenges faced by businesses in the SME sector, especially with regard to their survival, if management is not trained on how to manage finance as reported in the following. “Small businesses fail because more often than not cash flow is not properly managed” (Dickey as quoted by Mboniyane, 2006:18). Although the focus here is on financial performance measures, it is important to briefly have a look at non-financial performance measures as well.

In the past decade, increasing numbers of companies have started measuring customer loyalty, employee satisfaction and other performance areas that are not financial, but that they believe ultimately affect profitability (Ittner & Larcker, 2003:1). The trend in most of today’s organisations is the combined use of financial and nonfinancial measures which is believed to yield better general performance for firms. Some of the most widely cited non-financial measures are discussed below.

#### *2.3.1.1 Human resource (HR) practices*

Research suggests a positive relationship between human resource practices and a firm’s performance; and researchers have been able to demonstrate this relationship regardless of whether they use objective financial data or more subjective perceptual data to measure organisational performance (Hartog & Verburg as quoted by Ferguson & Reio, 2010:472). To increase the hierarchical effect of HR practices on performance of both employees and firms,

firms should understand the need for professional implementation of Human Resource Management (HRM). Therefore, recruitment should bring the quality of people recruited in line with organisational needs; training should heighten the knowledge and ability of employees; performance evaluation should limit differences between employees; and promotion activity should further the talent and capabilities in organisational ladders (Uysal & Koca, 2009:48)

#### *2.3.1.2 Total Quality Management (TQM)*

Joiner (2006:622) reports evidence that supports a strong positive relationship between the extent of implementation of TQM practices and organisation performance. In their study Fening, Pesakovic and Pesi (2008:705) identify a number of significant relationships between quality management variables and firm performance. Their study finds support for the argument that quality management practices improve organisational performance both in large and small businesses in any part of the world. The findings of their study have added to the body of knowledge that quality management practices improve organisational performance. Findings obtained from a study by Ou, Liu, Hung and Yen (2007:26) provide evidence that the influence of TQM practices on firm's performance should be measured at different levels of performance

#### *2.3.1.2 Customer satisfaction*

The term customer is very often taken to apply to external customers (buyers and/or suppliers). In this study, customers comprise external and internal (employees) customers as well. Numerous studies such as that of Rhian and Tse (2007:11) support the idea that a link exists between employee satisfaction and customer satisfaction, productivity, and financial results. Rhian and Tse (2007:11-12) caution that even if increased satisfaction does not drive financial performance, high levels of dissatisfaction may well have a deleterious effect on growth. Thus delivering higher service levels and satisfying customers may not lead to enhanced financial returns, but dropping service levels may well reduce financial returns.

### **2.3.2 Financial management**

Financial management means the management and control of money and money-related operations within a business (Lasher, 2010:6). Finance in its broader sense is concerned with the

process, institution, markets and instruments involved with the transfer of money. This is an area that requires knowledge, skill and experience with goals that include: maximising profits; sales; capturing a particular market share; minimising staff turnover and internal conflicts; survival of the firm; and maximising wealth (Jacobs, 2001:2). This section discusses investment management, creditors and financial statements and their reliability. Investment management suggests the management of money that is invested in a business, and this needs careful attention for small business to take off and grow. Creditors are the people or organisations that provide businesses with funding, and these creditors do that with caution and based on rigorous and specific criteria. These two topics relates well to the topic of financial performance due to the fact that if creditors do not provide funds, and/or investment is not done properly and on a careful basis, financial performance will become a non-topic of discussion.

#### *2.3.2.1 Investment management*

The various criteria for measuring Investment management is “the process of managing money, including investments, budgeting, banking and taxes, also called money management” (Investor Words, 2011). For the purpose of this study, this section discusses only capital budgeting, which involves investment criteria for profit maximisation as they relate to better financial performance. Capital budgeting refers to the process of evaluating and selecting long-term investment projects that achieve the goal of maximising owners’ wealth (KFUPM, 2011).

When investing, enterprises need to distinguish between independent projects (*i.e.* acceptance or rejection does not directly eliminate other projects), and mutually exclusive projects (*i.e.* acceptance of one project precludes the acceptance of alternative proposals), KFUPM (2011). Capital budgeting generally involves:

- Net present value (NPV);
- Internal rate of return (IRR);
- Profitability index (PI); and
- Payback period (PB)
  
- Net present value (NPV)

NPV is the present value (PV) of the stream of future cash flows (CFs) from a project minus the project's net investment; the cash flows are discounted at the firm's required rate of return or cost of capital (KFUPM, 2011).

$$NPV = CF_0 + CF_1/(1+k)^1 + CF_2/(1+k)^2 + CF_n/(1+k)^n ,$$

where k is the rate of return or cost of capital, and n the number of years,

NPV= PV of future cash flow – Investment, and CF = cash flow.

NPV decision rule:

If  $NPV \geq 0$  then invest in the project; a positive NPV means that the investment is expected to add value to the firm and will therefore increase the wealth of the owners. For Mutually exclusive investments, select the project with the largest NPV (KFUPM, 2011).

Advantages and disadvantages of the NPV method:

Advantages:

- a) Consistent with shareholder wealth maximisation: added net present values generated by investments are represented in higher stock prices.
- b) Consider both magnitude and timing of cash flows.
- c) Indicates whether a proposed project will yield the investor's required rate of return.

Disadvantage:

Many people find it difficult to work with a currency-denominated return rather than a percentage return (KFUPM, 2011).

- i) Internal Rate of Return (IRR)

IRR is the discount rate at which NPV is zero.

When the cost of capital equals the IRR,  $NPV=0$ .

When  $k > IRR$ ,  $NPV < 0$ , reject.

When  $k < \text{IRR}$ ,  $\text{NPV} > 0$ , invest.

$$\text{CF}_0 + \text{CF}_1/(1+\text{IRR})^1 + \text{CF}_2/(1+\text{IRR})^2 + \text{CF}_n/(1+\text{IRR})^n = 0$$

The IRR is an investment's expected rate of return. If it exceeds the cost of capital, then shareholder wealth is increased by the project.

IRR decision rule:

If  $\text{IRR} \geq \text{discount rate}$ , then invest.

For mutually exclusive investments, select the project with the largest IRR.

Advantages and disadvantages of IRR

Advantages:

- People feel more comfortable with IRR;
- Considers both the magnitude and the timing of cash flows;

Disadvantages:

- Multiple internal rates of return with unconventional cash flows;
- Any change in sign (+,-) in period cash flows, produces as many IRR's as there are changes in the cash flow directions of the investment.
- When it comes to lending or borrowing, the IRR does not distinguish between a lending (investing) or a borrowing (borrow and invest) situation, whereas the NPV clearly points out the negative aspects of the borrowing strategy (KFUPM, 2011).

NPV versus IRR

Reinvestment assumption:

NPV method assumes that cash flows (CFs) are reinvested at the cost of capital  $k$ ;

IRR method assumes that CFs are reinvested at IRR;



This can lead to conflicts in ranking of mutually exclusive projects;

NPV is superior to IRR when choosing among mutually exclusive investments (KFUPM, 2011).

#### ii) Profitability Index

The profitability index is the ratio of the sum of present values of the project divided by the initial cost of the investment. It is a relative measure of the value (present value) of a project compared to its cost.

$$PI = NPV / \text{Investment}$$

#### Profitability Index Decision Rule

For mutually exclusive investments with capital rationing, choose the project with the highest PI.

Capital rationing exists if there is a limit on the amount of funds available for investment.

Only use PI if there is capital rationing (KFUPM, 2011).

#### iii) Payback Period

This is the number of years for the cumulative net cash flows from a project to equal the initial cash outlay.

Payback period = year before full recovery + (uncovered costs at start of year/cash flow during the year).

For mutually exclusive investments, shorter payback period is better (KFUPM, 2011).

Advantages and disadvantages of payback:

Advantages:

- Measure of risk and liquidity;
- Useful for evaluating small projects.

Disadvantages:

- Ignores the time value of money;
- Ignores cash flows after the payback period;
- Objective not consistent with shareholder wealth maximisation (KFUPM, 2011).

#### iv) Investment Timing

When to make an investment is a difficult decision in a dynamic world. There is a need to calculate the NPV, then find the present value of it today. The decision rule for investment timing is to choose the investment date with the highest NPV today (KFUPM, 2011).

The next section shifts the discussions to creditors and lending criteria, since SMEs need to get money from creditors to invest before their financial performance comes into consideration.

#### 2.3.2.2 Creditors

Creditors can be defined as “businesses or people who provide goods and services in credit terms; that is, they allow time to pay rather than paying in cash” (Biz/ed., 2011). The discussions here focus on the criteria used by creditors to grant loans to SMEs.

In a 2008 study across 45 countries on the state of SMEs financing, Beck, Asli, and Peria (2008:3) find that in both developed and developing countries (including South Africa), “although a higher share of bank loans is directed to large firms relative to SMEs, there are surprisingly small differences in the type and pricing of the bank loans across firm sizes”. Beck *et al.* (2008) observe some differences in the lending criteria and collateral used by banks operating in developing compared to developed countries. Banks from developing and developed countries use scoring models for their lending decisions to small firms, but less so for medium-sized enterprises. Scoring is defined as “a statistical formula that is used, usually with the help of computers, to estimate future performance of prospective borrowers and existing customers”. A scoring model calculates scores based on data such as information on a consumer's credit report (Definition of scoring..., [s.a]). The study findings report that only 18 percent of developed country banks say they do not use scoring for small business lending and 45 percent report not

using scoring for medium-sized enterprise lending. Among developing country banks (because they are less sophisticated), 49 percent report not using scoring for medium-sized enterprise lending and 35 percent do not use scoring for small business lending.

Banks in developing countries in particular, are more likely to make lending decisions based on a firm's credit history with the bank and the owner's characteristics. While real estate is the most important collateral for SME loans around the world, it is less so for banks in developing countries where liquid assets are also commonly used as collateral (Beck *et al.*, 2008:17). While banks operating in developed countries seem to rely to a large extent on existing databases (such as credit registries) to go after potential SME clients, banks operating in developing countries reach out to clients in many different ways (Beck *et al.*, 2008:17). The authors also report that financial assessment is the most important loan approval criterion. Though a firm's credit history and owner characteristics are important in developing countries, loan size is the second most important criterion in developed countries.

For small business lending, 49 percent of developing country banks indicate that the financial assessment of the business is the most important criterion, and 59 percent indicate the same criterion for medium-sized business lending. A firm's credit history with the bank is the second most selected criterion followed by firms' owner characteristics and collateral (Beck *et al.*, 2008:18). The report also finds that, while not a decisive approval criterion, at least three quarters of banks require collateral to make business loans. Real estate is the most frequently used type of collateral for small business lending, but less so in developing countries: almost 56 percent of banks in developed countries indicate that real estate is the most commonly used type of collateral for small business lending; while in contrast, 37 percent of banks in developing countries report real estate as the most important collateral type. The percentage is higher though, for medium enterprises with 80 and 40 percent for banks in developed and developing countries respectively (Beck *et al.*, 2008:20). Among these banks, cash and other liquid assets rank second in terms of importance as collateral types, with 23 percent of banks indicating this option. Bank and personal guarantees, cash and other liquid assets are equally important for banks in both developed and developing countries (Beck *et al.*, 2008:20).

Beck et al. (2008:22) report that 81 and 72 percent of banks in developed and developing countries respectively indicate that the profitability of the SME sector is the most important determinant for their involvement in the sector. Also to recall from the above paragraphs, most banks indicate that the financial assessment of the business is the most important criterion for lending to SMEs, hence the importance of the study of financial performance measurement of SMEs.

After creditors, the next section looks at financial statements and their reliability. Financial management means the management and control of money and money-related operations within a business (Lasher, 2010:6). As such, it involves accounting data derived from the financial statements of firms. For this reason, it is important to have a look at the meaning of financial statements for various stakeholders and their reliability as well.

#### *2.3.2.3 Financial statement and financial statement reliability*

Accounting data reliability has recently become a subject of scrutiny because of increased irregularities and fraud (*e.g.* Enron in the USA). Leauanae and Rasmussen (2002) highlight the importance of financial statement as follows:

- To investors, financial statements are the last line of defense in protecting their investment. Financial statements are very often the only opportunity that investors are given to assess both an organisation's viability and its life expectancy.
- To creditors, financial statements represent the ability of an organisation to repay debts. Creditors gravitate towards financial statements because they generally like to function under the principle of reciprocity: if they give it, they would like to eventually get it back.
- To government, financial statements are a two-fold issue: they determine how much the IRS (Internal Revenue Service) can levy and they also create a burden on the powers that be, through the Securities and Exchange Commission (SEC) and other similar entities, to prevent the collapse of capitalism.

