



UNIVERSITY *of* NICOSIA

**Risk Analysis and Capital Budgeting usage in Small and  
Medium-sized Enterprises in Lebanon**

**Imad Hussein Farran**

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## **Abstract**

Lebanon, akin to many other regions, has undergone modest economic development and technological progress, with the prevalence of small-scale enterprises shaping the nation's economic landscape. The private sector, notably propelled by small and medium-sized enterprises (SMEs), has consistently held a pivotal role in the country's growth trajectory. Consequently, the SME sector assumes a vital role in Lebanon's long-term advancement, especially given the significant financial activities occurring within the informal sector.

This thesis delves into the capital budgeting practices embraced by SMEs in Lebanon, offering valuable insights into the broader national context. The primary aim is to discern the principal capital budgeting techniques employed by SMEs and their effectiveness in mitigating financial risks. Moreover, the research endeavors to achieve a deeper comprehension of the economic and societal conditions that govern the operations of SMEs and the informal sector in Lebanon. By doing so, this thesis strives to furnish a comprehensive exploration of the capital budgeting practices adopted by Lebanese SMEs, revealing their role in the management of financial risks within the wider national framework.

Employing a mixed-method research design, this study seamlessly integrates qualitative and quantitative data collection and analysis methodologies. This approach facilitates a holistic understanding of the research question or issue, harnessing the power of multiple methods to investigate the matter at hand. One aspect of this thesis focuses on unraveling the unique conditions prevailing in Lebanon. Notably, the thesis presents research findings concerning the impact of the COVID-19 pandemic on employees and businesses in Lebanon. Overall, the study concludes that while most SMEs engage in certain financial planning practices, they do not uniformly implement all financial planning activities.

These findings carry significant relevance within the current economic climate, where SMEs grapple with pronounced challenges due to the pandemic's repercussions and broader economic fluctuations. By adeptly selecting suitable Investment Appraisal Techniques during pivotal investment decisions, SMEs can forecast, strategize, and fortify themselves against liquidity constraints and potential insolvency, particularly in times of economic downturn. Hence, this research stands poised to offer valuable guidance to SMEs in Lebanon, aiding them in navigating their business operations during these formidable times.



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## Declaration

I declare that the work in this thesis was carried out in accordance with the regulations of the University of Nicosia. This thesis has been composed solely by myself except where stated otherwise by reference or acknowledgment. It has not been previously submitted, in whole or in part, to this or any other institution for a degree, diploma or other qualifications.

Signed .....

Date .....

Imad Farran



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## ABBREVIATIONS

AOU- Arab Open University

ARR- Accounting return rate

AP-Accounts payable

CAPM-Capital Asset Pricing Model

CEE- Central and Eastern European

CEO- Chief Executive Officer

CFO- chief financial officer

COD- Cost of Debt

CMA-Certified management accountant

DCB- Development Credit Bank

DCF- Discounted Cash Flow

DPB-Days Past Due

GDP-Gross domestic product

IPO-initial public offering

IRR- Internal rate of return

LBP- Lebanese Libra

LFF-Libraries For the Future Community

MIRR- Modified Internal rate of return

MoSA- Ministry of Social Issues

MROR- Multiple Internal rate of return

NDCF- Non-Discounted Cash Flow

NGO- Non-government Organizations

NSE-National Stock Exchange

NPV- Net Present value

P- Selling price

PB- Payback

PBM-Process-Based Management-

PI-Profitability Index

PW- Per week

Q- Quantity sold

VC- Variable costs

WACC- Weighted Average Cost of Capital



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## **1.0 INTRODUCTION**

The fundamental purpose behind the establishment of organizations revolves around augmenting company value and satisfying the interests of shareholders. This endeavor inherently demands the adept identification of potent investment opportunities spanning both short and long-term horizons. The trajectory of a firm's growth is intricately influenced by an array of factors encompassing internal financial dynamics, prospective corporate strategies, productivity enhancements, and the organizational scale, irrespective of whether it falls under the domain of largescale or Small and Medium Enterprises (SMEs). SMEs are characterized not only by their economic objectives but also by the policies and initiatives enacted by governing bodies or institutions aimed at fostering their expansion. In the microfinance arena, the concept of capital budgeting assumes a pivotal role in shaping investment decisions.

Capital budgeting denotes the comprehensive process through which enterprises assess their investment alternatives and judiciously allocate capital resources to specific projects. In navigating this intricate terrain, managers grapple with evaluating the potential return on investment and meticulously gauging project risks. This involves the utilization of diverse formal and informal methodologies. Among the pivotal choices confronting managerial circles is the determination of whether to channel resources into fixed assets, given that such investments bear enduring implications for a company's operational landscape and necessitate substantial financial commitments. To navigate this complex terrain, decision-makers harness an array of quantitative and analytical tools at their disposal.

As posited by Adrian (1996), the concept of capital budgeting stands as a bedrock principle within the business realm, exercising an indelible influence on the intricate fabric of

investment decision-making. Due to its significance, many scholars and academics have shown interest in this area. Rossi (2015) conducted research exploring different capital budgeting methodologies and their application in today's corporate world. Different organizations employ diverse methods to assess the feasibility of new ventures. Since its introduction to the business sector, numerous scholars have conducted research, written books, and published articles on capital budgeting. Given the variety of approaches employed in different aspects of capital budgeting, it is important to establish a practical body of knowledge that illustrates how this concept can be applied in the workplace to facilitate sound investment decisions.

Fu (2015) emphasizes that capital budgeting is a crucial method used by businesses to evaluate investment plans and profitability. The study examines investment decisions made by investors and management across various commercial enterprises, highlighting the different components of capital budgeting. This research is valuable to our study as it explores how the capital budgeting process assesses the long-term viability of investments. To develop a successful investment strategy, key decisions need to be made by management, accounting, and investment experts. Stakeholders of a company typically seek to minimize risks and develop effective approaches for success when investing. De Andrés, De Fuente, and San Martín (2015) also support the significance of capital budgeting in their analysis of capital budgeting in Spain, showcasing the diverse strategies employed by well-known corporations worldwide.

This study will focus on fundamental aspects of capital budgeting and investment evaluation, particularly its relevance to companies and investors. Understanding the reasons behind the substantial interest of scholars in researching this topic is crucial. Malenko (2018) emphasizes the irrevocable nature of investment decisions and the need for thorough research. These investments typically require significant organizational resources, which cannot be easily

replaced if lost. Capital budgeting plays a vital role in facilitating wise investment choices. Poor decision-making is a concern for SMEs due to challenges in identifying risks. Lack of transparency in financial statements and limited studies and research on management challenges and solutions for SMEs (Lebanon's Ministry of Economy) further contribute to these risks. In Lebanon, a majority of small and medium-sized enterprises are managed by individuals or families, often lacking a broad and scientific perspective in decision-making. Consequently, securing payments from debtors or banks can be challenging. The promotion of entrepreneurship and leadership is essential to fostering a culture of change for success and progress in SMEs in Lebanon (SMEs in Lebanon, Ministry of Economics, 2015).

Given the substantial financial commitments involved, fixed asset investments have a significant and long-term impact on a company's operations. Consequently, managers employ various quantitative and analytical methodologies to make informed decisions in project selection. Capital budgeting encompasses techniques based on assumptions about project growth and investment, particularly cash flows. Accounting standards play a crucial role in establishing the foundation for specific processes.

The management control strategy encompasses financial planning and monitoring to provide essential accounting information. Variance reports, typically prepared by cost accountants, present the majority of the relevant data. Capital budgeting decisions are influenced by a range of factors, including economic, social, political, and cultural diversity. Over the past two decades, there has been significant growth in foreign direct investment (FDI), driven by increased commercial investment activity worldwide. However, multinational corporations have encountered challenges due to the lack of reliable and accurate methods for making efficient market judgments.

## 1.1 Problem Statement

Capital planning is a critical aspect of corporate management that has continued to cause anxiety in the business world (Deo, 2022). Inadequate capital budgeting decisions can lead to a loss of identity or liquidation of firms. Additionally, the failure to employ assessment techniques that accurately depict a company's financial state and use various computations based on comparing future returns on investment to initial investment further compounds the problem. Often, market rates and economic scales such as inflation are ignored, leading to even greater difficulties.

Given the continuing industrial issues and the implications of globalization, it is crucial to conduct rigorous investment research before making any critical decision. This research should involve a comprehensive evaluation of various financial indicators, such as cash flow projections, expected return on investment, and potential risks. Only with this level of analysis can companies make informed decisions about their capital budgeting plans and ensure their long-term sustainability (Nunden et al., 2022).

One of the most significant challenges in capital planning is the risk of inadequate budgeting decisions. Many firms have suffered significant losses or been liquidated due to poor budgeting decisions (Nunden et al., 2022). This is often due to a lack of proper analysis, which results in the selection of projects that do not align with the company's goals or financial capabilities. To avoid such a scenario, companies must have a clear understanding of their financial standing and create a detailed budgeting plan that considers all relevant factors.

Moreover, companies must employ effective assessment techniques to accurately depict their financial state. The use of these techniques helps identify areas of financial strength and weakness and assesses the potential return on investment. Companies can also use these

techniques to make sound decisions based on comparing future returns on investment to initial investments. This information is crucial as it allows companies to prioritize projects that have the potential to provide the highest returns while minimizing risks.

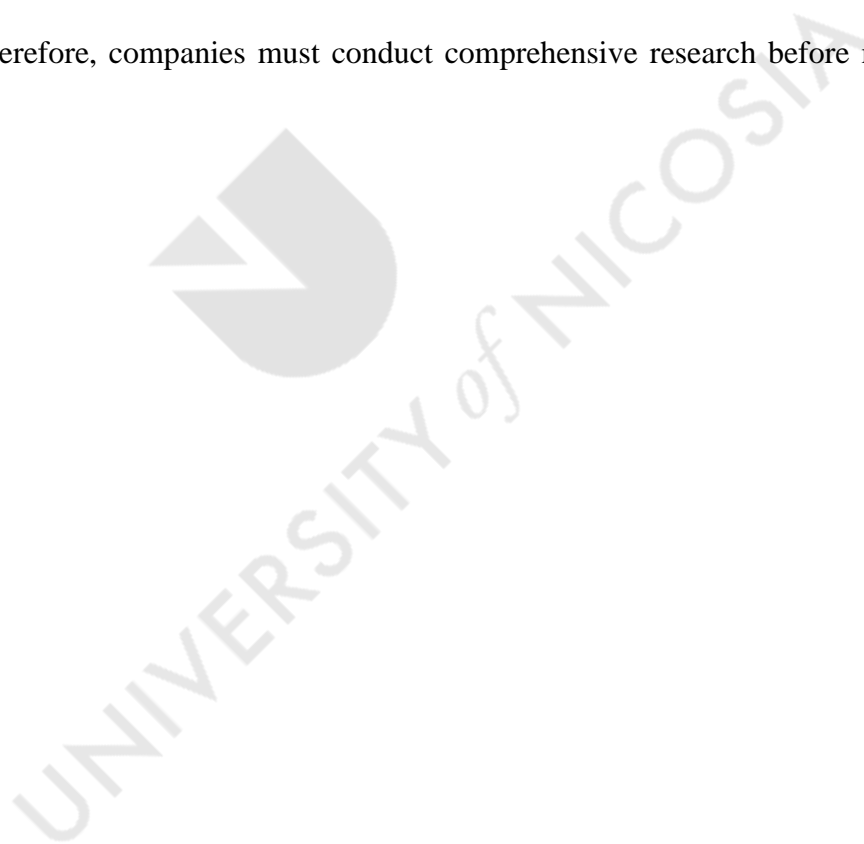
Additionally, market rates and economic scales such as inflation must be taken into account when making capital budgeting decisions. The failure to consider these factors can lead to serious financial difficulties, especially in the long term (Egbide, 2013). For example, if a company fails to consider inflation rates, it may find that the cost of goods and services has increased significantly, making it difficult to generate profits. Similarly, if market rates are ignored, the company may be unable to obtain financing on favorable terms, making it challenging to execute its capital budgeting plan.

Given the implications of globalization, rigorous investment research is now more critical than ever before. Companies that fail to conduct adequate research may find themselves ill-equipped to compete in an increasingly globalized market. This is because they may not have the financial resources to execute critical projects or lack the necessary infrastructure to compete effectively. Additionally, the lack of research may result in poor decision-making, leading to a loss of market share or even liquidation.

Therefore, companies must conduct comprehensive research before making any critical decision. This research should include an evaluation of their financial standing, an assessment of potential risks, and a consideration of market rates and economic scales such as inflation (Weiskirchner-Merten, 2023). Only with this level of analysis can companies create effective capital budgeting plans that prioritize projects with the potential to provide the highest returns while minimizing risks.



In a nutshell, capital planning remains a critical aspect of corporate management that continues to cause anxiety in the business world. Inadequate capital budgeting decisions can lead to a loss of identity or liquidation of firms. Therefore, it is crucial to employ effective assessment techniques that accurately depict a company's financial state and use various computations based on comparing future returns on investment to initial investment. Market rates and economic scales such as inflation must also be considered. With the implications of globalization, rigorous investment research is now more critical than ever before. Companies that fail to conduct adequate research may find themselves ill-equipped to compete effectively in an increasingly globalized market. Therefore, companies must conduct comprehensive research before making any critical decision.



## 1.2 Research Questions

The following are the major research concerns that will be addressed in the project:

- I. What role have NPV, IRR, and PB played in the value-asset processes of Lebanese SMEs?
- II. What are the issues that finance managers face when adopting advanced capital budgeting methodologies like Net Present Value, which is especially useful as a general tool for project assessment, Internal Rate of Return, and the modified internal rate of return (MIRR)?
- III. What models can financial managers in Lebanese Small and Medium-Sized Enterprises (SMEs) employ to leverage capital budgeting procedures and minimize negative financial risk outcomes?
- IV. How have client-related concerns influenced SME operations in Lebanon?
- V. How have system-related concerns influenced SME operations in Lebanon?
- VI. How have employee-related factors influenced SME operations in Lebanon?

## 1.3 Objectives and Goals

This research focuses on the capital budgeting practices of Lebanese SMEs, which serve as a representative sample of the country's overall landscape. The main objective is to examine the common capital budgeting techniques employed by SMEs in Lebanon and assess their effectiveness in risk management. The specific objectives of the study are as follows:

- 1) Investigate the utilization of NPV, IRR, and PB by financial managers in Lebanese SMEs in their value-asset operations and other relevant aspects.
- 2) Evaluate the effectiveness of risk analysis approaches employed by financial managers in Microfinance Institutions and Small and Medium-Sized Businesses in making capital budgeting decisions.
- 3) Identify the challenges faced by finance managers of SMEs when adopting complex capital budgeting methods, including NPV, IRR, MIRR, DPB, and DCB.
- 4) Develop frameworks for Lebanese investment analysts in microfinance institutions and SMEs to effectively employ capital budgeting methodologies and mitigate the negative consequences of financial risks.
- 5) Assess the risks associated with risk evaluation methods within the context of capital budgeting.
- 6) Establish a conceptual link between risk discounting and risk analysis metrics, examining their interrelationships and implications.

By addressing these specific objectives, the research aims to provide insights and recommendations that can enhance the capital budgeting practices of Lebanese SMEs. The study will contribute to the understanding of effective risk management strategies and promote informed decision-making in capital budgeting processes.

#### **1.4 Conceptual framework**

The model framework presented outlines various capital budgeting techniques that can be applied to Small and Medium Enterprises (SMEs) operations. In addition to this, the framework also includes several risk assessment models that can aid businesses in assessing the risks

associated with capital budgeting. Based on these assumptions, the following hypotheses have been formulated:

H1: Discounted measures like Net Present Value (NPV), Internal Rate of Return (IRR), and other discounting factors can successfully determine business feasibility. The feasibility of a business will be approached and made operational by defining variables into measurable factors.

H2: Risk analysis measures, such as Scenario Analysis, Sensitivity Analysis, and Monte Carlo Simulation, may not be helpful to Lebanese SMEs when assessing financial-related risks.

H3: Developing financial models can help overcome adverse outcomes of financial risks, thus overcoming challenges faced by financial managers of SMEs when implementing advanced capital budgeting techniques such as NPV, IRR, Modified Internal Rate of Return (MIRR), Discounted Payback Period (DPB), and Discounted Cash Flow (DCF).

H4: Conducting risk analysis measures that aim to achieve a considerable future outcome at the same discounting actions can help assess the risks associated with risk assessment models within the capital budgeting phenomenon.

The first hypothesis suggests that discounted measures can be used to evaluate the feasibility of a business. These measures are based on the time value of money concept and involve discounting future cash flows to the present value. The discounted measures, such as NPV and IRR, can provide a clear understanding of the viability of a business. The feasibility of a business can be approached by defining the variables that affect the business and making them measurable. This will help in determining the financial viability of a business.

The second hypothesis suggests that risk analysis measures, such as Scenario Analysis, Sensitivity Analysis, and Monte Carlo Simulation, may not be helpful to Lebanese SMEs when assessing financial-related risks. These techniques are commonly used to assess the potential

risks associated with a particular business decision. However, the hypothesis suggests that these techniques may not be suitable for SMEs in Lebanon. It is important to note that the suitability of these techniques depends on the nature of the business and the specific risks associated with it.

The third hypothesis suggests that financial modelling can help overcome adverse outcomes of financial risks. Financial modelling involves creating a mathematical model that represents a company's financial situation. This can help in identifying potential risks and developing strategies to mitigate them. This hypothesis also suggests that financial managers of SMEs may face challenges when implementing advanced capital budgeting techniques. However, financial modelling can help in overcoming these challenges and ensuring the success of a business.

The fourth hypothesis suggests that conducting risk analysis measures can help assess the risks associated with risk assessment models within the capital budgeting phenomenon. This hypothesis suggests that the risk analysis measures should aim to achieve a considerable future outcome at the same discounting actions. This will help in assessing the risks associated with a particular business decision and ensuring its success.

The United Kingdom introduced the Risk Analysis and Management of Projects (RAMP) risk assessment method. Its purpose is to record and minimize the effects of risk by employing the project's established framework when encountering those risks. Throughout the project's life cycle, RAMP incorporates scheduled assessment analyses, which primarily concentrate on financial considerations affected by project uncertainty.

## **2.0 LITERATURE REVIEW**

### **2.1 Defining and understanding capital budgeting**

Capital budgeting is not just a single decision, but rather the culmination of multiple activities and choices. It plays a critical role in decision-making due to its fundamental nature in the capital budgeting process. Capital budgeting is a dynamic and comprehensive process that aids in the identification of viable and profitable investment opportunities. It is not a fixed procedure and is influenced by evolving business conditions. The activities involved in capital budgeting include planning, evaluation, analysis, determination, execution, and monitoring. Leon et al. (2008) describe capital budgeting as the evaluation and selection of investment projects, emphasizing the examination of cash flows and the consideration of risk and uncertainty. Therefore, careful consideration must be given to project selection in order to maximize long-term economic benefits.

Research affirms that the foremost objective of capital budgeting revolves around the discernment and selection of projects that augment the overall value of an organization. This comprehensive process encapsulates various facets of a business venture, spanning from the acquisition of requisite land to the procurement of essential fixed assets like machinery and vehicles. The central focus typically rests on projects that yield profitable returns, thereby bolstering shareholders' equity. However, the acceptance of a project's rate of return is contingent upon an array of factors, intricately tied to both the organizational context and the specific project under scrutiny (Lidia, 2020). Notably, projects centered on social or charitable initiatives might exhibit a relatively lower financial return, yet their viability could stem from the organization's intent to foster goodwill, contribute to the local community, and ensure

sustainability. In tandem with this, Blocher et al. (2019) underscore two widely endorsed methods for making capital budgeting decisions: the Net Present Value (NPV) and the Internal Rate of Return (IRR).

Within this milieu, effective capital planning emerges as a pivotal linchpin shaping long-term financial performance and decision-making paradigms within an enterprise (Garrison et al., 2018). Ross et al. (2016) characterize capital budgeting as a strategic blueprint that orchestrates the planning and management of an organization's investments in assets. Capital budgeting assumes heightened significance when contemplating expansion ventures, asset revitalization, consolidation endeavors, cost-saving initiatives, and determinations pertaining to asset leasing or acquisition. Fundamentally, capital budgeting involves a meticulous cost-benefit analysis of a company's capital investment undertakings (Al-Mutairi et al., 2018). In essence, it is an intricate process of appraising whether the anticipated future cash inflows emanating from a proposed investment are robust enough to facilitate its execution, all the while navigating the complexities of associated risks and uncertainties (Leon et al., 2008).

Budgeting assumes a widely acknowledged mantle as one of the paramount financial management deliberations (Ryan & Ryan, 2002). The influence wielded by a company's capital budgeting process and financial analysis methodologies upon the allocation of scarce resources among competing investment alternatives by managers is pivotal in determining the efficacy of the capital budgeting process and the efficacy of the employed financial analysis tools (Pike, 1988; Pike & Ooi, 1988). In the realm of investment decision-making, managerial judgments frequently traverse subjective realms (Pike, 1983). Further augmenting this tapestry, Andrés et al. (2015) posit that managerial profiles can exert discernible impacts on a company's chosen

capital budgeting paradigms. Moreover, distinct enterprises may opt for varied decision-making approaches when confronted with analogous financial choices (Brijlal & Quesada, 2009).

Capital investment decisions wield profound ramifications for a company's trajectory of growth, with ill-conceived choices holding the potential to precipitate its downfall. Such undertakings necessitate substantial financial outlays and are inherently among the most intricate to navigate, given the uncertainties entwined with forecasting future cash flows and the multifaceted external factors at play (Egbide et al., 2013). The evaluation of capital budgeting alternatives constitutes an integral facet of the investment decision-making process (Arnold & Hatzopoulos, 2000). Beyond doubt, financial management and capital investment verdicts stand as linchpins of a company's enduring viability and prosperity (Bennouna et al., 2010). In fact, capital budgeting stands prominently as the quintessential financial decision across enterprises of diverse dimensions, casting a direct and indelible influence upon profitability and overall triumph (Egbide et al., 2013). This pivotal significance elucidates the rationale behind the diverse array of capital budgeting approaches and methodologies embraced by companies, as they navigate the intricate tapestry of interrelationships among various budgeting facets (Pike, 1986). Amidst the plethora of avenues for augmenting decision-making efficacy, encompassing qualifications, recruitment incentives, and beyond, capital budgeting strategies and methodologies assume a position of paramount importance (Pike, 1989).

Capital budgeting is an increasingly significant topic in both theoretical and empirical research (Al-Mutairi et al., 2018). The main objective of many studies is to investigate the most commonly used approaches in capital budgeting and understand the reasons behind their popularity (Block, 1997; Ryan & Ryan, 2002; Markovics, 2016). While some studies have found that the payback period (PP) method is frequently utilized for project appraisal, others have



identified discounted cash flows as the most commonly employed capital budgeting method (e.g., Sandahl & Sjögren, 2003; Hall & Mutshutshu, 2013; Andrés et al., 2015).

Researchers are increasingly interested in studying capital budgeting practices due to the valuable insights and benefits they offer. However, emerging economies such as Lebanon have received less attention in this area compared to industrialized nations. To the author's knowledge, there has been no comprehensive review conducted on capital budgeting strategies in Lebanon. Hence, the purpose of this study is to examine the current state of capital budgeting in Lebanon and identify the risks associated with capital budgeting practices in listed companies in the country.

Capital budgeting is considered one of the most critical decisions that financial management in any organization must make (Batra & Verma, 2014). It involves allocating resources among investment projects and evaluating those projects that will have long-term benefits for the company, generating revenue or reducing expenses (Al-Mutairi et al., 2018). However, the year mentioned in the text (2010) does not seem to be directly relevant to the surrounding context.

Capital budgeting is a method used to evaluate both minor strategic decisions, such as equipment replacement, and major infrastructure projects, such as constructing a new plant (Leon et al., 2008). Successful capital investment decisions require managers to follow best practices, given the importance of these decisions (Toit & Pienaar, 2005). More advanced capital budgeting methods incorporate discounted cash flow (DCF) techniques, such as Net Present Value (NPV), Internal Rate of Return (IRR), and others. On the other hand, Payback (PB) and Accounting Return Rate (ARR) are fundamental accounting principles commonly used (Leon et al., 2008; Brijlal & Quesada, 2009; Hall & Mutshutshu, 2013).

In the early 1960s, there was a growing interest in understanding companies' capital planning processes. The preference for conceptually sound models based on discounted cash flows became evident in management practices during the 1960s and 1970s (Andrés et al., 2015). Engineering economics and finance have many stories about the challenges of calculating interest rates for projects or dealing with capital budgeting complexities (Eschenbach & Cohen, 2006).

Since the 1960s, the literature on capital budgeting has seen an increase in analytical tools, as noted by Mao (1970). While modern budgeting processes exist for managers to make investment decisions, their widespread adoption seems limited. The academic community is still trying to understand why there is a gap between theoretical predictions and actual practices (Bennouna et al., 2010). Various reasons have been proposed, such as managerial culture, preferences, and constraints (Hall & Millard, 2011; Andrés et al., 2015; Souza & Lunkes, 2016).

Despite the development of various subjective approaches, they have received less attention in the literature, highlighting the need for further exploration and application in this area (Toloo et al., 2018). Therefore, this study aims to provide a comprehensive assessment of the capital budgeting literature by addressing the following questions: Who are the most notable authors and publications in the scientific community? What are the research opportunities in capital budgeting? By conducting a thorough review of global literature, this study aims to identify gaps that can guide future research to enhance the capital budgeting process both theoretically and practically. Researchers and professionals hope that compiling information into a single document, conducting bibliometric analysis of relevant publications, and systematically studying reports from a bibliographic portfolio will assist in focusing efforts on studies that generate valuable insights and contribute to research and practice in this field.

### **2.1.1 A Summary of steps on how to explain capital budgeting**

Capital budgeting is an essential business process used to assess the viability of projects or investments. In Lebanon, businesses can utilize capital budgeting to evaluate and determine the appropriate level of investment in fixed assets. This process is particularly valuable for small and medium-sized enterprises (SMEs) as it helps in making informed financial decisions despite their operational constraints.

The capital budgeting process involves several crucial steps that should not be overlooked. Firstly, it is important to identify all potential opportunities (Graham and Harvey, 2002). Decision-makers involved in capital budgeting evaluate various projects and strategies to determine which ones are feasible. It is essential to consider all available options and select the most financially sensible choice. Additionally, the timing and method of pursuing the chosen option need to be carefully assessed.

