ASSESSING THE IMPACT OF INVESTMENT DECISIONS ON PROFITABILITY OF SMALL AND MEDIUM SCALE ENTERPRISES IN NAIROBI, KENYA

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145205

A RESEARCH PROJECT SUBMITTED TO THE STRATHMORE UNIVERSITY BUSINESS SCHOOL IN PARTIAL FULFILLMENT FOR THE DEGREE OF BACHELOR OF COMMERCE

STRATHMORE UNIVERSITY BUSINESS SCHOOL

STRATHMORE UNIVERSITY

NAIROBI, KENYA

NOVEMBER 2024

DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the research project contains no material previously published or written by another person except where due reference is made in the research project itself.

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ABSTRACT

This study investigates the impact of various investment decisions—capital expenditure, information technology (IT), research and development (R&D), training and education and working capital management—on the profitability of Small and Medium Enterprises (SMEs) in Nairobi, Kenya. The study was done in order to determine the investment decisions that can yield the highest profitability for SMEs. This is due to the fact that SMEs are financially constrained according to (Gveroski, G., & Jankuloska, M. (2017) and as a result, the investment decisions that yield the highest profitability should be considered. Employing a descriptive research design, data was collected from a sample of 70 SMEs across multiple sectors using stratified sampling. Quantitative methods were utilized, including regression and descriptive statistical analysis, to explore the relationship between these investment decisions and profitability, measured by return on investment (ROI).

The findings reveal that IT investments generate the highest average ROI (77.8%), underscoring their critical role in enhancing operational efficiency and market competitiveness. Capital expenditure follows with a significant average ROI of 41.5%, demonstrating its importance in long-term asset growth. R&D, along with education and training, yields an average ROI of 51.2%, reflecting its value in driving innovation and workforce capability. Working capital management also positively influences profitability, albeit with varied outcomes depending on the firm's efficiency in handling short-term assets and liabilities.

The results suggest that strategic investment decisions are pivotal in improving SME profitability. These insights are valuable for SME managers, policymakers, and investors aiming to enhance financial performance and stimulate economic growth. The study highlights the need for SMEs to adopt data-driven approaches when selecting investment strategies, ensuring optimal resource allocation for sustained profitability. The uniqueness of the study stems from the fact that unlike many studies that focus on a single type of investment, this research examines the combined impact of capital expenditure, IT investments, R&D, education and training, and working capital management. This multifaceted approach provides a more comprehensive understanding of how various investment strategies contribute to SME profitability.

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ABBREVIATIONS AND ACRONYMS

CCC - Cash Conversion Cycle

CRM - Customer Relationship Management

IT - Information Technology

R&D - Research and Development

ROA - Return On Assets

ROI - Return On Investment

SME - Small and Medium Enterprises

ACKNOWLEDGEMENT

I would like to thank God for giving me the strength and perseverance to manage to carry out this study. I would also like to thank my parents for giving me the motivation to keep on pushing even when times were tough. In addition to this I would also like to thank my friends for assisting me and encouraging me to keep pushing and maintain a high standard. Lastly I want to thank my supervisor for giving me the guidance, wisdom, knowledge and assistance to undertake this study

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

1.1.1 Small and Medium Enterprises

SMEs, that is small and medium sized enterprises are companies that are classed under the notion of being small or medium depending on the number of employees they have. According to Somaya Jalal Al-Herwi (2019), SMEs are companies that employ under 250 employees. More specifically, medium sized enterprises are companies with under 250 employees, small businesses are companies that have fewer than 50 employees and a micro business employs fewer than 10 people. Despite SMEs employing a few number of employees per company, they are instrumental to the success of an economy. According to the Kenya National Bureau of Statistics, there are over 7.4 million SMEs employing over 15 million Kenyans. According to Danielson and Scott (2006), in the US, small businesses produce 50% of private GDP and employ 60% of the private labor force. According to Omar (2008), SMEs comprise over 90% of the private sector in Uganda. The above statistics highlight in numbers the impact SMEs have towards the economy of a country. In addition to this, the added value that SMEs create annually—such as jobs, export engagement, poverty reduction, women's empowerment, etc.—shows how important SMEs are to the economy. It is undeniable that the majority of businesses in low-income nations are small ones, and most of the labor force in these nations works for small businesses looking at the above numbers as well. As a large portion of the labor force in a country work for small businesses, it is important that SMEs growth and investment options exist because SMEs are drivers of modernization, industrialization as well as urbanization and the advancement in the aforementioned factors according to Umar (2020) leads to improvement of income per capita as well as quality of life.

Due to the importance of SMEs to an economy, it has led to support from the government and governments have made promoting and supporting SME as part of their national development strategy (Abdullahi, 2007). Government's primary goal is the element of job creation. Umar (2020) says that a lot of the employees that have been made redundant by large firms get absorbed back into the workforce by SMEs. As a result, it is in the government's best interests to ensure that SMEs are growing and succeeding in order to create more job opportunities and reduce the rate of unemployment in the country.

1.1.2 Investment Decisions

Looking at investment decisions, according to Pandey (1976), Investment decisions are the firm's decision to invest its current funds most efficiently in long term assets with an expectation of a flow of benefits over a series of years. Investment decisions can as well be described as ways in which a business determines how to invest its capital (Srivastava & Misra, 2008). The investment decisions that can be made are of a wide variety but for this research, the ones that are of focus are capital expenditure, R&D, training and education and information technology. In addition to this, working capital management will also be researched as they play an important role in the available cash flows of SMEs.

Capital expenditure refers to investments in non current assets that will last in the business for over a year. Capital expenditure allows SMEs to upgrade or acquire new assets that improve productivity. For example, investing in new production lines or retail outlets can increase sales capacity and market reach, directly boosting profitability (Gill, Biger, & Mathur, 2010). Capital expenditure is not just important in the short term but also in the long term. While capital expenditure requires significant upfront costs, the long-term benefits often outweigh these expenses. Properly managed, these investments contribute to sustained financial health and profitability by ensuring that the company remains competitive and capable of meeting future demand (Ross, Westerfield, & Jaffe, 2016).

Looking at IT Investments, firms have found that investments in IT are crucial not only to become more profitable but also to gain a competitive advantage in this digital age (Hamilton & Asundi,

2008). IT investments are important as well to enable SMEs to automate routine tasks, streamline processes, and improve communication, which can significantly reduce operational costs and increase productivity. As noted by Bharadwaj (2000), firms that effectively leverage IT can achieve greater operational efficiency, leading to improved profitability. In addition to this, IT investments are also important because it can enhance customer service. Implementing IT systems such as customer relationship management (CRM) software allows SMEs to better understand and serve their customers. Enhanced customer satisfaction often results in increased customer loyalty and higher sales, which are key drivers of profitability (Keh, Nguyen, & Ng, 2007).

Furthermore, investments in R&D, training and education are vital for the growth, innovation, and long-term profitability of small and medium-sized enterprises (SMEs). R&D investments are crucial for innovation, allowing SMEs to create new products or improve existing ones. This can lead to increased market share and higher profit margins. As noted by Cefis and Marsili (2006), SMEs that invest in R&D are more likely to introduce innovations, which are key drivers of profitability and growth. Looking at the aspect of education and training, these types of investments enhance the skills and knowledge of employees, leading to better performance and productivity. According to Becker (1993), human capital development through education and training is directly linked to improved organizational performance and profitability, as skilled employees contribute more effectively to business success. Furthermore, investments in research enables SMEs to not only stay ahead of market trends but also adapt to changing customer preferences and this will enable SMEs to gain a competitive advantage (Freel, 2005).

In addition to this, for SMEs specifically, working capital management is important and as a result, the research will focus on it because efficient working capital management leads to SMEs ensuring that their short term obligations are met. As a result, it leads to SMEs being in a position to invest and increase profitability as their short term obligations have been met. SMEs meet their short term obligations by ensuring they have sufficient liquidity such as paying suppliers and employees, without disrupting operations. According to Deloof (2003), efficient working capital management is essential for maintaining liquidity and operational efficiency, which in turn, positively impacts profitability. As mentioned by Gveroski, G., & Jankuloska, M. (2017), SMEs have limited access to finance as compared to larger firms as it is difficult for them to receive funding from external

lenders because they are considered too risky. This means that largely, investment decisions that SMEs make would be financed from within and therefore working capital management is especially important to ensure adequate amounts of cash flow exists in order to make profitable investment decisions. Effective management of working capital components, such as accounts receivable, accounts payable, and inventory, allows SMEs to optimize cash flow.

1.1.3 Financial performance

Essentially to measure how successful the investment decisions are for the small and medium enterprises can be determined through looking at the financial performance. Financial performance is essentially how well a firm is able to leverage on its assets in order to increase revenue. A firm that is able to effectively use its assets in order to increase its revenues can be said to have a good financial performance. Financial performance is essentially the overall financial health of a company and it is important because good financial performance means that the company is headed in the right direction. It is important not just internally but externally as well because it allows a firm to compare performance with competitors in the industry to measure where they are vis a vis their competitors and look for ways to improve financial performance in order to gain a competitive advantage. According to Levasseur (2002) financial performance can be measured using elements such as profitability, return on investment, return on assets, liquidity, solvency, sales growth etc and can be obtained from the financial statements of the firm. Levasseur goes on to say that profitability is a key element that firms should examine in order to determine their effectiveness. The net profit is a good indicator on how effectively a firm is performing and whether the firm is performing well against its set objectives. Financial ratios analysis, benchmarking, measuring performance against budgets are ways according to Avkiran (1995) in which financial performance can be measured. Some of these financial ratios have been touched by Lavesseur through the mention of profitability ratios such as the gross and net profit margins, return on investment, return on assets, liquidity and solvency. These ratios are important in analyzing performance because they assist a company in comparing current financial performance against past performance and it lets a company know whether improvements are being made.

Examining the relationship between investment decisions and profitability is crucial in order to understand how businesses allocate resources in order to maximize returns. According to Cohen & Klepper (1996) a positive relationship exists between a firm's investment decisions and its productivity through its financial performance. This therefore gives an indication that if better investment decisions are being made, a firm's productivity can be improved leading to an overall improvement in the financial performance. For example Ericson & Pakes (1995) say that making good investment decisions when it comes to capital expenditure leads to improved productivity, growth in sales turnover and profit and this ultimately leads to an overall improvement in financial performance. In addition to this, it is important as well that the investments being sought after are investments that look at the risk-return trade off. It is important that the level of risk of the investment is commensurate with the levels of return in order to safeguard the business and improve the financial performance as a result. Akintoye & Olowolaju, (2008) discuss the importance of management when it comes to making the right investment decisions in order to improve financial performance. They discuss that managers tend to have more information than other investors and therefore they are crucial in making the right investment decisions in order for there to be improved profitability. Managers can have more information compared to other investors such as the financial information of a firm. Managers are responsible for the efficient allocation of resources. They assess various investment opportunities and allocate resources to projects that promise the highest returns and are in line with the company's strategic priorities (Ross, Westerfield, & Jaffe, 2016). Brigham & Ehrhardt, (2013) discuss investment decisions being aligned with a company's strategic goals and objectives. An investment would ordinarily not be worth undertaking if it does not align with the strategic goals of the company. Managers tend to not only know the long term but the short term goals of the firm and are therefore best placed to make investment decisions that align with the goals of the firm in order for improved financial performance to occur.