- To accountants, financial statements represent both a source of ongoing fees and a Pandora's box of potential liability. If financial statements issued by a CPA (Certified Public Accountant) or a CPA firm are eventually exposed as misleading, whether intentional or not, the accountant or firm that is responsible must face the sometimes dramatic consequences.

Financial statement data must be verifiable, that is, they must provide a significant degree of assurance that accounting measures represent what they are supposed to represent. Johnson (2005:2) states that verification requires consensus among observers, meaning that accounting measures that are determined by one measurer must be confirmed or substantiated by other measurers that reach essentially the same result from measuring the same phenomenon. In that regard, there may be more consensus among observers about some measures than others. For example, measures of cash by different observers are more likely to be clustered together than their measures of receivables (net of the allowance for bad debts), in part because of differences in views about the collectability of those receivables.

One important issue related to financial statement reliability is fraud. Quffa (2010:3-4) gives the following different definitions of financial statement fraud:

- Financial statement fraud is deliberate misstatements or omissions of amounts or disclosures of financial statements to deceive financial statement users, particularly investors and creditors.
- It is the falsification, alteration, or manipulation of material financial records, supporting documents, or business transactions.
- It entails material intentional omissions or misrepresentations of events, transactions, accounts, or other significant information from which financial statements are prepared.
- It is a deliberate misapplication of accounting principles, policies, and procedures used to measure, recognise, report, and disclose economic events and business transactions.

Quffa goes on to highlight the costs of financial statement fraud in the following:

- More than 50% of U.S. corporations are victims of fraud with losses of more than \$500,000.
- Enron lost about \$70 billion in market capitalisation to investors, employees, and pensioners.
- Enron, WorldCom, Quest, Global Crossing, and Tyco's loss to shareholders was \$460 billion.
- Other fraud costs are legal costs, increased insurance costs, loss of productivity, adverse impacts on employee morale, customers' goodwill, suppliers' trust, and negative stock market reactions.

Leauanae & Rasmussen (2002) conclude that without fundamental changes in how audits and related consulting services are sold, maintained, managed, and performed, the quality of audited financial statements will not improve; and if the check-and balance system that is the contemporary audit process is allowed to continue unabated and uncorrected, the troubled spectre of Enron will return again.

## **2.4 RATIOS ANALYSIS AND BANKRUPTCY PREDICTION MODELS**

A ratio is the simplest mathematical expression of two magnitudes which are meaningfully related, and which are expressed in relation to each other as a quotient (Jacobs, 2001:208). Bankruptcy has many definitions with little difference according countries. Several such definitions will be given in the bankruptcy prediction models section.

### **2.4.1 Ratio classification and analysis**

Financial ratios are generally classified into the categories discussed below:

#### *2.4.1.1 Activity ratios*

They measure how quickly various accounts are converted into money or sales. These ratios include:

- Accounts receivable turnover which is equal to net credit sales/average accounts receivable.

- Accounts receivable period (the number of days' purchases in receivables) which is equal to  $360/\text{accounts receivables turnover}$ .
- Inventory turnover which is equal to  $\text{Cost of goods sold}/\text{average inventory}$ .
- Number of days inventory which is equal to  $(\text{inventory}/\text{cost of good sold}) \times 360$ .
- Accounts payable turnover which is equal to  $\text{cost of goods sold}/\text{average accounts payable}$ .
- Accounts payable period (the number of days' purchases is payables) which is equal to  $360/\text{accounts payable turnover}$ .
- Assets turnover which is equal to  $\text{net sales}/\text{average total assets}$  (Delta Publishing, 2006:64).

#### *2.4.1.2 Liquidity*

This is an enterprise's ability to pay its short term debts when they are due. It refers to the solvency of the enterprise's total financial position. This includes:

- Current ratio which is equal to  $\text{current assets}/\text{current liabilities}$ .
- Quick (acid-test) ratio which is equal to  $(\text{current assets} - \text{inventory})/\text{current liabilities}$ .

#### *2.4.1.3 Debt/leverage ratios*

These measure the extent of debt in relation to total assets. They show the percentage of total funds obtained from creditors. Creditors would rather see a low debt ratio because there is a greater cushion for creditor losses if the firm goes bankrupt. The debt ratios include:

- Debt ratio which is equal to  $\text{average total liabilities}/\text{average total assets}$ .
- Debt to equity ratio which is equal to  $\text{total liabilities}/\text{stockholders' equity}$ .
- Equity to total assets which is equal to  $\text{shareholders' equity}/\text{total assets}$ .

- Times interest earned which is equal to income before interest and taxes (EBIT)/interest expense (Delta Publishing, 2006:76).

#### *2.4.1.4 Cash flow ratios*

Cash flow analysis should not be overlooked when evaluating the liquidity of a company. Cash flow ratios need to be evaluated to determine a company's ability to satisfy its debts. They are useful in predicting financial distress (or even bankruptcy). Cash flow returns on assets and on equity ratios help users assess whether a firm is earning an adequate cash flow return on its net assets and whether stockholders are earning adequate cash flows from their investments. The following are some of the most recognised cash flow ratios:

- Cash flow to average total current liabilities;
- Cash flow and bank to total assets;
- Cash flow and bank to current liability;
- Cash flows from operating activities/operating income;
- Cash flows from operating activities/net income;
- Cash flow return on assets which is equal to (Cash flows from operating activities + interest paid + taxes paid)/average total assets; and
- Cash flow return on equity which is equal to (Cash flows from operating activities - preferred dividends paid)/average common stockholders' equity (Delta Publishing, 2006:117).

#### *2.4.1.5 Profitability ratios*

The various criteria for measuring profit relate the enterprise's earnings to sales, assets, owner's equity and share value (Jacobs, 2001:209). Profitability refers to the ability of a company to earn income. Net income is the single most significant measure of profitability. These ratios include:

- Gross profit margin which is equal to gross profit/net sales.



- Net operating income which is equal to operating income/net sales.
- Return on total assets (ROA) which is equal to net income/average total assets.
- Return on equity (ROE) which is equal to net income/shareholders' equity.
- Return on investment (ROI) which is equal to net income/average total assets.

Earnings per share (EPS) which is equal to net income available to common shareholders/weighted average number of common share outstanding (Delta Publishing, 2006:84)

#### *2.4.1.6 Ratios by different authors.*

Edmister (1970:21) summarises the following ratios from various authors as significant predictors of business failure.

- i) Current ratio (current assets to current liabilities);
- ii) Net working capital to total assets;
- iii) Debt to total assets;
- iv) Total assets turnover (sales to total assets);
- v) Net sales to net working capital;
- vi) Net operating margin (net working capital to total assets);
- vii) Earnings after tax to total assets;
- viii) Market value of equity to book value of total debt;
- ix) Cash flow to total debt;
- x) Trend breaks of net quick assets to inventory;
- xi) Net quick assets to inventory; and
- xii) Rate of return to common shareholders.

Among the 12 variables, Edmister notes five (iii, ix, x, xi, xii) that generally perform best, all of the time periods. Daya (1977:27) in his study, also mentions three out of the five variables which are the best predictors of failure. Three of the five ratios used by Altman (2000:8-9) in the Z-score are included in the 12 variables mentioned by Edmister as well.

Other popular ratios as failure predictors in the literature include the following:

- Retained earnings to total assets;
- Profit after tax (PAT) to total assets;
- Shareholders' funds to total assets;
- Turnover to total assets;
- Operating profit to operating assets;
- Inventory to sales;
- Quick assets to current liabilities;
- Receivables to inventory; and
- Equity/total capital.

The justification for basing the study on the bankruptcy prediction models is feasible because most of these ratios are put forward by different authors as the best predictors of business failure. Some of the ratios (those most widely used as failure predictors) will be discussed in detail with the bankruptcy prediction models in the next section.

#### **2.4.2 Bankruptcy prediction models**

In the U.S.A. bankruptcy is defined as a federal law whereby a person's assets are turned over to a trustee and used to pay off outstanding debts. This usually occurs when someone owes more than they have the ability to repay; or the condition of a legal entity that does not have the financial means to pay their incurred debts as they come due (Teach Me Finance, 2005). In South Africa, Bankruptcy is defined as a successful legal procedure that results from:

- An application to the relevant court by a legal entity (Close Corporation or Company) or a person in order to have themselves declared bankrupt; or
- An application to the relevant court by a creditor of a legal entity or a person in order to have the legal entity or person declared bankrupt; or
- A special resolution which a legal entity files with the Registrar of Companies in order to be declared bankrupt (Rohan Lamprecht, 2011).

Various reasons are cited as causes of firms' bankruptcy. Valley (2008:1) cites the followings:

- Ineffective financial risk assessment and management;
- Ineffective working capital management leading to illiquidity/overtrading;
- Inadequate financial planning and budgetary control;
- Fraud e.g. Enron, World-Com, etc.;
- Inadequate corporate governance;
- Loss of key management and staff;
- Poor industrial relations e.g. Aer Lingus Plc;
- Over-dependence on a single supplier/product;
- Legislation changes e.g. smoking in the workplace ban;
- Quality problems;
- Entry of a new competitor;
- Technical/technological obsolescence;
- Loss of customer/marketplace focus e.g. IBM;
- Unsuccessful mergers/acquisitions e.g. Baltimore Securities;

- Loss of a major customer, franchise or patent; and
- Research and development failure e.g. Elan Corporation.

Though, Vallely (2008:1) states that in today's world of liquidity difficulties, the most important indicators include liquidity/solvency ratios, particularly the current and quick ratios. A comparison of how these ratios change over time and how they relate to the recommended averages may indicate whether or not a liquidity problem and potential corporate collapse is looming.

Over the years, because of the shortcomings of financial ratio analysis, various authors (Altman, 1968:129-132; Edmister, 1970:88-91) have suggested the combination of similar ratios in a group to develop meaningful bankruptcy prediction models to overcome these shortcomings. It is to be noted that most of studies on bankruptcy prediction models have concentrated primarily upon large asset-size firms and have generally ignored small business (Edmister, 1970:1). Edmister's study results indicate that ratio functions may also be accurate at predicting failure of small businesses as well, which is the interest of this study. The study will use bankruptcy prediction models as a framework for ratio analysis and interpretation. The reason is that most models use a combination of a relatively smaller number of ratios found to be the most significant predictors of business failure to compute a single score. The interpretation of this score may be used by SMEs, as a financial measurement tool to assess how they are doing financially (i.e. are they financially sound, should they start worrying and take careful measures or are they facing imminent financial collapse?). The use of bankruptcy prediction models with fewer ratios will also make it easier for practical use by SMEs.

A couple of bankruptcy prediction models are briefly discussed. Among those, two will be discussed in more detail. These are the Z-score and Zeta credit risk models. The reason for singling these two out, is that the former is widely used and the latter has a higher prediction accuracy up to five years prior to failure. Daya (1977:15-16) reports that Altman discusses three generic terms which are often used to describe "corporate problems", these being failure, insolvency, and bankruptcy. He describes failure as represented by the situation where the realised rate of return on invested capital, with allowances for risk considerations, is significantly

and continually lower than prevailing rates on similar investments. The state of insolvency exists when a firm cannot meet its current obligations, signifying a lack of liquidity. Bankruptcy can be of two types: the state of insolvency (above), and the declaration of bankruptcy in court accompanied by a petition to either liquidate the entity's assets or attempts at a recovery program. The next section discusses bankruptcy prediction models.

#### *2.4.2.1 Altman's Z-Score model*

Edward Ian Altman has been one of the most recognised authorities on predicting corporate failure over the past four decades. He is also a founding father of using statistical techniques to predict corporate failure. He developed the Z –Score more than forty years ago and it is still widely used today. Professor Altman researched 66 companies that experienced corporate failure between 1946 and 1965 in the United States (U.S) to determine whether or not their failure could have been predicted. The model is used by investors and analysts to inform them of the financial risk associated with potential investments. Altman chose Multiple Discriminant Analysis (MDA) to develop his models. The technique has been utilised in a variety of disciplines since its first application in the 1930s. During those earlier years, MDA was used mainly in the biological and behavioural sciences. In recent years, this technique has become increasingly popular in the practical business world as well as in the academic environment. Altman (2000:5) describes the method as follows:

MDA is a statistical technique used to classify an observation into one of several *a priori* groupings dependent upon the observation's individual characteristics. It is used primarily to classify and/or make predictions in problems where the dependent variable appears in qualitative form, for example, male or female, bankrupt or non-bankrupt. Therefore, the first step is to establish explicit group classifications. The number of original groups can be two or more. After the groups are established, data are collected for the objects in the groups. MDA in its most simple form attempts to derive a linear combination of these characteristics which "best" discriminates between the groups. If a particular object, for instance, a corporation, has characteristics (financial ratios) which can be quantified for all of the companies in the analysis, the MDA determines a set of discriminant coefficients. When these coefficients are applied to the actual ratios, a basis for classification into one of the mutually exclusive groupings exists.

