

The Role of Investment Appraisal Techniques in Enhancing Financial Sustainability of Small and Medium Enterprises in Solwezi, Zambia

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Abstract

This study investigates the role of investment appraisal techniques in enhancing the financial sustainability of Small and Medium Enterprises (SMEs) in Solwezi, Zambia. Despite their economic importance, SMEs in Zambia face high failure rates, with financial sustainability being a key challenge. The research employs a sequential explanatory mixed-methods approach, combining a quantitative survey of 280 SMEs with qualitative interviews of 20 key informants. Financial literacy of owners/managers, financial sustainability, decision-making processes, and the political environment emerge as critical factors influencing the adoption and application of these techniques. The study finds a significant positive relationship between the frequency of investment appraisal technique usage and SME financial sustainability ($\beta = 0.303$, $t = 2.367$, $p < 0.05$). Based on these findings, the research proposes an Ideal Investment Appraisal Technique Framework tailored to the Solwezi context. This research contributes to the limited literature on investment appraisal practices among SMEs in developing economies and provides practical insights for policymakers and SME support organizations in Zambia. Future research could explore specific barriers to consistent application of these techniques and investigate the role of digital technologies in facilitating their adoption.

Keywords: Investment Appraisal Techniques, Financial Sustainability, Net Present Value, Financial Literacy, Framework Development

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1. Introduction

Small and Medium Enterprises (SMEs) play a crucial role in economic development and job creation across both developed and emerging economies globally (OECD, 2019). However, SMEs often face financial sustainability challenges such as limited access to capital, cash flow problems, and difficulty evaluating investments (Wingard & Brähler, 2022).

In the Zambian context, SMEs represent over 90% of all businesses and provide income for most households, thus playing a vital economic role (GRA, 2021). However, nearly half of formal SMEs become inactive within their first five years of operation (MASSIVE, 2018).

This research investigates whether enhanced utilization of investment appraisal techniques can improve the financial sustainability of SMEs in Solwezi, Zambia. Solwezi has a burgeoning SME sector centered around mining and agriculture that still faces substantial productivity and longevity hurdles (World Bank, 2019). Examining the use of appraisal methods and their impact on sustainability can provide targeted recommendations aligned to Zambia's SME development policy objectives. Prior research shows that adoption of sound investment appraisal techniques like net present value, internal rate of return, and payback period enhances SME profitability, growth, and sustainability globally. Studies across Europe, Asia, Latin America, North America, and Australia highlight 10-30% higher profitability and revenue growth for SMEs that rely on formal capital budgeting tools versus more adhoc approaches (Herciu, 2017; Soni & Padhan, 2021; Lazaridis, 2004).

However, levels of usage and impact of these techniques in African countries remain under-explored, with studies in Nigeria, Ghana and South Africa pointing to low awareness and capabilities as key constraints (Olawale et al., 2017; Quartey et al., 2017). This lack of financial analysis proficiency is reflected in the high SME failure rates across Africa, estimated at 50-70% by the 5th year of operations (Falkena et al., 2001). In Zambia specifically, while government initiatives aim to promote SME development, high failure rates persist due to gaps in financial planning proficiencies (Chilipamushi-Mbayi & Njelesani, 2022; Banda et al., 2011). Studies show over 70% of Zambian SME owners cannot demonstrate use of capital budgeting tools for investment decisions, limiting growth and sustainability (Mambwe, 2020). At the local level, economic profiles and empirical studies indicate that Solwezi SMEs in key sectors like agriculture, mining services, manufacturing, and construction facilitate substantial job and income opportunities but frequently collapse due to poor financial decisions, inadequate access to credit, and lack of investment analysis skills (World Bank, 2019; Mambwe, 2020; Musonda, 2012). Specifically, there remains a gap in understanding Solwezi SMEs' barriers regarding appraising potential investments to enhance productivity and longevity. Therefore, this study aims to examine the investment appraisal practices employed by Solwezi SMEs and analyse how improved techniques can strengthen financial sustainability. Findings will inform policy recommendations tailored to Solwezi's context to foster local SME sector development aligned with Zambia's national objectives.

Objectives

General Objective

The key objective of this research is to scrutinize the role of investment appraisal techniques in enhancing the financial sustainability of SMEs in Solwezi, Zambia.

Specific Objectives

- i. To explore the investment appraisal techniques commonly used by SMEs in developed nations.
- ii. To examine the factors for the successful application of investment appraisal techniques in the decision-making processes of SMEs.
- iii. To develop the ideal Investment Appraisal Technique Framework for the financial sustainability of SMEs in Solwezi, Zambia.

2. Literature Review

2.1 Introduction

This chapter provides a review of existing literature on investment appraisal techniques, financial sustainability of SMEs, and related theories. The literature review is structured around the research objectives, focusing on investment appraisal techniques commonly used by SMEs, factors for successful application of these techniques, and the ideal Investment Appraisal Technique Framework for SME financial sustainability. The chapter also identifies gaps in the literature that this study aims to address.

2.2 Overview

Investment Appraisal Techniques

Investment appraisal techniques are structured approaches used by firms to financially evaluate potential projects and investments, supporting capital budgeting and financing decisions (Herath, 2020). These techniques provide a systematic framework for assessing the financial viability and attractiveness of investment opportunities, enabling firms to make informed decisions about resource allocation, as explained by Götze et al. (2015). Meanwhile, Baker et al. (2011) emphasize that investment appraisal techniques are essential for ensuring the efficient use of limited financial resources and maximizing shareholder value. According to Kierulff (2008), the main methods include Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period, Average Rate of Return (ARR), and Profitability Index, each with its own strengths and limitations.