Secondly, all operating costs associated with the project must be estimated. This involves conducting internal and external research to determine the project's expenses and prices, enabling the organization to gauge the potential financial returns. The next step is to estimate the cash flow required for implementing the project. This entails evaluating and assessing the cash flow projections, and reviewing successful similar projects from the past can provide valuable insights during this stage (Graham and Harvey, 2002).

By following these steps and conducting thorough evaluations, capital budgeting helps businesses in Lebanon make rational and informed decisions about their investment in fixed assets. It provides a quantitative perspective on proposed investments, enabling organizations to make well-founded judgments.

After assessing the risks involved, the organization should have a clear understanding of the potential financial losses or sacrifices in the capital budgeting planning. Based on this assessment, a decision is made whether to proceed with the implementation of the plan. Once the plan is approved, the implementation phase begins, where the finances align with the proposed budget and feedback is gathered to evaluate the success or failure of the capital budgeting process (Graham and Harvey, 2002). The chosen method of implementation should include defined means of funding the project, measures and standards to track incurred costs, and a process to record cash flows and other project benefits.

Every facet of the capital budgeting process necessitates a meticulous and methodical approach, guided by specific decision criteria and an all-encompassing consideration of cash flows (Haka et al., 1985). Within this framework, three cardinal rules hold sway as the bedrock of capital budgeting: the Payback Period, Present Net Value (NPV), and Internal Rate of Return (IRR).

The Payback Period Rule stands as a yardstick to fathom the temporal span required for a capital budgeting venture to recoup its initial outlay. It delineates the interval wherein invested capital remains exposed to risk, while concurrently entailing the discounting and computation of cash flows.

Turning to the Present Net Value (NPV), its paramount objective resides in gauging the envisaged impact of a project upon the organization's intrinsic value (Haka et al., 1985). The NPV calculus hinges upon delineating the difference between the present value of incremental benefits and costs. By this tenet, autonomous projects endowed with positive NPVs secure acceptance, while those characterized by negative NPVs face rejection. Alternatively, the amalgamation of projects boasting the most robust aggregate NPV may warrant selection.

The Internal Rate of Return (IRR) unfurls as another cardinal dictum within the realm of capital budgeting. It decrees that an independent project warrants endorsement should its IRR transcend the prevailing market-based discount rate. Notably, the NPV can assume parity with zero under this premise. The crux of this rule is bolstered by juxtaposing the IRR against the market rate, thus amplifying its efficacy and robustness.

Capital budgeting encompasses a range of rules and methods that facilitate project evaluation. These guidelines serve the purpose of determining whether a particular project should be pursued by an organization. Among the multitude of decision rules available, the following are widely recognized and employed;

- 1) Net Present Value (NPV) Method
- 2) Breakeven Analysis
- 3) Internal Rate of Return (IRR) Method
- 4) Breakeven Chart
- 5) Payback Period Method

### **2.1.2 A quick review of previous capital budgeting studies**

A comprehensive examination of capital budgeting practices across various studies and regions illuminates the evolving landscape of investment decision-making strategies. A retrospective analysis encompassing research from the 1960s and early 1970s reveals prevailing trends in non-discounted techniques, particularly favoring the Payback Period (PBP) method by Graham and Harvey, followed by the Accounting Rate of Return (ARR). In contrast, the Discounted Cash Flow (DCF) model, notably deemed less favorable during that period,

witnessed a transition in perception by the late 1980s. Studies documented an uptick in the adoption of DCF, Net Present Value (NPV), and Internal Rate of Return (IRR) as primary methodologies, while the utilization of non-DCF methods like PBP and ARR waned. Visual representations by Pike and Neale (2006) and Arnold (2008) further elucidated the intricate multistage structure characterizing corporate investment decision-making.

In the Irish context, Kester and Robbins (2011) probed capital budgeting practices, revealing a penchant for DCF techniques, with NPV emerging as the foremost metric for capital planning. While Payback Period and IRR found application to a lesser extent, the Accounting Rate of Return (ARR) was accorded lower relevance. Risk assessment techniques were commonly rooted in scenario analysis and sensitivity evaluations, often grounded in the adoption of the weighted average cost of capital (WACC) for discount rate computation. Contrastingly, Lazaridis (2004) uncovered the prevalence of the Payback Period (PBP) strategy in Cyprus, offering an alternative perspective.

A comprehensive global panorama showcases diverse practices. Shinoda (2010) dissected data from Japanese firms, elucidating their nuanced approach that combines Payback Period and Net Present Value techniques. The effectiveness of capital budgeting decisions transcends rigid academic theory, advocating for a holistic understanding of methodologies. Strikingly, developing nations predominantly lean towards the Payback Period (PBP) method, as illustrated by Kester et al. (1999), with growing inclinations towards Discounted Cash Flow (DCF) alternatives. Hermès et al. (2007) delved into Dutch and Chinese enterprises, spotlighting variations in the popularity of strategies like NPV, PBP, and the Weighted Average Cost of Capital (WACC) among CFOs.

De Andrés et al. (2015) unveiled the Spanish landscape, revealing a predominant reliance on retaliation and sparing use of real options. Mubashar and Tariq (2019) explored Pakistan's capital planning, highlighting the widespread employment of NPV, IRR, and PI methodologies, shaped by organizational demographics and management characteristics. Baker et al. (2017) observed a blend of techniques in Moroccan businesses, while Alleyne et al. (2018) illuminated the unique landscape in Barbados, where the Payback Period (PBP) method garnered preference. The intricate tapestry of capital budgeting practices continues to evolve, shaped by distinct factors within diverse economic contexts and industries.

Mubashar and Tariq (2019) undertook a comprehensive survey targeting 200 non-financial firms enlisted on the Pakistan Stock Exchange, with a notable 35% response rate. Their study cast light on the capital planning practices of Pakistani listed enterprises, showcasing the widespread adoption of key methodologies. Among these, Net Present Value (NPV), Internal Rate of Return (IRR), and Profitability Index (PI) emerged as extensively employed tools. The prominent role of the Discounted Cash Flow (DCF) approach was evident, with a staggering 61.4% of respondent organizations consistently relying on the Net Present Value (NPV) method. Internal Rate of Return (IRR) found favor among 27% of enterprises, often utilized in tandem with NPV. The computation of the cost of equity capital hinged upon the capital asset pricing model, complemented by target value weights to derive the Weighted Average Cost of Capital (WACC), encompassing added risk factors. While sensitivity and scenario analyses took center stage as preferred risk assessment techniques, intriguingly, the utilization of real options remained notably limited despite their theoretical advantages. The distinct demographics and management attributes of companies exerted a substantial influence on investment decisions, underscoring the multidimensional nature of the capital planning landscape.

In the realm of Moroccan businesses, Baker et al. (2017) explored the capital budgeting terrain of publicly listed firms. The study illuminated a spectrum of practices, indicating that 64% employed Internal Rate of Return (IRR), 63% used the Accounting Rate of Return (ARR), and 53% adopted the Payback Period (PBM) method. Notably, Net Present Value (NPV) emerged as the least popular choice. Intriguingly, real options were embraced by a limited number of participating organizations. The research indicated that Moroccan firms, in comparison to their counterparts in developed nations, exhibited a preference for relatively less intricate methodologies when evaluating investment prospects and estimating the cost of capital. The computation of the Cost of Equity Capital for entities listed on the Chittagong Stock Exchange encompassed diverse approaches, including the addition of the Cost of Debt (COD) and equity risk premium, as well as the utilization of the accounting return on equity.

Turning to Barbados, Alleyne et al. (2018) conducted an insightful study encompassing 41 companies, shedding light on capital budgeting practices within the nation. Their findings unveiled a prevalent inclination toward employing the Payback Period (PBM) technique among respondents, driven by its simplicity, ease of calculation, reduced workload, and adaptability. The survey unearthed a notable trend wherein companies enhanced their decision-making process by amalgamating fundamental methodologies with innovative capital budgeting strategies. Particularly intriguing was the observation that professional accountants displayed a heightened proclivity toward techniques such as Net Present Value (NPV) and sensitivity analysis, as compared to their nonprofessional counterparts. Nonetheless, statistical analysis revealed a lack of significant disparities in the employment of capital planning techniques across different organizations.



Collectively, these studies underscore the dynamic and multifaceted nature of capital budgeting practices across various geographical and organizational contexts. The intricate interplay of methodologies, preferences, and influencing factors contributes to a comprehensive understanding of investment decision-making processes.

Nurullah and Kengatharan (2015a) conducted a study involving 32 out of the 46 Chief Financial Officers (CFOs) of industrial and commercial firms in Sri Lanka that were listed on the Colombo Stock Exchange. The surveys conducted during the study revealed that the most frequently utilized capital budgeting approaches among these firms were the Payback Period (PBP) and the Internal Rate of Return (IRR). Similarly, the Weighted Average Cost of Capital (WACC) emerged as the preferred method for determining the cost of capital, and sensitivity analysis stood out as the predominant risk management technique employed in the context of capital budgeting. Furthermore, the size of the capital budget wielded an influence over the application of capital budgeting methodologies such as Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period (PBP). It also played a role in the integration of risk instruments within the capital budgeting process, where sensitivity analysis and simulation techniques assumed significance.

Andor et al. (2015) conducted a telephone survey of 400 CEOs from small, medium, and large firms in 10 Central and Eastern European (CEE) nations. The study revealed that capital budgeting methods in CEE are primarily influenced by company size, culture, ethical standards in the country, and company goals, with factors like leverage, corporate capital, and the number of projects playing a minor role. Cost of capital calculation and the use of the Capital Asset Pricing Model (CAPM) were common practices. The Discounted Cash Flow (DCF) technique was employed by 56% of small and medium-sized firms and 45% of large organizations.

Surprisingly, even when profitable projects were selected using DCF methods, senior management could reject them based on other factors such as ethical considerations, financing scarcity, strategic fit, analyst trust, or reliable data sources. In Canada, Bennouna et al. (2010) found that NPV was the preferred method for capital budgeting among Canadian corporations, with DCF being adopted by only 17% of major firms. Genuine options were chosen by a mere 8%, with the majority opting for NPV and IRR.

The research by Khamees et al. (2010) examined capital budgeting approaches in the Jordan Industrial Corporation and revealed that firms employed both DCF and non-DCF approaches in similar proportions for evaluating capital investment projects. Profitability Index (PI) was the most prevalent approach, followed by Payback Period (PBP). The study indicated a lack of a precise plan among respondents, with no single approach outperforming others. Similarly, De Souza and Lunkes (2016) investigated capital budgeting practices in major publicly listed Brazilian firms. Their research showed that the most widely used methods were PBP (71%), followed by NPV (65%), and IRR (61%). The Weighted Average Cost of Capital (WACC) was the most commonly employed method for estimating the minimum rate of return, and scenario analysis (68%) and sensitivity analysis were the most frequently used risk analysis techniques (55%).

Batra and Verma (2017) analyzed responses from 77 Indian firms listed on the Bombay Stock Exchange. Their findings indicated that company leaders generally utilize capital budgeting techniques based on academic theory. The most commonly used DCF methods were NPV and IRR, with risk-adjusted sensitivity analysis and DCF methodology being preferred. WACC was also favored by managers as a cost of capital. However, there was a gap between theory and practice when it came to real options, modified internal rate of return (MIRR), and

simulation techniques. Project managers also considered non-financial factors in their decision-making process. Roopali and Verma (2014) explored the capital planning phases of Indian firms listed on the Bombay Stock Exchange. Their research examined the CFO's perceptions of the importance, difficulty, and risk associated with various stages of capital planning. They also investigated the impact of organizational factors such as capital spending plan size, industry nature, and firm status. The findings highlighted financial analysis and project selection as the most crucial steps in capital planning, followed by project description and revenue estimation.

Ross (1986) conducted a comprehensive analysis of the capital planning activities of 12 large manufacturing firms and found that the lengthy implementation and planning stages of venture audit were relatively unimportant. Despite strategies that integrated discounted cash flows, many companies heavily relied on the myopic Payback Period (PBP) approach, especially for smaller operations. Lower-cost profit strategies were frequently updated as they were developed. Some firms used the same financial life for all projects, disregarding the actual lifespan of the projects to alleviate concerns.

Companies often made minimal adjustments to their risk estimates to simplify the process. The data also revealed that project acceptance was influenced by various factors depending on the decision-making authority within different organizations (eight out of the twelve investigated). In a study conducted by Wong, Farragher, and Leung in 1985, prominent companies in Hong Kong, Malaysia, and Singapore were examined. In Malaysia, PBP was the most commonly used primary technique for analyzing and positioning activities, while in Hong Kong, PBP and ARR were the most popular. The authors concluded that, unlike the United States, where discounted cash flow techniques are widely used as critical assessment measures by organizations, companies in Hong Kong, Malaysia, and Singapore preferred to analyze and

position future venture initiatives through a few key stages. Businesses in these regions were also criticized for conducting limited risk analysis, which did not involve evaluating risk or adjusting evaluation criteria to account for it. Sensitivity analysis and scenario inquiry were the two most commonly used risk appraisal methods (high-medium-low estimates).

Bierman (1993) provided insight into the capital planning landscape of Fortune 100 corporations, revealing that 73% of these entities favor discounted cash flow (DCF) analysis. Internal Rate of Return (IRR) emerged as the preferred criterion over Net Present Value (NPV), reflecting the strategic choices made by these corporations. The Payback Period technique, although still prevalent, no longer holds the same degree of importance. Drury, Braund, and Tayles (1993) conducted a comprehensive survey encompassing 300 manufacturing firms with substantial annual revenues (£20 million and above). Their findings underscored the prevalence of Payback Period (86%) and IRR (84%) as the dominant project evaluation methods. Sensitivity analysis was the preferred risk measurement technique, while approximately 49% of respondents refrained from utilizing objective risk assessment due to a lack of familiarity. Intriguingly, the study unveiled that Capital Asset Pricing Model (CAPM) and Monte Carlo simulation were scarcely employed (95% never used them). As a result, a blend of methods was commonly adopted. Weighted Average Cost of Capital (WACC) emerged as a pivotal factor, with 93% of cases incorporating it into the capital planning process. The study highlighted the dynamic nature of WACC application, as 73% of businesses adjusted it to account for varying degrees of risk, reflecting either corporate or divisional considerations.

Wokabi (2014) embarked on an evaluation of the nexus between capital planning methodologies and the financial performance of non-budgetary firms listed on the Nairobi Securities Exchange (NSE). Limited in scope, the study encompassed 50 non-financial listed

companies, employing a mixed-method approach involving primary and secondary data. Essential data was collected through surveys administered using a drop-and-pick-later method, while secondary data was drawn from published records and institutional libraries. Notable variables, including capital planning techniques, firm size, organization age, and profitability factors, were examined. The findings unveiled a positive correlation between the adoption of capital planning techniques and higher profitability ratings, holding other independent variables constant.

Irungu (2014) delved into the intricate relationship between capital planning methodologies and the financial performance of NSE-listed companies. Employing a cross-sectional study approach encompassing the entire spectrum of NSE-registered entities, data was extracted from company documents and questionnaires distributed to personnel engaged in capital planning. Regression analysis was employed to scrutinize the impact of various capital planning methods on financial performance. The study illuminated a prevalent adoption of diverse methodologies, including Payback Period (PBP), Net Present Value (NPV), Accounting Rate of Return (ARR), and Internal Rate of Return (IRR). Notably, however, no discernible correlation was observed between budgeting implementation and the employed capital planning approaches.

In a separate study, Kiget (2014) delved into the capital planning strategies of NSE-listed companies. The sample encompassed 42 entities out of the total 62 listed on the NSE by the end of 2013. Quantitative data was extracted through surveys and analyzed using SPSS and Microsoft Excel. The study revealed that Internal Rate of Return (IRR) stood as the most frequently adopted capital planning technique, followed by Net Present Value (NPV) and Profitability Index (PI). Additional methods, such as Modified Internal Rate of Return (MIRR),

Accounting Rate of Return (ARR), and discounted Payback Period, also found their place. Noteworthy issues highlighted included respondents' limited consideration for cash timing in certain methods, complexity in calculations, and a lack of system understanding, collectively shaping the capital planning landscape.

### **2.1.3 Capital Budgeting as a Process of Planning**

Entrepreneurs and investors are driven by the desire to enhance their wealth, and a company's shareholders' interests are typically safeguarded when it makes long-term investment choices. Nurullah and Kengatharan (2015) investigate how a company's investment decisions impact the interests of its shareholders. Capital budgeting, which is used to determine a company's long-term investments, plays a crucial role in this process. By utilizing capital budgeting tools, a company can make informed decisions that lead to increased revenues and attract new investors.

Capital budgeting involves employing tactics based on project and investment ideas that generate incremental cash flows. Accounting concepts are necessary for the growth of various activities, and the management control process relies on budgetary planning and control separation to provide critical accounting information. In many cases, accountants in charge provide essential data through variance reports. Capital budgeting decisions are influenced by various factors such as economic, social, political, and cultural diversity (Gray et al., 2001).

Management and investors are responsible for making several decisions within a company. Many corporate decisions are based on significant investments and the activities of commercial entities. Properly budgeting the firm's capital is one of the most important responsibilities of an organization's management, as highlighted by Al-Mutairi, Naser, and Saeid

(2018). The financial decisions made by management stakeholders significantly impact the functioning of a company. Financial managers rely on capital budgeting indicators such as the Internal Rate of Return (IRR), Net Present Value (NPV), and others to make informed decisions. When these principles are effectively followed, businesses and investments thrive in the market and industry.

According to Kengatharan (2016), the adoption of capital budgeting theory and practice is a fundamental difference between successful and unsuccessful businesses. Successful enterprises in globally competitive industries utilize capital budgeting processes. The study also examined how companies promote accountability and measurement in their operations. Capital budgeting allows businesses to evaluate expected investment returns and potential risks. The concepts of capital budgeting are critical drivers of corporate operations and have a significant impact on overall business performance.

Rossi (2015) investigated various capital budgeting strategies used in corporate organizations. The study highlighted three major approaches, with Net Present Value (NPV) being the most useful in a commercial environment. Cash flows are discounted using the company's cost of capital to determine the net present value, which is then considered in commercial transactions. Projects with a positive net present value are typically accepted by the company. The study also discussed the use of discounted cash flows, which accounts for the time value of money.

Internal Rate of Return (IRR) is another strategy that significantly influences corporate success. Batra and Verma (2017) selected IRR as the most efficient approach when evaluating investment efficiency in the Indian economy. Businesses can use the IRR to improve performance and profitability by ranking project proposals based on their IRR. In some cases,

alternatives to the NPV=0 criterion can be considered. Andor, Mohanty, and Toth (2015) emphasized the importance of effective organizational management in achieving NPV=0 through various techniques, thereby enhancing overall project efficacy and efficiency.

The Equivalent Annuity Approach is another capital budgeting option discussed in the study by Batra and Verma (2017). This approach presents the NPV as the firm's annual cash flow. Scholars often introduce the concept in simplified terms and provide recommendations for businesses to utilize it in analyzing and monitoring investment decisions.

According to the study, the net present value (NPV) methodology is considered more important than other evaluation methods when analyzing investment projects. Malenko (2018) highlights that financial flexibility and credit ratings are crucial indicators for assessing a company's debt policy difficulties. NPV has emerged as a prominent and powerful indicator for estimating a company's value. The study utilized a comparative analysis of 200 Indian and 150 Spanish enterprises to provide insights into the usage and importance of these techniques in investment decision-making. It is crucial for businesses to conduct research to ensure they make the best available investment choices.

The topic of capital budgeting difficulties has been widely debated by academics, with various perspectives and approaches. Scholars have focused on exploring different aspects of capital budgeting, including its significance and methodologies. Capital budgeting is a versatile approach for determining investment priorities and has been developed using various tools such as Net Present Value (NPV), Internal Rate of Return (IRR), and others. Among these methods, NPV has been found to be particularly beneficial as it provides reliable data for investment decision-making. A positive NPV indicates that a business idea is viable and warrants further exploration.



Capital budgeting has been widely advocated by academics as a valuable approach to analyze cash flow statements and forecast investment returns. According to Fu (2015), managing any type of business fundamentally involves continuous decision-making in capital budgeting. This tool offers several features that contribute to its usefulness in corporate decision-making and its significance in business operations, providing a better understanding of a company's financial and investment choices.

Burgos, Kittler, and Walsh (2020) conducted a comprehensive study that aimed to shed light on how small businesses approach capital expenditure decisions. Employing a method of restricted rationality, the research delved into the intricacies of capital planning for small enterprises and its implementation across diverse circumstances. To initiate discussions on capital budgeting techniques, the study utilized constructivist grounded theory. Through forty semi-structured interviews, insights were gleaned from entrepreneurs and business managers. The findings unveiled a notable influence of limited reasoning on small firm capital budgeting decisions. Furthermore, the study highlighted the significant role played by the country context in shaping the application of constrained rationality. This dynamic was explored across two distinct contexts—Mexico and Canada—employing the constrained rationality approach as a framework (Burgos, Kittler & Walsh, 2020).

In contrast, Magni and Marchioni (2018) presented an alternative perspective, focusing on a widely employed capital budgeting method—Intrinsic Rate of Return (IRR). Particularly favored by small businesses, the IRR offers simplicity in its calculation. This straightforward investment profitability ratio enables the evaluation of returns based on the total investment in a long-term project. Unlike more intricate methodologies, the IRR doesn't require a complex formula, making it easily comprehensible for business professionals without specialized

technical knowledge. Its versatility lies in its ability to measure both income and cash flow, catering to a range of industries, including engineering and finance. This approach, often favored by small firms, facilitates effective ex-ante decision-making and contributes to enhanced wealth or profit accumulation. Its user-friendly nature positions the IRR as a valuable tool, especially in scenarios where advanced techniques like sensitivity analysis and net present value may seem more intricate or less approachable.

In a study conducted by Srithongrungrung, Yusuf, and Kriz (2019), capital budgeting and management in the public sector were investigated across different countries. Infrastructures such as roads, sewage systems, power and water utilities, and government buildings contribute to economic growth. The government plays a crucial role in making investment decisions regarding these infrastructures. Systematic capital management budgeting encompasses capital budgeting, financial management, and project management. Srithongrungrung, Yusuf, and Kriz (2019) emphasize that capital budgeting primarily aligns with strategic management, where the government or managers establish the fundamental framework for long-term investments. Effective capital budgeting and management lead to prudent investment decisions in high-quality public infrastructure, promoting economic prosperity.

Kim, Fallov, and Groom (2020) conducted a study on capital budgeting approaches in the public sector. The authors focused on assessing the consistency and reliability of findings from public investment projects within medium-term expenditures, aiming to successfully accomplish project objectives. They highlighted the importance of ensuring that funds are not reallocated before supporting new initiatives, as projects often end up competing for funding in subsequent accounting periods. Inadequate public investment management procedures have led to project failures, reduced funding, or prolonged stagnation. Additionally, ongoing projects tend to

experience cost increases at a faster rate than those completed within the originally planned timelines. To address these challenges, the authors suggested implementing multi-year budgetary commitments for public projects.

The objective of this literature study was to gain deeper insights into capital budgeting and project evaluation decisions, as well as the factors influencing them. Despite extensive research on capital planning techniques, there remains a significant knowledge gap for small and medium-sized enterprises (SMEs). Further research is needed to address this gap, as capital planning represents one of the most challenging aspects of a CEO's and management's role due to the complexity of project analysis. Poor decision-making in capital budgeting can lead to investments in less profitable ventures. It is essential to conduct more research, particularly on less common capital budgeting methods and practices, to enhance management's understanding of these procedures and provide them with more options when evaluating projects. Based on the literature review, this topic has been identified as a potential area for further investigation. Future research should focus on capital budgeting techniques such as the Accounting Rate of Return, Payback Periods, and Profitability Index.

## **2.2.4 Risk and Capital Budgeting**

Capital budgeting, also known as investment evaluation or investment appraisal, is the process of planning a company's long-term asset investments. It involves analyzing whether the company's long-term goals are worth pursuing by considering projected expenditures and benefits. However, this long-term planning is not without risks. One of the risks associated with capital budgeting is the possibility of incurring losses from a particular activity or operation, including the option of doing nothing. Various risks come into play when it comes to capital planning, particularly when high levels of volatility require corporate management to adjust their

strategies. The use of the discount rate in capital planning is subjective, and even slight changes in the discount rate can significantly impact the final outcomes. Therefore, relying solely on capital budgeting execution can be challenging (Walls, 2015).

In capital budgeting decisions, there are three significant types of risks to consider: operational, market, and financial risks. Market risk pertains to changes in the market that can impact product sales. In our constantly changing and highly competitive environment, these risks are significant. Consumer preferences are continually evolving, and technologies quickly become obsolete (Smith, 2014). Any significant downward shift in the market can render the entire capital investment ineffective. Factors such as competitors reducing prices, increased taxes, and import quotas can lead to reduced demand for the company's products.

To mitigate these risks, various tools can be employed in capital budgeting. Sensitivity analysis, scenario analysis, and break-even analysis are some of the methods that can be used to examine and plan for potential risks. These tools help assess the impact of different scenarios and variations in key factors on the company's financial performance and investment outcomes. By considering these risks and utilizing appropriate analytical techniques, companies can make more informed capital budgeting decisions.

Financial risks can be understood as the potential consequences of misusing or risking money. Changes in monetary terms and conditions can disrupt the flow of funds, posing a significant threat to the viability of the process or project. Financial risks also heighten the stakes involved. Factors such as credit rating changes can affect borrowing capacity, operational profits, and the ability of customers to pay for the goods or services provided (Froot & Stein, 2018).

Operational risks, on the other hand, relate to the possibility that the operational performance or controls may not function as intended. Examples of operational risks include

frequent breakdowns, unexpected increases in administration costs, higher storage and maintenance expenses, and lower production rates. Operational risks can have an impact on capital budgeting decisions, as they introduce uncertainties and potential disruptions to the anticipated outcomes (Froot & Stein, 2018). Both financial and operational risks play a crucial role in capital budgeting, as they influence the overall feasibility and success of investment decisions. Proper assessment and management of these risks are essential to mitigate potential negative impacts on the financial performance and operational efficiency of the project or business

The quantitative approach, which involves the use of mathematical models to determine the expected returns and risks associated with an investment, is one of the most widely used methods for risk assessment in capital budgeting (Fama & French, 2004). The most commonly used models in this approach include Monte Carlo simulation (Longnecker & Lierman, 2020), decision trees (Brunnermeier & Pedersen, 2009), and real options analysis (Trigeorgis, 1996). These models are based on the premise that future events can be modeled as a probability distribution, and that the investment's expected return can be estimated by taking the expected value of this distribution.