The MDA technique has the advantage of considering an entire profile of characteristics common to the relevant firms, as well as the interaction of these properties. Another advantage of MDA is the reduction of the analyst's space dimensionally, that is, from the number of different independent variables to G-1 dimension(s), where G equals the number of original *a priori* groups. This analysis is concerned with two groups, consisting of bankrupt and non bankrupt firms. Therefore, the analysis is transformed into its simplest form, one dimension: The discriminant function, of the form of  $Z = V_1X_1 + V_2X_2 + \dots + V_nX_n$ , transforms the individual variable values to a single discriminant score, or Z value, which is then used to classify the object, where  $V_1, X_2, \dots, V_n =$  discriminant coefficients, and  $X_1, X_2, \dots, X_n =$  independent variables.

The MDA computes the discriminant coefficient  $V_i$ ; while the independent variables  $X_i$  are the actual (ratio) values.

When utilising a comprehensive list of financial ratios in assessing a firm's bankruptcy potential, there is reason to believe that some of the measurements will have a high degree of correlation or collinearity with each other (Altman, 2000:6). Altman continues that, while this aspect is not serious in discriminant analysis, it usually motivates careful selection of the predictive variables (ratios). It also has the advantage of potentially yielding a model with a relatively small number of selected measurements which convey a great deal of information. This information might very well indicate differences among groups, but whether or not these differences are significant and meaningful is a more important aspect of the analysis. Perhaps the primary advantage of MDA in dealing with classification problems is the potential of analysing the entire variable profile of the object simultaneously rather than sequentially examining its individual characteristics.

After the initial groups are defined and firms selected, balance sheet and income statement data are collected. Because of the large number of variables found to be significant indicators of corporate problems in past studies, a list of 22 potentially helpful variables (ratios) was compiled for evaluation (Altman, 2000:8). The variables are classified into five standard ratio categories, including liquidity, profitability, leverage, solvency, and activity. The ratios are chosen on the basis of their popularity in the literature and their potential relevancy to the study, and there are a

few “new” ratios in the analysis. From the original list of 22 variables, five are selected as doing the best overall job together in the prediction of corporate bankruptcy.

In order to arrive at a final profile of variables, the following procedures are utilised: (1) observation of the statistical significance of various alternative functions, including determination of the relative contributions of each independent variable; (2) evaluation of inter correlations among the relevant variables; (3) observation of the predictive accuracy of the various profiles; and (4) judgment of the analyst (Altman, 2000:9).

The final discriminant function is as follows:

$$Z = 0.012X1 + 0.014X2 + 0.033X3 + 0.006X4 + 0.999X5,$$

where

X1 = working capital/total assets,

X2 = retained earnings/total assets,

X3 = earnings before interest and taxes/total assets,

X4 = market value of equity/book value of total liabilities,

X5 = sales/total assets, and

Z = overall index.

The above variables are briefly explained in the section to follow:

### **X1, Working capital/total assets (WC/TA).**

The working capital/total assets ratio, frequently found in studies of corporate problems, is a measure of the net liquid assets of the firm relative to total capitalisation. Working capital is defined as the difference between current assets and current liabilities (Altman, 2000:10).

**X2, Retained earnings/total assets (RE/TA).**

Retained earnings are the account which reports the total amount of reinvested earnings and/or losses of a firm over its entire life. The account is also referred to as earned surplus. RE/TA ratio also measures the leverage of a firm. Those firms with high RE, relative to TA, have financed their assets through retention of profits and have not utilised as much debt (Altman, 2006:10).

**X3, Earnings before interest and taxes/total assets (EBIT/TA).**

This ratio is a measure of the true productivity of the firm's assets, independent of any tax or leverage factors. Since a firm's ultimate existence is based on the earning power of its assets, this ratio appears to be particularly appropriate for studies dealing with corporate failure. Furthermore, insolvency in a bankruptcy sense occurs when the total liabilities exceed a fair valuation of the firm's assets with value determined by the earning power of the assets. As it is shown, this ratio continually outperforms other profitability measures, including cash flow (Altman, 2000:11).

**X4, Market value of equity/book value of total liabilities (MVE/TL).**

Equity is measured by the combined market value of all shares of stock, preferred and common, while liabilities include both current and long term liabilities. The measure shows how much the firm's assets can decline in value (measured by market value of equity plus debt) before the liabilities exceed the assets and the firm becomes insolvent (Altman, 2000:11).

**X5, Sales/total assets (S/TA).**

The capital-turnover ratio is a standard financial ratio illustrating the sales generating ability of the firm's assets. It is one measure of management's capacity for dealing with competitive conditions. This final ratio is quite important, because it is the least significant ratio on an individual basis. In fact, based on the univariate statistical significance test, it should not have appeared at all. However, because of its unique relationship to other variables in the model, the sales/total assets ratio ranks second in its contribution to the overall discriminating ability of the model. Still, there is a wide variation among industries in asset turnover (Altman, 2000:12).



Altman cautions that due to the original computer format arrangement, variables X1 through X4 must be calculated as absolute percentage values. For instance, the firm whose net working capital to total assets (X1) is 10% should be included as 10.0% and not 0.10. Only variable X5 (sales to total assets) should be expressed in a different manner: that is, a S/TA ratio of 200% should be included as 2.0. Thus a more convenient specification of the model is of the form:

$$Z = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 1.0X5.$$

In practical terms, the application of this model consists of calculating the variables (ratios) X1, X2, X3, X4, X5 and then the overall index Z using the above formula. The result is interpreted as in Table 2.2.

Table 2.2: Interpretation of Altman's Z-score

<b>Z-score</b>	<b>Interpretation</b>
2.99 and Above	No imminent danger. Collapse unlikely
1.81 to 2.98	A warning sign that collapse is a possibility. Manage (and invest) carefully.
below 1.81	Collapse/bankruptcy is likely

Adapted from: Bernard Vallely FCCA MBA, 2008

#### 2.4.2.2 A revised Z-Score model

In this model, Altman substitutes the book values of equity for the market value in X4. With that all of the coefficients will change (not only the new variable's parameter) and then the classification criterion also changes.

The results of the revised Z-Score model with a new X4 variable are now:

$$Z' = 0.717(X1) + 0.847(X2) + 3.107(X3) + 0.420(X4) + 0.998(X5).$$

The equation looks different to the earlier model. Note, for instance, the coefficient of X1 which decreases from 1.2 to 0.7. But, the model looks quite similar to the one using market values. The actual variable that has been modified, X4, shows a coefficient change to 0.42 from 0.6001; that is, it now has less of an impact on the Z-Score. X3 and X5 are virtually unchanged. The book

value of X4 (25.8) is lower than the 33.3 level for the market value but the scaled vector results show that the revised book value measure is still the third most important contributor. However analysis of the result indicates that the revised model is probably somewhat less reliable than the original, but only slightly less so (Altman, 2000:25). Due to lack of a private firm data base, Altman states that this model has not been tested.

#### *2.4.2.3 The ZETA Credit Model (1977)*

In 1977, a second generation model with several enhancements to the original Z-Score approach was constructed. The purpose was to “construct, analyze and test a new bankruptcy classification model which considers explicitly recent developments with respect to business failures” (Altman, 2000:31). The new study also incorporated refinements in the utilisation of discriminant statistical techniques. Several reasons for building a new model, despite the availability of several fairly impressive "old" models, are presented below and the empirical results seem to substantiate the effort. The new model, which is called ZETA, was effective in classifying bankrupt companies up to five years prior to failure on a sample of corporations consisting of manufacturers and retailers (Altman, 2000:31).

Altman gave the following reasons for constructing a new model:

There are at least five valid reasons why a revised Z-Score bankruptcy classification model can improve and extend upon those statistical models which had been published in the literature in the prior decade. These include:

- i) The change in the size, and perhaps the financial profile, of business failures. The average size of bankrupt firms had increased dramatically with the consequent greater visibility and concern from financial institutions, regulatory agencies and the public at large. Most of the past studies used relatively small firms in their samples. Any new model should be as relevant as possible to the population to which it will eventually be applied. This study utilised a bankrupt firm sample where the average asset size two annual reporting periods prior to failure was approximately \$100 million. No firm had less than \$20 million in assets.

- ii) Following the (i) above, a new model should be as current as possible with respect to the temporal nature of the data.
- iii) Past failure models concentrated either on the broad classification of manufacturers or on specific industries. But with the appropriate analytical adjustments, retailing companies, a particularly vulnerable group, could be analysed on an equal basis with manufacturers.
- iv) An important feature of this study is that the data and footnotes to financial statements have been scrupulously analysed to include the most recent changes in financial reporting standards and accepted accounting practices. Indeed, in at least one instance, a change which was scheduled to be implemented in a very short time was applied. The purpose of these modifications was to make the model not only relevant to past failures, but to the data that will appear in the future.
- v) To test and assess several of the then recent advances and still controversial aspects of discriminant analysis.

#### *2.4.2.4 Principal findings from the Zeta model*

It was concluded that the new ZETA model for bankruptcy classification appears to be quite accurate for up to five years prior to failure with successful classification of well over 90% of the sample one year prior and 70% accurate up to five years. It is also observed that the inclusion of retailing firms in the same model as manufacturers does not seem to affect the results negatively. This is probably true due to the adjustments to the data based on recent and anticipated financial reporting changes. It is also found that the ZETA model outperforms alternative bankruptcy classification strategies in terms of expected cost criteria utilising prior probabilities and explicit cost of error estimates (Altman, 2000:32).

Altman (Altman, 2000:35) states that a number of financial ratios and other measures have been found in other studies to be helpful in providing statistical evidence of impending failures. The analysis covered 27 variables based on their use in credit analysis.

After an careful process of reducing the number of variables, a 7-variable model was selected which not only classifies the test sample well, but also proves the most reliable in various validation procedures. That is, adding more variables could not significantly improve upon the results, and no model with fewer variables performed as well (Altman, 2000:37).

The seven variables for the Zeta model are as follows:

- **X1 Return on assets**, measured by the earnings before interest and taxes/total assets. This variable has proven to be extremely helpful in assessing firm performance in several past multivariate studies (Altman, 2000:37).
- **X2 Stability of earnings**, is measured by a normalised measure of the standard error of estimate around a five to ten-year trend in X1. Business risk is often expressed in terms of earnings fluctuations and this measure proved to be particularly effective (Altman, 2000:37).
- **X3 Debt service**, measured by the familiar interest coverage ratio, i.e., earnings before
- **Interest** and taxes/total interest payments (including that amount imputed from the capitalised lease liability) (Altman, 2000:37).
- **X4 Cumulative profitability**, measured by the firm's retained earnings/total assets. This ratio, which imputes such factors as the age of the firm, debt and dividend policy as well as its profitability record over time, was found to be quite helpful in the Z-Score model, as well. As the results show, this cumulative profitability measure is unquestionably the most important variable measured univariately and multivariately (Altman, 2000:37).
- **X5 Liquidity**, measured by the familiar current ratio. Despite previous findings that the current ratio was not as effective in identifying failures as some other liquidity measures, it is now found that it is slightly more informative than others, such as the working capital/total assets ratio (Altman, 2000:39).
- **X6 Capitalisation**, measured by common equity/total capital. In both the numerator and the denominator, common equity is measured by a five-year average of the total market

value, rather than book value. The denominator also includes preferred stock at liquidating value, long term debt and capitalised leases (Altman, 2000:39).

- **X7 Size**, measured by the firms' total assets. This variable, as is the case with the others, was adjusted for financial reporting changes. It also includes the capitalisation of leases (Altman, 2000:39).

Unfortunately, the quantitative equation for the Zeta model is not given as it is a proprietary model for subscribers to ZETA Services, Inc. in Hoboken, New Jersey, U.S.A. This means that the Zeta model is copyrighted for the use of this group of subscribers only and thus cannot be shown in the study.

#### *2.4.2.5 Comparison of The Zeta credit model with the Z-Score model*

A comparison is made based on the original sample classification accuracy and also the accuracy for up to five years prior to financial distress of the Z-Score and ZETA models. It is noted that the one-year prior classification accuracy of bankrupt firms is quite similar for both models (96.2% for ZETA and 93.9% for Z-Score), but that the accuracy is consistently higher for the ZETA model in years two to five prior to the distress date. Indeed, by the fifth year, the ZETA model is still about 70% accurate but the Z-Score's accuracy falls to 36%. It is also noted that the Z-Score's accuracy on the ZETA sample is actually considerably higher in years two to five than on the original sample. Finally, when the Z-Score model's coefficients are recalibrated based on the ZETA sample, the classification results are much better than the originals in all but the first year prior to failure (Altman, 2000:41).