Financial Sustainability of SMEs

Olawale & Garwe (2010) highlight the critical role that SMEs play in driving economic growth, innovation, and employment creation globally. However, the authors also note that despite their significant contributions, SMEs often struggle to achieve long-term financial sustainability, with high failure rates observed across various countries and regions. Furthermore, Olawale & Garwe (2010) suggest that understanding the key factors influencing SME sustainability is crucial for developing effective policies and support mechanisms to promote their growth and resilience. The authors identify several internal and external challenges that can impact SME sustainability, including limited access to finance, inadequate management skills, insufficient market knowledge, and unfavourable regulatory environments.

The World Bank (2020) cites a 2019 OECD report on SME development, which covers 85 countries and provides a comprehensive overview of the financial sustainability challenges faced by small firms. The report indicates that only about 55% of small firms in high-income nations survive beyond the first five years after establishment, highlighting the significant risks and uncertainties associated with SME operations. The survival rate is even lower in less developed

economies, with 46% of SMEs in upper-middle-income countries and 42% in lower-middle-income countries remaining in business after five years. These figures underscore the elevated mortality risk faced by SMEs, particularly in emerging markets where infrastructure, financial systems, and institutional support may be less developed.

2.3 Investment Appraisal Techniques Commonly Used by SMEs

Bărbuță-Mișu et al. (2019) investigated the financial management practices of SMEs in the European Union. The authors employed a survey methodology, collecting data from 1,500 SMEs across 28 EU countries. The study found that only 38% of the surveyed firms utilized NPV or IRR for investment appraisal, while 55% relied on payback period analysis. The authors also noted that SMEs with higher levels of financial literacy and access to professional advice were more likely to adopt sophisticated appraisal techniques. Bărbuță-Mișu et al. (2019) concluded that targeted interventions, such as financial education programs and simplified appraisal tools, were necessary to enhance the adoption of effective investment appraisal practices among European SMEs.

These studies provide compelling evidence that payback period, IRR, and NPV are among the most used investment appraisal techniques by SMEs across various countries and regions. The findings highlight the positive impact of adopting these techniques on the financial performance, sustainability, and competitiveness of SMEs. However, the extent of adoption varies based on factors such as the availability of financial expertise, supportive policy environments, and the level of economic development in the country. The studies underscore the need for targeted interventions to promote the widespread adoption of investment appraisal techniques among SMEs, particularly in developing economies.

2.4 Factors for Successful Application of Investment Appraisal Techniques in SMEs

Lévesque and Minniti (2011) conducted a comprehensive study on the impact of discounted cash flow techniques on the financial performance of manufacturing SMEs in Canada. The authors employed a longitudinal research design, tracking the performance of 300 SMEs over a 5-year period. The study found that firms adopting NPV and IRR for capital budgeting had, on average, 11% higher sales growth and 15% greater profitability compared to non-adopters. Lévesque and Minniti (2011) discovered that the successful application of these techniques was influenced by factors such as the availability of accurate financial data, the presence of skilled financial personnel, and the alignment of investment decisions with the firms' strategic objectives. The authors also noted that SMEs using investment appraisal techniques had easier access to bank finance, with 25% lower collateral requirements. This finding underscores the importance of these techniques in enhancing the creditworthiness and financial stability of SMEs. Lévesque and Minniti (2011) concluded that the adoption of discounted cash flow techniques was a critical factor in the long-term success and sustainability of manufacturing SMEs in Canada.

2.5 Ideal Investment Appraisal Technique Framework for SME Financial Sustainability

Prasad et al. (2019) conducted a comprehensive review of financial theories and practices of working capital management among SMEs. The authors employed a systematic literature review methodology, analysing 50 peer-reviewed articles published between 2000 and 2018. The study found that effective financial management practices, including the use of investment appraisal techniques, were critical for ensuring the liquidity and profitability of SMEs. Prasad et al. (2019) discovered that the adoption of these practices was influenced by factors such as the size and age of the firm, the level of financial expertise of the owners and managers, and the availability of external support services. The authors noted that an ideal investment appraisal framework for SMEs should consider the unique characteristics and constraints of these firms, such as limited resources, informal decision-making processes, and the dominant role of the owner-manager. Prasad et al. (2019) concluded that the framework should include a mix of financial and non-financial measures and should be adaptable to the specific needs and circumstances of individual SMEs. The authors stressed the importance of providing SME owners and managers with practical guidance and guidance to implement the framework effectively.

The findings underscore the need for simplified tools and templates that can be easily understood and applied by SME owners and managers, even those with limited financial expertise.

2.6 Summary of the literature

The reviewed literature provides valuable insights into the role of investment appraisal techniques in enhancing the financial sustainability of SMEs. The studies highlight the most used techniques, such as payback period, IRR, and NPV, and their positive impact on the financial performance and competitiveness of SMEs across various countries and regions. The literature also identifies key factors that influence the successful application of these techniques, including financial literacy, access to professional expertise, supportive policy environments, and the development of intangible assets like human capital and organizational capabilities.