Another approach to risk assessment in capital budgeting is the qualitative approach, which involves the use of expert judgment and subjective assessments of the risks associated with an investment (Brealey, Myers, & Marcus, 2020). This approach can be useful when the investment is in a new or untested market, or when there is limited historical data available to support the quantitative approach (Kelleher & MacCormac, 2003). The qualitative approach typically involves a review of the industry trends and market conditions, as well as the internal and external factors that may affect the investment's success (Kassouf, 2014).

A third approach to risk assessment in capital budgeting is the combined approach, which combines the strengths of both the quantitative and qualitative approaches to provide a more comprehensive assessment of the investment's risks (Jain & Kroll, 2008). This approach can be useful when the investment involves multiple uncertainties, and when the investment's potential outcomes are difficult to predict using a single model (Klein, 2002).

In addition to risk assessment, capital budgeting also involves the evaluation of investment opportunities (Pandey, 2009). There are several methods used to evaluate investment opportunities, including net present value (NPV) (Brealey, Myers, & Marcus, 2020), internal rate of return (IRR) (Shaw, 2013), and profitability index (PI) (Sadowsky, 2010). The NPV method calculates the present value of the expected cash flows generated by the investment, and compares this value to the initial cost of the investment (Brealey, Myers, & Marcus, 2020). The IRR method calculates the discount rate that makes the NPV of the investment equal to zero, and is often used to compare investment opportunities with different investment periods (Shaw, 2013). The PI method calculates the ratio of the present value of the expected cash flows to the initial cost of the investment (Sadowsky, 2010).

In a nut shell, risk assessment and capital budgeting are crucial components of a firm's financial management strategy (Myers & Majluf, 1984). The quantitative approach, qualitative approach, and combined approach are the three most commonly used methods for risk assessment (Fama & French, 2004; Brealey, Myers, & Marcus, 2020; Jain & Kroll, 2008), while NPV, IRR, and PI are the most commonly used methods for evaluating investment opportunities (Brealey, Myers, & Marcus, 2020; Shaw, 2013; Sadowsky, 2010). While each method has its strengths and weaknesses (Klein, 2002), the best approach to risk assessment and capital

budgeting will depend on the specific circumstances of the investment and the goals of the firm (Pandey, 2009).

According to Klammer and Walter (1984), most organizations explicitly consider risk when evaluating capital investments. Large industrial enterprises, as noted by Kim and Farragher (1981), tend to employ more traditional approaches to assess risks in capital planning. In this context, Monte Carlo simulation and sensitivity analysis are commonly used methods to identify potential project hazards.

The Monte Carlo approach, coupled with the consideration of probability distributions in evaluating the financial performance of the project, enhances the quality and certainty of evaluation, ranking, and selection of the best investment opportunity. The authors' review of Monte Carlo simulation aims to contribute to a better understanding and wider application of this method in business practice, with the goal of making more informed and higher-quality capital investment decisions.

Risk in capital budgeting decisions is inherent, with uncertainty surrounding key variables. Various analyses and simulations, such as those by Karanaovic and Gjosevska (2014), are used to estimate individual risks associated with capital investments in projects.

The adoption of capital budgeting methods can be influenced by both financial and non-financial considerations, as noted by Alles et al. (2020). Non-financial factors, including decision-demography characteristics, can play a role in this regard. In Tanzania, Katabi and Dimoso (2016) found that firm-related parameters such as industry, sales growth, company size, number of employees, and business type significantly impact the choice of capital budgeting techniques.

According to Leon et al. (2008), eight factors motivate Indonesian businesses to adopt capital planning, including the CFO's qualifications, company size, annual investment, industry type, ownership structure, foreign influence, financial leverage, and political risk. Brunzell et al. (2013) also highlighted political risk as an additional element to consider when selecting a strategy.

In their analysis of publicly traded Swedish companies, Daunfeldt and Hartwig (2008) identified several distinct factors that influenced capital budgeting decisions. These factors included the dividend payment ratio, corporate expansion potential, and overseas sales volume. However, further research indicated a shift in the popularity of capital budgeting techniques. Towards the end of the 1980s, the usage of discounted cash flow (DCF) techniques such as internal rate of return (IRR) and net present value (NPV) was increasing, while the use of payback period (PBP) as a primary criterion was declining. Nonetheless, PBP remained a popular secondary criterion in capital budgeting decisions (Blazouske et al., 1988; Brigham, 1975; Gitman and Forrester, 1977; Farragher et al., 2001).

## **2.2 Time Value of Money**

The Time Value of Money (TVM) is a fundamental concept in finance, which states that a dollar today is worth more than a dollar in the future due to the potential earning capacity of the money. In other words, the value of money changes over time, and this change must be considered when making financial decisions. This literature review will examine the TVM concept in detail, exploring its history, definitions, applications, and criticisms.

The concept of TVM has been around since the 16th century when Leonardo Fibonacci, an Italian mathematician, introduced the idea of compound interest. Since then, the concept has



evolved and been further developed by economists and financial experts. TVM became more widely accepted as a valuable tool in financial decision making in the 20th century (Longnecker & Lierman, 2020).

TVM is often defined as the idea that a given sum of money today is worth more than the same sum in the future due to its potential earning capacity (Pandey, 2009). This concept is based on the idea of discounting, which refers to the process of reducing the future value of a sum of money to its present value. The present value of money is calculated by dividing the future value by  $(1 + r)^n$ , where  $r$  is the discount rate and  $n$  is the number of periods over which the money will be invested (Brealey, Myers, & Marcus, 2020).

The TVM concept has numerous applications in finance, including capital budgeting, investment analysis, and portfolio management. In capital budgeting, TVM is used to determine the present value of a future stream of cash flows, which is then used to evaluate the feasibility of a proposed investment. For example, when considering a proposed investment, the expected future cash flows must be discounted to their present value to determine the investment's net present value (NPV). A positive NPV indicates that the investment is expected to generate more cash flows than the initial investment, and it is therefore considered to be a good investment (Shaw, 2013).

Investment analysis also utilizes TVM in the calculation of measures such as internal rate of return (IRR) and modified internal rate of return (MIRR). IRR is a measure of the profitability of an investment and is calculated as the discount rate at which the NPV of the investment is equal to zero. The IRR is used to determine the expected rate of return on an investment and is an important tool in investment analysis (Pandey, 2009). MIRR, on the other hand, is a modified version of IRR that accounts for reinvestment of intermediate cash flows. This makes MIRR a

more accurate measure of an investment's expected rate of return (Longnecker & Lierman, 2020).

In portfolio management, TVM is used to evaluate the expected return and risk of a portfolio. By discounting the expected future cash flows, the portfolio manager can determine the present value of the portfolio, which is then used to calculate the expected return. The expected return is used as an input in portfolio optimization models, which are used to determine the optimal portfolio weights that maximize the expected return for a given level of risk (Shaw, 2013).

Despite its widespread use, the TVM concept has faced criticism from some economists. One of the main criticisms is that the discount rate used in TVM calculations is often arbitrary and subjective, leading to inconsistent results (Myers & Majluf, 1984). Additionally, the TVM concept assumes that the discount rate remains constant over time, which may not be the case in reality (Fama & French, 2004).

In conclusion, the Time Value of Money is a fundamental concept in finance that has numerous applications in areas such as capital budgeting, investment analysis, and portfolio management. It is based on the idea that a given sum of money today is worth more than the same sum in the future due to its potential earning capacity. The present value of money is calculated by dividing the future value by  $(1 + r)^n$ , where  $r$  is the discount rate and  $n$  is the number of periods over which the money will be invested. Despite its widespread use, the TVM concept has faced criticism, such as its arbitrary and subjective discount rate and the assumption of a constant discount rate over time.

## 2.3 Techniques for capital budgeting

Capital planning methodologies can be broadly categorized into two main types: discounted cash flow (DCF) and non-discounted cash flow (NDCF) methods. Non-DCF methods, such as the payback method (PBM) and the rate of return, do not incorporate the concept of time value of money. On the other hand, DCF techniques, including net present value (NPV), internal rate of return (IRR), reduced payback approach, and profitability index, take into consideration the time value of money, which is a crucial aspect in evaluating investment decisions (Alleyne et al., 2018; Hermes et al., 2007).

Haka et al. (1985) further categorize capital budgeting techniques into advanced selection procedures and naive selection processes. Advanced systems consider factors like risk-adjusted net cash flows, time value of money, and inflation in their evaluations. In contrast, naive models overlook risk-adjusted variables and the time value of money, resulting in simpler approaches such as the payback period (PBP) and the accounting rate of return (ARR).

The capital budgeting process, as outlined by Baker and Powell (2009), typically involves six key steps: project idea generation, calculation of project cash flows, project analysis, project selection, project execution, and post-completion auditing. These steps collectively guide organizations in identifying investment opportunities, assessing their financial viability, and ultimately implementing and evaluating the chosen projects (Segelod, 1998).

Andor et al. (2015) conducted a survey on capital budgeting practices within Central and Eastern European companies. Their research demonstrated that various factors, including firm size, institutional goals, global culture, and rules of conduct, significantly influence capital budgeting practices. The ownership structure of the firm and the units of analyzed projects also

play a role, albeit to a lesser extent. The survey involved the participation of 400 executives from 10 Central and Eastern European countries.

In the American context, Ryan et al. (2002) investigated the capital budgeting approaches utilized by the top 1000 companies. Their study revealed that net present value (NPV) emerged as the most favored capital budgeting technique, followed closely by the internal rate of return (IRR). Other capital budgeting techniques were found to be less commonly used. However, it is worth noting that there exist varying opinions among different authors regarding the optimal capital budgeting technique, with some preferring the payback method or the accounting rate of return. This diversity of perspectives highlights the nuanced nature of capital budgeting decisions and the range of considerations that organizations must consider when evaluating investment opportunities.

Klammer (1972) notes a preference for general discounted cash flow models, and most documented studies indicate that management favors the internal rate of return (IRR) as the primary investment appraisal technique. Evans and Forbes (1993) suggest that IRR is a more operationally optimal metric for comparison. While managers may lean towards NPV as a preferred method, previous studies indicate that they never prioritize it to the same extent as IRR.

Unlike large corporations, small businesses can develop in various ways. The business cycle and economic growth are closely linked. Growing enterprises tend to have higher debt levels compared to non-developing businesses, according to Huynh & Petrunia (2010). Once capital budgeting decisions have been made, a capital budget is established. However, before long-term investments can be made, funds need to be raised. Long-term investments are typically undertaken to facilitate business expansion in existing and new markets, acquire or replace capital assets, and achieve other objectives that generate long-term income streams.

According to Graham and Harvey (2001), the most common capital budgeting approach used by firms is the discounted cash flow (DCF) method, specifically focusing on Internal Rate of Return (IRR) and Net Present Value (NPV), with payback time being considered last. Research conducted in Europe, India, and Australia supports this finding. While large corporations tend to utilize NPV and IRR, small businesses and entrepreneurs often prefer to rely on payback time. A survey of Fortune 1000 organizations in 2002 revealed that NPV is the most favored capital budgeting tool, followed by IRR and payback time. Similar results were obtained from a poll of chief financial officers from 205 organizations.

Capital budgeting decisions are influenced by various factors and variables, such as company size and the qualifications of the CEO. It is crucial to delve deeper into some key qualities and elements. Research indicates that firms do not always employ simple capital budgeting strategies under the guidance of CEOs due to a lack of essential skills, talents, and top management support. The selection of capital budgeting methods depends on several factors, including risk evaluation and expected returns. Present Net Value (NPV) is widely defined as the difference between the present value of cash inflows and outflows over a specified timeframe.

The NPV approach is used to estimate the projected profitability of a project. It calculates the present value of a future payment stream, considering the financial worth of time (Karenlampi, 2021). It is crucial to avoid negative or low NPV investment opportunities. Positive NPV indicates a profitable investment, as demonstrated by Trejo-Pech and Thompson (2021). The NPV model incorporates inflation and recognizes that the value of money changes over time. By discounting future cash flows, the NPV accounts for the potential income and value appreciation of financial assets.

Gaspari-Wieloch (2019) provides an example where an investor has the choice between receiving \$100 immediately or \$110 over the course of a year. Most investors prefer to receive cash sooner. However, if presented with the option of \$110 immediately or \$110 in a year, some may choose the latter. If another investment opportunity offers a higher rate of return within the same timeframe, delaying cash acquisition for a year becomes a better choice. For instance, if the investor knows they can earn a 12% return on a similar investment over the same period, they would prefer to receive \$100 now rather than \$112 in a year at 12% return, as the rate has decreased by 12% (Gaspari-Wieloch, 2019).

Renlampi (2021) highlights the widespread use of the net present value (NPV) rule in decision-making processes to determine whether to accept or reject project acquisitions within organizations. When a project has a positive NPV, it indicates that the expected returns outweigh the expected expenses in current money terms, making it a profitable investment. Conversely, a project with a negative NPV would result in a loss. Gaspari-Wieloch's research (2019) supports the fundamental assumption of the NPV rule, which advocates for accepting projects with positive NPV and rejecting those with negative NPV. Projects with an NPV of zero are unlikely to generate significant profit or loss for the company. Additionally, non-monetary factors and intangible benefits are considered by leadership when deciding whether to pursue a project with a neutral or break-even NPV.

Silva et al. (2018) point out one of the main drawbacks of using NPV analysis, which is the uncertainty associated with assumptions about future occurrences. NPV calculations rely on assumptions and estimates, and due to the inherent unpredictability, there is a considerable margin of error. Assumptions regarding discount rates, investment returns, and expenses introduce uncertainty into the analysis. Furthermore, as noted by Maravas and Pantouvakis

(2018), as a project progresses, it often requires additional resources or incurs extra costs, which can impact its profitability.

The payback period, also known as the "payback method," is a simple alternative to NPV. Specialized capital budgeting systems incorporate the calculation of the time required for the initial investment to be recovered. However, a significant drawback is the lack of consideration for inflation or the time value of money throughout the payback period. This omission increases the risk of errors since the evaluation of long-term assets does not account for inflation. The payback period is also limited to the time it takes to recoup the initial investment cost and fails to account for variations in return on investment. Moreover, comparisons based solely on payback periods overlook the long-term benefits of alternative investment techniques (Gaspari-Wieloch, 2019).

Capital budgeting has been a concern for many financial professionals across industries. With limited resources, companies must prioritize initiatives that will generate the most profit. Therefore, investment appraisals are conducted to evaluate capital expenditures. These assessments employ various approaches, including both financial and non-financial factors. Finance managers often rely on financial tools to gain quantifiable information about a project (Vance, 2003).

When making capital budgeting decisions, it is crucial to consider project cash flows and the time value of money in order to achieve optimal outcomes. Evaluating the sustainability of long-term investment projects requires taking into account factors such as risk, expected returns, company goals, and available resources. Long-term strategies should be employed to maximize revenue generation and retention. Capital budgeting is employed to analyze investments in areas like plants and machinery, growth initiatives, research and development, and other long-term

investments. Various tools, including net present value (NPV) and internal rate of return (IRR), among others, are utilized in the investment evaluation process to determine the best course of action. Additionally, organizations should conduct risk assessments to identify potential hazards and develop alternative solutions to mitigate risks. While organizations face various risks, this research focuses on the financial threats.

Harris and Wonglimpiyarat (2020) conducted research on the methodologies organizations employ to assess the feasibility of capital expenditure projects. Factors such as the time value of money, projected future cash flows, cash flow volatility, and performance indicators play a significant role in determining the attractiveness of these ventures. When an organization introduces a new capital budgeting decision, the project team is responsible for evaluating project profitability and other related tasks. While various techniques such as NPV and IRR are often used, conflicting outcomes can arise from different approaches, and management's decision-making power and preferred criteria can influence the choice of methodology. Siziba and Hall (2021) suggest that while there are advantages and disadvantages to commonly adopted valuation methods, it is crucial to consider long-term organizational goals for future growth and success. A single wrong capital budgeting decision can have disastrous consequences for the long-term survival of the organization. Proper planning and scrutiny of projects are essential due to the high level of risk associated with long-term investments (Kudratova et al., 2020). Capital budgeting techniques are a fundamental aspect of successful long-term business operations as they help reduce costs and promote profitability by avoiding over or under-investing.

According to Gupta (2017), capital budgeting is a critical responsibility of organizational managers and it determines the long-term success or failure of the business. The process involves



evaluating market factors, such as risks, and determining the appropriate discount rate and expected returns from investments. Umma and Handayani (2019) argue that capital budgeting decisions should focus on finding the optimal resource allocation formula for the organization, as it directly impacts its long-term success or failure.

Blocher et al. emphasize the importance of capital budgeting approaches in making sound financial management decisions as they provide financial managers with a range of projects to assess in terms of investment growth (2019). These tools help analyze the risks and benefits of different project choices by continuously monitoring investment data. Implementing capital budgeting enables decision-makers to effectively control the resources required for capital expenditure plans. The efficient utilization of present resources plays a crucial role in determining the success and long-term viability of an organization. Discounted cash flow methods, such as NPV and IRR, are essential tools in capital budgeting (Karenlampi, 2021).

According to Sahore (2018), following capital budgeting standards such as gaining clarity, identifying risks, and establishing a realistic financial plan are advantageous for firms before embarking on comprehensive financial agreements. Creating and managing a budget is essential for every productive capital project as it serves as a financial planning tool. Through a detailed examination of each expenditure item, managers can choose the most cost-effective project and prioritize other commitments, thereby avoiding wasteful spending. Categorizing projects based on available resources is crucial to minimize project waste.

Maravas and Pantouvakis (2018) found that managers who set a capital budget spend less time worrying about the risks involved and more time managing the project, thanks to the earlier research and selection process. Furthermore, organizations with a capital budget find it easier to secure financing from external sources by demonstrating successful project investments.

Therefore, the formulation and administration of a budget for each capital project are important for financial planning and attracting external funding.

In terms of research areas in capital budgeting, Michelin, Lunkes, and Bornia (2020) highlight that the discounted cash flow and payback methods are the most commonly used approaches for project evaluation and capital budgeting strategies. However, there is a mismatch between capital budgeting practice and theory, often due to a lack of knowledge and understanding of issue projects among management. The study emphasizes the need for management to have proper knowledge and training in effective capital budgeting methodologies. The article suggests further investigation into the use of appropriate approaches by management, taking into account factors such as industry, organizational size, and capital budgeting practices. The findings suggest that businesses should provide specific and ongoing management training to ensure the use of proper methodologies for total discounted cash flows and capital planning.

Kengaharan (2016) aimed to develop a comprehensive understanding of the scope of capital planning and practice philosophy by building upon previous research. The literature review for this article utilized various sources, including Crossref, Elsevier, and GALE. It covered topics such as capital budgeting tools, theories, budgeting judgments, investment decisions, and accounting processes. The primary objective was to explore empirical studies on capital budgeting techniques, which are widely recognized as crucial for a company's long-term success. Through the literature review, the article addressed several research questions related to capital budgeting approaches and theories employed by organizations, factors influencing capital budgeting processes, and identified gaps in capital budgeting research. (LingesiyaKengat-haran, 2016).

### *Net present value method (NPV)*

Net present value (NPV) is a measure that indicates the relationship between the present value of cash inflows and the present value of cash outflows over a specified time period. According to Ehrhardt & Brigham (2016), NPV is widely regarded as the most effective capital budgeting method for assessing project profitability. The calculation of NPV is based on the following formula:

$$NPV = \sum_{t=1}^T \frac{C_t}{(1+r)^t} - C_0$$

$C_t$  = Net inflow of cash during the period  $t$

$C_0$  = Total cost of investment

$r$  = Discount rate

$t$  = Time period

According to Rocheteau, Wright, and Zhang (2018), a positive net value indicates that an investment's earnings exceed its expected expenditures. Net Present Value (NPV) is widely recognized in financial and investing research as it helps assess the relative value of money in both the present and future. This concept is invaluable in business decision-making, allowing you to determine whether an investment made today will yield returns in the future.

The two critical factors evaluated by NPV are the interest rate and inflation. Significant fluctuations in a country's inflation rate can distort NPV calculations as they directly impact the future value of money by either increasing or decreasing it. For instance, in the United States, inflation skyrocketed from 3.5 percent to over 12 percent in 1973-1974 due to the end of the gold standard and the Watergate scandal (Hanke & Boger, 2018). Consequently, the stock market experienced a crisis due to changes in expected returns and stock gains.

The NPV formula, represented as  $R_t/(1+i)^t$  (Hoyle, Shaefer, & Doupnik, 2015), considers cash flow time ( $t$ ), the discount rate ( $i$ ), and the net cash flow ( $R_t$ ). The discount rate plays a crucial role in NPV calculations as it brings future cash flows to their present value. The net present value (NPV) of a venture or investment is utilized in decision-making to determine its significance for the firm. Employing various discount rates allows for a comprehensive analysis of the problem, helping identify projects with more favorable terms (Hoyle et al., 2015). Future cash flows can be acquired through purchasing bonds or stocks, acquiring businesses, investing in income-producing assets, or participating in the creation of such assets, as is often the case with long-term construction projects lasting a decade or more.

A similar situation arises when acquiring tools, machinery, or electronics for a production plant. Estimating the NPV becomes crucial to evaluate the return on investment and establish future service prices in certain scenarios. NPV can be calculated using either discounting or compounding. Discounting determines the present value based on the future value, while compounding determines the future worth of an investment. Discounting enables us to determine the required amount for an investment to yield a given interest rate in the future, while compounding helps calculate the returns for a present investment. One significant drawback of NPV is its sensitivity to discount rates. The NPV formula considers the overall value of different cash flows over time (Marchioni & Magni, 2018). Consequently, even minor inaccuracies in discount rate calculations can significantly affect the final result.

The Net Present Value (NPV) method assesses the current value of forthcoming cash flows and determines the viability of a project by comparing the favorable NPV to the initial outlays (Els, 2015). In cases involving mutually exclusive projects, the preferable choice is the investment with the higher NPV (Brigham and Ehrhardt, 2015, p. 360; Horngren et al., 2013;

Garrison and Noreen, 2014). NPV offers numerous advantages, including incorporation of the time value of money, consideration of all cash flows, reflection of risk linked to future cash flows, and provision of more dependable information compared to other decision criteria due to its use of absolute values (Brigham and Ehrhardt, 2015, p. 360). Owing to these merits, financial theory regards NPV as the premier method for appraising capital investment projects.

The NPV approach entails computing the present value of all anticipated future cash flows of a project and deducting the initial cash outflow. A negative result indicates an unfeasible project, while a zero or positive value signifies an acceptable project. The NPV method is widely employed in the financial sector across diverse industries, especially for evaluating alternative options (Woo et al., 2019). Scholars consider the NPV method theoretically precise for all aspects of capital budgeting decision-making techniques, primarily because the method often yields solutions or choices that optimize the organization's value.

NPV is commonly utilized in capital budgeting for the assessment of investment prospects. It accounts not just for the initial investment costs, but also for the projected cash flows over the investment's lifespan. By encompassing both costs and benefits of an investment, NPV delivers a thorough and accurate measure of the projected profitability of the investment.

Besides capital budgeting, NPV finds application in other domains of finance, such as corporate finance, real estate investment, and risk management. In corporate finance, NPV gauges the effect of new projects on a company's financial performance. For real estate investment, NPV evaluates the anticipated return on a property investment. In risk management, NPV estimates the projected loss of an investment across diverse scenarios.

The Net Present Value (NPV) method offers a primary advantage in its adeptness at incorporating the time value of money. By discounting forthcoming cash flows to their current

worth, NPV encompasses the opportunity cost of investing in a venture, alongside the projected inflation throughout the investment's lifespan. Consequently, NPV emerges as a more precise gauge of anticipated profitability, distinguishing itself from metrics that overlook the temporal element.

Another asset of NPV lies in its capacity to navigate uncertainty. Through the consideration of projected cash flows and the cost of capital, NPV furnishes a robust estimation of the potential profitability of an investment, even within an environment marked by unpredictability. This robustness renders NPV an invaluable instrument for decision-making, particularly when grappling with scenarios steeped in data uncertainty.

However, NPV does confront certain limitations. Chief among them is its reliance on accurate prognostication of future cash flows, a task that often proves daunting in practical applications. Should these cash flow projections prove inaccurate, the ensuing NPV calculation would similarly suffer from inaccuracy, potentially leading to erroneous investment judgments. Another constraint arises from NPV's assumption of a fixed discount rate, a premise that might fail to faithfully mirror the authentic cost of capital in an ever-evolving market landscape.

The Net Present Value (NPV) method, akin to various other capital budgeting methodologies, encompasses both strengths and drawbacks. Nonetheless, the NPV approach frequently earns acclaim as the most conceptually sound strategy in numerous scenarios. This endorsement is substantiated by several factors. Primarily, the NPV methodology hinges on the supposition that cash flows can be reinvested at the prevailing cost of capital.

In summation, NPV serves as a widely embraced financial metric that furnishes a comprehensive and precise gauge of the potential profitability tied to an investment. Its proficiency in accommodating the time value of money and its adeptness in grappling with

uncertainty equip it as a valuable asset for decision-making in a diverse array of domains, encompassing capital budgeting, corporate finance, real estate investment, and risk management. Nonetheless, akin to any financial metric, NPV does exhibit limitations, underscoring the necessity of utilizing it alongside other financial metrics and validating outcomes against real-world data.

### *Internal Rate of Return Method (IRR)*

The internal rate of return (IRR) plays a vital role in the capital budgeting process as it helps assess the profitability potential of prospective investments (Rocheteau, Wright, & Zhang, 2018). By aiming to identify the discounted rate at which the net present value (NPV) of projected cash flows becomes zero, IRR serves as a key metric. It is noteworthy that both NPV and IRR utilize the same formula for calculation.

$$NPV = \sum_{t=1}^T \frac{C_t}{(1+r)^t} - C_0$$

The internal rate of return (IRR) is considered beneficial for small businesses as it provides insights into the profitability of investments, alongside the net present value (NPV). Molina and Preve (2012) suggest that IRR determines the minimum required rate of return for a business to achieve profitability. This aspect holds particular significance for Lebanese SMEs operating with limited resources, where taking risks with business projects can have severe consequences. Therefore, according to Brigham and Daves (2012), SMEs tend to select projects with an IRR that exceeds the required return, enabling them to choose favorable business scenarios.