Altman (1967:130) in conclusion, states that Multiple Discriminant Analysis (MDA) exhibits exceptional accuracy as a bankruptcy prediction procedure. This accuracy was evident for as many as two years prior to bankruptcy with effectiveness of the model substantially diminishing after the second year. When Altman revisited the model in 2000, more than thirty years after he first tested it, it was still being widely used with the same appreciation of accuracy. Though, the Zeta model, constructed ten years later in 1977, has a much higher accuracy more than two years prior to bankruptcy (Altman, 2000:41). The Zeta model, because it is a proprietary model, cannot be accessed by all firms, especially small businesses. MDA, as a bankruptcy prediction model,

was shown to be easily applicable for practical decision making with two of its attributes being simplicity and low cost (Altman, 1967:131). Results of the study by Edmister (1970:99) indicate that the ratio functions used in the MDA may be accurate and efficient at predicting small business failure as well as failure of larger firms.

The next section discusses cash flow ratios, which are not shown in the financial statements of businesses, even though they are important in the prediction of failure of companies.

#### 2.4.2.6 *Daya's model (1977)*

Daya analysed thirty one pairs of failed and healthy South African companies with data taken from 1966 to 1976. The definition of failure was the same as that used by Beaver and Altman in earlier studies. It was intended that the 30 ratios used by Beaver were to be used, but lack of financial information resulted in the analysis of only 17 ratios. The percentages of correct classification for Daya's second test are noted in Table 2.3 below.

Table 2.3 Predictive accuracy for Daya's second test

Ratio	Year 1	Year 2	Year 3	Year 4	Year 5
Cash flow to average total current liabilities	82%	60%	52%	52%	57%
Net income to total assets	81%	66%	67%	65%	56%
Total current and long term liabilities to total finance	81%	77%	65%	60%	62%
Cash and bank to total assets	60%	55%	60%	55%	56%
Cash and bank to current liabilities	68%	52%	60%	53%	63%

Source: Naidoo, 2006:32.

Daya found the cash flow to average total current liabilities ratio to be the best predictor one year prior to failure. However, he also noted that the best overall predictor over the five year period was net income to total assets. With reference to Table 2.3 above, this ratio is closely contested by the total current and long term liabilities to total finance ratio, and the latter could arguably be considered to be the superior overall ratio (Naidoo, 2006:32).

#### 2.4.2.7 De L Rey's model (1981)

De La Rey developed a model using financial information on 26 pairs of failed and non failed South African listed companies, with the failed companies taken from the period of 1972 to 1979. Unlike Altman's Z-score model which used "marked value of equity to book value of total debt" as a variable implying its use only on listed companies, De La Rey's model could be used on both listed and unlisted companies. By using multiple discriminant analysis (MDA) and 25 variables, the following model was developed:

$$K = -0.01662a + 0.0111b + 0.0529c + 0.076d + 0.0174e + 0.01071f - 0.068811$$

Where,

$$a = (\text{Total outside funding}/\text{total assets}) * 100,$$

$$b = (\text{EBIT}/\text{average total assets}) * 100,$$

$$c = (\text{Total current assets} + \text{listed investments}) * \text{Total current liabilities},$$

$$d = (\text{PAT}/\text{average total assets}) * 100,$$

$$e = (\text{Cash flow profit after tax}/\text{inflation adjusted total assets}) * 100, \text{ and}$$

$$f = (\text{Inventory}/\text{inflation adjusted total real assets}) * 100.$$

A k-score < -0.19 implies potential failure, with a k-score > 0.20 implying a "healthy" company; and a zone of ignorance exists between a score of -0.19 and +0.20 implying that a company cannot be classified as either "healthy" or "a candidate for potential failure".

The model was found to classify companies as either "healthy" or "likely to fail" with a 96% overall accuracy one year prior to failure (Naidoo, 2006:33).

#### 2.4.3 Problems with ratio analysis and interpretation

While ratio analysis is an effective tool for assessing a business' financial condition, the following limitations must also recognise:

- Accounting policies vary among companies and can inhibit useful comparisons. For example, the use of different depreciation methods (straight-line vs. double declining balance) will affect profitability and return ratios.
- A ratio is static and does not reveal future flows. For example, it will not answer questions such as "How much cash do you have in your pocket now?" or "Is that sufficient, considering your expenses and income over the next month?"
- A ratio does not indicate the quality of its components. For example, a high quick ratio may contain receivables that might never be collected.
- Reported liabilities may be undervalued. An example is a lawsuit on which the company is contingently liable.
- The company may have multiple lines of businesses, making it difficult to identify the industry group the company is a part of.
- Industry averages cited by financial advisory services are only approximations. Hence, you may have to compare a company's ratios to those of competing companies in the industry (Delta Publishing, 2006:138).

Grice and Dugan (2001:124) in the conclusion of their study on the limitations of bankruptcy prediction models caution that:

- Researchers should use bankruptcy prediction models cautiously.
- Applying the models to time periods and industries other than those used to develop the models may result in a significant decline in the models' accuracies.
- Additionally, some bankruptcy prediction models may be more generally useful for predicting financial distress, not just bankruptcy.
- To avoid erroneous applications of bankruptcy prediction models in the future, it is necessary for researchers not only to understand the uses of prediction models, but also to understand the limitations of the models.



## **2.5 CONCLUSION**

This chapter discussed briefly the topics of business management and financial management which included performance measurement, investment management and debtors. The chapter also presented a discussion of a couple of bankruptcy prediction models used as a basis for ratio analysis and interpretation. These models use a combination of similar ratios to give a single score that can be interpreted to efficiently predict business failure. The Zeta Credit model, has a much higher accuracy than the MDA model in more than two years prior to bankruptcy, but the former is a proprietary model, accessed only by the members of that organisation. The chapter ends with a discussion of cash flow ratios that are often not present in the financial statements, but are also important in assessing companies' performance. The analysis showed that ratios can be a valuable and effective tool for assessing a company's financial condition, and even for predicting failure of small businesses, but their limitations must also be recognised. Therefore they should be used cautiously.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 INTRODUCTION**

This chapter outlines the process followed to arrive at a conclusion regarding the research problem. A case study is a commonly used method among business economists studying firms and organisational behaviour. It can be seen as a special research strategy and approach that can use either qualitative or quantitative data, or even combinations of them. The studied cases are usually simple ones, and they are studied in their own special environment. Case study is often used in the field of business economics as well as in other disciplines. Among these are administration sciences and technical sciences, where the research objects frequently include independent organisational entities, such as companies and other administrative organisations (Aaltio & Heilmann, 2009).

Due to the fact that this study is exploratory, and base on multiple case studies, the methodology is mainly qualitative, but also uses the quantitative methodology in combination. The purpose of quantitative research is to evaluate objective data consisting of numbers while qualitative research deals with subjective data that are produced by the minds of the respondents or interviewees *i.e.* human beings (Welman, Kruger & Mitchell, 2005:8). Numbers will feature in the study, but just as a means of communicating the tools applied to measure financial performance. Quality research is not simply the application of a one-size-fits-all approach, as might be assumed by the gold standard in the United States. Nor is quality research a simplistic question of qualitative or quantitative approaches. Rather, quality research involves alignment of the problem space, development of the related knowledge base, available technologies, and the design. Furthermore, quality research involves consideration of progress in the research agenda and the desire to extend knowledge about important problem spaces, which produces trustworthy results and compelling arguments reflecting prior inquiries and applicability to similar problem spaces and settings (Yore & Gretchen, 2009).

There seems to be little literature on the financial performance measurement of SMEs, therefore a multiple exploratory case study approach may bring an insight into this research problem. In conducting exploratory research, insights, ideas and opinions can be collected from individuals with knowledge and experience of the problem. The technique is becoming popular and is very important for business and management researchers (Mkocha as quoted by Rajendra, 2008:84). This chapter spells out the aspects of the research method to be covered including research objectives, research design, population and units of analysis, sample selection, data collection and data analysis methods, as well as ethics of the research.

### **3.2 RESEARCH OBJECTIVES**

The research problem for this study is the financial performance measures used by manufacturing SMEs in Pretoria. The objectives of the study are:

- To identify tools currently used by manufacturing SME's in measuring their financial performance;
- To recommend necessary improvements on financial performance measures used by manufacturing SMEs; and
- To recommend necessary training interventions that would be needed for manufacturing SMEs to successfully implement financial performance measurement.

### **3.3 RESEARCH DESIGN**

The design of this study is based on multiple case studies. Yin (2004:6) justifies the use of a multiple case study saying that “focusing on a single case will force you to devote careful attention to that case; however, having multiple cases might help you to strengthen the findings from your entire study - because the multiple cases might have been chosen as: replications of each other, deliberate and contrasting comparisons, or hypothesised variations.

Multiple-case designs have important advantages to consider. First, the researcher will be able to show his/her audience that he/she can practice the complete cycle of case study research (*e.g.*, design, selection, analysis, and reporting) with more than a single case, reducing suspicion that

his/her skills are limited to a single case that also might have been personally special to him/her in some way. Second, the researcher is able to respond to a common criticism of single-case studies, that they are somehow unique and idiosyncratic and therefore have limited value beyond the circumstances of the single case. Third, the researcher will have a modest amount of comparative data, even if the cases were chosen to be confirmatory cases, helping him/her to analyse his/her findings (Yin, 2004:9).

Yin (1994) describes exploratory case studies as a means for defining the necessary questions and hypotheses for developing consecutive studies. He therefore highlights case study research's supportive role in developing continuative social research in general. This includes single and multiple case studies, which can also test proposed research approaches and open possibilities for a variety of subsequent research designs. Streb (2009) points out that, this supportive form of case study is very often applied as a preliminary step of an overall causal or explanatory research design exploring a relatively new field of scientific investigation in which the research questions have either not been clearly identified and formulated or the data required for a hypothetical formulation have not yet been obtained.

This study uses mixed (quantitative and qualitative) methods in various aspects of its methodology (*i.e.* design, data collection). Mixed methods research works particularly well for case study research as it allows the researcher to take the rich empirical data yielded from case studies and apply either quantitative or qualitative methods or quantitative and qualitative methods to the data (Kitchenham, 2009:1).

### **3.4 POPULATION, UNITS OF ANALYSIS AND UNITS OF OBSERVATION**

The population is the subject of a study and consists of individuals, groups, organisations, humans, products, and events, or the condition to which they are exposed (Welman, *et al.*2001:52). According to Mugo (2011), a population is a group of individual persons, objects, or items from which samples are taken for measurement; for example a population of presidents or professors, books or students. The population in this study is manufacturing SMEs in Pretoria, South Africa.

The units of analysis are the members or elements of the population, and are manufacturing small and medium enterprises in Pretoria. According to Yin (1994:2), the units of analysis are the actual source of information: individuals, organisational documents, artefacts, for example. He suggests that single cases may be used if a case seems to represent a critical test to existing theory; rare or unique events, and it is important to select the case and the units of analysis properly. Multiple cases may be used if a “replication logic” is supposed to reveal support for theoretically similar results and contrasting results for predictable reasons.

The unit of observation is the entity in primary research that is observed and about which information is systematically collected (Humphrey, 2001:17). The units of observation for the study are the managers, owners or financial officers of the selected cases.

### **3.5 SAMPLING**

A sample can be defined as a set of respondents (people or organisations) selected from a larger population for the purpose of a study; and 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 (Mugo, 2011). The purpose of sampling is to draw conclusions about populations from samples with a population’s characteristics by directly observing only a portion (or sample) of the population, which is cheaper than observing the whole population (Mugo, 2011). Of course generalising these conclusions to the whole population will have to meet other criteria, which is not the aim of this study, as it is a case study based.

#### **a) Sampling method**

Judgment (purposive) sampling (a non-probability sampling method) was used to select a sample. Judgment (purposive) sampling (a non-probability form of sampling) was used to select a sample. Judgment sampling is a common non-probability method. The researcher selects the sample based on judgment. This is usually an extension of convenience sampling. For example, a researcher may decide to draw the entire sample from one "representative" city, even though the population includes all cities (Statpac, 2011).

It is to be noted though that this method of sampling along with the use of a case-study approach will not allow generalisation of the results to all manufacturing SMEs which is not the aim of the study anyway.

#### **b) Sample size**

Although no ideal sample size for studies using a qualitative approach has been established, guidelines are available for case studies. Cheney and Nienaber (2009:448) quote the following authors and their suggestions on the sample size for case studies: Eisenhardt (1989) proposes between four and ten cases, while Morse (in Denzin & Lincoln, 1994) suggests six cases and Creswell (in Onwuegbuzie & Leech, 2007) three to five cases. A number of cases will be selected and an effort will be made to present results from six to ten responding cases in order to keep the study within these guidelines for qualitative case study research. The cases were selected from three industrial areas of Pretoria. The subjects agreed to take part in the study, and were used as the actual size of the study.