Companies do not operate in a vacuum, especially SMEs. They face a lot of stiff competition and as mentioned earlier, there are over 7.4million SMEs in Kenya. It is therefore extremely important that SMEs are able to gain a competitive advantage. According to Damodaran (2012), investment in innovation, research and development and talent acquisition can really help a firm gain a competitive edge. Companies that invest in staying ahead of industry trends and technological

advancements are better positioned to outperform their competitors. To summarize, a positive relationship between investment decisions and financial performance exists and the right investment decisions for the firm will ultimately lead to improved financial performance and profitability

1.2 Problem Statement

Small and Medium Enterprises (SMEs) face significant challenges in making investment decisions due to limited access to finance compared to large organizations because they are considered more risky according to (Gveroski, G., & Jankuloska, M. (2017). This disparity in financial resources hinders SMEs' ability to conduct thorough analyses and evaluations of investment opportunities, leading to a reluctance or avoidance of the investment decision-making process Gveroski, G., & Jankuloska, M. (2017) and this affects profitability. As a result, SMEs miss out on potential growth opportunities and struggle to remain competitive in dynamic market environments. The importance of investment decisions in shaping the financial performance of SMEs cannot be overstated, as these decisions determine the allocation of scarce resources to projects that drive growth, profitability, and sustainability (Damodaran, 2012). Despite the critical role of investments in improving profitability, many SMEs struggle with inadequate financial literacy, suboptimal decision-making processes, and insufficient managerial expertise, leading to poor investment outcomes (Fatoki, 2014). This problem is enhanced by the external financial environment, where SMEs often face difficulties in accessing credit and other forms of financing, further constraining their investment capabilities (Kira & He, 2012). There exist some serious gaps in the previous studies regarding this research area. The SME sector is highly an essential sector in job creation and production of goods and services in numerous economies in the world, (Organisation for Economic Co-operation and Development, 2000). Despite many attributes to the SME sector as a job creator it has not attracted much research attention regarding the relationship between the financial performance of SMEs and the investment decisions that those SMEs take. Most of the prior research has looked at the human behavioral aspects influencing investment decisions that are usually listed in the capital markets (Shiundu, 2009), (Karanja, 2012). As a result, the study seeks to find out what is the impact of investment decisions on financial performance, specifically profitability of SMEs in Nairobi and the impact of making the right investment decisions on the

profitability. In addition to this, due to the wide variety of ways of measuring investment performance such as liquidity, profitability, solvency etc, a focus on profitability through the use of ROI would be the main area in determining the impact the investment decision would have on particular SMEs.

1.3 Research Objective

1.3.1 General Research Objective

The objective of the research project is to assess the impact of investment decisions on profitability of SMEs in Nairobi, Kenya

1.3.2 Specific Research Objectives

1. The impact of information technology investments on profitability on SMEs in Nairobi, Kenya
2. The impact of working capital management investments on profitability on SMEs in Nairobi, Kenya
3. The impact of research, development, education and training investments can have on profitability for SMEs in Nairobi, Kenya
4. The impact of capital expenditure investments on profitability for SMEs in Nairobi, Kenya

1.4 Research Questions

1. What is the impact of information technology investments on profitability on SMEs in Nairobi, Kenya?
2. What is the impact of working capital management investments on profitability for SMEs in Nairobi, Kenya?
3. What impact can research, development, training and education investments have on profitability for SMEs in Nairobi, Kenya?

4. What is the impact of capital expenditure investments on profitability for SMEs in Nairobi, Kenya?

1.5 Scope of the study

The study aims to analyze the impact of various investment decisions such as IT, R&D, Capital expenditure and working capital management on profitability for SMEs in Nairobi, Kenya. Data will be collected from various SMEs within Nairobi in terms of what kind of investments they undertake and how this impacts their profitability. There are several SMEs that exist within Nairobi and it would be impossible to obtain data from each and everyone. As a result, the researcher will ensure to collect a reasonable sample size in order to obtain data that is relevant to the study. Examining the scope in terms of the duration of the research, only a couple of months would be used to gather data and analyze it so that the research project can be completed on time.

1.6 Significance of the study

The study is significant because it will enable SMEs to better understand their financial state. By studying the impact of investment decisions on financial performance, the study will showcase how different investment decisions affect profitability. Afterwards, from the completion of the study, some SMEs would be able to use the information in this study in order to make the right investment decisions that will enhance their profitability.

The study is significant to investors as well because when it comes to Investment Opportunities, they can highlight profitable investment opportunities within SMEs, guiding investment choices. The research as well provides a framework for assessing the risk and return profiles of SMEs, helping in making more informed lending and investment decisions.
The research as well can establish benchmarks for financial performance, which investors can use to compare different SMEs.

The research is also significant to government agencies because the findings from the research can support policy formulation aimed at boosting SME growth, which is crucial for economic development and job creation.
In addition to this, the research can assist in the allocation of grants, subsidies, and other forms of support to sectors within SMEs that demonstrate high profitability and growth potential.

When it comes to the significance of the research to employees, from the research they can find that stable and profitable SMEs are more likely to offer job security and career development opportunities.
Furthermore, Insights from the research can lead to better training programs aligned with the investment strategies of the SME which further develops the skills of employees

The findings from the research as well can be significant to suppliers and business partners. By suppliers and business partners understanding the profitability helps SMEs become more stable business partners, ensuring timely payments and ongoing contracts.
In addition to this, profitable SMEs may expand, leading to increased business opportunities for suppliers and partners and therefore from the research, they can potentially determine which SMEs they should keep an eye on

Lastly, the study is significant because it contributes to the body of knowledge existing under investment decisions and profitability. Researchers in the future would be able to use this study in order to further contribute to the body of knowledge. In addition to this, the study would contain areas for further research as well as how the research can be approved for future researchers with an interest in the topic

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter examines the theories that exist in investment decisions, the empirical review which analyzes what others have studied in this area of research as well as a summary of the existing literature that emanates from the empirical literature review. After the summary of the existing literature, a research gap would be identified which would essentially enable the researcher to know what aspect to focus the research on. The research gap is essentially going to be what the researcher would be investigating during the research process and from the research gap the researcher would be able to design a conceptual framework which breaks down the research topic into independent variables and dependent variables that would be examined during the research

2.2 Theoretical Review

This section brings about the existing theories that exist in the particular fields of investments. The theories to be examined in this section include the investment models and their impact these models have on the investment decisions as well as the profitability of small and medium sized enterprises. The investment decisions, as mentioned earlier, that can be undertaken by a firm include but are not limited to capital expenditure, research and development and information technology. Working capital management is also important in order to ensure SMEs have an adequate amount of cash flow that leads to profitable investments. To determine whether the above said investment decisions are actually worthwhile for small and medium sized enterprises, the financial statements would need to be analyzed as well as analyzing a specific financial ratio (ROI) in order to determine whether the investment decisions actually end up yielding a positive result in terms of profitability for the SMEs to be studied.

In addition to this, firms undertake investment decisions with predictions on how the decisions made would end up leading to a positive impact on the profitability. Firms make projections on how the investment decisions made will affect the profitability and it is crucial that firms carry out accurate financial forecasts and select the investment decisions that do not just align with their objectives but as well select the investment decisions that are feasible. A firm wants to ensure elements such as profitability, return on investment, liquidity, solvency, sales growth etc have an upward trajectory in the long term after a particular investment decision is made and the aforementioned financial performance metrics can be obtained from the financial statements of the firm.

When examining investment theories, aspects such as expected output, cost of capital and available cash flows are essentially factors that influence the investment decisions to be made. An ideal scenario is to select an investment decision that maximizes expected output, minimizes the cost of capital expenditure and is within the range of a firm's available cash flows. Some of the investment theories to be discussed in the research include; the cash flow theory, the acceleration theory, the neoclassical theory as well as the Q theory.

2.2.1 Cash Flow Theory

This theory focuses on the interrelationship between the aspect of available cash flows and investment spending capabilities. The cash flow theory can further be subdivided into 3 which is the liquidity model, the information theoretical model and the managerial model and all these three models essentially explain how available cash flows impact investments. According to East (1993) a positive relationship exists between available cash flows and investments which suggests that an increase in available cash flows leads to an increase in investments

Examining the liquidity model of the cash flow theory, investments may be constrained as a result of inadequate cash flows. In addition to this, not just cash flows but elements of internal finance such as retained earnings can have an impact on investment decisions where a limited amount of

retained earnings could negatively impact a firm's investments. Firms with higher amounts of liquidity according to this theory are more likely to increase their investments as opposed to more illiquid firms

Looking at the information theoretical model, Samoye (2009) examined the symmetry of information and the impact of information symmetry on investment decisions. Information symmetry is essentially a situation where the same information is known by all necessary parties for example in between managers and investors. Myers & Majluf, (1985) examined information asymmetry between managers and investors which is where the same information managers may not be totally available to investors and this ended up impacting investment decisions. If investors believe that they have inadequate information, it can lead to an increased reluctance in undertaking investments. In reality, it is more likely that the management have more information than the investors but it is important that the investors have the information they need in order to make the right decisions

The previous model examines the importance of information symmetry in order to encourage investment from investors. The managerial model highlights the importance of management having more information when it comes to investments. According to Akintoye & Olowolaju (2008), managers are perceived to have more information than investors and therefore managers are vital investment decision making analysis. The managerial model was established before the information theoretical model and the information theoretical model came afterwards to highlight the potential risks of information asymmetry between managers and investors.

2.2.2 Acceleration Theory

The previous theory looked at the aspect of cash flow and its impact on investments while the acceleration theory is more focused on the aspect of expected output. The theory suggests that a positive relationship exists between investment and expected production output and thus an increase in demand leads to an increase in investment committed. The theory as well suggested that demand as a result has the power to influence investment decisions that have been made.

Similar to the cash flow theory, the acceleration theory can be further subdivided into the rigid accelerator theory and the flexible accelerator theory. The rigid accelerator theory according to J. M. Clark (1917) suggests that investment is directly proportional to changes in output/demand. It operates under the assumption that there is a fixed capital to output ratio. This essentially means that any changes in output/demand will necessitate a corresponding change in capital stock. For example if the demand for a company's product increases, the company will need to invest in additional machinery and equipment to meet its increased demand

The flexible accelerator theory by Chenery (1952) and Koyck (1954) came about because firms do not necessarily adjust their capital stock (the number of common shares and preferred shares that a company is authorized to issue) immediately due to changes in output. Firms instead adjust their capital stock overtime due to adjustment costs, planning delays and other adjustment costs. The flexible accelerator theory is important because it is not practical for firms to adjust their capital stock whenever there is a change in demand because of the costs mentioned prior and therefore a better financial decision would be made if the firm decides to adjust their capital stock overtime

2.2.3 Neoclassical Theory

According to Samuel (1996), the neoclassical theory is based on the assumption of profit maximizing behavior by firms. The theory is based on the assumption that management seeks to maximize the present networth of the firm. Danielson and Scott (2006) say that firms as a result would seek out investment projects that lead to shareholders wealth maximization. As a result, firms would try to seek out investments that yield a positive net present value and reject a negative net present value because a positive net present value essentially means that the present value of future cash flows exceeds the initial cash outlay.

Danielson and Scott (2006) state two assumptions in their theory in that firstly the primary goal of a firm's shareholder is to maximize the firm's value and secondly, a firm has to access perfect financial markets in order to finance all value enhancing projects. Critics may argue that the

neoclassical theory assumes perfect foresight and that perfect financial markets practically do not exist and that uncertainty should be incorporated when it comes to making investment decisions. In addition to this the element of behavioral aspects should be considered in that there could be real world deviations from rational behavior for example overconfidence and risk aversion which could impact whether an investment decision would actually have been undertaken.