Furthermore, the studies emphasize the need for an ideal investment appraisal framework tailored to the specific needs and constraints of SMEs. This framework should include simplified tools and templates, targeted training and support, and a mix of financial and non-financial measures that align with the unique characteristics of these firms. The literature also underscores the importance of providing practical guidance and mentorship to SME owners and managers to effectively implement the framework and enhance their financial sustainability.

While the reviewed studies offer valuable insights, they also reveal significant gaps in the existing knowledge base, particularly concerning the specific context of SMEs in Solwezi, Zambia. The literature lacks a comprehensive

understanding of the factors influencing investment appraisal adoption and the impact of targeted interventions on financial sustainability among SMEs in this region. Moreover, there is an absence of a tailored Investment Appraisal Technique Framework that considers the unique needs and challenges faced by SMEs in Solwezi. These gaps underscore the need for further research to develop context-specific solutions and recommendations that can effectively support the financial sustainability of SMEs in Zambia.

2.7 Knowledge Gap

This study addresses significant gaps in the existing literature by focusing on the specific case of SMEs in Solwezi, Zambia, which has received limited attention in previous research. While prior studies have explored investment appraisal techniques and their application in various settings, they often lack depth when it comes to SMEs in this region. This research takes a comprehensive approach, not only identifying the techniques commonly used but also examining how these techniques are applied within the decision-making processes of these small enterprises. The gap analysis table below illustrates some of the identified gaps in literature:

Table 1: Literature Table

No.	Author and year of publication	Research Topic	Methodology	Findings	Research Gap
1	Bărbuță-Mișu et al. (2019)	Financial management practices of SMEs in the European Union	Approach: Survey Study Population: SMEs in 28 EU countries. Sample size: 1,500 SMEs. Sampling technique: Stratified random sampling	Only 38% of SMEs utilized NPV or IRR for investment appraisal, while 55% relied on payback period analysis. SMEs with higher financial literacy and access to professional advice were more likely to adopt sophisticated appraisal techniques.	Limited research on the impact of targeted interventions on investment appraisal adoption and financial sustainability among SMEs in Zambia, particularly in Solwezi.
2	Yoshino and Taghizadeh-Hesary (2019)	Challenges and opportunities for SME finance in Asia	Approach: Mixed methods Study Population: SMEs and financial institutions in 10 Asian countries. Sample size: 1,000 SMEs. Sampling technique: Stratified random sampling	Limited access to finance was a major constraint for SME growth and sustainability in Asia. Alternative financing instruments were underutilized due to lack of awareness and limited institutional support.	Lack of comprehensive research on the impact of access to finance and institutional support on the adoption of investment appraisal techniques and financial sustainability of SMEs in Zambia, particularly in Solwezi.

3 Materials and Method

3.1 Research Approach

This study adopts a sequential explanatory mixed-methods approach, combining both quantitative and qualitative research methods. Mixed-methods research integrates quantitative and qualitative data collection and analysis in a single study or a series of studies to gain a more comprehensive understanding of the research problem (Creswell & Plano Clark, 2018). The quantitative component involves the collection and analysis of numerical data, while the qualitative component focuses on non-numerical data, such as text, images, or audio (Bryman, 2016). By employing a sequential explanatory mixed-methods approach, this study aims to leverage the strengths of both quantitative and qualitative methods to provide a more robust and nuanced understanding of the role of investment appraisal techniques in enhancing SME financial sustainability in Solwezi, Zambia.

3.2 Research Design

The research design for this study is a convergent parallel mixed-methods design. In a convergent parallel design, the researcher collects and analyzes both quantitative and qualitative data separately and then merges the results to develop a more complete understanding of the research problem (Creswell & Plano Clark, 2018). The quantitative component of this study involves a survey of SME owners and managers in Solwezi, Zambia, to gather data on their adoption and application of investment appraisal techniques, as well as their perceptions of the factors influencing SME financial sustainability. The qualitative component consists of semi-structured interviews with a subset of survey participants to gain

deeper insights into their experiences, challenges, and strategies related to investment appraisal and financial sustainability.

3.3 Data Collection

Study Population

The study population for this research consists of all small and medium enterprises (SMEs) operating in Solwezi, Zambia. SMEs are defined as firms with between 10 and 100 employees and an annual turnover of between 250,000 and 10 million Zambian Kwacha (ZMW) (Zambia Development Agency, 2018). However, the exact number of SMEs in Solwezi is unknown due to the lack of a comprehensive and up-to-date business registry.

Sample Size

Determining an appropriate sample size is crucial for ensuring the representativeness and generalizability of the study findings (Taherdoost, 2017). Since the exact population of SMEs in Solwezi is unknown, the sample size is calculated using Cochran's formula for unknown populations (Cochran, 1977):

$$n = (Z^2 * p * q) / e^2$$

Therefore, a sample of 384 SMEs is required for the quantitative survey to ensure a 95% confidence level and a 5% margin of error.

For the qualitative component, a purposive sampling strategy is employed to select a subset of 20-30 SME owners and managers from the survey sample for semi-structured interviews. This sample size is considered sufficient to achieve data saturation, the point at which no new themes or insights emerge from additional interviews (Guest et al., 2006).