#### **c) Sampling plan**

A screening of the participants was done prior to the sample selection and field work. This was done to avoid a waste of time during the field study which might have resulted from practicality problems such as finding that the selected SMEs were not able to give the information sought. The process consisted of asking the selected SMEs whether they measure their financial performance after explaining the purpose of the study. It did not matter whether they do these measures internally or externally using the service of a consultant as far as they were willing to refer the researcher to that consultant. If selected SMEs did not measure financial performance, or did not meet the criteria to be classified as an SME, then it became irrelevant to the study and was dropped out of the sample. Another SME was then selected in replacement, and the process was complete once a sufficient number of cases (six to ten) had agreed to take part. The researcher endeavoured to select SMEs that have been running for a minimum of three to five years, the reason being that such SMEs have been around long enough to provide useful and recent information for the study.

#### **d) Sample selection**

Taking into account that there is no complete list of SMEs in South Africa, a list of businesses in Pretoria from the Department of Trade and Industry (DTI) database was requested for sample selection. Later on, the plan was changed and Braby's database of manufacturing businesses in Pretoria was used to select the case studies on a convenience basis. Brabys.com is an online business directory for Southern Africa and the Indian Ocean Islands. According to Denscombe (2003:34), with its limits with regard to time and resources, the selection of cases is quite likely to include a consideration of convenience. Faced with alternatives which are equally suitable, it is reasonable for the researcher to select the ones which involves the least travel, the least expense and the least difficulty when it comes to gaining access. He warns though that convenience should only come into play when deciding between equally suitable alternatives. All selected SMEs were manufacturing in nature, making different products and from three different industrial areas of Pretoria.

### **3.6 DATA COLLECTION**

Qualitative data can be gathered not only as texts but also as pictures or through participatory observation, and a range of other methods. Interviews, for example, especially thematic interviews, are the most common data gathering method for a case study. Using several different methods also enables triangulation, that is, the information received from different data can be compared, which increases validity (Aaltio & Pia, 2009). Semi-structured interviews were used to collect data at the premises of the participant SME businesses, with an interviewer-administered questionnaire. Zikmund, *et.al.* (2010:151) describe this method as follow:

Semi-structured interviews usually come in written form and ask respondents for short essay responses to specific open questions. Respondents are free to write as much or as little as they want. The questions would be divided into sections, typically, and within each section, the opening question would be followed by some probing.

During the interview, the researcher had the opportunity to take notes while asking clarification on some responses or explaining others that the respondent may have had difficulties understanding. Interviews were arranged by telephone with SMEs, and in all cases, because they

were too busy, the questionnaire was either emailed or dropped by the researcher at the SMEs' premises to give them time to have a look at it, then an arrangement was made to come back for the semi-interviews that most of the time lasted between half an hour to forty five minutes. In some cases, it was found that the questionnaire had been filled in, but the researcher might have to ask for clarification on questions that were not properly answered or to which the answers could not be understood. The process was completed over a period of nine weeks.

The questionnaire consisted of two parts with respect to the kind of information asked, but were not separated. In the first part of the questionnaire (1-9), open-ended questions were used to gather information on the profile of the respondents SMEs. These questions were about the role of the respondents in the business, the time period since the business had been operating, the product manufactured by the business, the number of employees in the business, and the aspects of the business which are important to financial performance. In the second part (10-20), open ended questions and questions with options to choose from were concerned with the financial performance measures currently used by the chosen manufacturing SME cases.

The questionnaire was distributed with a covering letter (Annexure1), explaining the purpose of the study and assuring the participants SMEs of their anonymity. Brief instructions on how to respond the questions are given at the beginning of the questionnaire (Annexure 2).

### **3.7 DATA ANALYSIS**

Unlike most other methods, when doing case studies the researcher may need to do data collection and data analysis together. For instance, a field interview of one person may produce information that conflicts with that from an earlier interview. Doing the interview is considered data collection, but surfacing the conflict is considered data analysis. The researcher would want that analysis to happen quickly, so that he/she can modify his/her data collection plans while still in the field, either by re-interviewing the earlier person or by seeking to find a third source to resolve the conflict (Yin, 2004:3).

Because of the qualitative nature of the study and information sought, thematic content analysis was used for data analysis. Qualitative content analysis goes beyond merely counting words or extracting objective content from texts to examine meanings, themes and patterns that may be



manifest or latent in a particular text. Qualitative content analysis is mainly inductive, grounding the examination of topics and themes, as well as the inferences drawn from them, in the data. In some cases, qualitative content analysis attempts to generate theory (Zhang & Wildemuth, 2011:1).

Thematic analysis is widely used as an analytic approach across methods and paradigms by case study researchers, qualitative researchers in general, and scholars of the humanities because of its power to yield insightful interpretations that are contextually grounded (Lapadat, 2009). Lapadat goes on to describe thematic analysis as a systematic approach to the analysis of qualitative data that involves identifying themes or patterns of cultural meaning; coding and classifying data, usually textual, according to themes; and interpreting the resulting thematic structures by seeking commonalities, relationships, overarching patterns, theoretical constructs, or explanatory principles. Thematic analysis is not particular to any one research method but is used by scholars across many fields and disciplines. It is not a research method in itself but rather an analytic approach and synthesising strategy used as part of the meaning-making process of many methods, including case study research.

Thematic analysis is a tactic for reducing and managing large volumes of data without losing the context, for getting close to or immersing oneself in the data, for organizing and summarizing, and for focusing the interpretation. Identification of themes can be done deductively, on the basis of theoretical constructs that the case study researcher wishes to investigate. Researchers might use their research questions, interview questions, or theory-derived categories as a start list of *a priori* themes for coding data documents, an approach that can facilitate within- or cross case comparisons (Lapadat, 2009).

### **3.8 GENERALISATION, VALIDITY AND RELIABILITY**

Rowley (2002:20) says that generalisation of the case study so that it contributes to theory is important. Though, she adds that the method of generalisation for case studies is not statistical generalisation, but analytical generalisation in which a previously developed theory is used as a template with which to compare the empirical results of the case study. If two or more cases are shown to support the same theory, replication can be claimed. In analytic generalisation, each

case is viewed as an experiment, and not a case within an experiment. The greater the number of case studies that show replication the greater the rigour with which a theory has been established. This is the generalisation objective of this study, rather than statistical generalisation.

Due to its empirical nature, the study is only concerned with external validity. External validity concerns are related to the ability to take the findings from one study and apply the same relationships and conclusions to other populations and contexts. According to Welman, Kruger, Mitchell (2005:125), External validity is twofold:

- Population validity refers to the degree to which the findings obtained for a sample may be generalised to the total population to which the research hypothesis applies.
- The ecological validity of the obtained results refers to the degree to which they may be generalised to all circumstances that are implied by the research hypothesis.

Reliability requires the investigator to follow the same process when repeating the same case process. Documentation of the research process is very important if other researchers are to be able to repeat a research programme: It is for this reason that researchers like Yin are especially adamant that a case database be created and maintained to allow repetition and re-evaluation of cases. Reliability is most important during the data collection phase, and involves the use of case study protocol as well as the case study database already mentioned (Schell,1992:13 as quoted by Yue, 2009).

As far as this study is concerned, population validity cannot be guaranteed, since the study cannot be generalised to the whole population of manufacturing SMEs, because of the case study approach and method of sampling. However, because the study is a field study (questionnaires and interviews conducted at SMEs premises), the ecological validity may not be threatened. As for assuring the reliability of the study, all documents used during the research process, especially during the data collection phase were kept for any repetition or replication of the study, or re-evaluation of the cases.

### **3.9 CONCLUSION**

This chapter outlined how the study was going to be conducted practically on the field, including the design that was used. The chapter discussed the sampling method, sample selection, method of data collection and data analysis as well as the generalisation, validity and reliability of the study.

**CHAPTER FOUR**  
**RESEARCH FINDINGS AND DISCUSSIONS**

**4.1 INTRODUCTION**

This chapter presents the empirical results of the study. The first part presents the profile (organisational characteristics) of the studied SMEs. Aspects include the role of the respondents in the business, the time period over which the business has been operating, the product manufactured by the business, the number of employees in the business, and the important aspects of financial performance of the business. The second part presents the results for the various financial performance measures used by manufacturing SMEs.

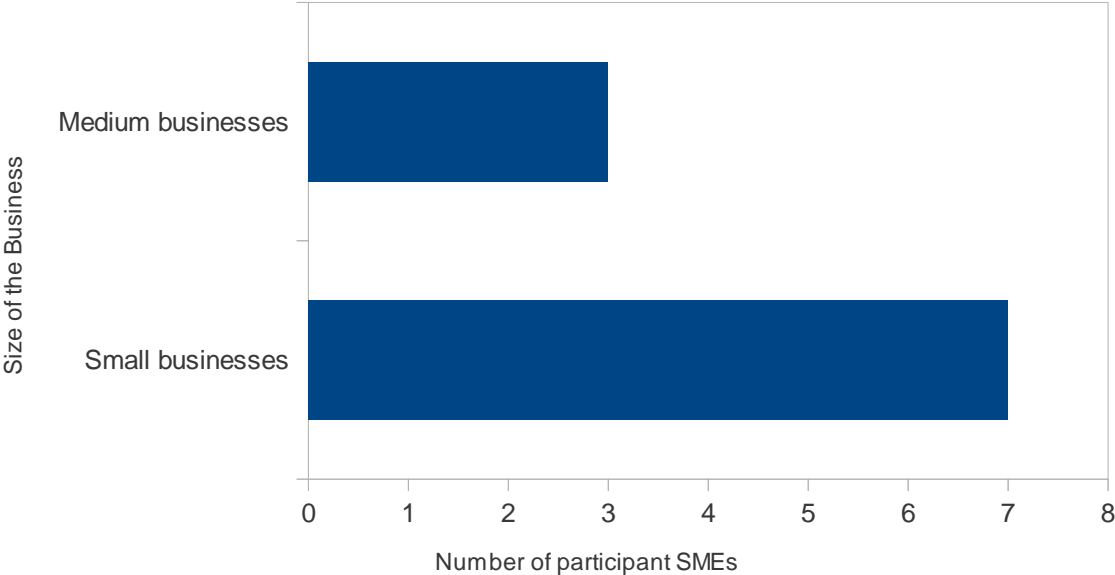
**4.2 PROFILE OF THE RESPONDENTS**

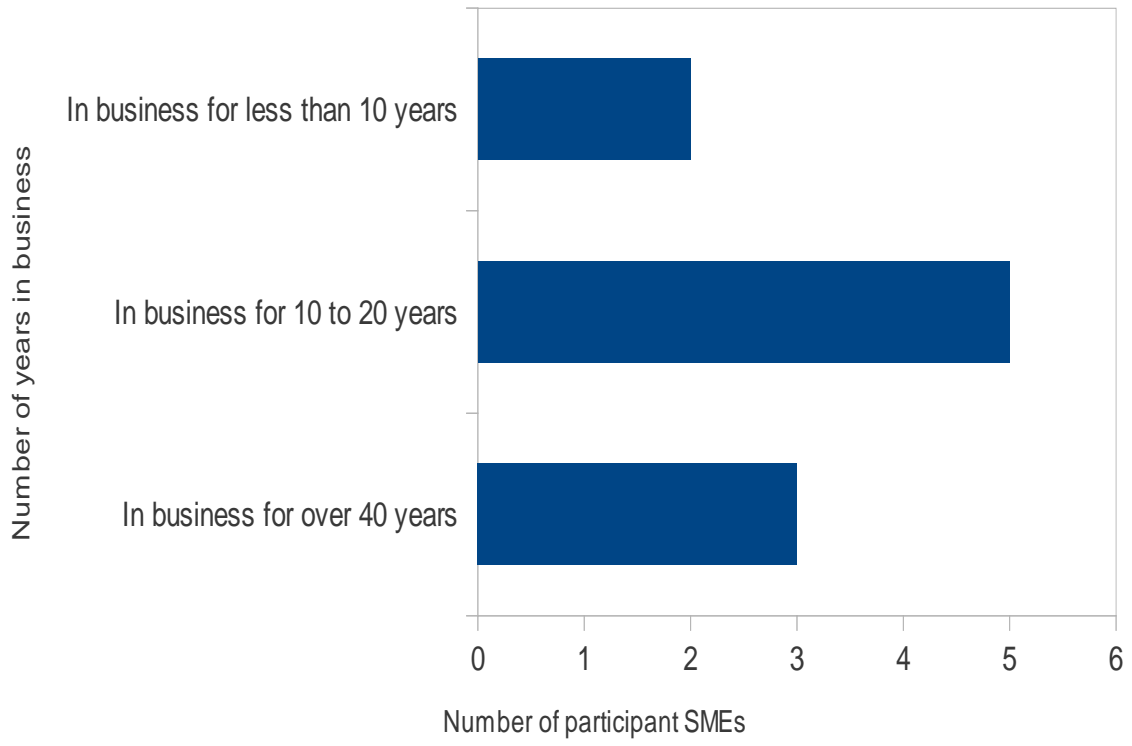
The studied SMEs were from various sectors of manufacturing in terms of products manufactured, including steel components and hand tools, automotive parts, industrial ovens, corrugated boxes, rubber, exhaust systems and accessories, etc. Table 4.1 below summarises the profile of the respondent SMEs.