The neoclassical theory examines essentially looking at investments and before undertaking them, determine if they could end up being profitable for the firm. However, other criteria can as well be used when making investment decisions. Pandey (1976) examines investment criteria being divided into two which is the discounted cash flow criteria and the non-discounted cash flow criteria. Under the discounted cash flow criteria, the net present value, internal rate of return and profitability index are analyzed and under the non discounted cash flow criteria, the payback period and the accounting rate of return are analyzed. All the discounted and non discounted cash flow criteria are essentially just ways in which a firm can determine if an investment is worth undertaking or not. For example, if a firm was to analyze the payback period, the firm would ordinarily want to calculate a short payback period because it means that a shorter duration would be taken to recover the initial capital put into the investment. However, further analysis would need to be done to ensure that even though a particular investment has a shorter payback period, investments that are more profitable with a longer payback period are not neglected and thus other criteria such as net present value for example can be examined. In summary, the particular investment criteria used to analyze whether an investment is worth it or not should not be used in isolation but rather a combination of the other investment criteria should be used as well in order to make a more informed decision.

2.2.4 Q Theory

The Q theory of investment was a theory developed by James Tobin, an economist and the theory provides a framework on understanding how firm's decide to invest in physical capital. According to Tobin (1969), a firm's investment decisions are driven by the ratio of market value of its existing capital to the replacement cost of that capital.

This ratio is known as Tobin's Q

$$Q = \frac{Market\ Value\ of\ Firm}{Replacement\ Cost\ of\ Firm's\ Assets}$$

According to this theory, if Q>1, the market value of the firm exceeds the replacement cost of its assets indicating profitable investment opportunities. In an instance like this, firms would be more likely to invest in new capital and if Q<1, the market value of the firm is less than the replacement costs of its assets meaning that investments are not likely to be profitable.

The market value of the firms is the market value of equity plus the market value of debt. The replacement costs of the firm's assets are costs such as acquiring new capital goods for example at the prevailing market price. The market value of the firm gives an indication about investor's expectations about the firm's future profitability and if a firm has a high market value, then it means that the future profitability of the firm is also high. As a result, it means that a firm is able to undertake investments because the market value of existing capital exceed the costs of replacing the capital and if the firm were to acquire new capital, it is likely that the additional investment would yield profitable returns

2.3 Empirical Review

This section will examine prior research done by looking at the impact of the various investment decisions mentioned in the objectives on the profitability

2.3.1 The impact of information technology investments on profitability on SMEs

A study done by Hamilton & Asundi (2008) examines the impact of technology uses and its impact on profitability on SMEs. The purpose of the authors writing the paper was to determine whether firms that incorporate IT are more likely to be profitable as compared to those that do not. Key contributions from Brynjolfsson et al. (1991) and Eisenhardt (1989) provide a foundation for

understanding how IT can lead to improved operational efficiencies and market responsiveness. The authors emphasize the need for SMEs to adopt innovative practices and leverage technology to meet consumer demands and navigate competitive pressures.

From the study by Hamilton & Asundi (2008), examining the impact of IT on productivity, indicates that while IT investments are often perceived as beneficial, the actual measurement of productivity gains remains complex. The study highlights that many firms struggle to quantify the non-quantitative benefits of IT, such as improved customer service and operational responsiveness, leading to an underestimation of IT's true impact on productivity

According to Hamilton & Asundi (2008), SMEs that actively invest in IT and innovate their product and service offerings tend to perform better in terms of profitability. The research suggests that these firms are better positioned to identify and exploit niche markets, thereby enhancing their competitive edge

However, even though from the research, Hamilton & Asundi (2008) found the profitability upside that comes about as a result of IT investments, they experienced challenges in Data Acquisition. A significant limitation noted in the study is the difficulty in obtaining quantitative data related to IT investments and their direct impact on profitability. Many firms were reluctant to share sensitive financial information due to competitive concerns, which may affect the generalizability of the findings

From the study, Hamilton & Asundi (2008) highlight the importance of IT and innovation for the profitability of SMEs. While the study highlights the positive correlation between IT investments and productivity, it also points to the challenges in measuring these impacts accurately. The author suggests that future research should aim to develop standardized metrics for assessing the effectiveness of IT in SMEs, collection of more data due to reluctance of certain SMEs to provide information and as well as exploring the long-term effects of sustained IT investment on business performance.

2.3.2 The Impact of working capital management investments on the profitability of SMEs

Working capital management involves a company utilizing their resources in an effective manner through the management of their current assets and liabilities in order to ensure that the firm has sufficient cash flow in order to meet its short term obligations. The relationship between working capital management and the profitability of SMEs has been a subject of extensive research, yielding mixed results across different contexts and regions. The article written by Gorondutse, Ali, Abubakar, & Naalah (2017) synthesizes key findings from various studies to examine the relationship between elements of working capital management which are debtors, creditors and inventory and its impact on the profitability of SMEs.

Dinku (2013) found a positive correlation between the number of days accounts payable and return on assets (ROA) among SMEs in Ethiopia. The study indicated that extending the payment period to suppliers could enhance profitability, as it allows firms to retain cash longer. Akinlo (2011) reported a positive link between working capital management and SME performance in Nigeria, by examining the cash conversion cycle, accounts receivable and inventory period. A positive relationship exists between the components mentioned above on profitability.

Pais and Gamma (2015) and Tran et al (2017) also observed positive relationships in their studies conducted in Portugal and Vietnam, respectively, reinforcing the notion that efficient working capital management contributes to better profitability.

Conversely, several studies have documented negative effects of working capital management on profitability. Afeef (2011) found a negative relationship between working capital management and the performance of SMEs in Pakistan. Afeef (2011) specifically examined the inventory conversion period and receivable collection period and found that a negative relationship exists between the aforementioned components and the operating profit.

Gul et al. (2013) found a similar negative relationship in Pakistan between components of working capital management and profitability but focused on the average collection period, cash conversion cycle and the inventory turnover.

Jose et al. (1996) highlighted a negative effect of aggressive working capital management on the profitability of US firms, particularly focusing on the Cash Conversion Cycle (CCC), which they found to be inversely related to return on investment.

The literature presents a relatively balanced view, with an almost equal proportion of studies reporting positive and negative relationships. This disparity may stem from differences in the economic environment, industry characteristics, and the specific methodologies employed in each study. The mixed results highlight the need for SME managers to adopt tailored working capital strategies that align with their specific operational contexts. Effective management of accounts receivable, inventory, and accounts payable is crucial for optimizing cash flow and enhancing profitability. Focusing on the article written by Gorondutse, Ali, Abubakar, & Naalah (2017), the researchers found a significant relationship between working capital management and profitability of SMEs in Malaysia. Due to varying results seen in other countries on whether there exists a positive or negative relationship between working capital management and SMEs, there exists a gap to determine in the Kenyan context the relationship between working capital management and profitability of SMEs.

2.3.3 The impact research, development, training and education investments can have on profitability for SMEs

According to Khan, S. A. (2024), Research and Development (R&D) activities are critical for fostering innovation and driving growth in Small and Medium Enterprises (SMEs). The study consistently highlights that R&D is essential for enhancing productivity and maintaining competitiveness in an increasingly dynamic market environment.

Due to how essential R&D and its impact on profitability is, it has led to firms finding a way to ensure they carry out the R&D activities even if it is through outsourcing due to its importance and also, an SME might not have the facilities and resources to carry out extensive research. A notable trend in the industry is the shift towards outsourcing R&D, even among large firms that have traditionally relied on in-house research capabilities. This shift is driven by the need for agility and external collaboration in response to technological advancements and market dynamics

(Chesbrough, 2003). While outsourcing may provide small firms with access to necessary resources, the implications of firm size on the productivity outcomes of outsourced versus in-house R&D remain under-explored (Cassiman, Veugelers, & Zuniga, 2008; Grimpe and Kaiser, 2010).

The literature emphasizes the significance of R&D infrastructure (resources, equipment, facilities etc) and managerial expertise in influencing firm performance. Studies suggest that the quality of R&D infrastructure and the experience of executives are predictors of sales growth in SMEs (Cunningham & Link, 2016; Herrmann et al., 2012). Managerial expertise has led to the proper planning, researching, developing and controlling the R&D process, which leads to sales growth and profitability. In addition to this, Businesses who invest in top-notch R&D infrastructure show off their superior innovation and research methods, which improves their ability to respond to the market and gives them a competitive edge (Zhang et al., 2020; Hottenrott and Lopes-Bento, 2014)

Despite the increasing use of innovation models in R&D, empirical research distinguishing the productivity outcomes of basic versus applied R&D is limited. Basic research is more focused on increasing knowledge on a particular subject matter while applied research is more focused on the aspect of problem solving. The existing studies often fail to differentiate between these types of research Belderbos, Carree, & Lokshin, 2004; Arora, Belenzon, & Rios (2014), which is crucial for understanding their respective impacts on firm performance. This gap highlights the need for further investigation into how managerial decisions moderate these outcomes and determining the appropriate times to know which research method to use. This will enable the investment in research to yield profitable results for the firm in the future.

While there is a growing body of literature examining R&D efficiency and its influencing factors, significant gaps remain (Khan, S. A. 2024). In the case of SMEs, a large majority may not have the capabilities to carry out R&D. There as well exists a gap in examining whether investments in education and training lead to improved profitability

2.3.4 The impact of capital expenditure investments on profitability for SMEs

According to FasterCapital. (2024), Businesses must properly allocate their resources in order to optimize profitability in today's cutthroat business environment. A major component of resource allocation is capital expenditure, or the money spent on purchasing or modernizing tangible assets like machinery, buildings, or technology. It is impossible to overstate how much capital spending affects profitability because it has a direct bearing on a company's capacity to increase revenue, cut expenses, and, in the end, achieve a higher return on investment (ROI).

Effective capital expenditure management can help small and medium-sized businesses (SMEs) as well as large multinationals. FasterCapital. (2024) gave an example of how a restaurant owner might spend more money on modern kitchen appliances that enable quicker cooking times and better-quality cuisine. A higher level of customer happiness can eventually lead to more profitability that can result from this investment. In a similar vein according to FasterCapital, (2024) a retail establishment might spend money on a cutting-edge point-of-sale system that offers easy checkout procedures and real-time inventory tracking. The store can draw in more consumers and boost revenues by optimizing operations and enhancing customer care. These illustrations show how capital investment choices may have a big impact on growth and profitability for any size business.

Improving operational efficiency is a major driver behind capital expenditure investments made by businesses. Businesses can increase overall productivity, lower labor costs, and streamline their production processes by investing in new or upgraded technology and equipment. Because businesses can produce more goods or services at a lesser cost and so raise their profit margins, this greater efficiency frequently results in higher profitability. FasterCapital. (2024) gave an instance of a manufacturer who may spend money on cutting-edge equipment that automates specific production duties. This investment raises the standard and uniformity of the products while also lowering the demand for manual labor. Because of this, the business can create more units in a shorter amount of time, which lowers production costs and boosts profitability.

The ability of businesses to increase their capacity in response to rising demand is another way that capital investment affects profitability. Businesses can boost production and get a bigger market share by investing in new facilities, such as warehouses or production plants. Increased

revenue and therefore improved profitability are frequently the results of this expansion. FasterCapital. (2024) gives another example of a retail corporation that chooses to launch new outlets in various places. Through the allocation of resources towards essential infrastructure, like store building, fixtures, and inventory, the business can expand its customer base and increase revenues. Through this expansion, the business will be able to take advantage of economies of scale, bargain for better terms from suppliers, and eventually increase profitability.

A company's profitability can also be directly impacted by capital expenditures that enhance the general customer experience. Investing in technological advancements, store renovations, or improved customer service skills, for instance, might draw in more consumers, foster client loyalty, and eventually boost sales.

FasterCapital. (2024) considered the example of a hotel chain that makes renovation investments in its establishments. The hotel can draw in more business and raise room rates by upgrading rooms, enhancing amenities, and enhancing the aesthetics of the establishment. These improvements raise the hotel's profitability by improving the guest experience and setting it apart from the competition. However, despite the impact that can be seen from investing in capital expenditure on profitability, there is a gap created in earlier studies made on the capital investment on PPE and the relationship it has with the optimal return on the operating assets according to (McConnel and Muscarella 1985); (Olatunji and Adegbite 2014); (Boasson and Boasson 2012); (Hertz 2016). More research is needed to determine whether investment in capital expenditure leads to the huge profitability level for operating assets which are assets a company uses to support its business operations.