Sampling Techniques

This study employs a two-stage sampling technique to select participants for the quantitative and qualitative components. In the first stage, convenience sampling is used to select SMEs for the quantitative survey. Convenience sampling is a non-probability sampling technique in which participants are selected based on their accessibility and willingness to participate in the study (Etikan et al., 2016). Given the lack of a comprehensive sampling frame for SMEs in Solwezi, convenience sampling is considered the most feasible approach for recruiting survey participants.

In the second stage, purposive sampling is used to select a subset of SME owners and managers from the survey sample for semi-structured interviews. Purposive sampling is a non-probability sampling technique in which participants are selected based on specific criteria or characteristics that are relevant to the research question (Palinkas et al., 2015). For this study, interview participants are selected based on their sector, size, and years of operation to ensure diversity and richness of perspectives.

Data Collection Tools

This study employs two primary data collection tools, a structured questionnaire for the quantitative survey and a semi-structured interview guide for the qualitative interviews. The structured questionnaire is designed to gather data on SME owners' and managers' adoption and application of investment appraisal techniques, as well as their perceptions of the factors influencing SME financial sustainability. The questionnaire consists of closed-ended questions with predetermined response options, using a combination of dichotomous, multiple-choice, and Likert scale formats (Brace, 2018). The questionnaire is administered online using a web-based survey platform (e.g., Google Forms or Survey Monkey) to facilitate data collection and management.

3.4 Validity

Ensuring the validity of the data collection tools is of utmost importance in any research study, as it directly impacts the credibility of the findings (Mohajan, 2017). To enhance the validity of the structured questionnaire used in the quantitative component of the study, several strategies are employed. First, content validity is ensured by developing the questionnaire items based on a thorough review of the existing literature and subjecting them to a review by a panel of experts in SME finance and investment appraisal (Taherdoost, 2016). In the qualitative component of the study, which involves semi-structured interviews, several strategies are employed to enhance validity. First, member checking is conducted by sharing the interview transcripts with participants to ensure the accuracy of their responses and to allow for clarification (Birt et al., 2016). This process helps to validate the data collected. Second, triangulation is employed by comparing the interview data with other sources of information, such as questionnaire responses and secondary data, to corroborate findings and enhance the credibility of the interpretations (Fusch et al., 2018). This approach helps to provide a more comprehensive and nuanced understanding of the research topic by integrating multiple perspectives and sources of evidence.

3.5 Reliability

Ensuring the reliability of the data collection tools is of utmost importance in any research study, as it directly impacts the trustworthiness of the findings (Mohajan, 2017).

In the context of this study, which employs a mixed-methods approach, it is crucial to establish the reliability of both the quantitative and qualitative data collection tools. To enhance the reliability of the structured questionnaire, two main

strategies are employed. First, internal consistency is assessed using Cronbach's alpha, which is a measure of the extent to which items that measure the same construct are correlated with each other (Taber, 2018). A Cronbach's alpha value of 0.7 or higher is considered acceptable, indicating that the questionnaire items are consistent and reliable in measuring the underlying constructs (Nunnally & Bernstein, 1994) and as observed by Nyakundi (2015), a Cronbach's alpha test coefficient measure of 0.6-0.7 is deemed acceptable while one that has a greater value than 0.7 is deemed good or excellent depending on the greatest measure. Second, test-retest reliability is established by administering a subset of the questionnaire items to a small sample of SME owners and managers at two different time points and assessing the stability of their responses over time (Berchtold, 2016). This approach helps to determine whether the questionnaire items elicit consistent responses from participants, thereby confirming their reliability.

In the qualitative component of the study, which involves semi-structured interviews, several strategies are employed to enhance reliability. Reflexivity is practiced by the researcher throughout the data collection and analysis process to identify and mitigate potential biases or preconceptions that may influence the interpretation of the data (Berger, 2015). This involves engaging in ongoing self-reflection and self-awareness to ensure that the researcher's own experiences, beliefs, and assumptions do not unduly shape the findings of the study.

By employing these strategies to enhance the reliability of both the quantitative and qualitative data collection tools, this study aims to generate trustworthy findings that accurately reflect the experiences and perspectives of SME owners and managers in Solwezi, Zambia, regarding the role of investment appraisal techniques in enhancing financial sustainability. The rigorous approach to reliability strengthens the transferability of the study's findings, thereby contributing to the advancement of knowledge in the field of SME finance and investment decision-making.

3.6 Ethics

First, informed consent is obtained from all participants prior to their involvement in the study. Second, confidentiality and anonymity are strictly maintained throughout the data collection, analysis, and reporting process. Third, data protection measures are implemented to ensure the security and integrity of the data collected from participants. Fourth, the study is designed to minimize any potential harm or discomfort to participants. Finally, ethical approval is sought from the University of Lusaka ethics committee prior to commencing data collection. The study protocol is submitted for review and approval to ensure compliance with ethical standards and guidelines (Grady, 2015). This process helps to ensure that the study is conducted in a manner that is ethically sound and that the rights and welfare of participants are protected.

4 Results and Discussion

We now deliberate the key findings of the study, which aimed to analyze the relationship between investment appraisal techniques and the financial sustainability of SMEs in Solwezi, Zambia.