Danielson (2018) explains that IRR is a capital budgeting metric used to evaluate the potential profitability of investment options. It serves as a discount rate in discounted cash flow

analysis, reducing the NPV of cash flows to zero. The IRR calculation follows a similar formula to that of NPV. However, IRR represents the annual return that ensures the NPV value is zero, rather than focusing on the actual monetary amount of the investment.

In essence, IRR and NPV calculations are conceptually similar, with the distinction that IRR sets the NPV financial worth to zero. A higher IRR indicates a more attractive project overall. Investors use IRR as a grading system to compare investment opportunities on relatively equal grounds, making it a homogeneous and systematic approach to investing in diverse assets. Furthermore, IRR is an idealistic technique for evaluating capital budgeting projects, providing insights into anticipated yearly return rates over a specific period. When comparing investment options with similar characteristics, the one with the highest IRR typically emerges as the preferred choice (Danielson, 2018).

According to Blocher et al. (2019), the primary purpose of using IRR is to determine the final discount rate that makes the NPV of all annual nominal cash inflows equal to the initial cash outlay for the investment. Various approaches exist for evaluating and characterizing projected returns on investments, but IRR is theoretically suitable for assessing the potential return on a new proposal. IRR represents the expected annual growth rate of the investment. However, Lidia (2020) notes that most investments do not maintain a consistent annual rate of return throughout their lifespan, deviating from the initially expected IRR.

When it comes to capital planning, Danielson (2018) suggests that comparing the profitability of developing a new opportunity versus extending an existing organization is a common application of IRR. Energy companies like CPS and organizations use IRR to determine whether it is more beneficial to build a new power plant or extend and upgrade an existing one.



While both projects would undoubtedly add value to the energy company, the IRR analysis indicates which investment project would yield a higher rate of return.

It is worth noting that IRR is not typically recommended for longer-term investments with variable discount rates, as it does not account for shifting discount rates. However, corporations can use IRR to assist in decision-making regarding stock repurchase methods. Evaluating a company's stock is often a better investment strategy than acquiring new assets or outlets since the former generally offers a higher IRR, as indicated in the report.

Both individuals and companies can utilize IRR to make informed and advantageous financial decisions. For individuals, IRR can be used to compare different insurance policies based on required premiums and death benefits. Policies with higher IRRs and comparable prerequisites tend to be more popular. Life insurance policies often exhibit a high IRR in the early years, sometimes reaching as high as 1,000 percent. However, the IRR gradually decreases over time. Individuals who only make a single monthly payment before their passing leave the beneficiaries with a substantial lump sum payment (Sahore, 2018).

Silva et al. (2018) highlight another common use of IRR, which involves assessing and verifying investment returns. This approach assumes that cash dividends or interest payments will be reinvested in the original investment. However, investors may choose not to reinvest dividends and use the funds for other purposes. Additionally, when constructing instruments like annuities, where cash flows become more complex, IRR and alternative choices play a significant role. Kudratova et al. (2020) explain that IRR principles encompass the calculations required to determine the money-weighted rate of return on an investment (MWR). The MWR enables investors to calculate the necessary rate of return to achieve the initial investment's

overall return, considering all major cash flow factors throughout the investment term, including gains from sales.

The discount rate holds a pivotal role in equating a project's NPV to zero, forging a connection between the principles of Net Present Value (NPV) and Internal Rate of Return (IRR) within capital budgeting methodologies. Nonetheless, as Maravas and Pantouvakis (2018) propose, the NPV technique frequently finds application in comparing projects of diverse durations or capital requisites. For instance, investors can juxtapose the anticipated rates of profitability for a four-year endeavor necessitating a \$65,000 investment with those of a twelve-year undertaking requiring \$225,000 using the IRR methodology. Despite its simplicity, many investors deem NPV to outweigh IRR due to discrepant assumptions regarding reinvestment risk and capital allocation (Silva et al., 2018).

The concepts of net present value (NPV) and internal rate of return (IRR) interweave closely as integral capital budgeting tools deployed for evaluating project investments. The IRR denotes the discount rate at which a project's NPV converges to zero. Both NPV and IRR concepts boast broad relevance across various contexts. In organizational contexts, NPV serves to ascertain the overall monetary value of an investment, accounting for the temporal value of money. Conversely, IRR proves valuable for gauging the annualized equivalent rate of return on an investment project (Siziba & Hall, 2021). Ultimately, the investment project's intended outcomes influence the budgeting strategy of the organization.

Siziba and Hall (2021) additionally emphasize that when discerning the acceptance or rejection of autonomous investment proposals, both NPV and IRR methodologies lead to concordant conclusions. In such scenarios, the two metrics do not vie against each other but rather inform the decision contingent on the minimum requisite rate of return. Conventional

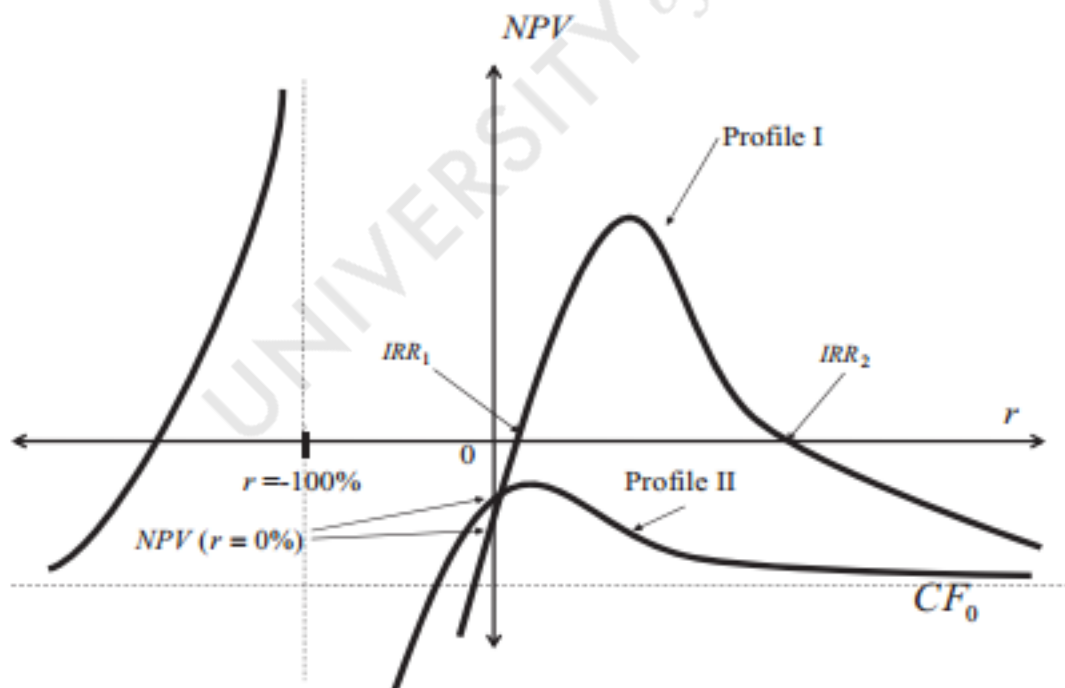
investment projects involve an initial outlay followed by a series of incoming cash flows throughout the project's lifecycle. The parallels noted above are discernible at every juncture of the decision-making process. Proposals with a positive net present value gain approval, while those with an IRR are endorsed if the resultant IRR surpasses the minimum required rate of return. Moreover, investment prospects exhibiting a positive net present value are projected to exhibit an internal rate of return higher than the hurdle rate (Harris & Wonglimpiyarat, 2020).

Capital budgeting furnishes a methodical approach for investors to evaluate the added value of prospective investment ventures. The internal rate of return (IRR) and net present value (NPV) stand as two commonly embraced methods for selecting projects. According to research, the IRR signifies the expected return on investment when it exceeds the cost of capital, signifying the project's value and acceptance by the company. Conversely, the NPV portrays the predicted profitability of the project relative to alternative choices. Although the net present value approach is generally deemed more pragmatic and efficacious, efficient processes remain imperative for the optimal utilization of these methodologies (Lidia, 2020).

### ***MIRR and IRR***

The Internal Rate of Return (IRR) is widely used by financial experts to assess profitability due to its user-friendly nature and independence from project size. However, despite its popularity, many business professionals overlook the flaws of IRR and rely on its methodology and assumptions. This can lead to overconfidence in the conclusions drawn from IRR or even significant errors. The Modified Internal Rate of Return (MIRR) is an alternative indicator based on IRR that addresses these shortcomings but is not commonly utilized.

One of the issues with IRR is the presence of Multiple Internal Rates of Return (MROR). This occurs when the mathematical process used to calculate IRR results in multiple roots or solutions, often due to the polynomial structure of the cash flow. While it is financially logical to consider only positive IRRs, it is not uncommon to encounter several positive IRRs in a single project. Extensive research has been conducted on MROR, dating back to the 1700s, but the conditions that cause it have not been consistently characterized. According to Jean (1968), Longbottom and Wiper (1978), and Wilkes (1980), MROR can occur whenever the cash flow signs change more than once in a project. However, this is not definitive as it can also yield equal roots (a unique IRR) or no solution (No IRR). Figure 1 visually represents the commonly observed Multiple IRR curves in relation to variations in Net Present Value (Profile I), as well as cases where no IRR solution exists (Profile II). Below is a profile of MIRR with two signs of variation in the cash flow and No IRR NPV profile. Taken from “The Limited Relevance of the Multiple IRR s. Engineering Economist,” by Ben-Horin and Kroll, (2012).



While it is true that Multiple Positive Internal Rates of Returns (MROR) have a low probability of occurrence, studies have shown that they can be predicted and avoided with reasonable confidence intervals in cash flow estimations. Harn and Beruvides (2015) conducted a study using Monte Carlo techniques and found that incorporating just a 5% variation in cash flows reduced the probability of MROR by approximately 50%. Financial cash flows typically have a range of confidence of around 5% to 10%, making it feasible to adequately address the issue of MROR by considering valid and plausible cash flow variations. Additionally, Horim and Kroll established two conditions for a project to have a single real positive IRR: (a) if the initial cash flow or the initial and ending cash flows are negative, and (b) if the NPV at zero cost of capital is positive.

Another significant issue with IRR is its assumption regarding the reinvestment of positive cash flows at the same rate. In reality, it is more likely that positive cash flows are reinvested at the weighted average cost of capital (WACC). Moreover, when the WACC varies across periods or when dealing with non-flat interest rate structures, the applicability of IRR is compromised. The same logic applies to analyzing negative interim outflows, which may require a finance rate for affordability. The assumption of reinvestment rate equal to IRR is unrealistic and poses challenges for project ranking. For example, if two mutually exclusive investments with the same duration have different scales, IRR may suggest the option with a lower return as the more attractive choice, which contradicts common sense. IRR fails to consider the wealth created by projects and becomes less reliable as the amount difference diminishes.

Furthermore, there are numerous other flaws in the IRR approach. Professor Carlo Alberto Magni has identified 18 fallacies of the IRR method, including its inability to analyze flows with the same sign, conflicts with accounting variables, changes in capital, and practical computational limitations. These limitations make IRR less suitable for analyzing certain types of projects, such as those involving arbitrage strategies or machinery costs.

Fortunately, an alternative method called the Modified Internal Rate of Return (MIRR) addresses the aforementioned issues with IRR. While MIRR has been known since the eighteenth century, it is not commonly used, despite its more realistic approach to financial analysis. Many experts recommend MIRR over traditional IRR and NPV methods. In fact, even Microsoft Excel includes the MIRR formula for everyday use. However, a survey among 1,000 companies found that only 9.3% of them used MIRR for predicting future cash flows and investments (Kierrulf). The methodology applied by MIRR relies on the following procedure:

- (a) First, it is calculated the total sum of positive cash flow, taken to the last period on a reinvestment rate; then
- (b) it is calculated the accrued negative flows on a present value with a finance rate, and lastly.
- (c) the internal rate of return of these two flows is obtained.

The Modified Internal Rate of Return (MIRR) has seen less academic support and recognition compared to IRR, which has contributed to its lack of awareness among professionals. Its computation and understanding are not as intuitive, leading to its limited adoption. Using MIRR requires explicit knowledge of the investment and financing rates of a project, which may require initial estimations. However, the determination of these rates can be

beneficial for analysts, allowing them to incorporate conservative or risk factors when selecting appropriate rates to work with, such as the firm's cost of capital or the hurdle rate.

MIRR addresses many of the key concerns associated with IRR, including the issues of multiple valid IRR values and the absence of an IRR root. By transforming cash inflows and outflows into two basic flows at the beginning and end of the project, MIRR eliminates the possibility of multiple sign variations that lead to Multiple Internal Rates of Return (MIRR). As long as these initial and final flows exist, MIRR can be calculated. Furthermore, MIRR resolves the conceptual problem of assuming internal flows to be reinvested or financed at the same rate at which they were generated. By allowing the choice of appropriate rates for positive and negative internal flows, MIRR provides a more realistic representation of real-life investments and a more accurate assessment of the associated risk. Additionally, MIRR can accommodate complex variable rate distributions and cash flows, allowing each independent internal flow to be discounted to the present or past using a chosen rate.

However, it should be noted that MIRR also faces limitations. It is unable to handle cash flows with the same sign, and it does not differentiate results among projects of different scales. Therefore, some authors recommend using MIRR alongside NPV or incremental analysis techniques. Kharabe and Rimbach explain that both MIRR and NPV can be used to evaluate projects, but MIRR, when interpreted as the interest rate paid by a project or alternative, provides project efficiency information not offered by NPV (1989).

Regarding the statement about MIRR considering positive cash flows reinvested against the existing cost of capital, it is indeed accurate. MIRR takes into account the reinvestment of positive cash flows at the cost of capital of the business (Gitman et al., 2015). The MIRR strives

to correctly portray the costing and profitability aspect of the project with the help of the following formula –

$$MIRR = [FVCF(c) / PVCF(FC)]^{(1/n)} - 1$$

FCF(c) = Future value of positive cash flows against the cost of capital to the business

PVCF(FC) = Present value of negative cash flows against the financing expenditures of the business, n = period

In the context of Lebanese SMEs, the application of MIRR could offer a more realistic approach to their financial strategies. For example, let's consider a small entrepreneur based in Beirut who embarks on a two-year project with an initial investment of \$195 and a discount rate of 12%. The projected profitability of the project is estimated to be \$121 in the first year and \$131 in the second year. Now, let's determine the net present value (NPV) of the project:

$$NPV = 0 = -195 + 121 / (1 + IRR) + 131 / (1 + IRR) \text{ when } IRR = 18.66\%$$

To calculate the Modified Internal Rate of Return (MIRR), we need to assume that the positive cash flows generated by the business are reinvested within the business at a discount rate of 12%. This means that the future value of the positive cash flows can be calculated as follows:

$\$121 * (1.12) + \$131 = \$266.52$ . It is noted to have the future value of positive cash flows, the time period has been considered as  $t = 2$ . Now MIRR would come as:

$$MIRR = (\$266.52 / \$195)^{(1/2)} - 1 = 1.1691 - 1 = 0.169 = 16.91\%$$

Employing the Modified Internal Rate of Return (MIRR) can provide small and medium-sized enterprises (SMEs) with a more pragmatic comprehension of a project's potential. The MIRR approach entails dividing the present value of cash inflows by the initial investment cost, akin to the Profitability Index (PI) variant of the NPV technique. A PI below one signifies a



signal to reject the investment (Els, 2014). Conversely, a PI surpassing one suggests that the investment should be pursued. This method aligns with the NPV approach, as the index can solely fall below 1 when the NPV holds a negative value.

The Internal Rate of Return (IRR) stands as a frequently employed financial methodology for appraising investment prospects. It serves as a discount rate that mirrors the anticipated return on an investment, facilitating the assessment of a project's profitability by contrasting its projected returns against the initial investment expense (Brigham & Houston, 2017).

One of the main advantages of using the IRR method is that it provides a single metric that can be used to compare investment opportunities. This allows investors to rank investment opportunities based on their expected returns and make more informed decisions (Chapman, 2017). Additionally, the IRR takes into account the timing of cash flows, which is an important factor in evaluating investment opportunities (Bodie, Kane, & Marcus, 2014).

Another advantage of the IRR is that it is widely used and understood by finance professionals, making it a commonly accepted method for evaluating investment opportunities (Brigham & Houston, 2017). This makes it easier for investors to communicate their investment decisions and to compare their results with other investors.

Despite these advantages, the IRR method also has some limitations. For example, it assumes that all cash flows from an investment can be reinvested at the IRR, which may not always be the case (Hirschey, 2013). Additionally, the IRR can lead to multiple solutions, making it difficult to determine the true rate of return on an investment (Chapman, 2017).

When analyzing projects based on their Internal Rate of Return (IRR), projects with higher IRRs are generally more favorable compared to those with lower IRRs. However, the IRR method has limitations as it does not directly relate to the organization's value or its objectives in terms of financial regulation to increase value (Dhavale & Sarkis, 2018). Despite this, in most cases, when evaluating IRR, selecting a 100% return on investment over 50% is likely to have a more significant impact on the organization's value.

In contrast to the IRR method, the Net Present Value (NPV) approach proves to be more practical and suitable for many organizations. The NPV method enables the evaluation of mutually exclusive projects with greater ease, taking into account assumptions regarding reinvestment rates, profitability, and shareholder wealth. Additionally, the NPV method facilitates working with non-normal or unknown cash flows for developers. It allows users to incorporate the concept of time value, utilizing cash flows throughout the project's duration.

However, there are cases where the use of the NPV method may be limited due to its complexity. The NPV method provides results in dollars rather than percentages. One recognizes that the use of dollars may not be as intuitively appealing as percentages in certain situations.

In conclusion, the IRR method is a widely used and accepted method for evaluating investment opportunities. It provides a single metric that takes into account the timing of cash flows, making it easier for investors to compare investment opportunities and make informed decisions. While it has some limitations, the IRR remains a valuable tool for investors looking to evaluate the expected returns on their investments.

### *Payback Period*

According to Brigham & Houston (2012), the payback period is a measure of the time required to recover the initial investment in a project. Vernimmen, Quiry, Dallochio, Le Fur & Salvi (2014) highlight the importance of the payback period, as entrepreneurs may be inclined to abandon projects with longer payback periods. For small and medium-sized enterprises (SMEs) in Lebanon, it would be beneficial to consider the payback period as an investment criterion, aiming for shorter payback periods. Ehrhardt & Brigham (2016) suggest that a shorter payback period is advantageous for SMEs, enabling them to recoup their invested capital in a shorter timeframe and support their growth activities. The payback period can be calculated using the formula:

$$\text{Payback period} = \text{Total investment} / \text{Annual cash flows}$$

The payback period model serves as a capital budgeting instrument utilized to gauge a project's profitability (Kenton, 2020). It approximates the time needed for a project to recuperate its initial investment. This calculation involves dividing the initial cash outlay by the annual net cash inflows produced by the investment. The payback period signifies the duration required for the project or investment to regain the funds initially invested, typically quantified in years. This model is instrumental in assessing a project's viability and profitability. Furthermore, an enhanced evaluation can be attained through the employment of the discounted payback period formula, which factors in the time value of money, rendering a more precise appraisal than conventional payback estimations (Kenton, 2020). A briefer payback period implies that the project or investment generates sufficient cash flows to offset its initial costs at an accelerated pace.

However, the payback period model contends with two notable constraints. Firstly, it neglects any additional cash flows yielded by the asset beyond the point of payback. Secondly, it fails to account for the fluctuating value of money over time, a considerable shortcoming as the model overlooks the temporal dynamics of monetary worth. To tackle the time value of money concern, the discounted payback period formula comes into play, integrating the present value of the investment and prospective cash flows to ascertain the timeframe necessary for recuperating the investment.

According to Molina & Preve (2012), small and medium-sized enterprises (SMEs) can employ the discounted cash flow (DCF) technique to evaluate a company's allure. This capital budgeting method gauges future cash flows at a discounted rate, utilizing the annual rate of return to compute present values. Williams (2015) posits that a positive outcome in DCF analysis, signifying a value exceeding the cost of capital, signifies a feasible economic opportunity for small businesses. The DCF model encompasses operational cash flows and capital expenditures, furnishing a systematic approach (Scott, 2015).

When implementing DCF methodologies for capital budgeting verdicts, the cost of capital should be factored in through appropriate hurdle rates. DCF methods facilitate the selection and prioritization of value-enhancing capital ventures. The adoption of DCF techniques such as Net Present Value (NPV) and Internal Rate of Return (IRR) is expected to surge, as they stand as the most suitable criteria for evaluating capital projects according to the academic literature (Shapiro, 2015; Horngren et al., 2014; McWatters et al., 2013; Garrison and Noreen, 2015; Maher et al., 2015; Weetman, 2014).

NPV (Net Present Value) is commonly regarded as the premier determinant for project selection due to its focus on cash flow and commitment to augmenting shareholder value. While

many finance textbooks and teachings endorse NPV as a pivotal factor, a disparity exists between scholarly consensus on NPV and actual investment decision-making practices. In practice, businesses often favor criteria such as IRR (Internal Rate of Return), PB (Payback Period), DPB (Discounted Payback Period), and PI (Profitability Index) over the NPV criterion (Berkovitch et al., 2014).

Hurdle rates, which represent the minimum acceptable rate of return for a capital investment project, are determined by businesses using various methods. The hurdle rate is intended to compensate for the risk associated with the project. Projects with higher risks are expected to have higher hurdle rates, while those with lower risks would have lower hurdle rates (Ehrhardt & Brigham, 2016). SMEs can also utilize hurdle rates to evaluate investment potential based on the total degree of risk, irrespective of intrinsic value (Weil, Schipper, & Francis, 2013). The hurdle rate is calculated by adding the risk premium to the firm's cost of capital:

$$\text{Hurdle Rate} = \text{Cost of Capital} + \text{Risk Premium.}$$

Different techniques are employed by companies to establish hurdle rates. They may use internal departments to gather industry averages within the same type of business. Another approach involves analyzing historical data to determine appropriate hurdle rates based on previous risks. Some organizations set hurdle rates on a project-by-project basis, while others categorize projects into risk buckets and assign appropriate rates based on the evaluated or perceived risk.

The Payback Period is a widely used method for evaluating investment opportunities in finance. It measures the time required for an investment to recoup its initial cost and is calculated

by dividing the initial cost by the annual cash flows generated by the investment (Chen & Chen, 2014; Brigham & Houston, 2017). The Payback Period method is advantageous because of its simplicity and ease of understanding. It provides a straightforward answer to the question of when the initial cost will be recovered, which is valuable information for decision-making. Additionally, the Payback Period is particularly suitable for assessing low-cost investments with predictable cash flows (Hirschey, 2013).

Another advantage of the Payback Period is that it provides a quick and easy way to evaluate the risk of an investment. Investments with a shorter Payback Period are generally considered less risky, as they will recover their initial cost more quickly (Brigham & Houston, 2017). This allows investors to make more informed decisions about which investments are the most suitable for their risk tolerance and investment goals.

Despite these advantages, the Payback Period method also has some limitations. For example, it does not take into account the timing or magnitude of cash flows after the Payback Period (Chen & Chen, 2014). Additionally, it does not consider the long-term profitability of an investment, which is an important factor in evaluating investment opportunities (Chapman, 2017).

The Payback Period method indeed does not consider the time value of money, which assumes that a dollar received in the future is worth less than a dollar received today. This limitation overlooks the importance of discounting future cash flows. Additionally, the Payback Period method fails to account for cash flows beyond the payback period, which is not reflective of real-world scenarios where cash inflows continue even after the initial investment has been recovered (Mentari & Daryanto, 2018). Furthermore, when comparing projects using the Payback Period method, the method may not provide an accurate comparison if the projects

differ in size or other important aspects. The method's focus solely on the payback time without considering other factors can introduce bias into the decision-making process.

Different capital budgeting techniques have their applications and suitability for specific projects. For example, the internal rate of return (IRR) can be complex and may lead to misleading results if not used appropriately. The capital structure of companies also plays a role in selecting the most suitable technique. Manufacturing companies, with guaranteed prices for their products, may find a debt structure more appropriate, while software development companies may benefit from equity financing to avoid double taxation (Mentari & Daryanto, 2018). It is essential for companies to consider their industry, capital structure, and specific project characteristics when choosing the appropriate capital budgeting technique.

In conclusion, the Payback Period is a simple and widely used method for evaluating investment opportunities. It provides a straightforward answer to the question of how long it will take for an investment to recover its initial cost and allows investors to quickly assess the risk of an investment. While it has some limitations, the Payback Period remains a valuable tool for investors looking to make informed decisions about their investments.

## **2.4 Risk analysis methods.**

Capital budgeting is a process that involves evaluating and selecting long-term investment projects based on their potential for generating future profits (Gitman and Forrester, 1977). Risk analysis is an essential component of capital budgeting, as it helps to identify and evaluate the potential risks associated with investment projects.

## *Sensitivity Analysis*

Sensitivity analysis is a widely used method in finance and other fields for examining the impact of changes in certain variables on a specific outcome. The objective of sensitivity analysis is to understand how much the output of a model, system, or project is affected by changes in inputs, and to identify the variables that have the greatest impact on the outcome (House, 1967). There are several types of sensitivity analysis, including univariate, bivariate, and multivariate sensitivity analysis, each of which considers a different number of variables.

Univariate sensitivity analysis involves varying one variable at a time and observing the effect on the outcome. This method is simple and easy to understand, but it does not capture the interactions between variables (Joy & Bradley, 1973). Bivariate sensitivity analysis considers the impact of two variables on the outcome, which can provide a better understanding of the interactions between variables. Multivariate sensitivity analysis, on the other hand, considers the impact of multiple variables on the outcome and can provide a more comprehensive understanding of the interactions between variables.

One of the most common applications of sensitivity analysis is in financial modelling. For example, a financial model may be used to estimate the future cash flows of a project and to determine its net present value. Sensitivity analysis can be used to examine the impact of changes in variables such as discount rate, cost of capital, and sales volume on the net present value of the project. This information can be used to make decisions about the viability of the project and to identify the key factors that drive its success.

Sensitivity analysis can also be used to assess the risk associated with a project. For example, the model may be used to estimate the expected return on investment for a portfolio of investments (Shinkar & Bharadiya, 2023). Sensitivity analysis can be used to examine the impact



of changes in variables such as market conditions, interest rates, and exchange rates on the expected return on investment. This information can be used to make decisions about the risk associated with the portfolio and to identify the factors that contribute most to the risk.