2.4 Summary of Literature and Research Gaps

In many economies around the world, the SME sector plays a critical role in the development of jobs and the manufacturing of goods and services (Organisation for Economic Co-operation and Development, 2000). The relationship between small and medium-sized enterprises' (SMEs') financial success and the investment decisions they make has not received much study attention, despite the SME sector's ability to create jobs. Most of the prior research has looked at the human

behavioral aspects (i.e herd behavior, overconfidence leading to underestimating risk, emotional attachment that clouds judgment etc) influencing investment decisions that are usually listed in the capital markets (Shiundu, 2009) and not at the impact of investment decisions on financial performance (Karanja, 2012). As a result, the research to be undertaken would examine the impact of investment decisions on financial performance but more specifically profitability. However, due to the wide scope of the area of focus, investment decisions have been broken down to IT, R&D, training and education and Capital Expenditure investments as well as looking at the element of working capital management with the focus on their impact on profitability.

From the various studies, it can be identified that IT, R&D, Working capital management as well as Capital Expenditure all have an impact on the profitability of SMEs. Examining the aspect of IT, SMEs that actively invest in IT tend to achieve better profitability. IT investments are linked to improved operational efficiencies and enhanced market responsiveness. However, there is still a need to collect more information on the impact of IT on profitability because Hamilton & Asundi (2008) experienced challenges in data acquisition

R&D is identified as crucial for fostering innovation and maintaining competitiveness among SMEs. The review emphasizes the importance of R&D infrastructure and managerial expertise in driving firm performance. The study on R&D notes a gap in carrying out more research between basic and applied R&D and distinguishing them which is essential for understanding their respective impacts on profitability. The study as well identified a gap on the impact of education and training on profitability.

The empirical literature on working capital management and SME profitability reveals a complex interplay of factors that influence financial outcomes. While some studies advocate for the benefits of effective working capital management, others do not see if effective working capital management actually yields improvements in operating profits for example. Due to the varying relationships between working capital management and its impact on profitability, there exists a gap to determine in the Kenyan context the relationship between working capital management and profitability of SMEs.

The review discusses how capital expenditures that improve customer experience—such as technological upgrades and renovations—can lead to increased profitability. It notes that while there is evidence of a positive relationship between capital investment and profitability, there is a need for further research to explore the optimal returns on operating assets where further research is to determine whether maximum profitability is able to be obtained from operating assets.

2.5 Conceptual Framework

The conceptual framework presents both the independent and dependent variables to be studied in the research. For this study, the independent variables are the various investment decisions which are R&D, training and education, capital expenditure and IT investments as well as working capital management. The dependent variable for the study would be the element of profitability

The relationship between the independent variables and dependent variables as well as profitability can be examined below:

Figure 2.5 Conceptual Framework

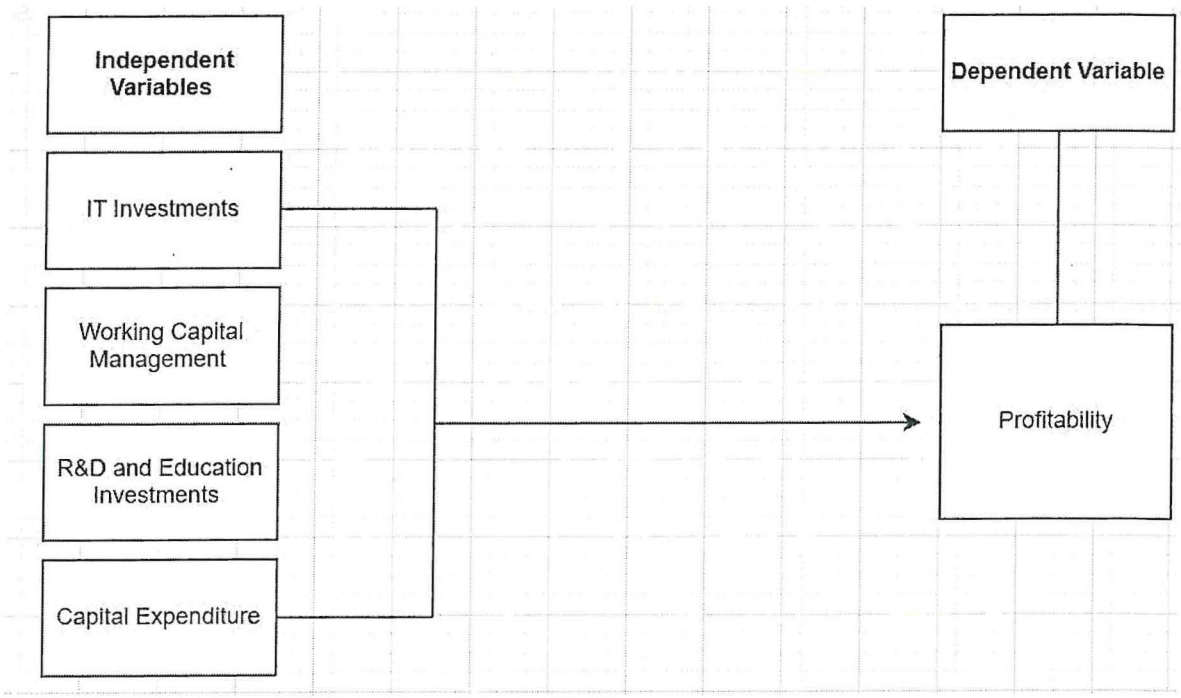


Table 2.5.1 Operationalization of study variables

Objective	Variable	Definition	Measurement Scale
1. IT Investments	Independent	Examining IT Investments and its impact on profitability	Profitability (ROI)
2. Working Capital Management	Independent	Examining WCM and its impact on profitability	Profitability (ROI)
3. R&D, training and education	Independent	Examining R&D, training and education and its impact on profitability	Profitability (ROI)
4. Capital Expenditure	Independent	Examining capital expenditure and its impact on profitability	Profitability (ROI)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter introduces the methodologies that are to be implemented when it comes to the way data is collected. The chapter introduces the strategy, plan of action, process or design that would be implemented in order to solve the research problem. In addition to this, the methods in which data would be collected will be explored and the most effective methods that would assist me to solve my research problem will be chosen. The chapter looks as well at the research design and target population after which an appropriate sample size will be chosen in order to collect sufficient data. Afterwards, an overview as to how the data will be analyzed is included in the chapter and will be further elaborated in later chapters after the data has been collected. Finally, the aspect of research quality as well as the ethics in research will be examined to ensure that all the ethical procedures are taken into consideration to protect the rights and welfare of all the individuals subject to research.

3.2 Research Design

The type of research that was conducted was descriptive research because the methods under which data will be collected involve descriptive research methods. In addition to this, the descriptive research method according to (Reiners, 2012) is used when you want to describe a phenomenon with as little bias as possible therefore making the research able to accurately and systematically describe a population, situation, or phenomenon. Furthermore, the descriptive research design (Reiners, 2012) ensures that each of the variables under consideration can be fully expressed in order to gain a better understanding of the situation. Descriptive research summarizes and describes the main features of a dataset. This branch focuses on presenting data in a meaningful way, often through numerical measures or graphical representations

3.3 Population

According to Mugenda & Mugenda, (1999), a population is defined as an entire group of individuals that possess some common observable characteristics in which generalizations can be made. As mentioned earlier, the Kenya National Bureau of Statistics say that there exists 7.4 million SMEs in Kenya. However, when it comes to Nairobi alone, the total population of SMEs according to the Nairobi City County is 98,600 with 21,100 comprising of SMEs in the CBD

3.3.1 Sample and Sample size

Kothari, (2004) defines a sample as a selected group of individuals chosen for participation in a study and are a representative of the entire population. Sampling is very important and necessary because it is not practical for this research to gather data from the thousands of SMEs that exist within Nairobi. As a result, samples were selected from the existing SMEs within Nairobi in order to save time and reduce costs of data collection, however, as much as possible a sample size that covered the population is convenient in order to be able to analyze the data and generalize it to the population. In order to determine the sample size, Fisher's formula will be used (Fisher's et al., 2007). It incorporates the z score, confidence level in the research and the proportion of the population which is relevant to the study

$$N = \frac{z^2 \times p \times q}{e^2}$$

z - Z score of value of 1.96 to obtain a 95% confidence level

p - Proportion of the population $\frac{SMEs\ in\ the\ CBD}{SMEs\ in\ Nairobi} = \frac{21,100}{98,600} = 0.214$

q - Proportion of population without characteristics

e - Is the margin of error at 95% confidence level = 0.05

N - Sample size = $\frac{1.96^2 \times 0.214 \times 0.214}{0.05^2} \approx 70$

The sample size of the population is therefore 70

The sampling technique that was implemented in the research was a stratified sampling technique which is a probabilistic sampling technique that selects random different subgroups within the population in order to ensure that different sub groups within the population are represented fairly. For example the sub groups of SMEs that were selected were dependent on the various sectors the SMEs exist in such as education, agriculture, luxury goods, hospitality, energy, manufacturing, IT etc. After creating the various sub groups, SMEs were chosen randomly from the different sub groups with the end goal of selecting a similar number of SMEs within the different sub groups in order to get a fair representation of SMEs in the different sectors and ultimately the population as a whole. This sampling technique is important because it ensures that there is increased precision in making conclusions about SMEs in Nairobi because a wide variety of SMEs from different sectors have been covered. In addition, there is a focus on specific sub groups and this allowed the researcher to make specific conclusions about SMEs from the different sectors.

3.4 Data and data Collection Methods

Some of the data collection methods that were employed in the research involve primary data techniques. Primary data involves collecting data such as the type of investments the SME undertakes including the net profit over the past few years as well as the cost of a particular investment of the company in order to determine the return on investment. For example if an SME has invested in machinery, the researcher looked at the cost of the machinery and as well looked at the net profit of the SME after the machinery has been purchased to examine the return on investment. Information was as well be collected such as net profit over a period of a few years to really determine if there is an improvement in the returns of the SME especially after an investment has been made.

In regards to the data collected, information in regards to the different objectives was also collected in a couple of ways. In regards to investments in capital expenditure, the researcher collected information such as the cost of purchase of a particular asset and examined whether purchasing a particular non current asset such as a machine led to increased profitability and whether an increase the purchase of machines means that there is an increase in profitability

The other objective of research, development, education and training, the researcher determined if the particular SME actually does R&D or whether some education or training has taken place and figured out if the training has lead to increased productivity and as a result increased profitability
The objective of IT Investments, the researcher determine the different IT investments that SME undertake be it software or hardware, the cost of the particular IT investment and analyzed whether it has led to increased profitability
Lastly, looking at the element of working capital management, the researcher collected data in regards to working capital management investments which have a focus on short term investments in order to analyze the impact of these investments on profitability of the firms.
Essentially for the objectives of the study, the researcher noted how a change in that particular objective for example increasing IT investments leads to increased profitability and the profitability would be measured in terms of ROI.

After the data has been collected in regards to the cost of different investments and the profitability it yielded, regression analysis was carried out as well. This was important in the study because it highlighted the relationship between each investment decision and profitability. The regression analysis helps SMEs understand the relationship between various investment objectives and profitability. This insight is valuable for future decision-making. For instance, if a strong positive relationship exists between IT investments and profitability, SMEs can use this information to predict outcomes. An increase in IT investments would likely result in higher profitability, based on the established correlation.
Data will also be collected on some financial information of SME from the financial statements such as the profit and loss statement, the balance sheet as well as the statement of cash flows.