4.1 Numerical Results

Investment Appraisal Techniques Commonly Used by SMEs in Solwezi

The frequency table below provides information on the familiarity of respondents with various investment appraisal techniques. The data on table 4.3 above shows that with single techniques, Payback Period ranked first with 21 respondents (7.5%) indicating familiarity with this technique alone, followed by Net Present Value (NPV) with 9 respondents (3.2%) indicating familiarity with this technique alone. Then others were distributed as:

Internal Rate of Return (IRR) with 3 respondents (1.1%) indicating familiarity with this technique alone. Accounting Rate of Return (ARR) with 1 respondent (0.4%) indicating familiarity with this technique alone. And Profitability Index (PI) with 3 respondents (1.1%) indicating familiarity with this technique alone. Another key respondent as above asserted that:

For a combination of two techniques, Payback Period and Net Present Value (NPV) ranked first with 40 respondents (14.3%) indicating familiarity with these two techniques together. A respondent added that:

The later combination was followed by Net Present Value (NPV) and Internal Rate of Return (IRR) with 2 respondents (0.7%) indicating familiarity with these two techniques together. Lastly, Net Present Value (NPV) and Profitability Index (PI) with 1 respondent (0.4%) indicating familiarity with these two techniques together.

For a combination of three Techniques, the Payback Period, Accounting Rate of Return (ARR), and Net Present Value (NPV) with 2 respondents (0.7%) indicating familiarity with these three techniques together ranked first while Accounting Rate of Return (ARR), Net Present Value (NPV), and Internal Rate of Return (IRR) with 1 respondent (0.4%) indicating familiarity with these three techniques together ranked second.

With regards to a combination of four techniques, the Payback Period, Accounting Rate of Return (ARR), Net Present Value (NPV), and Internal Rate of Return (IRR) with 16 respondents (5.7%) indicating familiarity with these four techniques together ranked first while Payback Period, Net Present Value (NPV), Internal Rate of Return (IRR), and Profitability Index (PI) with 5 respondents (1.8%) indicating familiarity with these four techniques together ranked second. The Payback Period, Accounting Rate of Return (ARR), Net Present Value (NPV), and Profitability Index (PI) with 1 respondent (0.4%) indicating familiarity with these four techniques together ranked last.

For the combination of five techniques the Payback Period, Accounting Rate of Return (ARR), Net Present Value (NPV), Internal Rate of Return (IRR), and Profitability Index (PI): 82 respondents (29.3%) indicating familiarity with all five

techniques together was the first and only.

Lastly 51 respondents (18.2%) indicated that they were not familiar with any of the listed investment appraisal techniques.

The table below shows that the frequency of usage varied, with 27.1% using these techniques often, 26.1% sometimes, 18.9% never, 14.3% always, and 13.6% rarely. This distribution suggests that while many SMEs use investment appraisal techniques, there is still room for more consistent adoption.

Table 2: Frequency of Investment Appraisal Technique Usage

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always	40	14.3	14.3	14.3
	Never	53	18.9	18.9	33.2
	Often	76	27.1	27.1	60.4
	Rarely	38	13.6	13.6	73.9
	Sometimes	73	26.1	26.1	100.0
	Total	280	100.0	100.0	

Source: Author (2024)

Inferences

The researcher deduced that while the Payback Period and NPV are the most recognized and used investment appraisal techniques among SMEs in Solwezi, their actual usage appears to be lower than familiarity levels. This suggests that despite many SMEs being aware of these techniques, there may be barriers or limitations hindering their consistent application in practice. Moreover, a significant proportion of SMEs do not use any of the listed techniques, emphasizing the need for further investigation into the reasons behind non-adoption and the development of targeted strategies to promote the uptake of these valuable tools. Addressing these issues can significantly improve the financial decision-making processes of SMEs in Solwezi and contribute to their long-term sustainability.

Factors Influencing the Successful Application of Investment Appraisal Techniques

Table 3 below presents the factors influencing the adoption of investment appraisal techniques among SMEs in Solwezi.

Table 3: Factors Influencing Adoption of Investment Appraisal Techniques

Factor	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Deviation
Financial literacy of owner/manager	74.3%	12.5%	7.9%	2.5%	2.9%	4.54	0.95
Market dynamics and competition	45.4%	30.4%	15.4%	6.1%	2.9%	4.09	1.05
Application of investment techniques	39.6%	21.8%	32.9%	4.3%	1.4%	3.94	0.99
Political environment and stability	70.0%	11.1%	10.4%	3.6%	5.0%	4.38	1.12
Investment appraisal	41.1%	20.7%	30.4%	4.3%	3.6%	3.91	1.08
Technical framework	32.5%	16.1%	35.4%	12.9%	3.2%	3.62	1.13
Decision making by the owner/manager	71.4%	15.0%	6.8%	4.3%	2.5%	4.49	0.97
Financial sustainability	74.3%	10.4%	8.6%	3.9%	2.9%	4.49	0.99

Source: Author, 2024

Several factors were examined for their influence on SMEs' adoption of investment appraisal techniques. The factors with the highest levels of strong agreement are financial literacy of the owner/manager (74.3%), financial sustainability (74.3%), decision making by the owner/manager (71.4%), and the political environment and stability (70.0%). These findings suggest that internal factors, such as the knowledge and skills of the owner/manager, as well as external factors, such as the political climate, play a crucial role in determining whether SMEs adopt investment appraisal techniques. Other factors, such as market dynamics and competition (45.4% strongly agree), investment appraisal (41.1% strongly agree), and the application of investment techniques (39.6% strongly agree), also show relatively high levels of agreement. The technical framework factor has the lowest level of strong agreement (32.5%) and the highest level of neutrality (35.4%), indicating that respondents may have varying opinions or experiences regarding the influence of technical frameworks on the adoption of investment appraisal techniques.