Table 4.1: Organisational characteristics of the participant SMEs.

Characteristics of firms	1	2	3	4	5	6	7	8	9	10
Number of employees	40	120	20	26	21	83	16	130	48	15
Years of existence	12	55	20	13	43	13	2	14	53	7
Products manufactured	Industrial ovens	Corrugated boxes	Rock drill, blasting and automotive parts	Steel components	Hand tools	Aluminium and fibre technology heat	Manganese metal	Rubber	Exhaust systems and accessories	Steel products

						shield s				
Interval of financial performance measurement	Weekly and yearly	Daily and yearly	Monthly and every 3 months	Monthly	Monthly	Monthly	Weekly	Monthly	Monthly and weekly update	Six months
Current financial performance is satisfying	Yes	Yes	No	No	Yes	Yes	Difficult to say	To be improved	To be improved	Yes
Importance of measuring financial performance	Very important	Very important	Very important	Essential	Very important	Very important	Very	Very	No 1 priority	Very
Use of external or internal financial officer	Both	Both	Both	both	Both	both	Internal	Internal	Internal	Internal
Person interviewed	Financial controller	Financial controller	Owner	Co-owner	Director : Financial and administration	Financial controller	Managing Director	Financial director	Project Manager	Owner





Interval periods of their financial performance measurement

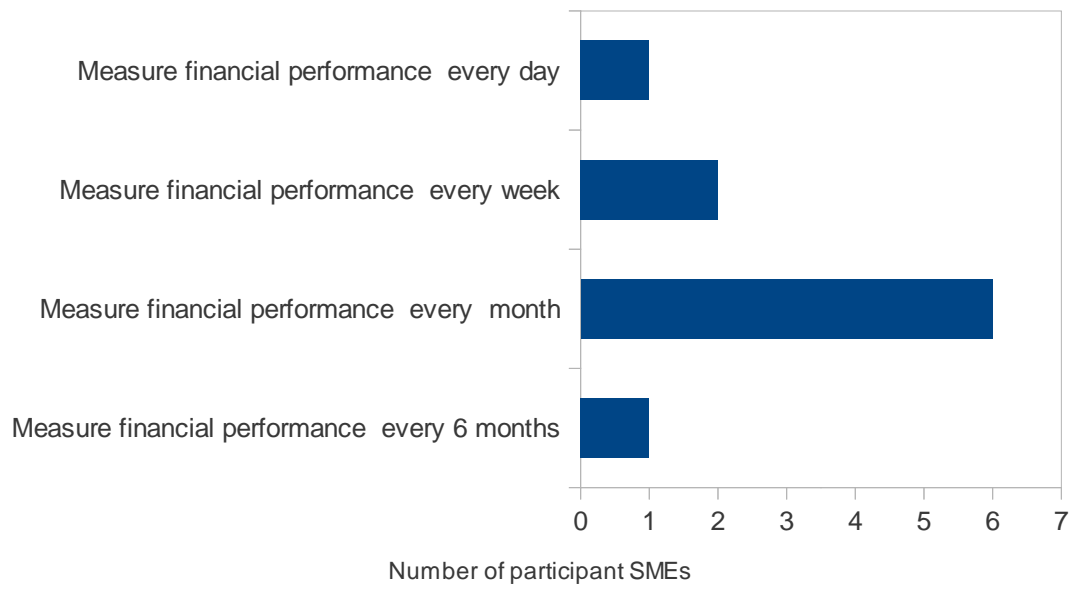
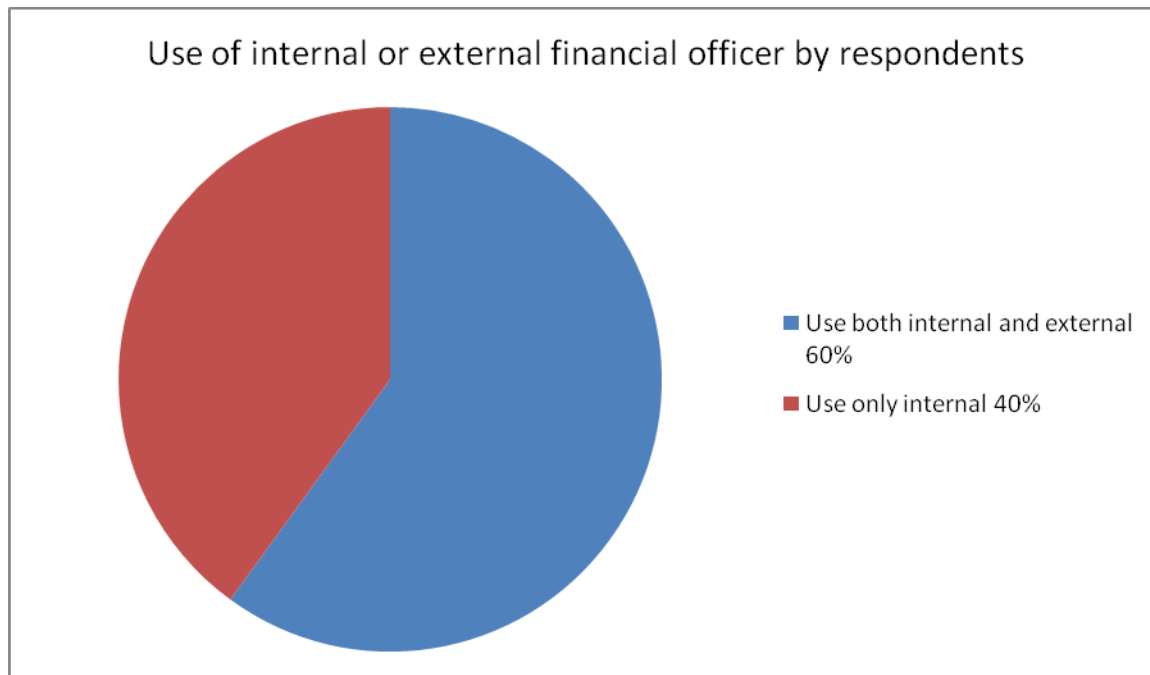




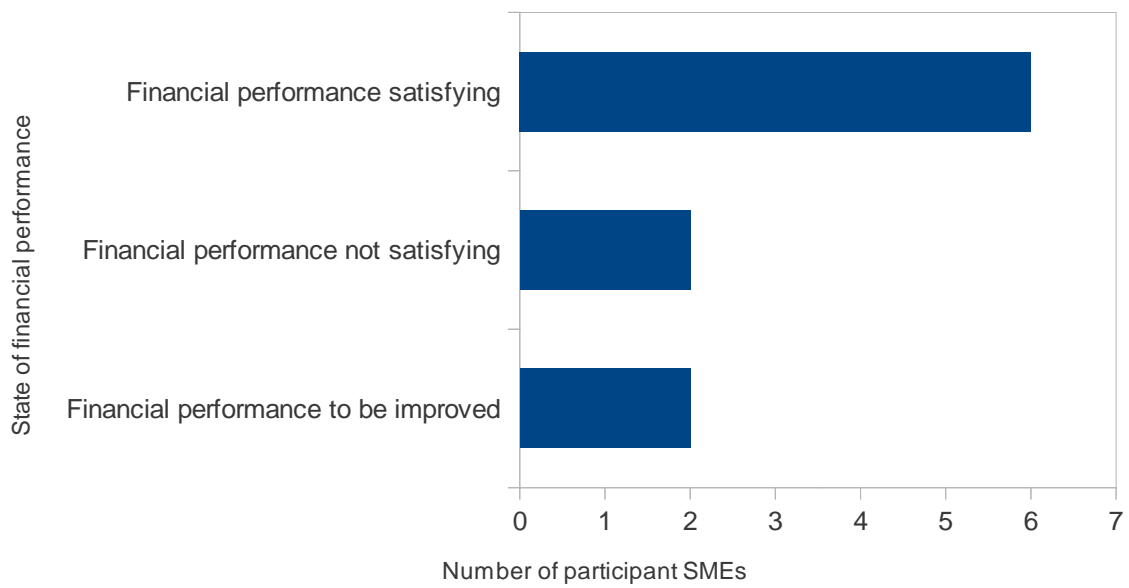
Figure 4.4 Use of internal or external financial officers by SMEs



#### 4.2.5 State of financial performance

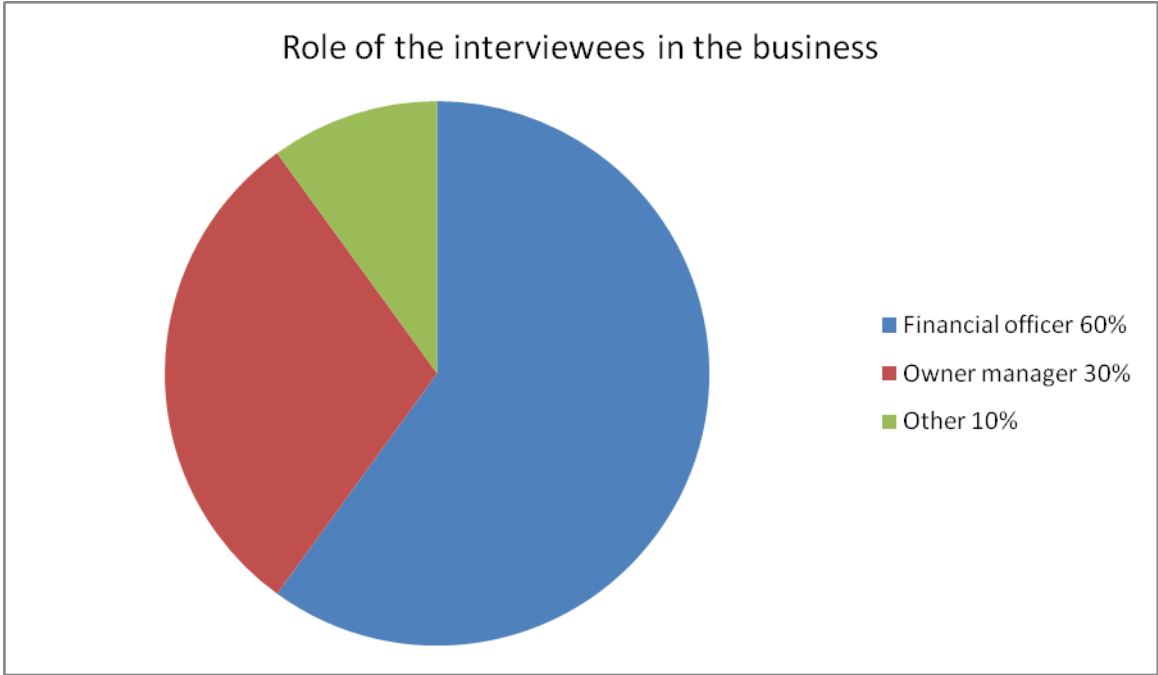
The majority of participants indicated that their current financial performance is satisfying for the following reasons:

- The business is still profitable with room for improvement.
- Re-facility margins are improved.
- One of the interviewees answered this way: Auditors' report is considered to determine how good or satisfying the company's financial performance is, but it is only discussed with top management. As far as the financial controller (interviewee) can say, it is satisfying, since they take orders only after calculating and making sure that a particular order will give the company an acceptable profit with no involvement of auditors' report at all. This has always maintained their finances at a very good level.



cases and a co-owner in the other case were the persons actually in charge of the financial performance monitoring of the business; and they were the people interviewed. In one of the respondent SMEs, the interviewee was the project manager as he was in charge in the absence of the financial manager, the latter was on sick leave at the time of the interview. Figure 4.6 below shows the role of the people interviewed in the respondent SMEs.