3.5 Data Analysis

According to Creswell, J. W., & Creswell, J. D. (2017), Data analysis is the process of systematically applying statistical and/or logical techniques to describe, illustrate, condense, recap, and evaluate data. The goal of data analysis is to extract useful information, identify patterns, and support decision-making. This process involves several steps, including collecting, cleaning, transforming, and modeling data to discover valuable insights.

As descriptive statistics deals with summarizing data of a sample from an entire population, it was the method used and through the use of microsoft excel, information such as the mean, median, mode, range etc were used to analyze the data in regards to the different investment decisions and its impact on profitability. In addition to this, visual representations of the data through the use of a pie chart were used to explain the data for example the proportion of SMEs in the different sectors

In order to analyze the relationship between the independent variables and the dependent variable, regression analysis was used. Regression analysis is a statistical method used for examining the relationship between a dependent variable and one or more independent variables. It helps in understanding how the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed. As the research contains more than one independent variable in the different investment decisions and one dependent variable in profitability, it was necessary to examine their relationship through multiple linear regression analysis. To analyze the relationship between the variables a formula for multiple regression will be used as seen below:

$$Y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

Where

- Y - Dependent Variable (Profitability, (ROI))
- X_1, X_2, X_3, X_4 - Independent Variables (Cost of Investments in IT, R&D, Working Capital Management, Capital Expenditure)
- $\beta_1, \beta_2, \beta_3, \beta_4$ - Coefficients of the independent variables
- β_o - Y intercept

3.6 Research Quality

When assessing the research quality, 3 aspects were examined: the validity, reliability and objectivity of the research. According to (Heale & Twycross, 2015), validity refers to how accurately something is measured. The research entailed collecting financial information from

SMEs as well as collecting information on the investment decisions that the firm undertakes in order to accurately ascertain that the investment decisions that were analyzed in this research are applicable to the different SMEs. In addition to this, the data that was collected from the SMEs, in order to ensure that they are accurate, were confirmed through examining the financial statements in detail of the SMEs in question

Examining the aspect of reliability, the research ensured that the data collected is not fabricated and the information obtained is actually from the SMEs in order to ensure that if the research was repeated by a different researcher for the same SMEs, similar results will be expected. Reliability essentially looks at the replicability of the data and it is important that the data collected is reliable so that users who rely on the analysis of the data collected can trust the data

When it comes to objectivity of the research, it is important that the researcher does not make any personal biases affect the research problem. Personal biases can end up leading to misleading data because the researcher would only want to include the data that they are happy with and potentially omit data they might not be in agreement with. It is important that the researcher gives a fair assessment of the data collected in order to not appear to favor one side over the other

3.7 Ethical issues in Research

According to (Bryman, 2001) a couple of legal and moral principles should exist in order to combat various ethical issues that may arise. They include; maintenance of privacy, no harm inflicted on the participants, there should be no deception and obtaining consent from the participants. The study incorporated all of the above moral principles in order to protect the rights and welfare of the participants. For example, the element of obtaining consent was enforced by the aspect of an introductory letter stating that the researcher would request data to be collected in your company for academic purposes as well as explaining the purpose of data collection. Other principles such as not inflicting harm nor deceiving the participants came from the researcher in ensuring that the researcher acts in a responsible manner and being honest wherever possible in order to ensure that no deception takes place

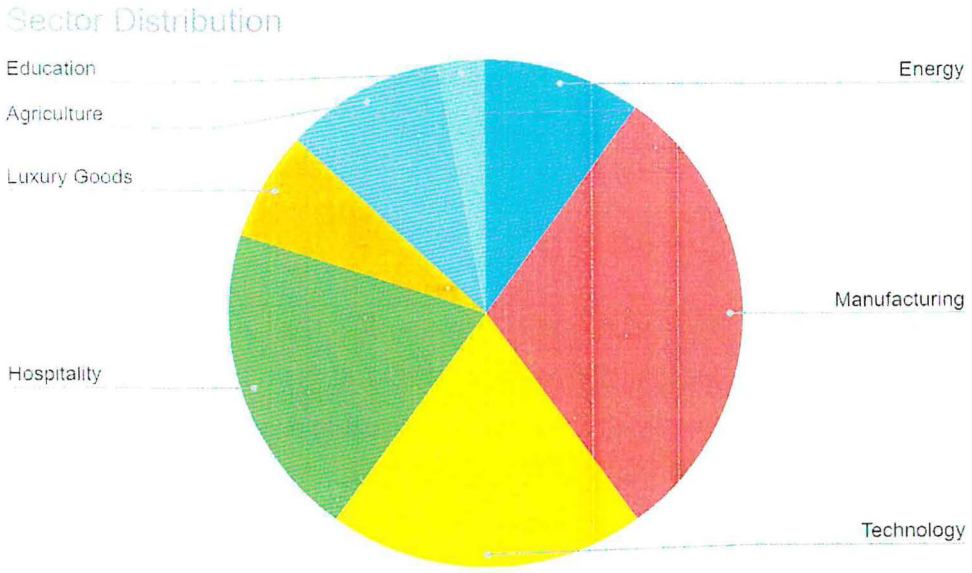
CHAPTER FOUR: PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

This chapter presents an analysis of the data collected to assess the impact of investment decisions on the profitability of Small and Medium Enterprises (SMEs) in Nairobi, Kenya. It includes descriptive statistics which summarize data of a sample from an entire population. It is the method used and through the use of Microsoft Excel, information such as the mean was calculated to analyze the data in regards to the different investment decisions and its impact on profitability. Furthermore, correlational analysis was used to analyze the relationship between the independent variables and the dependent variable. Lastly, a summary of findings based on the four research objectives: the impact of IT investments, working capital management, R&D, training and education and lastly capital expenditure on SME profitability was done to conclude the information that has been analyzed in prior sections of chapter 4.

4.2 Sample Representation

Successfully, a sample size of 70 as determined in chapter 3 was obtained from the research and a sampling technique of stratified sampling was used. Stratified sampling technique is a probabilistic sampling technique that selects random different subgroups within the population in order to ensure that different sub groups within the population are represented fairly. The sub groups that were selected came from a variety of different industry sectors as shown below



The chart above provides some information in regards to the different industries in which data had been collected including what percentage each sector represented the total sample size of 70 SMEs. Some of the industries include the manufacturing sector, energy sector, technology sector, hospitality sector, luxury goods, agriculture and education sector. All the companies in which the researcher had collected data from provided the required information in regards to informing the researcher on the investment decision undertaken, the cost of the investment as well as the resulting net profits. From this the return on investment can be calculated based on the net profit and the cost of investment

4.3 Descriptive Analysis

This section analyzes the data in regards to the different investment decisions and its impact on profitability.

4.3.1 Capital Expenditure Investments and its impact on profitability

The table below represents a summary of the ROI values for different statistical categories for the different SMEs that undertook capital expenditure investments

Table 4.3.1 Descriptive statistics on Capital Expenditure Investments

Statistical Category	ROI Values
Count	27
Mean	41.54501
Standard Error	3.900607
Median	39.60775
Mode	25
Standard Deviation	20.26815
Minimum	11.65544
Maximum	81.68317
Range	70.02772
Confidence Level (95.0%)	8.017812

The count level of 27 gives an indication that 27 firms in the researcher's sample of 70 actually undertook capital expenditure investments which is the most out of all the investment options.

The mean ROI of 41.55% shows that, on average, the capital expenditure investments are generating a return of approximately 41.55% for these firms. This is a good return because according to SmartAsset. (2023), a return of above 10% is considered a favorable ROI and in general, investments with high positive returns give an indication of a profitable investment.

A standard error of 3.90% means that the sample mean (41.55%) is a reasonably accurate estimate of the true population mean. The smaller the standard error, the more reliable the mean. For this dataset, the low standard error indicates that the sample size of 27 for SMEs that had capital expenditure investments is adequate for making inferences about the population.

The median ROI of 39.61% suggests that half of the firms achieve a return on investment below this value, and half achieve above it. Unlike the mean, the median is not affected by outliers or

skewed data, making it a more robust indicator of a "typical" ROI in the presence of extreme values.

The mode of 25% indicates that more firms achieved this ROI than any other specific value. In datasets where a mode exists, it can provide insight into the most common outcome or clustering of data. This information can be particularly useful for SMEs looking to invest in capital expenditure because an average of 41.55% may be expected, however most firms are yielding an ROI of 25%. The 25% is still a good indicator however, an expectation of 41.55% may not be the most accurate.

A standard deviation of 20.27% indicates significant variability in ROI among the firms. This means that while the average ROI is 41.55%, individual firms often have returns that deviate by about ±20.27% from this mean. Some firms might perform exceptionally well or poorly compared to the average. This high variability implies that the data is more variable and less precise indicating that investment in capital expenditure could yield with ROI's that are further away from the average of 41.55%.

The lowest ROI of 11.66% indicates some firms have struggled to generate a significant return on their investments, potentially pointing to inefficiencies or unfavorable market conditions. Conversely, the highest ROI of 81.68% highlights exceptional performance by at least one firm, which may serve as a benchmark or example of best practices. These extremes demonstrate the disparity in performance, suggesting diverse factors at play across the firms.

A range of 70.03% shows a significant difference between the best-performing firm (81.68%) and the worst-performing firm (11.66%). This wide range suggests that ROI outcomes vary dramatically among firms, which could be due to factors like different industries, investment scales, or strategies. A large range is often indicative of potential opportunities for benchmarking and learning from top performers or addressing issues faced by low performers.

The 95% confidence interval for the mean is approximately 8.0241.55±8.02, or between 33.53% and 49.57%. This means we can be 95% confident that the true average ROI for the population of firms falls within this range. A narrower confidence interval would suggest higher precision in the estimate. The true average being below 33.53% indicates that SMEs looking to invest in capital expenditure can expect ROIs between the 33 and 49% range which is a good indicator of profitability.

4.3.2 Information Technology Investments and its impact on profitability

The table below represents a summary of the ROI values for different statistical categories for the different SMEs that undertook IT investments

Table 4.3.2 Descriptive statistics on IT Investments

Statistical Category	ROI Values
Count	19
Mean	77.75356
Standard Error	1.857102
Median	76.1476
Mode	#N/A
Standard Deviation	8.094919
Minimum	64.88889
Maximum	92.23348
Range	27.34459
Confidence Level (95.0%)	3.901626

The count number of 19 gives an indication that from the data gathered out of the 70 firms on investment decisions, 19 of those firms undertook IT investments

The average ROI for IT investments across the 19 firms is 77.75%. This indicates that firms, on average, earn a return of 77.75% on their IT investments. Since the mean summarizes the data into a single value, it provides a baseline to evaluate the performance of individual firms. An ROI of 77.75% is extremely good which indicates that SMEs undertaking IT investments, for every unit of investment made, the investor gains 77% more than what was initially invested. This average as well exceeds the ROI for capital investments meaning IT Investments yield high returns as compared to capital investments

The standard error measures how much the sample mean is likely to vary from the true population mean if multiple samples were taken. A standard error of 1.86% indicates that the sample mean of 77.75% is a precise estimate of the true population mean. This low standard error reflects a high level of confidence in the representativeness of the sample, especially with a sample size of 19 firms undertaking IT Investments

The median ROI of 76.15% means that half of the firms have an ROI below this value, and half have an ROI above it. The median is slightly less than the mean, suggesting a relatively symmetric distribution with no extreme values significantly pulling the average upward. This makes the median an accurate measure of the "typical" ROI for firms.

The standard deviation of 8.09% suggests that most firms' ROIs are within 8.09 percentage points of the mean (77.75%). For example, the ROI values likely fall between 77.75±8.09 or between 69.66% and 85.84%. This relatively low standard deviation indicates that ROIs are not widely dispersed, suggesting consistent performance among the firms in terms of IT investment returns.