Table 4 presents the levels of agreement regarding statements asserting the financial sustainability of SMEs in Solwezi.

Table 4: Assertion on Financial Sustainability

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Deviation
Our SME is profitable and generates sufficient income to cover expenses.	40.0%	25.7%	19.3%	11.8%	3.2%	3.88	1.17
Our SME has adequate liquidity to meet short-term obligations.	35.0%	25.4%	22.1%	13.9%	3.6%	3.74	1.19
Our SME has a strong solvency position and can meet long-term financial commitments.	12.5%	19.3%	32.9%	22.1%	13.2%	2.96	1.21
Our SME has experienced consistent growth in revenue and market share over the past 3 years.	23.9%	25.7%	26.8%	16.8%	6.8%	3.43	1.22

Source: Author (2024)

According to table 4 above, the statement with the highest level of agreement is “Our SME is profitable and generates sufficient income to cover expenses,” with 40.0% strongly agreeing and 25.7% agreeing. This suggests that a majority of SMEs in Solwezi believe they are generating enough revenue to cover their costs.

The statement “Our SME has adequate liquidity to meet short-term obligations” also shows a relatively high level of agreement, with 35.0% strongly agreeing and 25.4% agreeing. This indicates that many SMEs feel confident in their ability to meet their short-term financial obligations.

However, the statement “Our SME has a strong solvency position and can meet long-term financial commitments” has the lowest level of agreement, with only 12.5% strongly agreeing and 19.3% agreeing. This suggests that SMEs in Solwezi may face challenges in ensuring their long-term financial stability and meeting their long-term financial obligations.

The statement “Our SME has experienced consistent growth in revenue and market share over the past 3 years” shows a more balanced distribution of responses, with 23.9% strongly agreeing, 25.7% agreeing, and 26.8% remaining neutral. This indicates that while some SMEs have experienced consistent growth, others may have faced challenges or maintained a stable performance over the past three years.

The Role of Investment Appraisal Techniques in Enhancing SME Financial Sustainability

To examine the relationship between the appraisal techniques and SMEs financial sustainability, it was necessary that frequency of investment appraisal technique usage and SMEs' financial sustainability be regressed, a multiple linear regression analysis was therefore conducted. The dependent variable was the financial sustainability of the SMEs, measured as the average of the four assertions of financial sustainability indicators (profitability, liquidity, solvency, and growth). The independent variable was the frequency of investment appraisal technique usage.

Table 5: Coefficients for Regression Analysis

Predictor Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	SE	Beta		
(Constant)	2.191	0.267		8.215	0.000
Frequency of investment appraisal technique usage	0.235	0.099	0.303	2.367	0.022

Source: Author (2024)

According to the table above, $R = 0.303$, $R^2 = 0.092$, Adjusted $R^2 = 0.075$, $F(1, 53) = 5.604$, $p < 0.05$. The regression results indicate that the model is statistically significant ($F(1, 53) = 5.604$, $p < 0.05$) and explains 9.2% of the variance in SMEs' overall financial sustainability ($R^2 = 0.092$). The frequency of investment appraisal technique usage is found to be a significant predictor of SMEs' financial sustainability ($\beta = 0.303$, $t = 2.367$, $p < 0.05$). This suggests that SMEs that use investment appraisal techniques more frequently tend to have higher levels of financial sustainability.

Inferences

Based on the findings and discussion, the researcher strongly recommend that SME support organizations and educational institutions in Solwezi prioritize the development and delivery of targeted training programs and resources to enhance the financial management capabilities of SME owners and managers. Improving their financial literacy and decision-making skills will be crucial in promoting the successful application of investment appraisal techniques and, consequently, the financial sustainability of SMEs in the region.

4.2 Graphical Results

Response Rate Analysis

A total of 280 SMEs out of the sampled 384 SMEs that were targeted in Solwezi together with 20 Key informants responded. The study targeted respondents who were owners, managers, employees or clients of various SMEs in Solwezi. The response rate stood at 73% for the SMEs. This high response rate ensures a comprehensive representation of the

target population. Prior to the data collection exercise being conducted in Solwezi district, a courtesy call was paid on the Chief Executive Officer of the North Western Chamber of Commerce and Industry, Mr. Mukuka Mulenga. After understanding the purpose of the research, he gave his consent for the research to access the data base of SMEs in Solwezi. The data collection was conducted from 14th April to 18th May, 2024. Figure1 shows the survey response rate.

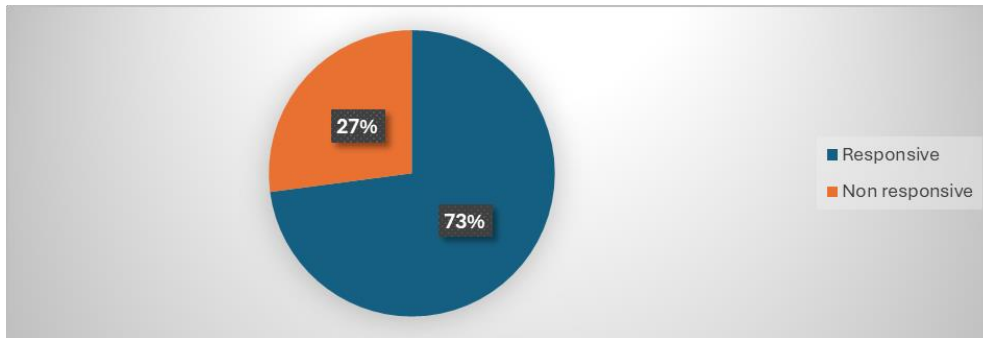


Figure 1: Questionnaire Response Rate
Source (Author, 2024)

The proposed ideal Investment Appraisal Technique Framework to enhance the financial sustainability of SMEs in Solwezi, Zambia?