In conclusion, sensitivity analysis is a valuable tool for understanding the impact of changes in variables on the outcome of a model, system, or project. It can provide insight into the interactions between variables and can help identify the key drivers of the outcome. Sensitivity analysis is widely used in finance, particularly in financial modelling, investment analysis, and risk management, but it has applications in many other fields as well. Sensitivity analysis is a method that involves altering assumptions and input variables to assess their impact on a company's project. This analysis is conducted to understand how changes in variables can affect the target variable and examine the sensitivity of the project to different scenarios. By performing sensitivity analysis, one can gain insights into how variations in input variables can influence the overall outcome of a project.

#### Merits and demerits of sensitivity Analysis

Sensitivity analysis is a widely used method in finance and other fields for examining the impact of changes in certain variables on a specific outcome. It is a valuable tool for understanding the interactions between variables and can provide insight into the key drivers of the outcome (Joy & Bradley, 1973). However, sensitivity analysis also has some limitations and drawbacks.

Merits of Sensitivity Analysis:

- Provides insight into key drivers: Sensitivity analysis can help identify the variables that have the greatest impact on the outcome, which can be useful in making decisions and in prioritizing efforts to address the most important drivers.
- Helps understand interactions between variables: Sensitivity analysis can provide a better understanding of the interactions between variables, which can be particularly important in situations where the impact of changes in one variable is dependent on changes in another variable.
- Easy to understand: Sensitivity analysis is a relatively simple and straightforward method that can be easily understood by stakeholders, even those without a technical background.
- Provides a visual representation of the impact of changes: Sensitivity analysis can be presented in a visual format, such as a graph, which can make it easier to understand the impact of changes in variables on the outcome.
- Cost-effective: Sensitivity analysis is a cost-effective method that can be performed using basic spreadsheet software or even a pen and paper.

#### Demerits of Sensitivity Analysis:

- Assumes linear relationships: Sensitivity analysis assumes linear relationships between variables, which may not be accurate in all cases. This can result in incorrect results and an over- or underestimation of the impact of changes in variables on the outcome.
- Can be influenced by arbitrary inputs: Sensitivity analysis can be influenced by arbitrary inputs, such as the choice of discount rate or the choice of scenario. This can lead to inconsistent results and can limit the usefulness of the analysis.

- Limited in scope: Sensitivity analysis is limited in scope and only considers a limited number of variables and scenarios. This can result in an incomplete picture of the impact of changes in variables on the outcome.
- Assumes constant variables: Sensitivity analysis assumes that the values of variables remain constant over time, which may not be accurate in all cases. This can result in incorrect results and can limit the usefulness of the analysis.
- May be time-consuming: Sensitivity analysis can be time-consuming, especially in cases where multiple variables and scenarios are considered.

In conclusion, sensitivity analysis is a valuable tool for understanding the impact of changes in variables on a specific outcome, but it also has some limitations and drawbacks. It is important to understand both the merits and demerits of sensitivity analysis and to use it appropriately in conjunction with other methods to ensure a complete and accurate understanding of the impact of changes in variables on the outcome.

### *Scenario Analysis*

There is sometimes confusion between sensitivity analysis and scenario analysis. Sensitivity analysis focuses on exploring the range of variables and outcomes within the financial sector. It examines how changes in variables can impact the results of a project or financial model. On the other hand, scenario analysis involves evaluating potential events that may occur in the future. It considers the likelihood of these events and predicts the possible outcomes associated with them. Scenario analysis assists analysts in understanding specific events or changes that may occur in industry regulations or other factors. It aids in imagining and

comprehending various scenarios, extremes, and occurrences that could arise based on a given set of values in real-life situations.

Scenario analysis is a popular method used in finance and other fields to assess the impact of changes in variables on a specific outcome. It involves considering a range of possible scenarios and evaluating the outcome under each scenario (Dhiansiri & Balsara, 2014). Scenario analysis is used to identify potential risks and opportunities and to inform decision making.

Advantages of Scenario Analysis:

- Incorporates uncertainty: Scenario analysis takes into account the uncertainty associated with the variables that affect the outcome. This can provide a more realistic assessment of the potential impact of changes in variables on the outcome.
- Helps identify potential risks and opportunities: By considering a range of possible scenarios, scenario analysis can help identify potential risks and opportunities that may not be apparent using other methods.
- Supports decision making: Scenario analysis can provide valuable information to support decision making, particularly in situations where there is uncertainty or complexity associated with the variables that affect the outcome.
- Encourages a proactive approach: By considering potential future scenarios, scenario analysis encourages a proactive approach to risk management and decision making.
- Promotes collaboration and communication: Scenario analysis can promote collaboration and communication among stakeholders by providing a common basis for discussion and decision making.

### Disadvantages of Scenario Analysis:

- **Time-consuming:** Scenario analysis can be time-consuming, especially when multiple scenarios are considered.
- **Limited in scope:** Scenario analysis is limited in scope and only considers a limited number of scenarios. This can result in an incomplete picture of the impact of changes in variables on the outcome.
- **May be influenced by arbitrary assumptions:** Scenario analysis may be influenced by arbitrary assumptions about the future, such as the choice of discount rate or the choice of scenarios. This can result in inconsistent results and can limit the usefulness of the analysis.
- **Assumes constant variables:** Scenario analysis assumes that the values of variables remain constant over time, which may not be accurate in all cases. This can result in incorrect results and can limit the usefulness of the analysis.
- **May be subject to human biases:** Scenario analysis may be subject to human biases, such as the tendency to overweight the probability of events that have recently occurred.

In conclusion, scenario analysis is a valuable method for assessing the impact of changes in variables on a specific outcome, but it also has some limitations and drawbacks. It is important to understand both the advantages and disadvantages of scenario analysis and to use it appropriately in conjunction with other methods to ensure a complete and accurate understanding of the impact of changes in variables on the outcome.

## *Decision Tree*

Decision trees are graphical representations that depict a sequence of decisions and their possible consequences. They are widely used in various fields such as finance, marketing, operations management, and computer science to analyze and solve complex problems (Majchrzak & Nadolna, 2019). The decision tree is constructed by breaking down a problem into smaller subproblems and evaluating the potential outcomes and their probabilities of each decision at each node. The final decision, called the terminal node or the leaf node, represents the optimal decision based on the probabilities and outcomes of the previous decisions.

The decision tree analysis is based on two key concepts: expected value and conditional probability. The expected value represents the average outcome of a decision over multiple iterations, while the conditional probability represents the likelihood of each outcome given a specific decision. To construct a decision tree, analysts use decision rules, such as expected value, maximum expected value, and minimum regret, to determine the best course of action at each node (Majchrzak & Nadolna, 2019).

One of the most commonly used decision tree techniques is the decision tree analysis used in finance. In finance, decision trees are used to analyze investment opportunities and evaluate the potential outcomes of different investment strategies. For example, a company may use a decision tree to evaluate the expected return of investing in a new project, taking into account the probabilities of different market scenarios and the potential outcomes of each scenario.

However, decision trees are not without limitations. One of the main limitations of decision trees is their assumption of independent and identically distributed (i.i.d) events, which is often unrealistic in real-world situations. Additionally, decision trees are susceptible to over

fitting, where the tree becomes too complex and provides misleading results. To overcome these limitations, analysts often use techniques such as pruning, which involves removing branches that do not contribute to the accuracy of the tree, and bootstrapping, which involves generating multiple trees and combining their results to improve the accuracy of the analysis.

A decision tree in capital budgeting is a graphical representation that illustrates the cash flows and net present value of a project under different scenarios. It is particularly useful when making decisions regarding capital project investments or when faced with uncertainty in choosing between competing investment options (Majchrzak & Nadolna, 2019). The decision tree is structured in a way that allows individuals to make decisions based on expected outcomes associated with the chosen strategy. For example, the desired outcome may be an increase in the investment made in the selected project by a certain percentage.

In real-life situations, decision trees are commonly used when deciding between expansion options and abandonment options. These decisions are based on actual circumstances and cannot be determined solely by mathematical models like the Black-Scholes formula. Real-life events and decisions hold significant value and have a substantial impact on capital budgeting decisions. Therefore, decision trees play a vital role in evaluating and analyzing the potential outcomes of different investment choices.

In conclusion, decision trees are a valuable tool for decision making and problem-solving in various fields, including finance. They provide a visual representation of potential outcomes and the probabilities of each outcome, allowing analysts to evaluate the expected value of each decision and make informed decisions. However, decision trees are not without limitations, and analysts should be aware of their limitations and use appropriate techniques to overcome them.

## Advantages and Disadvantages of a Decision Tree

The advantages of a decision tree in capital budgeting include;

- Easy to understand: Decision trees are visually appealing and easy to understand, making them a useful tool for communication and collaboration between stakeholders.
- Handling multiple variables: Decision trees can handle a large number of variables, making them a useful tool for complex decision-making problems.
- Handling non-linear relationships: Decision trees are capable of handling non-linear relationships between variables, making them a useful tool for decision-making problems that involve complex relationships.
- Handling both continuous and categorical variables: Decision trees can handle both continuous and categorical variables, making them a useful tool for decision-making problems that involve a mixture of different types of variables.
- Ability to handle missing data: Decision trees can handle missing data, making them a useful tool for decision-making problems that involve incomplete information.

The disadvantages of a decision tree in capital budgeting include;

- Over fitting: Decision trees are prone to over fitting, where the tree becomes too complex and provides misleading results. This can be addressed by pruning the tree or using a different model that is less prone to over fitting.
- Instability: Decision trees can be sensitive to small changes in the data, making them unstable. This can be addressed by using a random forest or boosting, which combines multiple trees to reduce the instability of individual trees.



- **High variance:** Decision trees can have high variance, making them prone to overfitting. This can be addressed by using bagging or boosting, which reduces the variance of the model by combining multiple trees.
- **Assumption of independence:** Decision trees assume independence between variables, which is often unrealistic in real-world situations. This can be addressed by using more complex models that take into account the dependencies between variables.
- **Complexity:** Decision trees can become very complex and difficult to interpret, especially for large datasets. This can be addressed by using pruning techniques or by using a different model that is less complex.

### *Simulation analysis*

Simulation analysis is a powerful tool that can be used to assess the risks associated with capital budgeting projects. In this literature review, I will provide an overview of some of the key research studies that have used simulation analysis in the context of risk analysis in capital budgeting.

One of the earliest applications of simulation analysis in capital budgeting was the use of Monte Carlo simulation to estimate the net present value (NPV) of investment projects. Monte Carlo simulation involves generating random values for the input variables of a model and calculating the output of the model for each set of input values. By repeating this process many times, Monte Carlo simulation can provide a distribution of possible outcomes for the model, allowing researchers to estimate the probability of different outcomes occurring. One of the most influential studies in this area was conducted by Brealey and Myers (1981), who used Monte Carlo simulation to estimate the NPV of a project to build a nuclear power plant. Their study

showed that Monte Carlo simulation could provide a more accurate estimate of the NPV of the project than traditional methods that relied on point estimates of input variables.

Another area where simulation analysis has been used extensively in capital budgeting is in the evaluation of real options. Real options are the rights, but not the obligations, to take actions that can increase the value of an investment project. Real options can include the right to delay an investment, abandon an investment, or expand an investment. Simulation analysis is a powerful tool for evaluating real options, as it allows researchers to explore the potential value of different options under different scenarios. For example, Trigeorgis (1993) used simulation analysis to evaluate the value of an option to delay an investment in a mining project. His study showed that the value of the option was highly dependent on the price of the commodity being mined and the cost of delaying the investment.

Simulation analysis has also been used in the context of risk analysis for capital budgeting projects in the oil and gas industry. One of the key challenges in this industry is the uncertainty surrounding the size and quality of the reserves that can be recovered from a particular field. Simulation analysis can be used to explore the potential impact of this uncertainty on the value of an investment project. For example, McNeil and Frey (2000) used simulation analysis to evaluate the value of an investment in an offshore oil field. Their study showed that the value of the investment was highly sensitive to the assumptions made about the size and quality of the reserves.

In addition to these specific areas of application, simulation analysis has also been used in capital budgeting to evaluate the risks associated with a wide range of investment projects. For example, simulation analysis has been used to evaluate the risks associated with investments in real estate (Meister and Vassalou, 2005), infrastructure (Fang and Marasco, 2010), and

renewable energy (Ketterer et al., 2012). Simulation analysis has also been used to evaluate the risks associated with project financing structures, such as public-private partnerships (Rao and Prasad, 2012).

Overall, simulation analysis is a powerful tool that can be used to assess the risks associated with capital budgeting projects. By providing a distribution of possible outcomes for a model, simulation analysis can help researchers to better understand the potential risks and uncertainties associated with a particular investment project. As computing power and data availability continue to increase, it is likely that simulation analysis will become an even more important tool for researchers in the context of capital budgeting and risk analysis.

In practical terms, it is recommended to generate distinct options for each variable that influences the project. This may involve considering different scenarios and potential outcomes for each variable. Additionally, cash flows should be considered over time, recognizing that a new product or initiative may perform exceptionally well in its early years and potentially continue to be profitable in subsequent years. However, when using a basic decision tree analysis, dealing with these complex variables and their interdependencies can become challenging. In such cases, simulation analysis with the aid of a computer can be a valuable tool. Simulation analysis involves defining the range of values for each component and the associated probability of each value occurring within that range. It then randomly selects values from the distribution for each component, calculates the combined rate of return based on these values, and repeats the process multiple times to determine and evaluate the probability of occurrence for each feasible rate of return. By employing simulation analysis, researchers can better understand the range of possible outcomes and assess the probabilities associated with different

rates of return. This approach helps to capture the uncertainties and complexities inherent in real-world investment scenarios, providing a more comprehensive analysis of the project's potential.

### *Monte Carlo simulation*

Monte Carlo simulation is a mathematical technique that involves generating random samples to simulate real-world problems and estimate the probabilities of different outcomes. The technique was named after the famous Monte Carlo Casino in Monaco and was first used in the 1940s by nuclear physicists to model the behavior of atoms and particles. Since then, Monte Carlo simulation has been widely used in a variety of fields, including finance, engineering, and operations research.

One of the key benefits of Monte Carlo simulation is its ability to handle uncertainty. By generating multiple scenarios using random inputs, Monte Carlo simulation provides a robust estimate of the range of possible outcomes and the likelihood of each outcome. This information is particularly useful in situations where the relationships between variables are complex or when there is a large degree of uncertainty in the data.

In finance, Monte Carlo simulation is commonly used in portfolio management to estimate the risk of different investment portfolios. The simulation generates random returns for the assets in the portfolio, which are then used to estimate the potential returns and risks of the portfolio. This information can be used to optimize the portfolio and make informed investment decisions.

Monte Carlo simulation is also used in capital budgeting to estimate the value of a project. The simulation generates random inputs for key variables such as revenue, costs, and project timelines, which are then used to estimate the expected value of the project. This

information can be used to compare the expected value of different projects and make informed investment decisions.

Another important application of Monte Carlo simulation is in the field of option pricing. Options are financial derivatives that give the holder the right, but not the obligation, to buy or sell an underlying asset at a specified price. Monte Carlo simulation is used to estimate the value of an option by simulating the underlying asset's price movements and calculating the resulting payouts. This information can be used to make informed decisions about buying or selling options.

Despite its many benefits, Monte Carlo simulation also has some limitations. One of the main limitations is that the accuracy of the simulation depends on the quality of the data and the assumptions used to generate the random inputs. If the data is inaccurate or the assumptions are unrealistic, the simulation may produce misleading results. Another limitation is that Monte Carlo simulation can be computationally intensive, which can make it challenging to run large simulations in a timely manner.

Monte Carlo simulation is a powerful spreadsheet model used to estimate the probability of various outcomes that are not easily predictable due to the involvement of random variables (Asadi et al., 2019). It provides a robust understanding of risks and uncertainties in discounted cash flow analysis, overcoming the limitations of sensitivity and scenario analysis by effectively examining all possible combinations of variables and their realizations.

This simulation tool assumes a perfectly efficient market and is commonly used to assess the impact of uncertainty and risk, aiding in making predictions and forecasting models. In capital budgeting, where multiple variables contribute to uncertainty, Monte Carlo simulation

assigns multiple values to uncertain variables to generate a range of potential results. Once all the impacts have been accounted for, the data can be averaged to obtain an estimate.

Monte Carlo simulation can be relatively straightforward to implement for traders and SMEs in Lebanon and around the world, as it can be easily performed on a computer. However, caution should be exercised, as working with large numbers and considering various limitations can be demanding. Achieving the most accurate result requires significant time and computational resources, and the quality of the output depends on the quality of the input data. Accurate and reliable forecasts rely on inputting appropriate and relevant information.

In risk management within capital budgeting, if the discounted rate-of-return technique is used, the hurdle rate may be increased or cash flows may be discounted at a higher rate. Determining how much to adjust the discount rate for different risk categories can be a challenging task. The risk premium, which represents investors' attitudes towards risk, is added to the risk-free cost of capital and varies based on the project's riskiness (Olowe, 1997). Thus, the risk-free rate plus the risk premium is used to calculate the discount rate for future cash flows.

The standard deviation/variance approach is commonly employed as an absolute measure of risk in capital budgeting. It helps in better understanding risk analysis by assessing the dispersion of cash flows. It calculates the difference between the expected value of potential cash flows and the actual value observed. Comparing the standard deviations of predicted cash inflows for two projects with the same cost and net present value can assist in assessing their relative risk (Fruit et al., 2014).

In conclusion, Monte Carlo simulation is a powerful tool that provides valuable insights into the behavior of complex systems and the likelihood of different outcomes. Its ability to handle uncertainty and its wide range of applications make it a popular tool in many fields,

including finance, engineering, and operations research. However, like any tool, Monte Carlo simulation has its limitations, and it is important to use it with caution and to validate the results against real-world data.

### **2.2.5 Breakeven analysis**

Break-even analysis is a financial tool used to determine the minimum level of sales required for a business to cover its costs and generate a profit (Brealey & Myers, 2017). The break-even point is calculated by dividing the total fixed costs by the difference between the selling price per unit and the variable cost per unit (Hirschey, 2013). This tool has a wide range of applications, including product pricing, production planning, and investment analysis (Jamieson, 2017).

One of the main advantages of break-even analysis is its simplicity, which makes it a useful tool for small businesses and startups that need to make quick decisions (Brealey & Myers, 2017). The clear picture of a business's costs and revenue structure provided by break-even analysis helps businesses identify areas where they can reduce costs and increase profits (Hirschey, 2013)

The breakeven analysis provides insight into the level of sales or operations required for a business to reach the point of profitability. It determines the breakeven point, where total costs equal total revenue. This point indicates the threshold at which total income matches total expenses. The formula used to calculate the breakeven point is as follows;

$$Q = \frac{FC}{(P - VC)}$$

Where: Q = the quantity sold

FC = total fixed costs, or the total initial investment

P = the selling price

VC= variable costs per unit

However, break-even analysis also has some limitations. For example, it assumes a linear relationship between sales volume and costs, which may not always be the case (Pfaff, 2015). Additionally, it does not take into account expected changes in sales volume over time, which could impact the profitability of the business (Riggs, 2017).

In conclusion, break-even analysis is a simple and effective tool that provides a clear picture of a business's costs and revenue structure. While it has some limitations, it is a useful tool for small businesses and startups, as well as for larger businesses that need to make quick decisions. However, it should be used in conjunction with other financial metrics and validated against real-world data (Brealey & Myers, 2017).

### **2.2.6 Breakeven Chart**

A break-even chart is a visual representation of the relationship between the costs, revenues, and profits of a business. The chart plots the total costs and total revenues on the same graph and identifies the point at which the two lines intersect, which is known as the break-even point (Langfield-Smith, Thorne, & Hilton, 2017). This point represents the minimum level of sales required for a business to cover its costs and generate a profit.

One of the key advantages of using a break-even chart is that it provides a clear and simple picture of the costs, revenues, and profits of a business (Hirschey, 2013). This can help



businesses quickly identify areas where they can reduce costs or increase sales to improve their financial performance (Langfield-Smith et al., 2017). The chart can also be used to identify the minimum price at which a product or service must be sold in order to generate a profit (Jamieson, 2017).

Another advantage of break-even charts is their versatility. They can be used to represent a wide range of business scenarios, including changes in sales volume, changes in costs, and changes in pricing (Brealey & Myers, 2017). This allows businesses to perform "what-if" analysis to explore different scenarios and make more informed decisions (Hirschey, 2013).

Despite these advantages, break-even charts also have some limitations. For example, they rely on a linear relationship between sales volume and costs, which may not always be the case (Pfaff, 2015). Additionally, they may not take into account changes in sales volume over time, which could impact the profitability of the business (Riggs, 2017).

The breakeven chart involves plotting the total revenue against the total cost. To construct this chart, it is necessary to calculate the costs incurred and the revenue generated by multiplying the quantity sold by the selling price. By establishing a revenue equation and inputting different values, data points can be obtained and plotted on the chart, along with the corresponding cost values. The point of intersection between the revenue and cost curves on the chart indicates the breakeven point, representing the quantity of units (Vishwanath, 2019). However, it is important to note a limitation of this method. While the concept of plotting cost and revenue on a chart may be theoretically straightforward, the actual prices and payments in real-life situations may not behave precisely as depicted in breakeven charts and graphs. Factors such as market fluctuations, pricing strategies, and customer behavior can affect the accuracy of the chart's representation in practical scenarios.

In conclusion, break-even charts are a useful tool for businesses of all sizes. They provide a clear picture of the costs, revenues, and profits of a business, and can be used to perform "what-if" analysis to explore different scenarios. While they have some limitations, they are a valuable tool for businesses looking to make informed decisions and improve their financial performance.

## **2.5 Organizational applicability of the theory and principles of capital budgeting**

Capital budgeting serves as a crucial process for organizations to identify value-added activities. It encompasses all aspects of a company's projects, including acquiring essential land and purchasing key fixed assets like machinery and vehicles. Corporations typically prioritize initiatives that generate profitable capital growth for shareholders. However, certain factors related to the company and the project influence the suitability of a rate of return (Lidia, 2020). For instance, social or philanthropic activities are less likely to be approved due to their low rate of return, but they have a higher chance of acceptance as they contribute to building goodwill and supporting the local community while remaining viable.

The Present Net Value (NPV) and Internal Rate of Return (IRR) are commonly used approaches in capital budgeting decision-making, as mentioned by Blocher et al. (2019). These models are evaluated in the following peer-reviewed literature, which provides definitions of important components, organizational implications, and implementation.

According to research by Harris and Wong limpiyarat (2020), businesses employ various methods to assess the appropriateness of capital budgeting projects. Factors such as the time value of money, projected future cash flows generated by the project, the risk associated with

these cash flows, and performance indicators used in project selection should all be considered when evaluating the attractiveness of such initiatives. When implementing a new capital budgeting system, one of the objectives for the team is to examine project profitability. Independent research indicates that even with a range of procedures like NPV and IRR, the outcomes may vary. However, the choice between methods is influenced by management's decision-making authority and stated objectives. According to Siziba and Hall (2021), commonly used valuation approaches have comparable advantages and disadvantages.

Long-term organizational objectives are crucial for a company's future growth and profitability, as stated by Wong limpiyarat (2020). A single misstep in capital planning can jeopardize the institution's long-term sustainability. Factors such as capital planning, long-term goals, future expenditures, and development all play a significant role in assessing a company's health and profitability. Due to the substantial risks involved, long-term investments require careful planning and the use of capital budgeting tools. Capital investment decisions are inherently irreversible in nature, resulting in a loss if a long-term current asset is sold prematurely (Kudratova et al., 2020). Capital planning helps control expenditures while enabling revolutionary profitability development by avoiding over- or under-investment. Proper planning and project evaluation are essential components of successful capital budgeting for long-term company operations (Kudratova et al., 2020).

Capital budgeting holds one of the most critical managerial roles in any organization and has a long-term impact on business success or failure. According to Gupta (2017), it involves evaluating and deciding on long-term investments that are crucial for the company's future growth and wealth maximization. Therefore, market risks are considered when establishing the appropriate discount rate and projected investment returns. Different authors suggest varying

primary objectives for managers when making capital budgeting decisions. Umma and Handayani (2019) emphasize the importance of identifying an organization's ideal resource allocation formula, which ultimately influences long-term success or failure.

According to Sarwary and Uman (2019), capital budgeting objectives should align with stakeholders and shareholders. The authors propose utilizing the agency theory to guide the capital budgeting process, emphasizing the need for decision-makers to act in the best interests of the organization's stakeholders and shareholders. Moreover, it is crucial for decision-makers to closely monitor critical stakeholders. In order to satisfy the majority of stakeholders and ensure the company's long-term viability and wealth creation, decision-makers may choose to engage in low-risk activities. However, this approach may not be suitable in challenging conditions or when pursuing innovation.

Gupta (2017) conducted a study to examine the factors influencing capital budgeting methods and techniques. The study involved surveying 75 businesses to gather a representative sample. The findings revealed that organizations utilizing the discounted capital budgeting technique had a higher turnover rate and used it more frequently. Another significant finding was the positive relationship between firm size and capital budgeting decisions. In a study by Schlegel, Frank, and Britzelmaier (2016), they explored how the size and behavior of German manufacturing enterprises influenced management and financial decisions. The study demonstrated notable differences in firm size and financial decision-making techniques, particularly in capital budgeting. Smaller firms tended to use single-period methodologies for financial choices, such as cost comparisons and cash flow models, while larger companies preferred multi-period financial decisions.

Brunzell, Liljebloom, and Vaihekoski (2013) investigated the factors influencing capital budgeting in Nordic countries, focusing on the weighted average cost of capital (WACC) and its impact on investment decisions. The study shed light on the capital budgeting process by considering agency issues and Chief Financial Officer (CFO) characteristics. The personality of a CFO, influenced by age, education level, company setting, and pressure from stakeholders, directly affected decision-making and the company's success or failure. The study found that discounted cash flow (DCF) was less commonly used in Nordic countries compared to the United States, while the payback period was the most widely utilized strategy. An interesting correlation between capital budgeting and the age of the CFO was also identified, with net present value (NPV) being less frequently used in organizations with a CFO older than fifty years. Additionally, the study suggested that capital planning becomes more challenging when the CFO has extensive experience in economics and business.

Andor, Mohanty, and Toth (2015) examined 400 businesses in Central and Eastern European (CEE) countries, emphasizing the significance of capital budgeting as a critical decision for leaders. The study highlighted how factors such as company size, goals, culture, and code of ethics influenced capital budgeting strategies across different countries. Schlegel, Frank, and Britzelmaier (2016) also demonstrated the impact of business size on capital budgeting strategies. Among the surveyed companies, one-third were small firms, while the rest were large. Larger companies with global operations tended to have skilled CEOs, leading to more sophisticated capital planning and management procedures. In contrast, smaller firms lacked the financial and technological resources, resulting in less formal capital planning methods. Larger companies were also more inclined to utilize advanced techniques like sensitivity analysis and Discounted Cash Flow (DCF) in their capital planning.