The lowest ROI of 64.89% indicates the least successful IT investment among the firms, while the highest ROI of 92.23% represents the best-performing firm. These values provide a benchmark to compare the performance of individual firms and identify outliers. A difference of 27.34% between the best and worst performers highlights some variation, but it is not extreme. A range of 27.34% shows the spread between the lowest-performing firm (64.89%) and the highest-performing firm (92.23%). Although the range seems wide, it's relatively modest compared to the mean, indicating that the firms' ROIs are reasonably close to each other. This narrow range reflects a degree of uniformity in the returns generated from IT investments.

The confidence interval provides a range within which the true population mean is expected to lie with 95% confidence. The researcher can be 95% confident that the true mean ROI for IT investments across all similar firms falls within the 3.90 range and the true mean can either be 3.90 above or below the 77.75% average for the ROI. This narrow interval indicates high precision in estimating the mean. All in all, IT investments seem to yield a higher average return and seem to be a better investment as compared to capital expenditure because it yields a higher average ROI return across the 19 firms that invested in IT. However, SMEs looking to select a particular investment may have to consider other factors as opposed to ROI only

4.3.3 R&D, Education and Training Investments and its impact on profitability

Research, Development and Education were grouped together with training as SMEs do not usually undertake a lot of research and development and therefore, this investment decision would be supplemented with education and training and be grouped under one category

Table 4.3.3 Descriptive statistics on R&D, Education and Training Investments

Statistical Category	ROI Values
Count	11
Mean	51.17638
Standard Error	6.458142
Median	50
Mode	50
Standard Deviation	21.41923
Minimum	26.34071
Maximum	92.5
Range	66.15929
Confidence Level (95.0%)	14.38964

The count number of 11 indicates that from the data gathered out of the 70 firms on investment decisions, 11 of those firms undertake R&D, education and training investments

The average ROI across these 11 firms is approximately 51.18%. This indicates that, on average, firms are generating a 51.18% return on their investments in R&D, education, and training investment. This average ROI is high as compared to what is considered a good ROI value and it is even above the average of capital expenditure investments however, the average is below IT investments.

A standard error of 6.46% indicates that the sample mean of 51.18% is a relatively precise estimate of the true population mean. This level of precision reflects that the sample size of 11 firms, while small, provides a reasonable representation of the population.

The median ROI of 50% indicates that half the firms achieve a return below this value and half achieve a return above it. The median is not influenced by extreme values, making it a strong measure of central tendency. Since the median (50) is close to the mean (51.18), the distribution appears to be moderately symmetric.

The mode of 50% indicates that this ROI is the most common among the firms. The presence of a mode highlights a specific ROI level where multiple firms converge, potentially reflecting a standard or benchmark return in the industry for these types of investments.

A standard deviation of 21.42% indicates moderate variability in ROI among the firms. This suggests that while the average ROI is 51.18%, individual firms often have ROIs that deviate by approximately ±21.42% meaning that the ROI of a firm according to the standard deviation can vary by 21.42% above or below the mean value of 51.18%. This level of dispersion suggests that the benefits of R&D, education, and training investments vary significantly between firms due to the wider dispersion of ROI

The minimum ROI of 26.34% represents the least successful firm, while the maximum ROI of 92.5% highlights the top performer. These values highlight the disparity in outcomes, which could indicate that some firms are not leveraging their R&D and training investments as effectively as others, or that external factors are playing a role in ROI differences.

The range of 66.16% indicates the difference between the worst-performing firm (26.34%) and the best-performing firm (92.5%). This wide range reflects substantial variation in ROI, which could be due to differences in the effectiveness of R&D, education, and training strategies between different firms.

At a 95% confidence level, the ROI for seems to fall in between 36.79% and 65.57% when the disparity level is 14.39. The relatively wide interval reflects the small sample size and moderate variability in ROI values. Comparing the ROI values between the 3 investments analyzed thus far, the R&D, education, and training investments seem to be better due to having a higher ROI of 51.18% as compared to capital expenditure of 41.55% but worse of compared to IT investments with an ROI of 77.75%.

4.3.4 Working Capital Management Investments and its impact on profitability

Working capital management investments, as opposed to the 3 other types of investments which are more long term focused, working capital management is focused on the short-term financial decision rather than a long-term capital investment decision. This is important for SMEs because, unlike larger corporations, SMEs often face unique challenges such as limited access to capital, greater sensitivity to cash flow disruptions, and smaller margins for error. Effective working capital management helps SMEs maintain financial stability and supports their growth.

Table 4.3.4 Descriptive statistics on Working Capital Management Investments

Statistical Category	ROI Values
Count	13
Mean	31.57719
Standard Error	3.113341
Median	26.026
Mode	#N/A
Standard Deviation	11.22531
Minimum	21.35628
Maximum	52.28426
Range	30.92799
Confidence Level (95.0%)	6.783386

The count number of 13 indicates that from the data gathered out of the 70 firms on investment decisions, 13 of those firms undertake working capital management investments

The average ROI across these 13 firms is approximately 31.58%. This means that, on average, firms achieve a 31.58% return on their working capital management investments. The mean serves as a benchmark, reflecting the typical performance of firms in this sample. The ROI of 31.58% is still a good indicator as it is above 10% however it is lower than the other 3 types of investments

A standard error of 3.11% indicates that the sample mean of 31.58% is a reasonably precise estimate of the true population mean. The small size of the standard error suggests the sample mean is relatively reliable, but the small sample size (13 firms) introduces some uncertainty.

The median ROI of 26.03% indicates that half of the firms achieve returns below this value, and half achieve returns above it. The median is less influenced by outliers than the mean. In this case, the median is noticeably lower than the mean, suggesting the presence of high ROI values skewing the average upward.

A standard deviation of 11.23% indicates moderate variability in ROI among the firms. This means that while the average ROI is 31.58%, individual firms often have returns that deviate by ±11.23%. For example, some firms achieve returns as low as 21.36% (minimum), while others achieve up to 52.28% (maximum).

The minimum and maximum ROI as mentioned above, the minimum ROI of 21.36% reflects the least effective outcome of working capital management, while the maximum ROI of 52.28% indicates the best-performing firm. The disparity between these extremes suggests that firms achieve varying levels of success depending on how well they implement their working capital strategies.

The range of 30.93% reflects the difference between the worst-performing firm (21.36%) and the best-performing firm (52.28%). This indicates a wide disparity in returns, which could be attributed to differences in how effectively firms manage working capital or variations in industry practices and market conditions

With a confidence level of 6.78, the researcher can be 95% confident that the true average ROI for similar firms investing in working capital management lies within the range of 24.8% and 38.36%. The relatively narrow interval reflects a moderate level of certainty about the population mean, given the sample variability and size. As mentioned earlier, the average ROI for firms that invest in working capital management investments of 31.58% is lower than IT, R&D and capital expenditure investments. A reason for this is due to the fact that working capital management investments tend to be short term and longer term investments expect higher returns due to the time value of money aspect where firms would expect higher compensation because of the potential earning capacity of money in the future. For SMEs as mentioned earlier, being able to access finance for investments might be more difficult than larger firms and therefore, shorter term investments with existing finances might be more feasible

4.4 Multiple Linear Regression Analysis

This method of analysis is suitable in situations where the researcher is trying to describe the relationship between one dependent variable and more than one independent variable. This section involves examining the relationship between the ROI which is the dependent variable and the cost of the particular investment which is the independent variable. Regression analysis helps in understanding how the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed.

4.4.1 Relationship between the cost and ROI of capital expenditure investments

The image below contains regression statistics examining the relationship between the cost and ROI of capital expenditure investments.

Figure 4.4.1 Regression statistics on capital expenditure investments

Regression Statistics	
Multiple R	0.299471273
R Square	0.089683043
Adjusted R Square	0.053270365
Standard Error	19.72091429
Observations	27

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	957.8815436	957.8815436	2.462962015	0.129130528
Residual	25	9722.861514	388.9144606		
Total	26	10680.74306			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	27.03074335	9.996848841	2.703926386	0.012147302	6.441847759	47.61963895	6.441847759	47.61963895
X Variable 1	3.38E-07	2.15E-07	1.569382686	0.129130528	-1.06E-07	7.81E-07	-1.06E-07	7.81E-07

The number of observations similar to the count number under descriptive statistics is 27 which represents the 27 firms that carried out capital expenditure investments.

The multiple R value represents the correlation coefficient, a measure of the strength and direction of the linear relationship between the cost of capital expenditure and ROI. A value of 0.299 indicates a weak positive relationship between the cost of capital expenditure and ROI. This means that as the cost of capital expenditure increases, there is a slight tendency for ROI to increase. However, the relationship is weak, implying that other factors may significantly influence ROI beyond capital expenditure cost. For SMEs, an increase in the cost of investment can lead to a small increase in ROI

R Square is the proportion of the variation in the dependent variable (ROI) that is explained by the independent variable (capital expenditure cost). Only 8.97% of the variability in ROI is explained by the cost of capital expenditure. This low value highlights that the cost alone is not a strong predictor of ROI and suggests the presence of other influential factors not included in the model.

Adjusted R Square adjusts the R Square value for the number of predictors in the model. It penalizes the inclusion of irrelevant predictors that do not improve the model. After adjusting for the single predictor, only 5.33% of the variation in ROI is explained. This further reinforces the idea that the increase in the cost of investment slightly increases the ROI

The standard error represents the average distance between the observed ROI values and the predicted values from the regression model. It measures the model's accuracy. A standard error of ±19.72 means that, on average, the actual ROI values deviate from the predicted values by about 19.72 units. This is relatively high compared to the scale of ROI values, indicating that the model's predictions are not highly precise.

The anova table essentially examines the goodness of fit and whether the model fits well with the data the researcher has. SS represents the sum of squares which essentially looks at the variation in the ROI explained by the regression model. The regression explains only a small fraction of the variation in ROI (957.88 out of 10680.74), which is consistent with the low R Square value. The F-statistic tests whether the independent variable significantly predicts the dependent variable. An F value of 2.46 is relatively low, indicating that the model does not explain a substantial proportion of ROI variation.

The significant F is the p-value which tests the overall significance of the regression model. A p-value of 0.129 is greater than the standard significance level (0.05), meaning that the relationship between the cost of capital expenditure and ROI is not statistically significant.

Examining the coefficient table, the focus was on x variable 1 which represents the cost coefficient of capital expenditure investments. This is the slope of the regression line, representing the change in ROI for each one-unit increase in cost. For every one-unit increase in the cost of capital expenditure, ROI is expected to increase by 3.38×10^{-7} which is an extremely small effect.

This gives an indication that even though the ROI increases when the cost of investment increases, the impact is very minimal and other factors must explain the increases in ROI in addition to the cost

4.4.2 Relationship between the cost and ROI of information technology investments

The image below contains regression statistics examining the relationship between the cost and ROI of IT investments.

Figure 4.4.2 Regression statistics on IT Investments

Regression Statistics	
Multiple R	0.26486516
R Square	0.070153553
Adjusted R Square	0.015456703
Standard Error	8.032115116
Observations	19

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	82.74603764	82.74603764	1.282588549	0.273139693
Residual	17	1096.752845	64.51487323		
Total	18	1179.498883			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	80.37846264	2.961003285	27.14568506	1.93404E-15	74.13129178	86.6256335	74.13129178	86.6256335
IT Investment Cost	7.33E-07	6.47197E-07	-1.13251426	0.273139693	-2.09843E-06	6.32506E-07	-2.09843E-06	6.32506E-07

The number of observations similar to the count number under descriptive statistics is 19 which represents the 19 firms that carried out IT investments.

A multiple R value of 0.265 suggests a weak positive correlation between IT investment costs and ROI. While there is some indication that ROI increases as IT costs increase, the relationship is weak and other factors must be considered in regards to why the ROI is increasing and not just the cost of investment

R square looks at the variation of ROI explained by IT costs. Only 7.02% of the variation in ROI is explained by the cost of IT investments. This low value suggests that other factors not included in the model may have a much larger influence on ROI.