The study concludes by proposing an Ideal Investment Appraisal Technique Framework tailored to enhance the financial sustainability of SMEs in Solwezi, Zambia. This framework addresses the specific needs, challenges, and contextual factors faced by SMEs in this developing economy.

The framework as illustrated in Figure 6.9, incorporates the most used investment appraisal techniques, namely the Payback Period and Net Present Value (NPV), while gradually introducing more advanced methods such as Internal Rate of Return (IRR) and Profitability Index (PI). By prioritizing these techniques, the framework builds on the existing knowledge and practices of SMEs, empowering them to expand their appraisal toolkit over time. A key component of the framework is the emphasis on financial literacy and capacity building for SME owners and managers, recognizing the critical role of individual competencies in driving the effective application of investment appraisal techniques. Targeted training programs, mentoring, and support are essential to enhance the financial knowledge and skills of SME decision-makers in Solwezi.

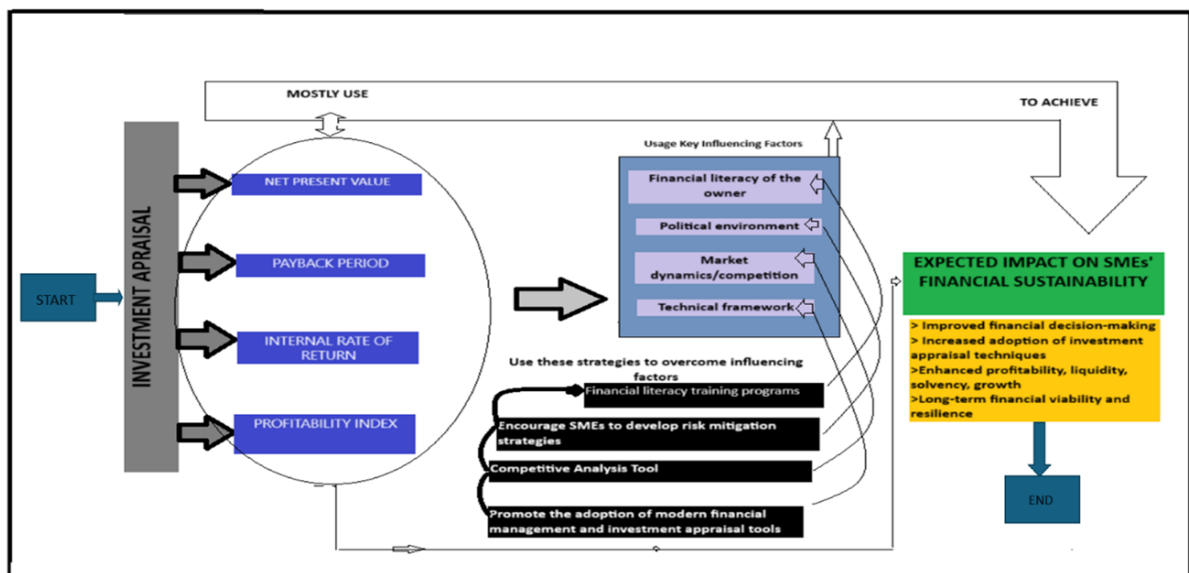


Figure 2: Ideal Investment Appraisal Technique Framework for SMEs financial sustainability
Source: (Author, 2024)

4.3 Proposed Improvements

Prioritize Targeted Training Programs for SME Owners and Managers

SME support organizations and educational institutions in Solwezi should prioritize the development and delivery of targeted training programs and resources to enhance the financial management capabilities of SME owners and managers. These training programs should focus on improving their understanding and application of investment appraisal

techniques, particularly the most commonly used methods such as the Payback Period and Net Present Value (NPV). Additionally, the training should cover more advanced techniques like Internal Rate of Return (IRR) and Profitability Index (PI) to equip SME decision-makers with a comprehensive toolkit for evaluating investment opportunities. By enhancing the financial literacy and skills of SME owners and managers, these targeted training programs can contribute to improved financial decision-making, increased adoption of investment appraisal techniques, and ultimately, better financial sustainability outcomes for SMEs in Solwezi.

Create a Supportive Policy Environment for SMEs

Policymakers should strive to create a stable and supportive policy environment that encourages SMEs to adopt sound financial management practices and make long-term investment decisions. This may involve implementing policies and regulations that provide incentives for SMEs to invest in their financial management capabilities, such as tax benefits, grants, or subsidized access to professional advisory services.

Additionally, policymakers can work towards reducing bureaucratic barriers and streamlining processes that may hinder SMEs from accessing finance or engaging in long-term investment planning. By creating an enabling environment that supports SME growth and development, policymakers can contribute to the overall financial sustainability of the SME sector in Solwezi.