However, even with the use of sophisticated techniques, CEOs may still reject a viable investment based on moral or ethical reservations, limited financial resources, data reliability, strategic fit, or lack of confidence in the analytical process (Andor, Mohanty & Toth, 2015). The study encompassed 35 countries, categorized into high-, middle-, and low-income groups, and considered geographical locations, income levels, and national characteristics in the analysis. Different countries exhibited varied capital budgeting tactics due to differences in institutional bases, culture, economic growth, and corporate governance systems. The influence of multinational firms on local subsidiaries was also identified as an important factor in how companies evaluate investment initiatives.

Alkaraan (2017) adopted a multidisciplinary approach to strategic capital budgeting, recognizing the inherent risks and ambiguous outcomes associated with long-term investments. The author emphasized that senior leadership in organizations employs various techniques to allocate resources to long-term investments aligned with the firm's objectives. Strategic investments like mergers and acquisitions require sophisticated approaches to decision-making, posing challenges for CEOs and company executives. The study proposed a theoretical framework for strategic investment capital planning, incorporating psychological factors. It highlighted the importance of considering both financial and non-financial factors and weighing positive and negative outcomes when making long-term investment decisions. CEOs rely on return estimates to guide their choices and utilize fundamental concepts to make precise and informed strategic investment decisions.

According to Alkaraan (2017), the key finding of the study is that capital budgeting and strategic investment review often prioritize factors other than profit and wealth maximization. CEOs and organizational leaders consider non-financial attributes that cannot be quantified but

are based on psychological knowledge. This understanding helps leaders make optimal managerial decisions based on individual behavioral preferences. The study provides valuable insights into the cognitive abilities of individual and organizational leaders in making long-term investment decisions. The author highlights that CEOs often rely on their expertise and skills to make such choices, and their historical ability to make similar decisions can forecast the success of strategic investments more accurately. The methodology presented in the article is crucial for managers to evaluate their decision-making abilities based on their strengths and limitations derived from past cognitive abilities.

Bennouna, Meredith, and Marchant (2010) conducted an email survey to explore the capital budgeting practices of 88 prominent Canadian companies. Accurate and effective capital budgeting decisions are essential for a company's survival in a competitive market. The study aimed to provide deeper insights into the accounting process by emphasizing the importance of conducting thorough investment research to make better capital investment choices. In Canada, academics have focused less on capital budgeting techniques compared to their counterparts in other countries. The focus is on long-term assets or investments that companies intend to profit from for at least a year, as it determines their future prosperity. The study found that the most commonly used approach in deciding future investments in long-term projects is the Discounted Cash Flow (DCF) method. This approach has become standard practice in most businesses, while non-DCF methods are on the decline.

The survey revealed that sensitivity analysis was the preferred approach among the majority of Canadian companies, followed by other methods such as Internal Rate of Return (IRR) and Net Present Value (NPV) for project appraisal. The authors suggested that better training could enhance individuals' ability to make sound long-term financial decisions. Basic

options strategies were found to be less popular among the surveyed companies, indicating the need for training in this area, including administrative processes and Weighted Average Cost of Capital (WACC). According to Nurullah and Kengatharan (2015), the capital budgeting tool plays a critical role in monitoring and managing expenditures. It helps determine the required payment and the necessary R&D for each investment project undertaken by a company. Even a sound investment idea can go wrong if prices are not adequately tracked. The capital budgeting process ensures effective oversight and management of an organization's spending, ensuring efficiency.

## **2.7 Research Gap**

A research gap is a topic or area where there is missing or insufficient knowledge, making it difficult to answer an existing inquiry. As a result, a research necessity in this dissertation will act as a gap pertaining to the restrictions on decision-makers' power to make future risk and capital budgeting judgments. The current thesis investigates how SMEs in Lebanon incorporate risk into their investment appraisal choices by finding and analyzing academic theory and research. However, there is a dearth of evidence on how this has been accomplished in Lebanese SMEs (NASSAR, 2021). Risk inclusion in a capital budgeting process is only depicted in broad terms.

Probability distributions are another technique to include risk into an investment evaluation decision. In this scenario, the approach of investment assessment emphasizes the project's future uncertainty. The investment project's probability distribution picks values and assigns probability weights to each (Savvides, 2014).

Scenario analysis, which is more or less a behavioral approach, is the third way to incorporate risk in investment appraisal decisions. The method, when used in investment



appraisal decisions, relies on several alternative outcomes in order to gain a sense of variability in terms of NPV-estimated returns. In general, scenario analysis is used to capture the variability in returns while making an investment choice that involves variations in the intended outcomes (Gitman and Zutter, 2012).

According to the literature assessment, there is a significant gap in the understanding of the degree of acceptability of the capital budgeting process (Verma, Gupta, and Batra, 2009; H. Décaire, 2019; Srithongrungrung, 2017). The payback period is the most widely acknowledged method of evaluating a firm in Lebanon and other regions of the world, including some sophisticated countries. The management' reason for choosing the payback period over the NPV and IRR was its ease of computation. As a result, there appears to be a significant discrepancy between organizations that choose non-discounted indicators versus discounted measures to estimate corporate performance (Verma, Gupta &Batra 2009). The study will cover this issue in the dissertation's succeeding chapters, and recommendations will be made to develop the scenario.

The cost of capital, a pivotal tool in both accounting and economics, serves to assess the opportunity costs of investments. The capital budgeting process entails the evaluation of potential investments with the aim of maximizing returns. According to Jacobs and Shivdasani (2015), the opportunity cost associated with supporting a specific business venture is intricately tied to the cost of capital. By scrutinizing these expenditures, businesses can make informed decisions to optimize the allocation of their funds towards maximizing potential investments. The cost of capital, as explained by Dunn (2020, p.67), represents the potential profit that could have been realized had an investment been undertaken. This cost of capital encompasses various forms of financing, such as equity, debt, or other capital sources. Essentially, it embodies the

opportunity cost of deploying the same sum of money across a range of investment alternatives at the actual cost of capital. This forgone money could have been earned if one investment choice had been favored over another.

Götze, Northcott, and Schuster (2018) emphasize that capital budgeting methods and investment assessment methodologies serve as decision-making tools employed to analyze and select investment projects. These strategies vary in complexity, ranging from intricate techniques like real options reasoning and net present value to more straightforward ones such as the payback period. Some of the simpler methodologies, however, may overlook aspects like risk considerations and the time value of money. The article extensively discusses these strategies, offering limited empirical evidence to elucidate the factors driving organizations' adoption of diverse organizational structures. Consequently, the primary objective of this article is to illustrate the practical application of capital investment assessment methodologies, including payback period, net present value, and weighted average cost of capital.

In particular, the research endeavors to unveil any peculiar occurrences that shed light on why institutions opt for or refrain from using distinct capital investment evaluation approaches. As Katabi and Dimoso (2016) point out, most small and medium-sized enterprises (SMEs) utilize investment appraisal strategies such as useful life, rate of return, internal rate of return, and net present value, either individually or in combination, when making investment decisions to enhance financial performance. However, according to John (2007) and Kipesha (2009), many SMEs do not employ investment evaluation tools in their financial decision-making to improve financial performance.

Daunfeldt and Hartwig (2014) emphasize the complexities of capital budgeting, which are compounded by factors like exchange rate fluctuations, terminal values, and political risks.

Yet, there exists a dearth of research examining the interplay between support systems for capital data and capital budgeting in investment decision-making. Similarly, the significance of capital budgeting has not been extensively studied (Kweh et al., 2016). For instance, there is limited research on how specific industries or types of organizations approach capital budgeting in Lebanon, or on the long-term ramifications of different capital budgeting decisions. One interviewee's perspective underscores this gap: "I am not aware of sustainability and human issues. In my business, I have set a minimum acceptable rate of return to ensure consistent achievement of targets and business viability." Consequently, despite the importance of capital budgeting in investment decisions, a disconnect between theory and practical implementation has emerged.

There's a disconnect between what's accessible and what's needed to make judgments. In the long run, there is a dearth of knowledge and a great deal of uncertainty in capital investment. Furthermore, the environment of the organization using capital budgeting, as well as the influence of the environment on the quality of decisions, have not been adequately investigated. As a result, capital budgeting choices should consider the organizational context rather than depending exclusively on financial theory. As a result, this study aims to fill a research need in Lebanon by lowering risk using appropriate capital budgeting strategies.

## **2.8 Contribution to Knowledge**

Capital budgeting is a crucial process for businesses of all sizes, but it is particularly essential for Small and Medium Enterprises (SMEs) operating in Lebanon. These businesses operate on a limited resource base, making it critical to choose the best possible business initiatives. However, with so many different capital budgeting processes available, it can be challenging for SMEs to know which one is right for them.

That's where this research study comes in. By differentiating the capital budgeting process for SMEs in general and SMEs in Lebanon in particular, this study aims to contribute new knowledge and give insight into the various capital budgeting processes widely practiced in the business scenario. The findings of this study can help business decision-makers choose the best business initiatives for their organization, leading to long-term viability.

One of the essential aspects of this study is its focus on discounted measures such as NPV, IRR, MIRR, DPB, DCB, and Hurdle rate. These measures have demonstrated their predominance in the business scenario over non-discounted measures, making them an excellent choice for SMEs in Lebanon. By highlighting the advantages of discounted measures, this study can help managers make more informed decisions about their business initiatives.

Despite the advantages of discounted measures, managers all over the world, including in Lebanon and other advanced nations, often have a propensity to use the payback period. This is because it is easy to calculate and can forecast the payback period using qualitative risk analysis methodologies, allowing the initial expenditure to be recovered. However, the study will demonstrate how discounted methods are more appropriate for assessing assets, particularly for SMEs operating in Lebanon.

The findings of this study are particularly relevant in the current economic climate, with SMEs facing significant challenges due to the pandemic and the economy at large. By selecting the right Investment Appraisal Technique during investment decisions, SMEs can anticipate, plan, and protect themselves from liquidity challenges and possible insolvency, especially during times of economic recession. Therefore, this research can assist SMEs in Lebanon in managing their businesses during these difficult times.

Moreover, this study can also benefit the government and policymakers in making policy choices like registration, licensing, taxation, acquisitions, and mergers. By informing them about the present state of valuation methods in this and other related sectors, they can make better-informed decisions that support SMEs and the economy as a whole.

Finally, scholars interested in this area of study will find valuable and credible resources to assist and grow their exploration in this and connected fields of research. By contrasting their observations to other research and utilizing the literature as a medium of data, they can gain a better understanding of the capital budgeting processes used by SMEs in Lebanon and around the world.

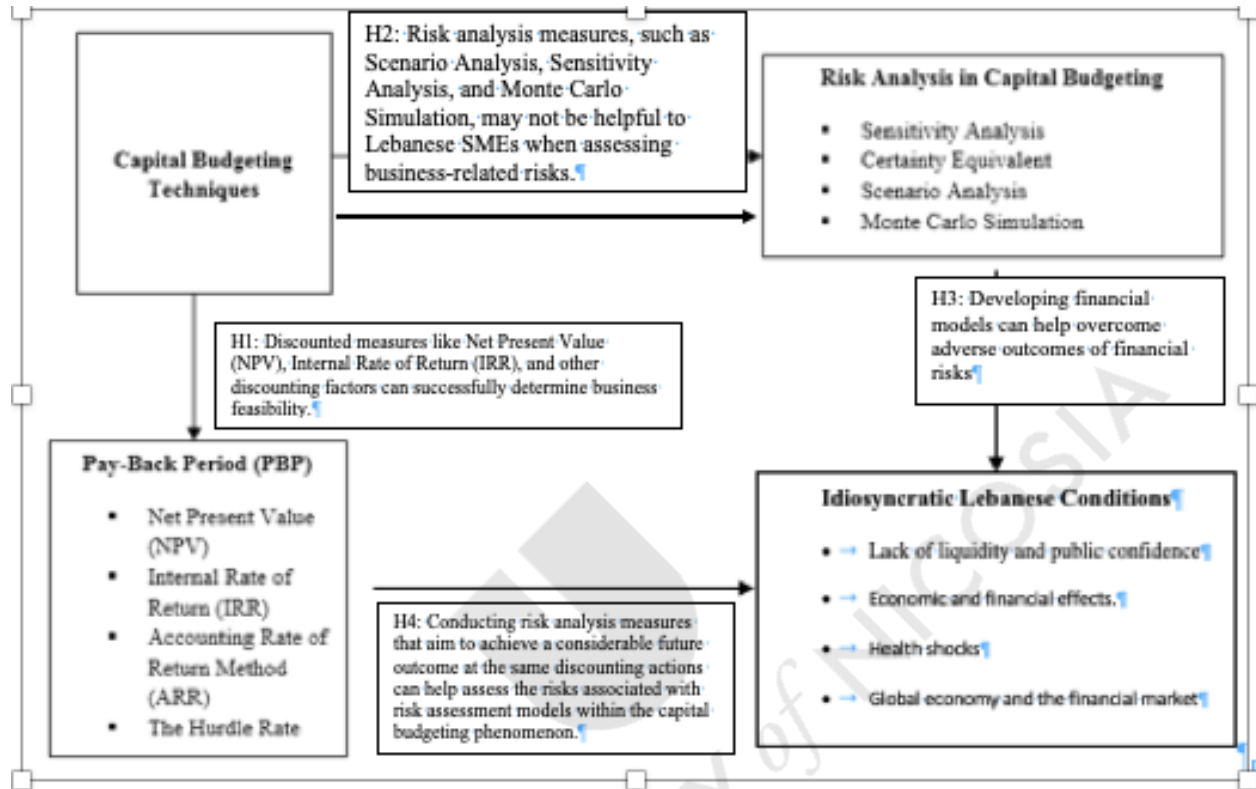
In conclusion, this research study is a valuable contribution to the field of capital budgeting, particularly for SMEs in Lebanon. By providing insight into the various capital budgeting processes widely practiced in the business scenario, it can help business decision-makers choose the best business initiatives for their organization. Moreover, it can assist SMEs in managing their businesses during challenging economic times, support government and policymakers in making informed policy choices, and provide scholars with valuable resources to assist and grow their exploration in this and related fields of research.

## **2.9 Initial Conceptualization**

Validating a research idea or hypothesis is a critical process that confirms its viability and soundness. The process involves a comprehensive evaluation of the research question's relevance and importance, identification of potential data sources and methods for data collection and analysis, and an assessment of the study's feasibility within the available resources and timeframe. A literature review is typically conducted to establish the research gap, refine the conceptualization of the research idea, and

identify potential areas of investigation. The initial conceptual framework to be validated by empirical research is shown below:

Figure 2.1: conceptual framework'



To derive the initial conceptualization for the research question focused on the use of capital budgeting techniques such as NPV, IRR, and PB in Lebanese SMEs, a comprehensive literature review will be conducted. The review will aim to identify existing research on this topic and any gaps in the literature that need to be addressed. It will provide insights into the advantages and disadvantages of these techniques and their use in capital budgeting in general and specifically in Lebanese SMEs. Additionally, the researcher will conduct interviews with financial managers in Lebanese SMEs to gain deeper insights into their use of these techniques in their value-asset processes.

The literature review will involve a systematic search of relevant databases and academic sources to identify studies on the topic of capital budgeting techniques. The researcher will critically appraise the studies' quality and relevance to the research question and extract key findings, conclusions, and limitations. This process will help identify any gaps in the literature and inform the development of research hypotheses and questions. It will also help refine the conceptualization of the research idea and ensure its alignment with existing knowledge and theory.

In addition to the latter topics of the literature review, the researcher could also investigate the challenges that financial managers face in implementing advanced capital budgeting techniques like NPV and IRR. The review will help identify any existing research on this topic and any gaps in the literature that need to be addressed. Additionally, the researcher may consider conducting interviews or surveys with financial managers in Lebanese SMEs to gain insights into their experiences and the specific challenges they face in implementing these techniques.

The interviews with financial managers will provide valuable insights into how they use capital budgeting techniques in their organizations. The researcher will use a structured interview protocol to ensure that all participants are asked the same questions. The protocol will cover topics such as the financial managers' experiences using NPV, IRR, and PB in their organizations, the benefits and limitations of these techniques, and any challenges they face in implementing them. The interviews will be recorded and transcribed for further analysis.

In a nutshell, validating the initial conceptualization of a research idea is a critical step in the research process. It ensures that the hypotheses and research questions are relevant, important, and feasible within the available resources and timeframe. A comprehensive literature

review and interviews with financial managers in Lebanese SMEs will provide valuable insights into the use of capital budgeting techniques and the challenges faced by financial managers in implementing them.



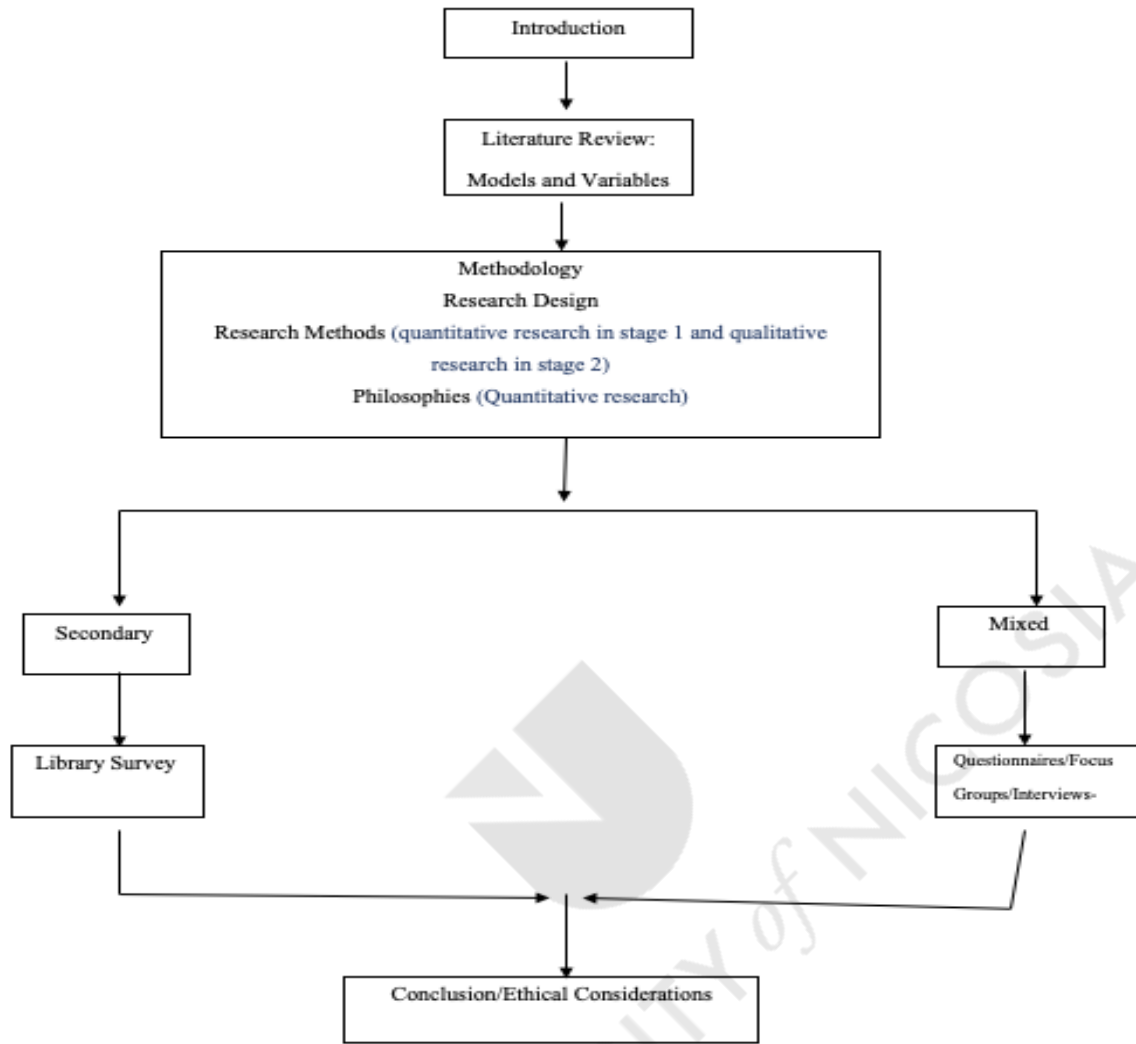


### **3.0 METHODOLOGY: OVERVIEW**

In this part of the study, the focus is to develop an appropriate research design that will enable the researcher to address the study's objectives. The structure of the overall methodology shall be as shown in figure 3.1. However, in implementing the primary dissertation, the proposed approach starts with qualitative research and then backs it up with quantitative analysis; in fact, this shall be why a sequential explanatory research approach will be recommended. Due to this, the following study outcome will be proposed:

Figure 3.1: Structure of the Methodology Chapter and findings





In summary, the stages of the research process in the proposed work shall be as shown below. This however, will be further segmented into three stages of initial conceptualization, qualitative and quantitative. A more detailed overview will be provided later in this document.

Research Objectives	Research questions	Interview Questions	Source
RO1: To investigate how financial managers in Lebanese SMEs have been integrating NPV, IRR, and PB, among others, in their value-asset processes	RQ1: How have financial managers in Lebanese SMEs integrated NPV, IRR, and PB in their value-asset processes?	<p><b><i>Choice of Investment Rule</i></b></p> <p><i>1. Can you briefly describe the business' investment decision making process?</i></p> <p><i>How does the business determine which investment should be pursued/ or has priority and which not? What are the most important factors to consider?</i></p> <p><i>2. What type of investment rule(s) is used in the business? Why?(Net Present Value NPV, Internal Rate of Return IRR, Accounting Rate of Return ARR, Earnings multiple approaches, Payback period, Discounted Payback,</i></p>	<p>(Bakri Bakri, 2019)</p> <p>(Neuman, 2013)</p> <p>(Saunders et al, 2012)</p> <p>(Glicken, 2002)</p>

		<i>Profitability Index)</i>	
RO 2: To examine the challenges of financial managers of SMEs when implementing advanced capital budgeting techniques like NPV, IRR, MIRR, DPB, and DCB.	RQ2: What are the challenges financial managers face in implementing advanced capital budgeting techniques like Net Present Value, especially as a general tool for evaluating a project, Internal Rate of Return, MIRR, the modified internal rate of return (MIRR)?	<p><i>1. What factors influence the investment rule(s)? (financial, non-financial)</i></p> <ul style="list-style-type: none"> <li>• <i>Are these factors specific to the organization's functionalities/operations, individual projects, organizational divisions, and personal preference (professional experience)?</i></li> <li>• <i>How do you deal with sustainability issues? Do you use specific measurements?</i></li> <li>• <i>How do you deal with social/human issues?</i></li> </ul>	(Addo, Guegan, & Hassani, 2018). (Yoe,2019). (Janekova, Fabianova, & Kadarova, 2021).
RO3: To create models for financial managers in the Lebanese SMEs to leverage their	RQ3: What models can be devised for financial managers in the Lebanese SMEs to leverage	<p><b><i>Risk Analysis</i></b></p> <ul style="list-style-type: none"> <li>• <i>What types of risks hinder the success of an investment decision? Are these risks specific to the</i></li> </ul>	(Manni, &Faccia, 2020). (Taherdoost, & Brard, 2019). (Addo, Guegan,

<p>capital budgeting processes to overcome adverse outcomes of financial risks and assess the risks associated with risk assessment models within the capital budgeting phenomenon.</p>	<p>their capital budgeting processes to overcome adverse outcomes of financial risks?</p>	<p><i>company or type of business?</i></p> <ul style="list-style-type: none"> <li>• <i>How do these risks influence the capital budgeting structure of the business?</i></li> <li>• <i>What kind of risk analysis techniques does the business use to avoid investment losses? Why?</i></li> <li>• <i>How does risk analysis contribute to the business' investment decision making process?</i></li> </ul>	<p>&amp;Hassani, 2018).</p>
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### 3.1 Model Specification and Variables Development

#### 3.1.1 Variables Development

To develop a dissertation in a focused manner, it would be essential to elaborate on all the variables to be operationalised in the primary thesis. By definition, a variable is a concept used in most research projects. Usually, it is worth identifying variables, especially where there are quantitative inquiries about a research problem. Therefore, the need for the researcher to profile the variables in a study would be a suitable way to prepare an accurate explanation and

justification of the relationship between them. It is held that there are no limits to the number of variables to be measured; however, a study with more variables will require complex investigation and wide-ranging statistical analysis. Similarly, a longer list of variables will mean more time needed to undertake data collection (Kerlinger, 2013).

For instance, in figure 2.1 developed earlier, the researcher created random variables which showed a quest to establish relationships between capital budgeting techniques and risk (financial) of the selected SMEs. Suffice to mention that capital budgeting techniques will be operationalised as the independent variable while the risk is the dependent variable. According to Earl (2014), the independent variable serves as the antecedent, and the dependent variable is the consequent. Hence, in the envisioned research, the extent of manipulation of capital budgeting techniques will be examined to assess their influence on risk mitigation, risk aversion, or risk tolerance within the operations of small and medium-sized enterprises (SMEs). Generally, alterations in the independent variable lead to corresponding changes in the dependent variable.

### **3.1.2 Model Analysis**

The model will comprise variable parameters that represent both capital budgeting decisions and techniques, as well as the determination and evaluation of financial risk within the chosen group of SMEs. For instance, the analysis will delve into the investment appraisal preferences of the SMEs concerning capital analysis, spotlighting the commonly employed practices. The underlying assumption will be that three principal capital budgeting techniques predominantly find use among SMEs in Lebanon.