A standard error of ±8.03 means that the predicted ROI values from the model, on average, deviate from the actual ROI values by about 8.03 units. The ROI values can deviate upwards or downwards by 8.03 units which is relatively large and the predictions from the model are not highly precise.

Looking at the anova table, the sum of squares is 82.75. The regression explains only a small fraction of the variability in ROI (82.75 out of 1179.50), reinforcing the fact that other factors other than cost need to be factored in order to examine the variability in the ROI.

The p-value tests the overall significance of the regression model. A p-value of 0.273 is greater than the typical threshold (0.05), meaning there is no statistically significant relationship between IT investment cost and ROI.

Examining the IT investment cost coefficient, for every one-unit increase in IT investment cost, ROI is expected to increase slightly by 7.33×10^{-7} This positive and negligible slope suggests that increasing IT investment costs slightly increases the ROI

Similar to the relationship between ROI and cost of capital expenditure investments, the same relationship exists for IT investments in that the increase in ROI has to be explained by more factors other than the cost because the cost plays such a small part in explaining the marginal increase in the ROI

4.4.3 Relationship between the cost and ROI of R&D, Education and Training Investments

The image below contains regression statistics examining the relationship between the cost and ROI of R&D, Education and Training investments

Figure 4.4.3 Regression statistics on R&D, Education and Training Investments

Regression Statistics	
Multiple R	0.695086839
R Square	0.483145714
Adjusted R Square	0.42571746
Standard Error	16.23180208
Observations	11

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2216.593195	2216.593195	8.413031564	0.017580407
Residual	9	2371.24259	263.4713988		
Total	10	4587.835784			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	92.7700397	15.15220005	6.122545862	0.000174413	58.49338183	127.0466976	58.49338183	127.0466976
R&D Cost	1.01036E-05	3.48337E-06	-2.900522636	0.017580407	-1.79835E-05	-2.22366E-06	-1.79835E-05	-2.22366E-06

The number of observations similar to the count number under descriptive statistics is 11 which represents the 11 firms that carried out R&D, Education and Training investments

A multiple R value of 0.695 indicates a moderately strong positive correlation. While this relationship is not perfect, it suggests a notable connection between the variables. This correlation indicates that the increase in cost of R&D, Education and Training investments plays a significant role in the increase of the ROI value

R square represents approximately 48.3% of the variation in ROI is explained by the cost of R&D, Education, and Training. This is a relatively substantial proportion, implying the cost has a meaningful influence on ROI and this aligns with correlation coefficient determined as 0.695

For the standard error, on average, the predicted ROI values deviate from the actual values by approximately ±16.23 units. While this indicates some variability, it is relatively acceptable given the scale of ROI values.

Looking at the anova table, the regression sum of squares value is 2216.59 out of 4587.84. The regression explains nearly half of the total variability in ROI, consistent with the R Square value indicating nearly half of the total variability in ROI comes from R&D cost which showcases the significant relationship between the 2 variables.

The p-value tests the overall significance of the regression model. A p-value of 0.018 is less than 0.05, indicating the model is statistically significant. This confirms that the relationship between R&D cost and ROI is unlikely to occur by random chance and significant changes in ROI can be accounted for by the R&D cost

The R&D cost coefficient is 1.01×10^{-5}. For every one-unit increase in R&D cost, ROI increases by 1.01×10^{-5}. While the slope is positive, it suggests only a very slight increase in ROI with increasing R&D expenditure.

Unlike capital investments and IT investments, the relationship between R&D costs and ROI is strong. Changes in ROI can be attributed largely to the R&D cost. The strong relationship existing could be a better indicator for firms in the future who want to predict the relationship between cost of R&D investments and ROI.

4.4.4 Relationship between the cost and ROI of Working Capital Management Investments

The image below contains regression statistics examining the relationship between the cost and ROI of Working Capital Management investments

Figure 4.4.4 Regression statistics on Working Capital Management Investments

Regression Statistics	
Multiple R	0.428150103
R Square	0.18331251
Adjusted R Square	0.109068193
Standard Error	10.59547774
Observations	13

Chart Area

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	277.1851593	277.1851593	2.469044329	0.144409176
Residual	11	1234.905634	112.2641485		
Total	12	1512.090793			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	23.48188232	5.931101271	3.959109994	0.002237468	10.42761644	36.5361482	10.42761644	36.5361482
Working Capital Management	8.89434E-07	5.66043E-07	1.571319296	0.144409176	-3.56418E-07	2.13529E-06	-3.56418E-07	2.13529E-06

The number of observations similar to the count number under descriptive statistics is 13 which represents the 13 firms that carried out working capital management investments

Multiple R is the correlation coefficient, indicating the strength and direction of the linear relationship between the cost of working capital management and ROI. A value of 0.4282 suggests a weak positive linear relationship in that an increase in the cost of investment leads to a small increase in the ROI

R square measures the proportion of variance in ROI that is explained by the cost of working capital management. In this case, only 18.33% of the variation in ROI is explained by the model, meaning 81.67% of the variation is influenced by other factors not captured in this analysis.

The standard error measures the typical distance between the observed ROI values and the values predicted by the model. A high standard error of 10.5955 relative to the scale of ROI indicates that the model's predictions could be more precise as compared to the number of observations which was thirteen

Looking at the regression of sum squares which was 277.19 out of 1512.09, close to 20% of the total variability in the ROI comes from the cost of R&D investments. This relatively low value suggests that other factors not included in the model may have a much larger influence on ROI.

The significance F/p-value is 0.1444. Since $p = 0.1444 > 0.05$, the model is not statistically significant, meaning there is insufficient evidence to conclude that the cost of working capital management has a significant impact on ROI. It again showcases other factors might influence ROI more than the cost of R&D investments

Examining the working capital management cost coefficient, the value is 8.89×10^{-7}. It indicates that for every 1 unit increase in the cost of working capital management, ROI increases by approximately 0.000000889 units. The impact is extremely small, suggesting that cost has a negligible influence on ROI. The p-value for this coefficient is 0.1444, which is greater than 0.05, indicating that the relationship is not statistically significant.

To conclude the fact that the significance level is less than 0.05 indicates that the cost of R&D plays a small role in determining the increase in ROI. Increasing the cost of R&D only ends up resulting in a very small increase in ROI. Other factors need to be considered in order to determine the impact on ROI increasing

4.5 Summary of the Findings

The analysis of chapter 4 was focused on the relationship between various types of investments—capital expenditure, information technology (IT), (R&D), training and education, and working capital—and their impact on profitability, specifically measured through ROI. The findings were presented through both descriptive and regression analyses, offering a comprehensive view of how these investments influence financial outcomes.

The descriptive analysis revealed that the capital expenditure investments had high mean values for the ROI and the average ROI was the 3rd highest out of all the investments. The average ROI being of a high value indicates that capital expenditure investments can end up yielding positive returns. However, the regression analysis showcased that the relationship between the cost of investment and the ROI of the investment is not statistically significant. This essentially means that for firms that are looking to undertake capital expenditure investments in order to obtain a high ROI, other factors would need to considered apart from higher expenditure on the investment to yield higher returns

Examining the descriptive analysis for IT investments, the data showed that IT investments end up leading to the highest profitability due to the firms investing in IT having the highest average ROI of 77.75%. SMEs looking to make investment decisions, IT investments might be the best because they are the most profitable. However, the regression analysis again shows that the relationship between the cost of IT investments and the ROI is not statistically significant. This means that other factors besides an increase in investment of IT yields to higher ROI values.

Looking at the relationship between R&D, education and training investments, the ROI was high with an average value of 51.18% which was the 2nd most profitable investment compared to the other investments which indicates that it is a good investment opportunity for SMEs. Furthermore, the regression analysis showed that the relationship between the cost and the ROI was statistically significant. This is important because it essentially means that the cost plays a significant role in determining the ROI and as a result, SMEs can invest in R&D investments knowing that it can have more of an impact on the ROI and thus increased profitability

Lastly, looking at working capital investments, the average ROI was still high however, comparing the average ROI to the other 3 investments, you can see that it had the lowest average ROI of 31.58% meaning that the other investments are probably better options. However, the elements of working capital investments being more short term should be taken into consideration because investments that are more long term or realize higher returns later tend to have a higher ROI. The regression analysis, similar to capital expenditure and IT investments indicates the relationship between cost and ROI is not statistically significant

CHAPTER FIVE: DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter focuses on the summary of the findings from the 4 research objectives which are IT investments, working capital management, R&D training and education and lastly capital expenditure investments. In addition to this, the chapter focuses on what conclusions about the research can be drawn based on the data that has been analyzed as well as recommendations and suggestions for further research. Lastly the chapter ends with any limitations of the research and what can be done in the future to improve on this

5.2 Summary of the Findings

5.2.1 Summary of the impact of capital expenditure investments on profitability for SMEs in Nairobi, Kenya

According to research done by FasterCapital. (2024), capital expenditure on assets such as machinery and buildings for example, can help a company increase revenue, cut expenses, and, in the end, achieve a higher return on investment (ROI). From the data I collected on capital expenditure investments, all the 27 firms that invested in capital expenditure included investments in non-current assets such as machinery, buildings, manufacturing plants etc. FasterCapital. (2024) have mentioned that an increase in these investments can lead to an increase in ROI.

The findings from FasterCapital. (2024) align with the data that this research has collected because it can be seen that an increase in capital expenditure investments by examining an increase in the cost of investment has led to higher ROI values. However, as mentioned earlier, other factors need to be considered as well to evaluate what is causing the increase in ROI and as a result profitability

5.2.2 Summary of the impact of information technology investments on profitability for SMEs in Nairobi, Kenya

According to Hamilton & Asundi (2008), SMEs that actively invest in IT and innovate their product and service offerings tend to perform better in terms of profitability. The research suggests that these firms are better positioned to identify and exploit niche markets, thereby enhancing their competitive edge. However, they do mention as well that even though IT investments can enhance profitability, non-quantitative benefits of IT such as improved customer service and improved operational responsiveness are hard to measure.

The findings from this research agree with Hamilton & Asundi (2008) on the fact that an increase in IT investments leads to an increase in profitability. In this research, profitability was measured through the use of ROI, and it was found that a positive relationship exists between an increase in investment in IT leading to an increase in ROI. However, as mentioned earlier, a weak positive relationship exists between cost of IT investment and ROI and as a result, more factors need to be considered that contribute to the increase in ROI

5.2.3 Summary of the impact of R&D, Education and Training Investments on profitability for SMEs in Nairobi, Kenya

According to Khan, S. A. (2024), Research and Development (R&D) activities are critical for fostering innovation and driving growth in Small and Medium Enterprises (SMEs). The study consistently highlights that R&D is essential for enhancing productivity and maintaining competitiveness in an increasingly dynamic market environment. However, according to the study, investments in R&D can lead to profitability, research on this area is limited due to the fact that R&D investments tend to be typically done by larger firms as compared to smaller firms.

In the research carried out on the 11 firms that undertook R&D investments, an increase in R&D investment has shown to yield higher profitability due to the higher average ROI. According to the regression analysis, the relationship between the cost of R&D investment and the ROI of the investment is a statistically significant relationship in that more investments in R&D leads to higher ROI and the increase in ROI can largely be attributed to the increase in R&D investments.