Figure 4.6 Role of the people interviewed in the respondent SMEs



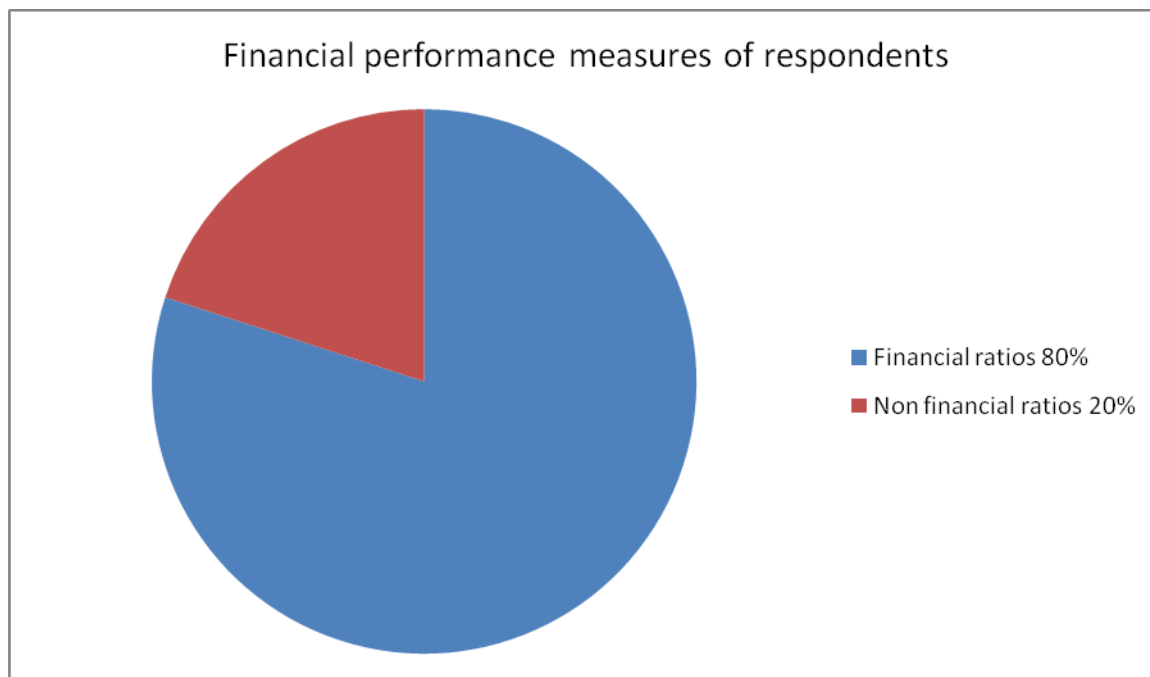
**4.3 FINANCIAL PERFORMANCE MEASUREMENT**

The second part of the interview focused on the financial performance tools used by respondent SMEs. This includes financial performance measures used, knowledge of financial ratios, use of financial ratios, more useful ratios, reflection of results from ratios on actual operations, contribution of ratios' results on financial performance, and knowledge of bankruptcy prediction models.

### 4.3.1 Financial performance measures used

Eight participants out of the ten interviewed indicated that they used financial ratios (one of them using PASTEL software, and one PRO ACC 5), and two said that they do not use them, neither do they use any of the measures given to them as other options, as shown in percentages in figure 4.7 below.

Figure 4.7: Percentage of financial ratios' and non-ratios' users



### 4.3.2 Knowledge of financial ratios

All the participant SMEs whether using financial ratios or not, were familiar with many of the ratios found and regularly used in the literature, namely:

- Current ratio (current assets to current liabilities);
- Net operating margin (net working capital to total assets);
- Earnings after tax to total assets;

- Market value of equity to book value of total debt;
- Cash flow to total debt;
- Cash flow to total current liabilities;
- Debt to equity ratio ( total liabilities/stockholders' equity );
- Equity to total assets ratio;
- Inventory turnover (inventory to sales);
- Quick assets to current liabilities;
- Gross profit margin ratio (gross profit to net sales); and
- Return on equity (ROE) which is equal to net income/average stockholders' equity.

### 4.3.3 Use of financial ratios

All of the SMEs that use financial ratios, even though familiar with many ratios found in the literature, make use of just a few of them in common, and many ratios individually as shown in table 4.2 below.

Table 4.2: Financial ratios currently used by respondents

<b>Financial ratios</b>	<b>Number of respondents using them</b>
Cash flow to total debt	6
Current ratio (current assets to current liabilities)	5
Cash flow to total current liabilities	5
Gross profit margin ratio (gross profit to net sales)	4

Inventory turnover (inventory to sales)	4
Operating profit to operating assets	3
Net working capital to total assets	2
Earnings after tax (PAT) to total assets	2
Return on equity (ROE)	1
Net profit ratio	1
Inventory, debtors, creditors' days	1
Times interest earned (income before interest and taxes [EBIT] to interest expense)	1
Net working capital (NWC)	1
Total assets turnover (sales to total assets)	1
Debt ratio (total debt to total assets)	1

One of the SMEs uses an additional ratio to the traditional ones that it has found very useful in maintaining its financial performance. That ratio is computed as:

$(\text{sale costs} - \text{throughput}) / \text{sales}$  where  $\text{throughput} = \text{sale costs} - (\text{materials} + \text{direct costs})$ .

This ratio should be 50% or more for the company not to be in financial trouble. The company also monitors carefully what it calls gross turnover (sales - cost of sales) tendency. If this ratio is constant or increasing, then management is happy. On the other hand, if it is decreasing, then the company has to look at other alternatives to improve its financial performance by broadening the product range, that is diversification, and market segment. The company looks at financial ratios once a year with auditors as well to see how it can improve its financial performance. Another participant SME also uses other ratios such as:

- Solvency ratio (Total assets to total debt);

- Supplier days ratio  $[(\text{accounts payable} * 30 * \text{period} / \text{cost of sales})]$ ;
- Customer days ratio  $[(\text{accounts receivable} * 30 * \text{period} / \text{sales})]$ .

In one of the participant SME, PASTEL software is used as a financial measuring tool. The owner is very confident about its use and its efficiency as well. He indicated that everything is done with the software. The company uses the ratios included in Table 4.2, but computes these using PASTEL.

In another participant SME, a complete computer software package called PRO ACC 5 is used to manage the company's assets and financials results. The software uses most of the ratios in question 9 and provides all the needed information, such as sales, materials needed, customer base and orders, inventory holding,.

Two of the participant SMEs do not use any of the tools given to them as options to choose from, and have specific tools they adopted for measuring their financial performance.

The interviewee at one SMEs said that financial ratios are briefly discussed between auditors and top management every month. However, no recommendation is given, suggesting that certain ratios are favoured but are then not used to measure the company's financial performance. Only the Rand Per Ton (RPT) method is used here to make sure that the company's financial performance remains satisfying. The RPT is a particular method adopted by this company and works as explained below: an order is considered from a client, but before being accepted, a Rand per ton of the material to be used to make the product is calculated. Knowing from their database that a ton of material can produce a certain number of boxes of the specified dimensions, they can determine whether such an order is profitable or not. The order is then either accepted or rejected. With this method the company makes sure that its cash flow is always good and its financial performance is maintained on a daily basis. Thus the company never worries about ratios or bankruptcy prediction models or any other tool. The interviewee continued that auditors give the company a monthly breakdown of all ratios and especially on the following:

- Total asset turnover (sales to total assets);
- Cash flow to total debt;
- Cash flow to total current liabilities;
- Debt to equity ratio ( total liabilities/stockholders' equity);
- Profit after tax (PAT) to total assets (return on investment [ROI]); and
- Gross profit margin ratio (gross profit to net sales).

There is no recommendation though, that particular attention should be paid to these ratios; and the company does not use them for measuring its financial performance. Only the RPT is a tool here. It is put into practice on a daily basis with very good results and proof of this is that the company that has been in existence for 55 years uses it.

For the interviewee at another SME (Number 1 in table 4.1), the company has a cash flow system it uses for financial performance measurement. The cash flow is done over a year period, but it is updated weekly. When any change is made the system shows whether there will be enough money to implement this change *e.g.* for the next two months. If the company gets less than its monthly expenses budget at any given moment and the system shows that there will not be enough money in the immediate future, then management has to act fast and look for other sources of income so as to maintain the financial performance. The cash flow system is monitored regularly and instant measures are taken whenever the system predicts possible money shortage and that is how the company keeps running.

#### **4.3.4 More useful ratios**

For the ratios that have been found more useful to respondent SMEs' financial performance, the responses of all participants using ratios along with the ones using PASTEL and PRO ACC 5 are summarised in table 4.3 below.



Table 4.3: More useful ratios for the financial performance of respondents.

Ratios	Number of respondents that found them more useful
Cash flow to total debt	3
Cash flow to total current liabilities	2
Current ratio	2
Net working capital to total assets	2
Net operating margin	1
Income before interest and taxes [EBIT]	1
Operating profit to operating assets	1
Inventory turnover	1
Debt ratio	1
Customer days ratio	1
Acid test ratio	1
Profit after tax (PAT) to total assets	1

The respondent that uses PRO ACC 5 said that, because everything is automatically done by the software, it is hard to single out any ratio as more useful.

#### 4.3.5 Reflection of ratio analysis' results on actual operations

To realise that the results from financial ratios reflect in the actual operations of SMEs is important, otherwise what would it mean to have high cash flow ratios for example, if the money is not reflected in the company's account. The responses of the participant SMEs that use ratios are quite close, with:

- One saying they do reflect in the business;
- Two saying they are 100% and 80% reflective of the actual operations respectively;
- Another one indicating that they are very accurate; and
- Two others saying they reflect very well on the actual operations and are very good for current business operations.

#### **4.3.6 Contribution of ratio analysis results to financial performance**

How helpful the results from the ratios are to participant SMEs' financial performance is a relevant question to ask, since it would be interesting to know the extent to which ratio analysis contributes to SME' financial performance. The following responses were obtained:

- One respondent said they are good measures for the company's budget and prepare the company for any disruption that might have been signaled.
- Another interviewee indicated that the results from ratio analysis help to form strategy for the next period, by taking proper corrective measures of any trouble shown by significant variations in some ratios.
- An interviewee at another SME acknowledges that the results from ratio analysis help get better performance for the company, not only financially but generally, since financial performance is the driver of the rest.
- The other participants said simply that these results are very helpful.
- The company that uses PRO ACC 5 indicated that with manufacturing, it is a long term process (when you newly start or after a recession), and it can take years of operations before any return can be seen as a reflection of what comes out of financial ratios. In other words, the company may be growing, but it can not see the money; and only with time will the money become evident.
- Another respondent said that many ratios are not often used and that management accounts and cash flow are much better accounting measures for the company's requirements.
- One respondent said that ratios are helpful, but will have to adapt to new business strategies.

#### **4.4 KNOWLEDGE OF BANKRUPTCY PREDICTION MODELS**

Seven of the participant businesses indicated that they know nothing about bankruptcy prediction models. One interviewee said she knows very little, close to nothing about them. Another one said she has some knowledge, but never uses them. Still, another one said she has never heard of them. Consequently, all the following questions about bankruptcy prediction models were not applicable to the respondent SMEs, since they cannot use what they do not even know.

#### **4.5 CONCLUSION**

In this chapter, the results were presented according to the questions posed in the questionnaire, including the frequencies of the results. Interesting and useful information emerged from the study. The evaluation of the objectives of the study with respect to empirical findings, concluding remarks and recommendations will be discussed in the next chapter.

## **CHAPTER FIVE**

### **DISCUSSIONS, RECOMMENDATIONS AND CONCLUSIONS**

#### **5.1 INTRODUCTION**

The contribution of Small and Medium Enterprises (SMEs) around the globe and especially in developing countries has been debated and praised in many studies. This sector development is seen as a key strategy for economic growth, job generation and poverty reduction (Agupusi, 2007:2). This study endeavoured to explore and describe the financial performance measures currently used by manufacturing SMEs in Pretoria. It was undertaken due to the fact that many studies were conducted on obstacles faced by SMEs in obtaining finance, but it appeared that not enough were undertaken on how these SMEs manage their finances; whereas some studies found that small businesses fail because more often than not cash flow is not properly managed (Mboniyane, 2006:18).

This chapter concludes the research project by summarising the previous chapters and highlighting the results of the empirical study in Chapter Four with respect to the objectives of the research. It also includes comments on the contribution and limitation of the study as well as recommendations and suggestions for future research.

#### **5.2 SUMMARY AND OVERVIEW OF THE RESEARCH**

Chapter one presented the background of the study, followed by problem statement, rationale and objectives of the research, a preliminary literature review, research methodology and layout of the Chapters.

Chapter Two presented a literature review regarding SMEs and their role in the South African economy. It was shown that the development of a sound SME sector is a key factor in job creation and economic growth for South Africa. Many obstacles were pointed out as causes of SME failure, including financial performance skills, which were the focus of this study. A brief discussion of non-financial measures was given as well, followed by financial performance measures that included financial ratios and bankruptcy prediction models.

Chapter Three presented the research plan including sampling, data collection, and data analysis.

Chapter Four presented the results of the empirical research findings on financial performance measures currently used by manufacturing SMEs in Pretoria. Thematic content analysis was used in presenting the results, taking the themes in the literature of the topic as basis for comparison. Chapter Five is the final phase of the study and aims at using the information from the literature study and the empirical findings to provide solutions to manufacturing SMEs' financial performance measurement according to the findings and through recommendations.

### **5.3 DISCUSSIONS OF FINDINGS**

The objectives were evaluated against the findings of the study and interesting information was recorded. Out of the 10 SMEs studied, 7 were small businesses while 3 were medium businesses. The participant SMEs had been in existence between 2 and 50 years. All participants indicated that measuring financial performance was very important to them. A large majority of them said they measured their financial performance on a monthly basis on their own, and discussed the issue with auditors yearly. Most respondents said that they had an internal financial officer as well as auditors that come in once a year, with the exception of the three medium companies that had auditors on a monthly basis.