The models for capital budgeting include:

- Net Present Value
- Internal Rate of Return

- Payback Period

The models for analysing risk shall be as follows:

- Standard Deviation =  $\hat{\sigma} = \sqrt{\frac{1}{T-1} \sum_{t=1}^T (r_t - \mu)^2}$

And the financial risk to be estimated using these models:

- Value at Risk

$$\widehat{\text{VAR}}_q = \hat{\mu} + \hat{\beta} / \hat{\varepsilon} \left[ (n/N_\mu (1-q))^{-1} \hat{\varepsilon}^{-1} \right]$$

Exponential Weighted Moving Average =  $\hat{\sigma}^{t+1} = \sum_{i=0}^{t-1} \beta^i \sigma^{t-i} \div \sum_{i=0}^{t-1} \beta^i$

The Generalized Autoregressive Conditional Heteroscedasticity (GARCH) model

$$\text{GARCH} = r_t = \mu + \varepsilon_t$$

$$\varepsilon_t = \sqrt{h_t} Z_t$$

$$h_t = \omega + \sum_{i=1}^p \beta_i h_{t-i} + \sum_{j=1}^q \alpha_j \varepsilon_{t-j}^2$$

$\mu$  represents the mean return

$r_t$  is the return with a given time t

$\varepsilon_t$  serves as the residual

$Z_t$  is the random variable with normal distribution

$\omega$  and  $\alpha_1, \alpha_2, \dots, \alpha_q$  serve as the model's parameters

## **3.2 Research Design**

In this section, the research design framework will be formulated, encompassing both exploratory and conclusive research aspects, specifically descriptive and definitive approaches. When contemplating the appropriate design for the envisaged dissertation, it's important to recognize that it can be categorized into exploratory, descriptive, or explanatory methodologies. Subsequently, the latter two categories are further refined into what is referred to as conclusive research. Using the qualitative research method of the case study, the research provides experimental results, and the quantitative research provides descriptive and descriptive results.

### **3.2.1 Conclusive Research Design**

The conclusive research design integrates the foundations of both exploratory and descriptive research designs. The experimental research design serves as the cornerstone of the study, aligning with the qualitative research questions that interconnect discounted and risk analysis methods to comprehensively assess the research components (Lewis, 2015). The explanatory research framework imbues a coherent structure into the systematic investigation.

Given the research objectives, an explanatory research design would be most appropriate for this study, yielding insights into the evaluation approaches adopted by Lebanese SMEs (Neuman, 2013). Leveraging the scope of the descriptive inquiry, it is fitting to establish relationships between variables, such as the capital budgeting mechanisms and the implementation of risk analysis methods within the business context.

### **3.2.2 Descriptive Design**

Within the framework of a descriptive design, one of the methodologies employed involves the utilization of secondary data (Saunders et al., 2012). Among the numerous benefits

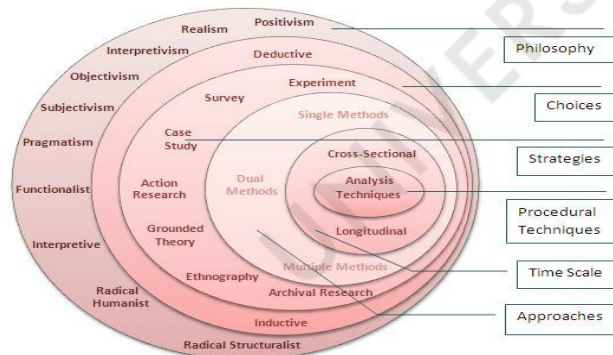


attributed to the descriptive design, it serves to establish a fundamental research problem and also serves as a bedrock for informed decision-making (Yin, 2011). For instance, the proposed descriptive design would be sought in the dissertation’s illustrative analysis regarding capital budgeting decisions and risk analysis among SMEs in Lebanon and their role in the Lebanese economy and reliable description. However, the design has disadvantaged him because it does not show or establish causal links; it is expensive and could consume time (Yin, 2011).

### 3.3. Research philosophy

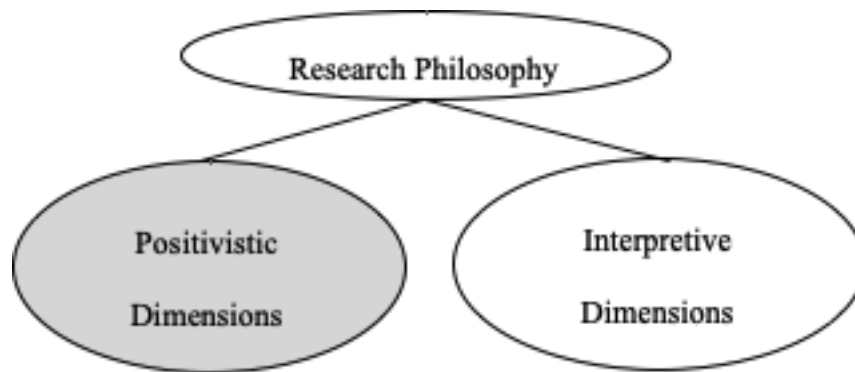
The selection of research philosophy is the first step toward forming a research methodology. In this relevance, three philosophies are associated with the research design: positivism, realism, and interpretivism (Saunders et al., 2003). It is vital to contemplate the research philosophy in a given study. Many scholars have defined research philosophy as the assumptions or premises held in the quest to perform research. On the other hand, research philosophy consists of values that a researcher depends on to determine strategies and approaches to a study (Osborne, 2008).

Figure 3.2: Multiple philosophical bases



Source: Saunders *et al.*(2003: 89)

Figure 3.3: Preliminary research philosophy alternatives



Source: (Amaratunga *et al.*, 2002).

Critical realism is critical because any attempt to describe and explain the world is bound to be fallible, and since those methods of ordering the universe, its categorisations, and the interrelations between them, cannot be warranted in any objective sense that are always open to feedback and replacement by a different number of topics and relationships. Justin Cruickshank expresses this point as follows: Critical philosophy is thus necessary because it rejects both the notion that there are set philosophical first precepts that ensure neither epistemic certainty nor the notion those first-order practices are self-justifying (Cruickshank, 2002, p. 54). In this study, I will use Critical Realism philosophy to deal with information from natural scientists as well as the sentiments of research dealing with the comprehension related to SMEs.

During the last three decades, the number of methodological techniques and attitudes used in scientific and social sciences has risen and diversified substantially (Miller & Tsang, 2011). Theorists have developed many research paradigms to define and describe research ideology. Each of the methodological approaches and paradigms has provoked intense debates and lengthy debates. Each research philosophy is founded on epistemic assumptions about what constitutes legitimate research and what does not (Cochran & Dolan, 2004, p.27). The optimal

study design/approach for conducting research was determined by evaluating four fundamental research paradigms: positivist, critical, interpretivist, and pragmatic.

According to Starr (2014), social science research uses paradigms from interpretivism, critical, and positivist approach. These approaches are linked to the rules and are governed by a set of broad theoretical assumptions. That will be applied throughout and after the study investigation (Mkansi & Acheampong, 2012). The assumptions that underpin distinct paradigms have changed over time. These assumptions are critical for a researcher to consider during research because they foreshadow what defines the correct approach to performing analysis, including research subjects, questions to be addressed, the study methodologies to be employed, and the expected outcomes for the researcher.

The positivist research paradigm, which holds that knowledge is both objective and unbiased, is one of the most common research paradigms (Carlson et al., 2009). In positivist studies, these hypotheses are employed to establish "Universal rules" that have been objectively proven to direct social etiquette. The positivist viewpoint is supported by approaches to science that use a quantitative approach to analyse social processes to achieve its goals (Frels & Onwuegbuzie, 2013). One must be a positivist to assume that phenomena have antecedents or causes and those causal linkages, law-like generalisations, and numerous regularities can be established. Following the positivist paradigm, empirical data is gathered, and the positivist then relies on the facts gathered. The investigation is carried out to provide significant support or validation of a theory or hypothesis testing (Mazzoni & Harcourt, 2014).

Researchers may try to criticise social, political, and economical structures to conduct social research studies. The critical paradigm is used to achieve this goal. The paradigm integrates essential thinking processes with a commitment to act to impact change. The required

method, as a paradigm, aims to reveal the structural and social factors that lead to the emergence and persistence of conditions of inequity, injustice, and exploitation. The critical paradigm differs from positivist and interpretative points. It is transformative and attempts to empower researchers and members who participate Through participatory action research to change or improve situations (Mkansi & Acheampong, 2012).

The research is conducted within the framework of constructive-interpretive philosophy, commonly referred to as interpretivism. The primary purpose of interpretive research is better to understand the subjective realm of the human condition. Qualitative research methods are frequently related to interpretivism. In contrast to positivism, the interpretive approach emphasises the quest for meaning, social interaction, and comprehension as the foundation for learning information (Miller & Tsang, 2011). According to this paradigm, knowledge and reality are socially produced, situational, and identity is subjective. Interpretivist research aims to determine comprehension of the issue, decipher a subtext in the precise socio-cultural context, expose beliefs, and elicit meaning from action and intentions through dialogical involvement between the survey participant and the researcher, according to Frels and Onwuegbuzie (2013). According to the interpretivism paradigm, all data obtained during the study should be utilised by the researcher's rationale and secondary literature findings and facts. Considering this viewpoint, the study will use interpretations to analyse data obtained from secondary sources.

### **3.3.1 Positivism Philosophy**

In relevance to the current research study, positivism is more suitable for achieving the research objectives, which were decided after checking the parameters of positivism in stage I explained by Amaratunga et al. (2002). According to them, Positivism “can provide wide

coverage of the range of situations...can be fast and economical...where statistics are aggregated from large samples, they may be considerable and relevant to policy decisions”(Amaratunga et al., 2002: 19).

The advantage of positivism research philosophy is that it provides a pathway for analyzing the study problem more objectively. On the contrary, the disadvantage that has been attributed to positivism philosophy is that it fails to support diversity when it comes to the interpretation of the research problem, thus, being a rigid approach. This has led many scholars such as Miller & Neil (2002) and Gray (2004) to support anti-positivist philosophy, in this case, interpretivism. In light of the issues above, the researcher was keen to capitalize on the whims of interpretivism research to develop the arguments in this dissertation. This and more shall be discussed in due course.

### **3.3.2 Interpretivism**

Unlike positivism research philosophy, interpretivism research philosophy is said to be much more flexible and not reliant on rigorous methodologies (Gray, 2004). Furthermore, although applied science is connected with positivism, interpretivism is more closely related with a social perspective. According to Glicken (2002), quantitative research alone cannot give appropriate explanations in the social sciences. The researcher prefers interpretivism approaches for the proposed dissertation because they provide for a more flexible approach to the study issue underpinning capital budgeting decision-making among SMEs in Lebanon. This will also be considered a component of a social science phenomenon that cannot be explained only by quantitative approaches. As a consequence, the proposed dissertation and underlying research challenge justify the practicality of using interpretivism as the major paradigm for creating knowledge.

Interpretivism is well-suited for Level II due to its appropriateness for conducting a comparative study of diverse capital budgeting approaches within a business context. Another rationale for favoring interpretivism is its capacity to accommodate greater variance, thereby enhancing the credibility of solutions and outcomes in problem-solving research (Glicken, 2002). The crux of the matter lies in the researcher's inclination towards a more inclusive reasoning process when addressing capital budgeting decisions and risk assessments in small enterprises. However, it is important to note that the diverse nature of interpretivism has been perceived as a potential limitation. This is because it could potentially leave the researcher more uncertain about arriving at the optimal solution for a research problem. In essence, the breadth of interpretivism's research philosophy has been criticized for occasionally contributing to confusion, as it may not always provide a solid foundation for determining the most appropriate solution.

Interpretive scholars posit that reality is a culmination of individuals' subjective perceptions of the external world, culminating in an inter-subjective epistemology and an ontological perspective that regards reality as a product of social construction. Willis (1995) characterizes interpretivism as a stance that refutes any notion of a singular, definitive way or approach to knowledge acquisition. In line with Walsham (1993), the interpretive tradition eschews the notion of a "corrector" of correct concepts. Instead, concepts are assessed based on their resonance with the researcher and fellow scholars exploring similar subjects. The emphasis lies in their commitment to immersively delve into their topics of interest, drawing insights from the field. In accordance with Gephart (1999), interpretivists contend that knowledge and meaning are activities rooted in interpretation.

As per Myers (2009), the cornerstone of interpretive research rests on the premise that access to reality, whether inherent or socially shaped, is solely attainable through societal

constructs like language, consciousness, and shared understandings. The foundational pillars of the interpretive paradigm are observation and interpretation. Consequently, observation entails the collection of data regarding events, while interpretation involves deriving significance from this data by formulating conclusions or assessing how effectively the facts align with a broader framework (Aikenhead, 1997). This approach delves into the meanings individuals attribute to objects in order to comprehend and contextualize them (Deetz, 1996).

Reeves and Hedberg (2003, p. 32) assert that the "interpretivist" paradigm places a strong emphasis on contextualizing analysis. Within the interpretive paradigm, the central focus revolves around human subjective experiences as a means of comprehending the world. This paradigm heavily relies on human interactions between researchers and participants, employing meaning-oriented approaches like interviews or participant observation, as opposed to measurement-oriented methods. The crux of interpretive research lies in comprehending the intricate complexity of human sense-making as it unfolds, rather than attempting to capture the entirety of this complexity (Kaplan and Maxwell, 1994). The primary goal of interpretive research is to grasp the subjective motivations and meanings that underpin social activities.

Contrary to generating new theories, the objective of interpretivism is to scrutinize, critique, and modify interpretive processes. Walsham (1995b) outlines three uses of theory in interpretive case studies: theory guiding data collection and analysis, theory as an iterative process of data collection and analysis, and theory as a conclusion drawn from the case study. In this particular study, a perspective was employed as an iterative approach to data collection and analysis.

Burrell and Morgan (1979) characterize interpretivism as a diverse collection of viewpoints rather than a singular stance. Hermeneutics and phenomenology serve as the

conceptual foundations of interpretive research (Boland, 1985). Hermeneutics, a branch of philosophy concerned with interpretation, is championed by notable figures such as Gadamer and Ricoeur (Klein and Myers, 1999). Originating in the late 1800s (Kaboob, 2001), hermeneutics serves as both a philosophical framework and an analytical method (Bleicher, 1980). This philosophical approach to human understanding forms the intellectual bedrock of interpretivism, offering a method to decipher and make sense of ambiguous or unclear textual content within the context of research.

At its core, hermeneutics proposes that human knowledge is acquired through a continual interplay between discerning the interdependent meanings of individual parts and the holistic entity they collectively form. In modern hermeneutics, all facets of the interpretive process—verbal and nonverbal communication, presuppositions, and pre-understandings—are considered.

"Understanding is always moving from the entire to the component and back to the whole," as articulated by the author (Gadamer, 1976b, p. 117). According to Gadamer, this process is circular in nature and seeks to comprehend individuals within their social context, forming the foundation for any interpretive endeavor grounded in hermeneutics.

While the study is not primarily phenomenological, certain aspects of it are rooted in phenomenological concepts, which center around uncovering and articulating fundamental qualities of events as they unfold. Phenomenology, in essence, delves into the examination of "phenomena," or how experiences manifest in our perception or how we interpret them. As such, it explores the underlying reasons for the existence of elements in our life (Stanford Encyclopedia, 2008). It scrutinizes the structures of consciousness from the perspective of a first-person observer. At its core, phenomenology endeavors to establish conditions that enable an



objective exploration of subjects that were once deemed subjective, such as consciousness and the content of conscious experiences like judgments, perceptions, and emotions.

Phenomenological research, as described by Creswell (1998), seeks to elucidate the significance of various individuals' lived experiences of a concept or phenomenon (p. 51). In the realm of human experience, this often entails delving into "deep" knowledge and emotions through inductive qualitative research methods like interviews and observations. Subsequently, this data and perspectives are presented through the lens of the study participants (Lester, 1999). Integral to this approach are data collection methods such as observation and interviews (Aspers, 2004). Phenomenological methodologies, which challenge structural or normative assumptions, bring forth individuals' experiences and perceptions from their own vantage points (Lester, 1999).

The following delineates the key attributes of interpretivism as applied in this study, categorized according to the research's objective, the nature of reality (ontology), the nature of knowledge and the dynamic between the researcher and the subject of inquiry (epistemology), as well as the employed methodology (Cantrell, 2001).

Feature	Description
Ontology	<ul style="list-style-type: none"> <li>• There are multiple perspectives in ontology.</li> <li>• Social relations and meaningful actions can be used to explore and construct reality.</li> <li>• Investigate how people make sense of their social worlds in the natural setting by interacting with others through daily routines, conversations, and writings. These writings could include both text and visual images.</li> <li>• Many social realities exist as a result of diverse human experiences, including people's knowledge, perspectives, interpretations, and experiences..</li> </ul>
Epistemology	<ul style="list-style-type: none"> <li>• Events are comprehended through cognitive states of interpretation that are influenced by facilitated by social contexts.</li> <li>• Those done by the researcher communally build knowledge by interacting with people in real-life or natural landscapes.</li> <li>• The questioner as well as the inquired-into are linked in an engaging process of talking, listening, reading, and writing.</li> <li>• A more personal and interactive data collection mode.</li> </ul>
Methodology	<ul style="list-style-type: none"> <li>• Data collection processes such as messages, personal interview, and reflective sessions.</li> <li>• Research is a reflection of the researcher's values.</li> </ul>

This methodology's key words are participation, collaboration, and involvement (Henning, van Rensburg, and Smit, 2004). The interpretive approach positions the researcher as

a participating member (Carr and Kemmis, 1986, p. 88) who operates directly and determines the definitions of actions conveyed within specific social contexts.

### **3.3.3 Critical Realism**

Realism is the concept that all items (actual or imagined) have their own existence and nature, regardless of whether they have been imagined or smelled by someone else. Disagreements between proponents and opponents of various forms of realism have defined the history of western philosophy. One of these concerns is the role of epistemological realism and anti-realism in defining and teaching critical thinking. In this study, the concept of realism is addressed in the context of teaching capital budgeting strategies. The various philosophical views are also studied, as well as how they affect capital budgeting techniques.

Critical thinking is a value term, much like justice, democracy, and knowledge. This is owing to the fact that numerous theorists have given several interpretations of the term, each based on a distinct set of premises. People may agree on the need and utility of critical thinking, but they may disagree on how to put it into practice in practice, because critical thinking is a value expression (Naticchia, 605). While many individuals feel democracy is vital, there may be differences of opinion about which government model best represents democracy. When it comes to capital budgeting, everyone would agree that being a critical thinker is better to being an uncritical thinker. However, there are variations in how critical thinking is used in practice.

This example has been used by some philosophers, such as Donald Hatcher, to argue that teachers must assist students to develop critical thinking abilities, but only in a practical fashion. He proposes for a situation in which teachers first adopt epistemic realism before applying it to their teaching (Hatcher, 12). As a result, critical thinking education should be predicated on the assumption that the truth exists and that it is our responsibility to uncover it; if the conditions

permit, we may be able to comprehend it. It is their obligation to teach their students how to search for and obtain the truth.

Realists, on the other side, are opposed to this way of thinking. They inquire as to why realists are unable to provide an authentic portrayal of reality. Realists can't give precise descriptions of reality. Anti-realists argue that realism falls short of its promise of objective reality's alleged truth (Borchert, 688-694). Others, such as Hostetler, take an even more anti-authenticity attitude. They argue that realism's philosophy is flawed because it ignores how societies have changed the criteria for evaluating knowledge claims. He believes that critical thinking should be taught to children so that they learn that reality cannot be described in a one-size-fits-all manner (Hosteller 1-12).

Teachers require a baseline standard for practical critical thinking that allows for a diversity of interpretations and material. While the various sides in this debate may vary on the amount of formal logical procedures that should be used, everyone believes that the capacity to adapt to changing circumstances, which is a characteristic of critical thinking, is essential. The basic and secondary norms of critical thinking, like other value notions such as democracy and justice, are difficult to define. Rivals with opposite ideas on critical thinking may understand and even respect one other's arguments if they have a thorough understanding of a few key terms.

A major standard is demonstrated when a supporter of one viewpoint acknowledges a good argument from their opponent and recognizes when their opponent gives a weak opinion. This means that when someone who opposes realism makes a strong claim, a realist may recognize and even congratulate them. As a consequence, even if they differ on realism, a realist instructor and one who opposes it may agree on what constitutes a good paper and what doesn't. Their beliefs must be irrelevant while teaching critical thinking to their students. Students who

submit a well-argued paper promoting realism should earn higher scores than those who provide a weak argument, regardless of their professors' opinions on realism. As a realist, the teacher should not let his or her philosophical convictions influence how they evaluate their students' reasoning ability. If they accepted this, it would defeat the point of having students write argumentative essays. According to realism, people must be allowed to investigate and find the truth on their own; they must be critical thinkers.

The same logic should apply in the opposite situation. A teacher who opposes reality should not allow his or her opinions to impact his or her teaching or how they evaluate their students on the subject. What matters is how well-thought-out and convincing their argument is. Even if the instructor is suspicious about realism as a philosophy, the basic criteria should allow them to identify and appreciate when a student presents a persuasive argument. Critical thinking is necessary to understand the power and limitations of critical thinking, which may seem paradoxical, but the components of critical thinking differ in both cases. In order for philosophical discussions on this topic to be feasible, all sides must agree on a set of basic and low-level requirements.

When it comes to building a framework of argument, reasoning is always a component of these agreed-upon basic ideas. As a result, both sides in this debate may be urged to employ realism, which permits them to argue for or against any of the ideas. There are no inconsistencies, as in Emmanuel Kant's critique of pure reason. According to Kant, we should have a reasoned knowledge that reason alone cannot produce complete understanding of things as they are (Burnham and Young, 73). We may derive from logic that it only has power within certain parameters.

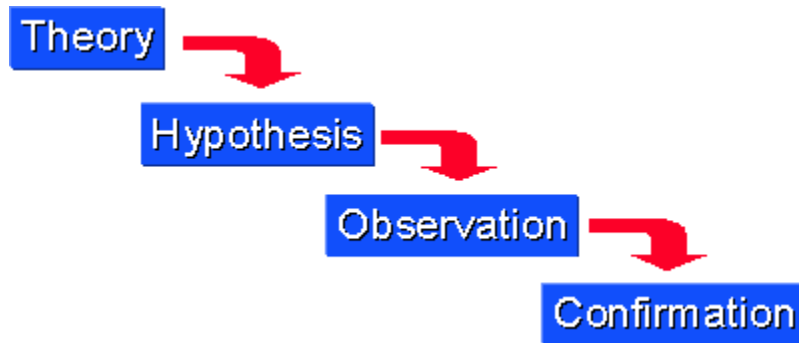
Because the goal is to apply a critical realism meta-theory to empirical research procedures in business, two assumptions must be accepted initially. Critical realism contends that an ontological theory entails an epistemological theory and that this meta-theory influences how evidence about the social reality is gathered and processed (at both the strategic and methodological levels) (Cruickshank, 2002, p. 54)

### **3.4. Research Approach**

In the next stage of designing a research methodology, a research approach is chosen to streamline further the selection of research philosophy (Cavaye, 1996). In this regard, there are two main approaches taken into consideration which include deductive and inductive (Hussey and Hussey, 1997). For the current study, an inductive approach shall be sought. For instance, in deductive research, the reasoning process starts from a general viewpoint about a research problem to that which is more specific; in most cases regarded as the top-down approach. In deductive research, the first step is to create a research topic of interest or the matter in question (McNabb, 2012). For instance, in the proposed dissertation, the researcher was keen to think about theory(is) related to capital budgeting decisions. Basically, in deductive research, the focus usually is to link theory to particular judgment in the hypotheses subjected to testing (Creswell, 2012).

Also, in deductive research, after formulating hypotheses, the researcher moves to make observations to address the ideas formulated; in so doing, the tested hypotheses become the basis for confirming or rejecting established theories regarding a research problem (McNabb, 2012).

Figure 3.4: A Deductive approach



In the case of an inductive approach, it is the right opposite of the deductive reasoning process discussed above. For instance, it starts from the specific state of affairs to broader generalizations or theories. The inductive reasoning process has been related to the bottom-up approach where everything begins from particular observations, and in that process, the researcher gets to start detecting patterns then formulating tentative hypotheses; ultimately, in inductive research, the end goal is usually to develop general conclusions and theories (Strauss and Corbin, 2011). To a large extent way, it can be affirmed that the methodology of the proposed thesis will be guided by inductive research, especially the fact that patterns in the literature findings were carefully split and from the more general conclusions drawn regarding issues related to capital budgeting decisions and risk analysis of SMEs.

### **3.5 Data Collection (Instrumentation)**

The data might be accrued by using each secondary source and primary source. This might be executed via contacting the Chamber of Commerce in Sidon to get widespread data approximately the call of the corporations and their activities. The questionnaire will then observe after the samples are selected. The predominant cause of the questionnaire is to reply to the study's questions and validate the hypotheses, above and get precise solutions that display

the volume of the way extensive SMEs use capital budgeting strategies in their decision. Data on capital budgeting strategies might be required (it consists of running capital management).

As far as capital budgeting techniques are concerned, the method employed needs to be evaluated and the extent to which the method or combination is used. The most used capital budgeting rule, the relationship between the rule and microfinance growth and the financial risk factors facing SMEs.

### **3.5.1 Secondary Research**

Several applications can be envisaged for the proposed dissertation back to the extended literature method. Several studies alleged that secondary analysis undertaken by an independent researcher could bring new value to the body of knowledge, in this case, on capital budgeting decisions and risk analysis in business. It is alleged that scholars have adopted the secondary data analysis due to interests different from those of the original study (Hinds et al., 1997). In addition, the secondary study seeks to give a new perspective or introduce a more conceptual focus to the existing research issues (Heaton, 2008).

In undertaking secondary analysis, it is required that an assessment is being conducted regarding the quality and validity of the dataset available, including the need to assert whether the dataset can respond to the questions set out in the second investigation (Charmaz, 2006). In application to the present dissertation, the researcher was keen to ensure all the information used to its gain right into the contributory role of training and development towards sustainable competitive advantage was supported by credible research; especially that primary data was representative. It was one of the ways to ensure the validity and reliability of the secondary analysis used in this dissertation in addressing the objectives of the research.



Some of the benefits that may be acquired from an expert interview include the following (Littig, 2008):

- I. Foresight into and comprehension of events in the future, like consumer trends or the adoption of emerging technologies
- II. Confirmation of internal intelligence? - Intel refers to the process of double-checking the consistency of integrated conclusions.
- III. Unexpected intelligence that frequently emerges during interview sessions (for example, when polling expert panels, they're willing to go much further than the context of the data required as well as provide rich supplementary competitor data.
- IV. Important reach for future Intel?

### **3.5.2 Mixed Methods**

The mono research method uses either a qualitative or quantitative technique during research. In this situation, only one course is used throughout the entire study process. Mixed research is a research style that employs both qualitative and quantitative methods in the same study. This research technique has risen to prominence as the third central paradigm, providing a viable alternative to qualitative and quantitative research. The compatibility hypothesis and pragmatism are essential to the mixed research technique (Borrego et al., 2009). The premise behind the compatibility thesis is that qualitative and quantitative approaches are compatible and can be employed in the same research investigation.