5.2.4 Summary of the impact of Working Capital Management Investments on profitability for SMEs in Nairobi, Kenya

A variety of prior researchers have found a positive link between effective working capital management and its impact on profitability. Akinlo (2011) reported a positive link between working capital management and SME performance in Nigeria. Pais and Gamma (2015) and (Tran et al, 2017) also observed positive relationships in their studies conducted in Portugal and Vietnam, respectively, reinforcing the notion that efficient working capital management contributes to better profitability. However a negative relationship between effective working capital management and its impact on profitability was also identified by other researchers. Afeef (2011) found a negative relationship between working capital management and the performance of SMEs in Pakistan. Gul et al. (2013) found a similar negative relationship in Pakistan between components of working capital management and profitability. Jose et al. (1996) highlighted a negative effect of aggressive working capital management on the profitability of US firms.

In the research carried out in this study of 13 firms, a positive relationship between an increase in the cost of investments leading to an increase in profitability was identified. However the regression analysis suggested that other factors need to be considered in determining what is causing the average increase in profitability through measuring the ROI

5.3 Conclusion

The impact of undertaking various investments decisions and what it does for profitability has been effectively studied and analyzed. For each of the 4 investment decisions, from the analysis, a positive relationship exists between the cost of investment and its impact on profitability. From the research, IT investments have shown to be the most profitable investments because they have the highest average ROI of 77.75% as compared to the other 3 investments. For the 3 investments apart from R&D investments, other factors need to be considered to explain the relationship between the cost of investment and its impact on ROI as a weak positive relationship exists

between the cost of investment and ROI of that investment. All the 4 investments yielded an ROI of greater than 10% on average which gives an indication that all the 4 investments are profitable investment opportunities and in the future, for SMEs deciding what investment decisions to undertake will be dependent on their financial capabilities as well as the objective of the firm. It is important that investment decisions that are undertaken align with the objectives and goals of the firm.

5.4 Recommendations

As mentioned above, I would recommend that SMEs ensure that they align their investment decisions with the goals of the firm in order to ensure that the investment decisions undertaken lead to not just increased profits in the future but also they meet their objectives.

I would as well recommend that SMEs evaluate other factors as this research has mentioned to determine what else is leading to an increase in ROI when the 4 investments are undertaken. Other factors include favorable market conditions such as economic growth and industry trends leading to increased profitability

I would also recommend SMEs to be more willing to give out data, as the information to be collected can help analyze issues their facing and as well improve research in the existing area

5.5 Suggestions for further research

This study has focused on the impact of investment decisions on profitability of SMEs. For future research, an analysis can be done to evaluate the impact of investment decisions on profitability of larger firms and compare and contrast with smaller firms. Furthermore a wider range of investments can be explored as well in order to determine the impact of those investment decisions on profitability for examples investments in shares, bonds etc

Further research can also be done on the importance of accurate record keeping and how accurate record keeping can positively affect the performance of SMEs. During this research, some of the SMEs in which data was attempted to be collected could not provide the researcher with the

requisite information as it was not simply there for some firms and as a result it forced the researcher to go and find other firms to collect data on.

5.6 Limitations of the research

The sample size was one of the limitations of the research because even though 70 SMEs was a good sample size for the research, the number of SMEs in which data was collected on for the specific investment decisions ended up being small. For example data to do with investments in R&D only came from 11 firms and this could be improved on for future research

Time constraints was another limitation in that collecting financial data from SMEs proved to take longer than expected because of the reluctance of SMEs to hand out that information and therefore as a result, it meant that more time could have been spent on the analysis section of the research and further analytical softwares could be examined to analyze the research and give further insight on top of the analysis that currently exists

Some SMEs were reluctant to allow the researcher to view their financial statements due to confidentiality concerns. This hesitation persisted even after the researcher assured them that the names of the SMEs would not be disclosed in the study. Despite this clarification, many SMEs remained unwilling to share their financial information. As a result, the researcher had to invest additional time and effort to find other SMEs who were more willing to provide access to their financial statements. This process proved to be very time-consuming.

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APPENDICES

Appendix 1: Introductory Letter

2nd September 2024

TO WHOM IT MAY CONCERN

Academic Reference for Mahat, Shureim- Student Number 145205.

Strathmore University offers a degree in Bachelor of Commerce. In their 4th year of study, each degree student is required to work on a Management Research Project. The project involves reading literature that relates to the research topic; data collection and analysis and finally preparing a written document of the research findings and recommendations.

Shureim is requesting to gather information to be used in his research. He is accountable for all information extracted from you and ensures that it will be used for research purposes only and will be kept confidential.

The research is entitled **"ASSESSING THE IMPACT OF INVESTMENT DECISIONS ON PROFITABILITY OF SMALL AND MEDIUM SCALE ENTERPRISES IN NAIROBI, KENYA."**

We are looking forward to your co-operation and assistance to the above-named student.

Any assistance accorded to him will be highly appreciated.

Yours faithfully,

Mary Weremba
Manager, Undergraduate Programmes
Strathmore Business School
Email:mweremba@strathmore.edu

Appendix 2: Summarized responses of all the SMEs Data

Due to the element of confidentiality while carrying out the research, the name of the SMEs were omitted to ensure that privacy is maintained. For all the data collected, the SMEs consented to providing their financial information and as a result, the research ensured that consent is maintained

Number	Type of Investment	Cost of Investment	Net Profit	ROI (%)
1	Capital Expenditure Investments	20,000,000	4,000,000	20
2	Capital Expenditure Investments	28,000,000	7,000,000	25
3	Capital Expenditure Investments	37,037,037	12,962,963	35
4	Capital Expenditure Investments	33,258,700	3,876,449	11.65544355
5	Capital Expenditure Investments	32,675,795	4,705,267	14.3998549
6	Capital Expenditure Investments	49,500,000	7,250,325	14.64712121
7	Capital Expenditure Investments	73,600,000	18,400,000	25
8	Capital Expenditure Investments	77,200,000	22,800,000	29.53367876
9	Capital Expenditure Investments	75,200,000	34,800,000	46.27659574
10	Capital Expenditure Investments	19,783,366	4,246,634	21.4656798
11	Capital Expenditure Investments	27,849,457	11,030,543	39.60774891
12	Capital Expenditure Investments	39,189,041	19,490,959	49.73573862
13	Capital Expenditure Investments	43,900,325	14,850,000	33.82662885
14	Capital Expenditure Investments	45,624,500	29,700,000	65.0966038
15	Capital Expenditure Investments	60,600,000	49,500,000	81.68316832
16	Capital Expenditure Investments	22,755,000	14,245,000	62.60162602
17	Capital Expenditure Investments	26,030,600	15,669,500	60.19646109
18	Capital Expenditure Investments	28,945,000	17,236,450	59.54897219

19	Capital Expenditure Investments	19,783,366	4,246,634	21.4656798
20	Capital Expenditure Investments	27,849,457	11,030,543	39.60774891
21	Capital Expenditure Investments	39,189,041	19,490,959	49.73573862
22	Capital Expenditure Investments	43,900,325	14,850,000	33.82662885
23	Capital Expenditure Investments	50,400,115	29,700,000	58.92843697
24	Capital Expenditure Investments	65,400,655	49,500,000	75.68731536
25	Capital Expenditure Investments	48,700,400	12,650,000	25.97514599
26	Capital Expenditure Investments	53,600,450	25,700,000	47.94735865
27	Capital Expenditure Investments	70,155,450	51,400,000	73.26586887
28	IT Investments	1,152,000	998,000	86.63194444
29	IT Investments	1,300,150	1,099,850	84.5940853
30	IT Investments	1,300,095	945,080	72.69314935
31	IT Investments	1,614,090	1,200,000	74.34529673
32	IT Investments	2,017,613	1,534,670	76.06364551
33	IT Investments	2,219,374	1,690,000	76.14759838
34	IT Investments	754,134	695,564	92.23347575
35	IT Investments	887,275	787,299	88.73224198
36	IT Investments	998,675	897,780	89.89711368
37	IT Investments	3,500,000	2,600,000	74.28571429
38	IT Investments	4,500,000	2,920,000	64.88888889
39	IT Investments	4,800,000	3,200,000	66.66666667
40	IT Investments	7,000,000	5,800,000	82.85714286
41	IT Investments	5,000,000	3,560,000	71.2
42	IT Investments	4,500,000	2,990,000	66.44444444
43	IT Investments	8,000,000	6,229,000	77.8625

44	IT Investments	3,500,000	2,550,000	72.85714286
45	IT Investments	12,000,000	9,750,000	81.25
46	IT Investments	3,000,000	2,330,000	77.66666667
47	R&D, Training or Education Investments	4,635,402	1,220,998	26.34071435
48	R&D, Training or Education Investments	5,066,787	1,355,253	26.74777921
49	R&D, Training or Education Investments	5,581,703	1,504,541	26.95487381
50	R&D, Training or Education Investments	5,400,000	2,400,000	44.44444444
51	R&D, Training or Education Investments	5,000,000	2,500,000	50
52	R&D, Training or Education Investments	6,000,000	3,250,000	54.16666667
53	R&D, Training or Education Investments	2,000,000	1,850,000	92.5
54	R&D, Training or Education Investments	2,500,000	1,250,000	50
55	R&D, Training or Education Investments	3,000,000	1,450,000	48.33333333
56	R&D, Training or Education Investments	4,000,000	2,500,000	62.5
57	R&D, Training or Education Investments	2,100,000	1,700,000	80.95238095
58	Working Capital Management	12,583,375	6,579,125	52.28426396
59	Working Capital Management	13,344,126	6,776,499	50.78263649

60	Working Capital Management	14,146,862	6,979,794	49.33810763
61	Working Capital Management	3,200,000	800,000	25
62	Working Capital Management	3,510,000	890,000	25.35612536
63	Working Capital Management	3,850,500	989,500	25.6979613
64	Working Capital Management	4,224,525	1,099,475	26.02600292
65	Working Capital Management	14,420,350	3,079,650	21.35627776
66	Working Capital Management	15,695,175	4,304,825	27.42769673
67	Working Capital Management	17,020,500	4,480,000	26.3212009
68	Working Capital Management	4,257,900	1,000,100	23.48810446
69	Working Capital Management	5,488,000	1,400,000	25.51020408
70	Working Capital Management	6,580,000	2,100,000	31.91489362

Appendix 3: Originality Report

ORIGINALITY REPORT

19%	17%	9%	9%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Strathmore University Student Paper	2%
2	erepository.uonbi.ac.ke Internet Source	1%
3	etd.uum.edu.my Internet Source	1%
4	www.researchgate.net Internet Source	1%
5	ir-library.ku.ac.ke Internet Source	<1%
6	su-plus.strathmore.edu Internet Source	<1%
7	oer.fukashere.edu.ng Internet Source	<1%

Appendix 4: Supervision Schedule

Strathmore UNIVERSITY BUSINESS SCHOOL

STRATHMORE UNIVERSITY BUSINESS SCHOOL

MANAGEMENT RESEARCH PROJECT I

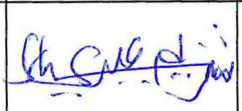
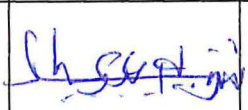
MANAGEMENT RESEARCH PROJECT II

SUPERVISION SCHEDULE

Name of the student: Shureim Mahat_____Reg. No: 145205_____

Program Name: Bachelor of Commerce_____

			Signature	
Session	**Date**	**Tasks achieved**	**Student**	**Supervisor**
1	23/04/2024	Drafting the problem statement		
2	30/04/2024	Adding references to the problem statement		
3	07/05/2024	Carrying out empirical literature review		
4	14/05/2024	Finding existing theories for the project		

5	21/05/2024	Identifying research gaps based on the empirical review		
6	04/06/2024	Complete chapter 1		
7	02/07/2024	Complete chapter 2		
8	16/07/2024	Complete chapter 3		
9	07/08/2024	Make changes to the proposal based on the proposal defense review		
10	02/09/2024	Begin Data Collection		
11	01/11/2024	Completion of data collection and chapter 4		
12	15/11/2024	Completion of chapter 5