Implement the Proposed Investment Appraisal Technique Framework through Collaboration

The proposed Investment Appraisal Technique Framework should be refined and implemented through collaboration among policymakers, SME support organizations, and industry experts. This collaborative approach should focus on providing the necessary resources, training, and support to enable SMEs to effectively adopt and utilize investment appraisal techniques.

Policymakers can work with SME support organizations to develop and disseminate practical guidelines, templates, and case studies that demonstrate the application of the framework in real-world contexts. Industry experts can provide mentoring and coaching support to SMEs, helping them to integrate investment appraisal techniques into their overall strategic decision-making processes.

By fostering collaboration and knowledge-sharing among key stakeholders, the implementation of the proposed framework can be more effective, leading to improved financial sustainability outcomes for SMEs in Solwezi.

4.4 Validation

The proposed Investment Appraisal Technique Framework was validated through a series of interviews with four key informants from the Ministry of Small and Medium Enterprises Development, Zambia Development Agency (ZDA), and two SME support organizations in Solwezi. These informants were purposively selected based on their expertise and experience in supporting SME development and financial sustainability in the region.

The validation process aimed to assess the framework's relevance, comprehensiveness, and potential for practical implementation. The informants were asked to provide feedback on the framework's structure, content, and its alignment with the needs and challenges faced by SMEs in Solwezi.

Table 6: Framework Validation and Evaluation

Informant Organization	Title of expert	Expertise and Experience	Feedback Focus Areas
Ministry of Small and Medium Enterprises Development	Permanently secretary	Expertise in SME policy development and support programs	Relevance of framework to SME policies, potential for practical implementation, and alignment with national SME strategies.
Zambia Development Agency (ZDA)	Manager of communications and PR	Experience in SME development and financial sustainability	Comprehensiveness of the framework, relevance to SME financial sustainability, and suggestions for improvement.
North-Western Chamber of commerce	Chief executive officer	Expertise in providing financial and managerial support to SMEs	Practical application of the framework, ease of understanding for SME owners/managers, and the need for training resources.
Solwezi SME support organization	Solwezi business executive	Experience in SME capacity building and consultancy	Feedback on framework structure and content, inclusion of real-world examples, and collaboration with other stakeholders.

Source: (Author 2024)

5 Conclusion and Recommendations

The study was intended to analyze the relationship that exists between the utilisation of Investment Appraisal Techniques and enhanced financial sustainability for Small and Medium Enterprises (SMEs) in Solwezi, Zambia. The study purposively analyzed the level of awareness of the Investment appraisal Techniques and their application. The study further examined the capacity of Small and Medium Enterprises (SMEs) to access financing and remain financially sustainable. Further, the study sought to find out the factors that contribute to the effective application of investment appraisal techniques in the decision-making processes of SMEs. The study also explored the components that should be integrated into the ideal Investment Appraisal Technique Framework to enhance the financial sustainability of SMEs in Solwezi, Zambia. The study sought to answer three main research questions as specified below:

What investment appraisal techniques are commonly used by SMEs in developed nations?

In conclusion, this study has shed light on the investment appraisal techniques mostly used by SMEs. The findings reveal that the Payback Period and Net Present Value (NPV) are the most recognized and applied methods among these enterprises. However, the study also uncovers a notable discrepancy between the familiarity and actual usage levels of these techniques. This suggests that while SME owners and managers may be aware of the potential benefits of investment appraisal methods, they face barriers or limitations that hinder their consistent application in practice.

What factors contribute to the effective application of investment appraisal techniques in the decision-making processes of SMEs?

The study concludes that several key factors contribute to the effective application of investment appraisal techniques in SME decision-making processes. Financial literacy of the owner/manager emerges as a critical factor, underscoring the importance of individual competencies in driving the adoption and effective use of these methods. SMEs with decision-makers who possess higher levels of financial knowledge and skills are better equipped to understand, interpret, and apply investment appraisal techniques. Also, the decision-making style of the owner/manager plays a significant role, with SMEs that employ structured, data-driven, and long-term oriented approaches being more likely to consistently utilize investment appraisal techniques compared to those with more intuitive, short-term focused decision-making processes. External factors, such as the political environment, market dynamics, and competition, also emerge as important influences.

What components should be integrated into the ideal Investment Appraisal Technique Framework to enhance the financial sustainability of SMEs in Solwezi, Zambia?

The study concludes by proposing an Ideal Investment Appraisal Technique Framework tailored to enhance the financial sustainability of SMEs in Solwezi, Zambia. This framework addresses the specific needs, challenges, and contextual factors faced by SMEs in this developing economy.

The framework as illustrated in Figure 6.9, incorporates the most used investment appraisal techniques, namely the Payback Period and Net Present Value (NPV), while gradually introducing more advanced methods such as Internal Rate of Return (IRR) and Profitability Index (PI). By prioritizing these techniques, the framework builds on the existing knowledge and practices of SMEs, empowering them to expand their appraisal toolkit over time. A key component of the framework is the emphasis on financial literacy and capacity building for SME owners and managers, recognizing the critical role of individual competencies in driving the effective application of investment appraisal techniques. Targeted training programs, mentoring, and support are essential to enhance the financial knowledge and skills of SME decision-makers in Solwezi.

Declaration of Competing Interests

The authors declare that they are not aware of any competing financial interests or personal relationships that may have influenced the work described in this document.

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Ethical considerations

The article followed all ethical standards appropriate for this kind of research.

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