The majority of participants (six out of ten) indicated that their current financial performance was satisfying; two said they could improve and two said that their current financial performance was not satisfying. For six of the participant SMEs, the person interviewed was found to be a financial controller, or a financial director. In three of the cases, the owners were the ones interviewed. One of the respondents was the project manager as he was in charge in the absence of the financial manager. The SMEs manufactured various products, which included steel components, hand tools, automotive parts, industrial ovens, corrugated boxes, rubber, exhaust systems and accessories.

The first objective of the study was to identify financial tools currently used by manufacturing SME's in measuring their financial performance.

This objective of the study was achieved during the field study with semi-structured interviews at SME premises that helped gather information on the financial performance measures used by each. The findings revealed the following ratios as the most widely used by respondents:

- Cash flow to total debt (used by six respondents);
- Current ratio (used by six respondents);
- Working capital to total assets (used by five respondents);
- Cash flow to average total current liabilities (used by five respondents);
- Gross profit margin ratio (used by four respondents); and
- Inventory turnover (used by four participants).

Compared to the ratios indicated by various authors in the literature as best financial measures (Edmister, 1970:21 & Vallely, 2008:1), current ratio, networking capital to total assets, and cash flow to total debt are the only ratios that appeared to be the most widely used ratios by respondents.

Compared to the ratios used in the presented bankruptcy prediction models, out of the five ratios in the Altman Z-score, only working capital to total assets, and sales to total assets were used by respondents.

As for the five ratios used in the predictive accuracy for Daya's second test, just cash flow to average total current liabilities and net income to total assets were used by the participant SMEs.

Compared to the six ratios used by De La Rey in his model, just one ratio was used by respondents, which is profit after tax (PAT) to total assets.

It is to be noted that there are ratios that were not emphasised by the above authors as being among the best financial measures, but were found to be used by many study respondents. These were:

- Gross profit margin ratio (used by 4 respondents); and
- Inventory turnover (used by 4 participants).

Comparing ratios that the studied SMEs found more useful to their financial performance to those mentioned in the literature (section 2.4.1), only a few of these ratios (used by respondents)

included ratios that were found to be the best financial measures or good financial distress predictors. Most of those ratios (in the literature) were being used by respondent SMEs, considering ratios used by all respondents put together, but just 2 to 3 are used by individual participants.

The use of bankruptcy prediction models (another financial tool in the literature) was totally absent among the respondents. In fact, almost all the participant SMEs knew nothing or very little about bankruptcy prediction models. The limited use of ratios and non use of bankruptcy prediction models raises the issue of objective number two which is to recommend necessary improvements on financial performance measurement of SMEs which will be part of the recommendations. Also, the lack of knowledge of bankruptcy prediction models by interviewees at different SMEs may necessitate relevant training for the financial officers of SMEs; that is the issue of objective number three of the study, which will be part of the recommendations section as well.

The second objective of the study was to recommend necessary improvements on financial performance measures used by manufacturing SMEs.

The study found that most manufacturing SMEs used financial ratios to measure their financial performance, but to a very limited extent. Very few ratios were used by individual SMEs and most of the ratios used were not the best indicators mentioned in the literature. Though, some of the interviewees acknowledged that they need to use more ratios. This objective will be part of the recommendation section below.

The third objective of the study was to recommend necessary training interventions that would be needed for manufacturing SMEs' successful financial performance measurement.

The research findings indicated that none of the respondents used any of the available bankruptcy prediction models; whereas it was proven in the literature that the models could be used successfully by SMEs as well as big businesses. SMEs could use the models not necessarily for predicting failure, but as a tool to constantly assess how they are doing financially so as to take necessary measures anytime they feel threatened. It was found that most of the respondents

knew nothing or very little about the models, and it seemed quite obvious that relevant training is needed.

#### **5.4 LIMITATIONS OF THE STUDY**

This study was based on a case study approach, and this poses a problem of statistical generalisation of its results to all manufacturing SMEs in Pretoria. These results can only be seen as a trend and further studies need to be conducted for any attempt at generalisation.

Requesting interviews over the phone or via electronic mail is a very slow procedure that can drag a bigger survey for months and months. For this study for example, either emails were not responded to at all, or potential participants kept postponing, suggesting that the researcher call the following week. In the end, respondents had to be approached at their business premises and requested to participate. It is costly if it is taken into account that many SMEs would decline to participate, but works better as procedure; and should be considered in future studies.

Also, it was noticed that more small businesses (70%) participated in the study because most medium business that were approached declined the invitation. Therefore, for a bigger study that would seek to generalise the results, researchers should endeavour to have a more balanced number between small and medium businesses that participate.

There was very limited literature on the topic of financial performance of SMEs as well. This resulted on the study having to be built on theory.

#### **5.5 RECOMMENDATIONS**

It is recommended that SMEs use more ratios, especially those in the literature study (Chapter Two) as improvement of their financial performance measures. SMEs should probably consider the use of the six most used ratios as summarised in section 5.3 above, since they seem to be working well not only for the majority of participants, but for businesses in general.

It is also recommended that SMEs owners/ managers request and enrol their financial staff for training on bankruptcy prediction models at relevant institutions such as universities. The few models presented in this study may be used by SMEs as well, since they are simple and cheap, and should not pose problems to trained financial staff.



Another recommendation would be for those SMEs that can afford it, to try the use of specialised software (*e.g.* PASTEL or PRO ACC5), which were indicated as effective by the few participants who use them. The SMEs would be able to use ratios that are computed from the software.

## **5.6 SUGGESTIONS FOR FUTURE RESEARCH**

This study was based on a case study approach. Further research could be conducted on a wider scale in an attempt to generalise the findings to manufacturing SMEs in Pretoria; and in different regions of South Africa.

Further research could also be done to determine whether the findings of the study are consistent across different sectors.

Financial performance measurement of larger enterprises could be another subject of study as well.

## **5.7 CONCLUSION**

It is fair to say that, contrary to what one may think, many manufacturing SMEs (with respect to the number of studied SMEs) in Pretoria, use financial ratios (one of the financial tools in the literature study) to measure their financial performance. Though, this use of ratios by the studied SMEs is limited, because only a few ratios are being used by the respondents. Yet again, out of the ratios used, few are among those in the literature that were found to be the best financial measures or good financial distress predictors. None of the respondents used any of the available bankruptcy prediction models. In fact, most of the respondents knew nothing or very little about the models. Some of the participants have opted for the use of computer software and are getting satisfying results from them. Although most of the respondents have performed fairly well so far, to improve their financial performance, SMEs should use more of the recognised ratios identified in this study. Six ratios were identified to be widely used by the various SMEs interviewed, and because most of the respondents indicated that their financial performance has been satisfying (even though some said there is a need to improve), these ratios should be taken into consideration. SMEs need also to train their financial staff on other financial tools such bankruptcy prediction models that are quite easy to use. It was also pointed out in the literature

review that ratio analysis and bankruptcy prediction models (since they consist of a group of ratios with variables of different weights) have their shortcomings as well. Therefore they should only be used as an indication.

This study will contribute toward filling the gap in the literature of SME financial performance measurement; and if taken seriously by SMEs, will help them in effective financial performance measurement by drawing attention to the various tools that are available to them for that purpose, and the necessity of training financial staff on various measures as well.

**ANNEXURE 1:**

**COVERING LETTER**

**Department of Business Management**

**PO Box 392, Unisa, 0003**

**Telephone (012) 429-3331**

Dear business owner/manager

Mr. Bouba is currently a student at Unisa and busy doing his Masters degree in Business Administration. In order to complete his degree he needs to do a research project involving SMEs businesses in Pretoria. With this research project his aim is to establish which financial performance measures are currently being used by SMEs.

Hereby we would like to request you to participate. The information gathered will only be used for academic purposes. We will not use your name or the business's name in any of the documents produced.

Please assist Mr. Bouba by completing the questionnaire.

Your input is vital and your assistance is highly appreciated.

Thank you.

Pretoria, 15 March 2011

A handwritten signature in black ink, appearing to read 'Edmund Ferreira', written in a cursive style.

Dr Edmund Ferreira

Senior Lecturer: Business Management

ANNEXURE 2: QUESTIONNAIRE

FINANCIAL PERFORMANCE MEASUREMENT OF MANUFACTURING SMALL AND MEDIUM ENTREPRISES IN PRETORIA: A MULTIPLE EXPLORATORY CASE STUDY

Answer each question by filling in the space provided below. Feel free to ask about any question that you misunderstand. Use additional paper if necessary.

For any question contact me (Bouba) on my cell phone or via email at: 0721709047 or i\_bouba\_99@yahoo.fr

RESPONDENT \_\_\_\_\_

Demographic information

1 What is your position in the business?

\_\_\_\_\_

2 How many people does the business employ?

\_\_\_\_\_

3 How long has the business been in existence?

\_\_\_\_\_

4 What product(s) does the business manufacture ?

\_\_\_\_\_

\_\_\_\_\_

5 How often do you measure your financial performance? Check the correct answer.

Six months \_\_\_\_\_

One year \_\_\_\_\_

More, how long \_\_\_\_\_

6 Is your current financial performance satisfying? explain

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7 How important is it to you to measure financial performance?

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8 Do you employ a financial officer or use the services of an external consultant?

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9 What tools do you use to measure your financial performance? Choose from the list.

Financial ratios

- Scoreboards
- Bankruptcy prediction models
- Others \_\_\_\_\_

10. Which financial ratios are you familiar with? Choose from the list.

- i) Current ratio (current assets to current liabilities)
- ii) Quick or acid-test ratio (current assets – inventory) to current liabilities
- iii) Net operating margin (net working capital to total assets)
- iv) Earnings after tax to total assets

- v) Market value of equity to book value of total debt
- vi) Cash flow to total debt
- vii) Cash flow to total current liabilities
- viii) Debt to equity ratio ( total liabilities/stockholders' equity )
- ix) Equity to total assets ratio
- x) Times interest earned (income before interest and taxes [EBIT] to interest expense
- xi) Net quick assets to inventory
- xii) Inventory turnover (inventory to sales)
- xiii) Quick assets to current liabilities
- xiv) Gross profit margin ratio (gross profit to net sales)
- xv) Return on assets (ROA)Earnings before interest and taxes to total assets
- xvi) Return on equity (ROE) equals to net income/average stockholders' equity

Others

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11 Do you use financial ratios in measuring your financial performance? Which ones? Choose from the list.

Current ratio (current assets to current liabilities)

- i) Quick or acid-test ratio (current assets – inventory) to current liabilities
- ii) Net working capital to total assets
- iii) Debt ratio (total debt to total assets)
- iv) Total assets turnover (sales to total assets)
- v) Net sales to net working capital
- vi) Net operating margin (net working capital to total assets)
- vii) Earnings after tax to total assets
- viii) Market value of equity to book value of total debt
- ix) Cash flow to total debt
- x) Cash flow to total current liabilities
- xi) Debt to equity ratio ( total liabilities/stockholders' equity )
- xii) Equity to total assets ratio
- xiii) Times interest earned (income before interest and taxes [EBIT] to interest expense
- xiv) Net quick assets to inventory
- xv) Retained earnings to total assets
- xvi) Profit after tax (PAT) to total assets (return on investment [ROI])
- xvii) Shareholders' funds to total assets
- xviii) Turnover to total assets

- xix) Operating profit to operating assets
- xx) Inventory turnover (inventory to sales)
- xxi) Quick assets to current liabilities
- xxii) Gross profit margin ratio (gross profit to net sales)
- xxiii) Return on assets (ROA) Earnings before interest and taxes to total assets
- xxiv) Return on equity (ROE) equals to net income/average stockholders' equity
- xxv) Others

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12 Which ratios have you found more useful with respect to your aim? List them with accuracy percentage if available.

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13 How reflective are the results from financial ratios of the actual operations?

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14 How helpful are the results from the ratios to your financial performance improvement?

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15 What do you know about bankruptcy prediction models?

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16 Have you ever used bankruptcy prediction models, for what purpose?

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17 What models have you used?

i) Altman's Z-Score model

ii) Daya's model (1977)

iii) De La Rey's model (1981)

iv) Others

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18 How accurate were the results from the bankruptcy prediction models?

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19 How reflective were the results from prediction models of the actual situation?

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20 How helpful were the results from the prediction models to you financial performance?

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Please note that your name or that of the institution or company you represent will not be included in the report. The questionnaire does not require any personal information. The information will only be seen by my supervisor, examiner and I. Your anonymity and confidentiality is of utmost importance and will be maintained throughout the study.

I appreciate your time and effort and would be very grateful for your participation, as it would enable me to complete my dissertation.

**THANK YOU FOR PARTICIPATING TO THIS STUDY**

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