According to pragmatist philosophy, researchers should use a strategy or a combination of ways that function best in real-life situations (Grant et al., 2001). Proponents of mixed research are currently using the underlying concept of diverse research. This concept proposes employing a combination or mix of techniques with non-overlapping flaws and complementary

strengths (McDonald & Adam, 2003). Hybrid model research can be divided into two types: across-stage hybrid model investigation and within-stage hybrid model study (Rowley, 2004).

Because the qualitative research technique will serve throughout the entire research study, the mono approach is appropriate for the research, as mentioned in the prior section. If the survey required a questionnaire with both closed-ended and open-ended questions for data collection, the mixed data collecting technique would have been the most pragmatically appropriate.

In the past decade, there has been a noticeable increase in the number of published articles on the subject of Mixed Methods Research (MMR) (Bryman and Bell, 2011). Building on the existing research, this study highlights the emergence and development of two significant trends within MMR: the first pertains to the growing number of research projects adopting mixed-method approaches, and the second trend involves an upsurge in publications on this topic (Bryman and Bell, 2011). In line with this perspective, Creswell (2009) noted the rising popularity of Mixed Methods, attributing it to the evolution of both quantitative and qualitative methodologies and research approaches. Teddlie and Tashakkori (2003; 2009) similarly positioned mixed methods as a secondary choice to conventional research methods and the third wave of research.

However, certain scholars have affirmed the merits of MMR and have embraced it as a valid methodology for both business and social sciences research (Saunders, Lewis, and Thornhill, 2003; Bryman and Bell, 2011). While some authors have expressed reservations about MMR, others (Bryman and Bell, 2011) have proposed additional steps and analyses to underscore the significance of prioritizing and sequencing decisions within the MMR design and process. In essence, MMR involves setting a schedule and designating a particular method as the

initial and primary data collection tool, followed by the integration of a second distinct method. As emphasized by Creswell (2009), mixed-method research represents a novel approach, underscoring the importance of understanding and planning mixed-method procedures. Creswell (2009) further underscored the significance of factors such as the timing of quantitative and qualitative data collection, whether sequential or concurrent.

A second critical factor is the determination of priority between quantitative and qualitative methods. The third pivotal factor involves the integration of data, encompassing questions, philosophical underpinnings, and ultimate interpretation (Creswell, 2009). Bryman and Bell's (2011) analysis corroborates the original research by Creswell (2009) concerning mixed-method procedures.

In this case, the method aids researchers by offering rich individual characterisations, perspectives and experiences, boosting the quantitative quantification of events (Duguleana & Nicolae, 2005). The measurement method is crucial to quantitative research because it provides a short but crucial link in mathematical formulations of empirical relationship realities and quantitative (Borrego et al., 2009). The formulation of models, the development and procedures of the tool and methods for evaluating, gathering empirical data, data modelling and analysis, experimental control, and variable manipulation are some of the scientific approaches utilised in quantitative research.

One will discover three categories involving quantitative research. Typically the category can always be descriptive, experimental exploration methods or origin comparative (Grant ain al., 2001). This descriptive technique investigates the current situation and comprises finding attributes associated with some sort of given event structured on observation or perhaps studying correlations involving and among incidences. The researcher should decide how the particular

dependent variables impact the independent factors in the causal comparison study and trigger and effect cordons between the axis. The researcher evaluates the administration associated with an intervention in a study team. The study after that assesses the treatment's effectiveness (Curry Ainsique al., 2009).

Qualitative studies are a technique of investigation simply by definition utilised within an array of academic areas, especially the interpersonal sciences and researching the particular market a lot more recently. The qualitative objective is to thoroughly understand behaviour and the aspects that impact this (Bryman & Burgess, 1994). The reason and how associated with the decision and producing decisions are analysed in the qualitative study instead of the where, precisely what, and when. This displays that fewer yet more tailored examples are typically needed instead of large samples. The most systematic qualitative research methodologies are usually ethnography and grounded concepts (Williams, 2007).

A client retention study in ZYX supermarket should be c,conducted using qualitative approaches. Curry et al. (2009) present numerous conditions for exploring qualitative techniques. For example, the research investigates trends that are challenging to quantify numerically. Typically the qualitative approach can be helpful in this case by simply describing Processes, aspects, and changes throughout the organisation after some time. It also influences cultural interactions and draws out individual preferences and even attitudes. The qualitative method is the simplest way to learn about causal mechanisms. That increases the exploration by creating tips on why some sort of specific intervention provides a particular impact, precisely how that impact arises, and under exactly what conditions or company contexts that effect occurs.

Another through which qualitative methods are widely-used can be applied is when the purpose involving the objective of the research is definitely to collect each of the information

needed to comprehend some sort of topic fully. During these conditions, qualitative techniques can easily be helpful simply because they provide detailed records of individual experiences and views even though increasing quantitative assessments of incidents. Customer retention review will focus on unique perspectives, elicitation of individual personal preferences and attitudes, and the advancement of conceptual interventions, encompassing consequences, how they happen, and the main factors.

### **3.6 Sampling Criteria and Sample Size**

The desire to keep a survey's cost as low as feasible involves sampling. By definition, a sample is a subset of a population, with the latter phrase referring to the total number of individual units of interest in the study (Hatefi, 2014). A researcher might select between probability and non-probability sampling when it comes to sample former term refers to situations in which each member of the population has an equal chance of being picked. In contrast, the latter term refers to situations in which population members have a different likelihood of being chosen.

The sampling process starts with selecting a sample frame and a sampling design. The set of population units from which the sample is drawn is a sample frame. Among the sampling designs accessible are simple random models, systematic sampling, stratified sampling, cluster sampling for probability and purposive sampling, and snowball sampling for non-probability selection (Wright, 2014).

Non-probability sampling is used in this inquiry. A purposive sampling strategy will be used to select a sample of eight companies. The most important question for the researcher to address while employing the technique is what they want to achieve or learn and the optimal sample strategy to use (Stafford, 2011). Stakeholder sampling, deviant or severe case sampling,

regular case sampling, paradigmatic case sampling, maximum variation sampling, criterion sampling, theory-guided sampling, critical case sampling, disconfirming or negative case sampling, and expert case sampling are all terms used to describe different types of selection.

In the current inquiry, expert sampling is being examined. The purpose is to attract people with specific skills who can help advance the researcher's goals and possibly open up new possibilities. To obtain the relevant files, the inquiry requires the aid of well-known individuals working at the top levels of management in particular firms. For each organisation, three managers will be picked. Among them will be a management accountant, an operational manager, and an accountant. As a result, there are twenty-four managers in the sample. Given that the study is qualitative, this number of participants is deemed suitable.

Let's begin by discussing the unit of analysis and measurement, which constitutes a crucial element of any scientific research endeavor. The analysis team represents the group that will be studied and from which broader findings will be extrapolated. Moving on, we will delve into the unit of measurement, a concept that is more intricate to define since it often does not comprise individuals or agents. The focus here lies in the researcher's ability to elucidate the unit of measurement and the initial parameters employed to categorize the group under study. To illustrate, consider a scenario where the research examines changes in risk within SMEs in Lebanon. The unit of measurement could encompass the documents and meeting records that chronicle the progression of risk changes in the chosen SMEs. The parameters would encompass the categories selected by the researcher, drawn from existing literature, to analyze the documents. These categories might encompass variables like alterations in salary structures, shifts in project team numbers, decisions related to stock management, classifications of debt, and other pertinent categories that contribute to comprehending organizational changes within

the selected firms. Consequently, parameters establish the framework for measuring the research's unit and facilitate the development of concrete qualitative measurements. The precision with which the researcher defines the units of analysis and measurement directly impacts the credibility of the study. Hence, it is imperative to provide clear and thorough explanations for both aspects.

Moving on to the sampling method employed for addressing the research questions, the qualitative component will employ the Purposive Sampling method. The Purposive Sampling method is characterized by its deliberate selection of participants based on a predefined purpose. The sample is meticulously chosen to encompass individuals of interest, while individuals who do not align with the research purpose are intentionally excluded (Changing Minds, 2015). The foundation of purposive sampling traces back to the concept of targeted selection, which predates the quota methods, surviving until 1934 (Desrosières, 2002). This approach stems from a direct consideration of the selection process for the surveyed units (Desrosières, 2002). It operates under the premise that segmenting a larger population into subsets with specific characteristics and faithfully mirroring this composition within the "miniature" represented by the sample is achievable (Desrosières, 2002).

The research question focuses on the challenges associated with the utilization of capital budgeting techniques in Lebanon. To address this research question through the Purposive Sampling method, the approach would involve engaging in interviews with a specific group of individuals who own and manage small and medium-sized enterprises (SMEs) in Lebanon. The objective is to ascertain whether these SME owners actively employ capital budgeting tools. The Purposive Sampling Method offers the advantage of directly interacting with each individual

within the sample, allowing for a comprehensive exploration of the usage of capital budgeting techniques across Lebanon.

In many instances, when students undertake their dissertation projects, the data collection process necessitates working with a designated sample. This implies that primary research involving data collection, whether through surveys or interviews, requires the identification of a larger population and then extracting a representative sample from it. Therefore, in this proposal, the researcher aims to illustrate the diverse methodologies for estimating sample sizes by revisiting mathematical models, such as Slovin's model. The formulation of Slovin's model is presented below:

#### *The Slovin's Formula*

Slovin's formula can be adapted to calculate the sample size ( $n$ ) given the population size ( $N$ ). It also has a margin of error estimate. From the researcher's point of view, I would advise adopting Slovin's formula where there is the use of random sampling (Creswell, 2014). Moreover, students can use the formula where nothing is known regarding the population's behavior.

$$n = \frac{N}{1 + N e^2}$$

The parameters in the formula are:

$n$  = No. of samples

$N$  = Total Population

$e$  = error margin/margin of error



<b>Confidence Level</b>	<b>z-score</b>
-------------------------	----------------

Using Slovin's formula, the student needs to consider the confidence level. For example, a student may opt to have a confidence level of about 95% to get an error margin of 0.05 or 5%. On the other hand, the same student may need a confidence level of 98% which means a margin of error of 0.02. The researcher would like to provide two covert or fictitious exercises on how Slovin's formula may be used to determine a sample size before the actual application to the dissertation proposed.

#### *Z-score approach*

The focus is to illustrate another possible way to determine sample size using the Z-score approach. Foremost, when one sets to calculate a sample size, a few things must be determined regarding the target population and the sample needed. The determinations include:

- **Population size:** What is the total number of individuals that fit within the demographic? For example, if an investigator wants to know about males living in Country A, the population size would be the aggregate number of males present.
- **The margin of Error (Confidence Interval):** There can be no perfect sample. Therefore, one needs to decide on the degree of error allowed in a given study. The confidence interval simply tells the level at which (i.e., how much higher or how much lower) you are willing to let your sample mean fall below the population represent. The margin of error can be 5% or 0.05.
- **Confidence Level:** It says the degree one wants to be confident such that the actual mean lies within the confidence interval. The confidence levels sought are 90% sure, 95% secure, or 99% confident in most cases.

Confidence Level	Z-Score
90%	1.645
95%	1.96
98%	2.326
99%	2.576

Table 3.1: Schedule z-scores for expected confidence levels

- Standard Deviation:** This refers to the expected variance in the responses. In most cases, students will be in a situation where they have not administered a survey. Due to this, the safe decision is to use .5 or 50%. Most scholars propose this metric because it is a highly unforgiving number and sees that your sample will be large enough.

The equation to calculate the sample size would be as shown below.

$$\text{Required sample size} = (\text{Z-score})^2 * \text{Std Dev} * (1 - \text{StdDev}) / (\text{Margin of Error})^2$$

$$\text{Or } n = z^2 * p (1-p) / e^2$$

Where:

n = sample size

p = proportion you study

1 – p = opposite

e = precision sought i.e., 1%, 0.1%, 5% ..... and so forth

It means for a confidence interval of 95% a value of z = 1.96, a 99% would have a z = 2.576

In most cases, students or researchers do not know the proportion to use; it is advisable to work with 50% since you do not see the balance; hence working with a maximum error. Suppose one chooses to use the above formula to determine sample size. In that case, one must make several assumptions: assume to work with a confidence level of 95%, .5 standard deviation, and a margin error of 5% (confidence interval).

$$n = 1.96^2 * 0.5*(1 - 0.5)/0.05^2 = \mathbf{384}$$

What if a 99% confidence level is assumed?

$$n = 2.576^2 * 0.5*(1 - 0.5)/0.05^2 = \mathbf{664}$$

Consider another example where a researcher seeks a level of confidence in his sample of 95% and wants a precision of  $e = 1\%$ .

$$n = 1.96^2 * 0.5*(1 - 0.5)/0.01^2 = \mathbf{9,604}$$

- *10% Rule*

Other scholars have opined that 10% would be a representative sample size if the researcher knows the population. For instance, assume you want to approach a population of 2,000 individuals; it would mean 10% is enough sample size. This is the 10% condition which asserts that sample sizes should not exceed 10% of the population. Therefore:

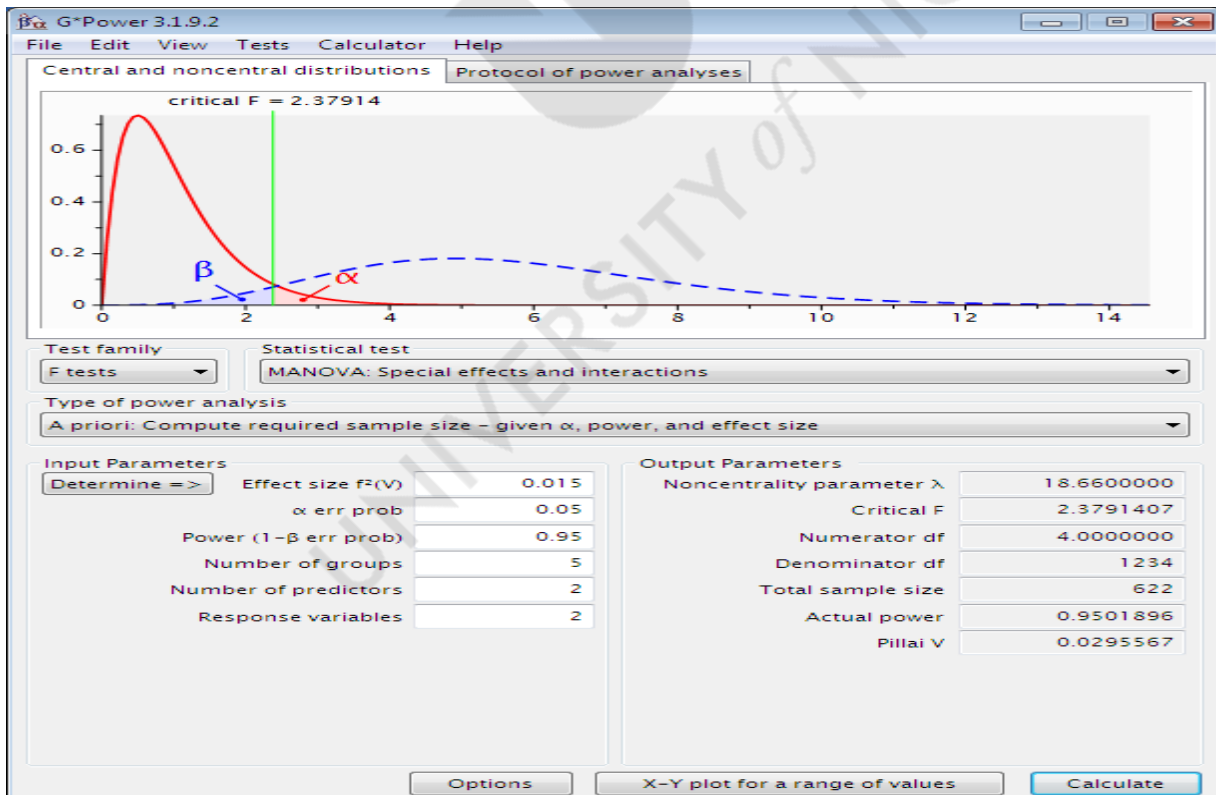
$$10/100 * 2,000 = 200$$

- *Thumb Rule*

In addition to the above is the Thumb Rule, which opines that each statement in a construct requires at least ten samples. This can be used as a way to decide on the sample size. For instance, if a researcher has decided to use 25 questionnaires items their/her construct the sample size would be  $25*10 = 250$ . It is the most straightforward approach to estimating sample size.

- *Power Calculation*

Another reliable approach to estimating the needed sample size is Power calculation. Therefore, to use power analysis to calculate sample size, one must write a hypothesis and decide which statistical test to use. Always, it should be one of the inferential statistics. In that, one needs to determine the following: alpha (standard is 0.05), power (measure to be at .80), and effect size (small, moderate, or large, each test has its value). For instance, take an example where a researcher sets to use power analysis to estimate sample size, using “Manova: Special Effects and Interactions” as the statistical test. Then, alpha at 0.05 and an effect size of 0.015. The G Power software results would recommend a total sample size of 622. See the output below.



However, a list of 1,000 sample firms will be the probable estimate for collecting data in anticipation. These samples will be obtained from the data collected from the Chamber of Commerce with 1000 respondents. The selected firms will be used in the interviewing process as well. The data required pertain to the size of the firms. This will be determined by the number of employees working in the selected firm. Firms' annual sales are also crucial in determining the firm's size. The company's value in assets is another important indicator of the company's size. The firm's age is also essential, and this information will be attained by interviewing the executives of the sample firms.

### ***3.7 Reliability and Validity***

Reliability and validity checks shall be focused on both qualitative and quantitative methods. The considerations for reliability and validity will be addressed in this research section. Different studies have stated that reliability and validity are tools "of an essentially positivist epistemology" (Winter, 2008).

"Reliability is how a specific study's results are constant throughout time, including an appropriate depiction of the whole population underneath," writes Joppe (2000, p.1). Similarly, the dependability of a study refers to the situation in which the results of a specific study can be replicated using a corresponding technique; such a research instrument would be considered dependable. In application to the proposed dissertation, reliability will be confirmed primarily based on the interview feedback outcomes; additionally, the validity of the research will be justified if the findings in the primary dissertation show consistency regarding capital budgeting practices among the sampled SMEs; and the same character will be expected to appear when compared to past results of other studies.

According to Joppe (2000, p.45), validity refers to whether a particular "study actually measures that which it is intended to assess" or the degree to which the research results are true. Even better, validity specifies if a certain research instrument pervades the researcher, allowing him or her to strike the "bull's eye" on the study target. In most circumstances, researchers establish the validity of a study by posing a series of questions and searching for answers by reviewing previous research (p.47). Precisely, the validity of the proposed study will be operationalized by first posing several research questions; this is evident in chapter one, where a set of research questions has been formulated, and each of them will be addressed based on research conducted by others regarding capital budgeting techniques and their effects on the risk of SMEs.

The experts are true in their claim that the importance of validity and reliability in qualitative research cannot be overstated. In research, validity simply refers to the correctness or accuracy of the results, whereas reliability refers to the consistency of receiving the same results if the research is repeated. Looking at the definitions of the two words, it is clear that their presence in qualitative research is critical since the notions provide correct findings. The importance of procedural accuracy and verification procedures along the process in ensuring rigor in qualitative research cannot be overstated (Morse et al. 2002). Trustworthiness, severity, and quality are all dependent on validity and reliability in qualitative paradigms, making the two ideas just as important as quantitative research. Researchers must grasp that the two principles aid in the elimination of prejudice while enhancing the level of authenticity in study concerning a social issue.

In contrast to quantitative research, which focuses on numerical data, qualitative research focuses on non-numerical data and phenomenological interpretation, which involves human

senses and subjectivity (Morse et al. 2002). In the absence of these two notions, the research's credibility is dependent on the researcher, who may be prejudiced, resulting in misleading findings. Because there is no consensus for judging the quality and robustness of qualitative research, it has been repeatedly criticized and dismissed. Our findings are useful to readers and other researchers since they are consistent, realistic, relevant, and trustworthy, as demonstrated by the application of phenomenological interpretation. Furthermore, expert interviews eliminate the need for extra screening or clarifying questions in order to uncover the truth.

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### ***3.8 Research Techniques***

In reflecting on research methods, the researcher knows that they may involve quantitative or qualitative techniques. There are also mixed methods which could be a combination of the two above (See Creswell, 2012). However, for the proposed dissertation majority of the approaches were considered because the research problem needed to be explored

in all dimensions of reasoning and understanding. For instance, an extended literature analysis was sought, relating to the desk-research or library-survey method. This invited survey research method is the primary research technique. More details on the same shall be discussed in due course.

Two primary research techniques are considered while forming a comprehensive research design. The methods include quantitative and qualitative approaches, whittled to guide the analysis of obtained data from the study sample (Creswell, 2009). The quantitative method is applied when the collected data is statistically measured (Hussey and Hussey). Conversely, the qualitative case study technique is employed descriptively when the data is analysed (Miles, 1994).



## 4.0 QUALITATIVE RESEARCH APPROACH

The qualitative research approach was used within this study. Qualitative research is a kind of investigation used within several academic topics, like the social savoir and market evaluation. This kind of research usually aims to obtain a comprehensive knowledge of behavior and the factors that impact it (Duvendack and Palmer-Jones, 2013). This method identifies the why and how rather than focusing on the particular what, when, plus where of decision-making. This means that small, more targeted trials are essential than vast samples.

Typically, qualitative approaches will determine the connection between earnings, operations, and managing to account. Cochran and even Dolan (2004) illustrate some scenarios inside which qualitative exploration methods can be helpful. This plan may be applied when the research aims to investigate challenging trends to quantify statistically. The technique could help define company dynamics, processes, and even changes over the moment ideal circumstances. That also aids typically the researcher in outlining social interactions by simply eliciting participant opinions and preferences. The qualitative technique is the most excellent alternative for learning about causal mechanisms.

That contributes to exploration by creating tips on why some intervention might include a result, how which effect occurs, and even the organizational circumstance and circumstances inside which losses. The qualitative approach is ideal when the research aims to gather the details needed to include a thorough photo of the trouble. Inside this situation, t, typically, the technique helps analysts provide detailed descriptions of personal perspectives and activities while increasing the quantitative quantification of cases (Duguleana & Nicolae, 2005).

Depth interviews will be used to get qualitative data. A talk, according to Mugenda & Mugenda (2003), is the oral distribution of a questionnaire or interview agenda. It's a one-on-one encounter. Interviews are used to get in-depth data that is difficult to obtain through questionnaires, data needed to satisfy specific study objectives, and more information through probing questions. Interviews also generate better response rates since respondents cannot refuse to answer questions or completely ignore the interviewer.

The researcher will gather data from the interviews using the interview schedule. An interview schedule is defined by Mugenda and Mugenda (2003) and Orodho (2009) as the questions the interviewer asks during the interview. They also argue that the interview schedule aids them in gathering the data required to achieve the study's unique goals. It's utilized to establish a consistent interview environment, allowing interviewers to ask the same questions in the same manner. As a result, semi-structured interviews were used in this study. The data will be recorded by taking notes throughout the sessions. Because the material is readily available and has already been classified into relevant categories by the interviewer, data analysis will be easy. If the interviewee agrees, tape recording will be used.

The goal is to be able to replay it and examine it in more depth. One of the benefits of this expert interview is that it delivers a reliable expert opinion that identifies project risk areas. The conversations also serve as a foundation for converting qualitative data into quantitative risk estimations. Expert interviews provide additional information that is not accessible from previous project data alone.

The following are some of the reasons why qualitative research methodologies are preferable to quantitative research. To begin with, quantitative analysis is rarely practical or acceptable for getting information from participants. Quantitative approaches were not used in

this investigation since making meaningful inferences from the data proved challenging. Case studies involving interviews, according to Hartley (2004), also fit the study aims since questions may be tailored to each participant. In contrast to the restrictive design of a "yes/no" "check box" kind of questionnaire, flexibility in the levels of structural discourse is imaginable, and it has the ability to yield more information (Carter, 2004).

Second, qualitative research may be utilized to investigate people's perspectives, interpretations, and experiences. It is, on the other hand, appropriate for conducting research, evaluating data, or gaining a comprehensive understanding of the objectives at hand (Malhotra, 2004). In other words, qualitative research studies may be utilized to find, characterize, or explain a certain context (Marshall and Rossman, 1999). Furthermore, qualitative research aids the researcher in developing a framework that allows participants to express their various points of view on a topic or issue in a structured manner. Finally, the researcher uses the collected data to provide a simple explanation for the phenomena.

#### **4.1: Definition of Qualitative Research**

According to Bryman and Bell (2007), qualitative research is an approach to research which stresses linguistic forms rather than figures in data collection and analysis. Government Design Service Manual (2016) defines qualitative research as a type of descriptive research that aims at gathering information about peoples' lifestyle; their occupation; how they relate with others or what they buy on a daily basis.

## **4.2: Features of Qualitative Research**

According to Bogdan and Biklen (1982) from Syracuse University, there are five features of qualitative research. They are as discussed below.

### **4.2.1: Naturalistic**

Qualitative research possess the same settings with the actual source of the information. The researcher is an important instrument in the research. Data collection for a qualitative research involves the researcher spending considerable time in the area of research. An example is a researcher spending time in hospitals, prisons, offices, learning institutions and even remote regions. The researcher collects the data in the locality and supplemented by their experience in being within the premises. Data collected is reviewed by the researcher with an aim of identifying instruments to be analyzed. Most researchers spend long periods collecting data. Ogbu (1974) while researching on the educational stratification in California, he spent one year and nine months in the field collecting data by interviewing participants in the research.

Context is an important factor in qualitative research. Researchers believe that occurrences are best observed and judged when they happen in their natural setting. Historical information about the collected data should be reviewed. For example when official records are to be used as a source of data, factors like who prepared them, how, when, and why they were prepared should be reviewed. Qualitative researchers believe that human behavior is hugely influenced by the circumstances surrounding their actions. This explains why researcher goes to the natural setting where the actions occur.

### **4.2.2: Concern with Process**

The process rather than the outcome is the greatest interest of qualitative researchers. In a study on equity and integration in schools, Bruni(1980) examined teachers' attitude towards a specific group of children and then observed how the attitudes made them to treat the children and how this treatment revealed issues that were usually taken for granted .

### **4.2.3: Meaning**

The perspective of research participants is of great concern to qualitative researchers. Okhremtchouk et. al. (2015) studied the challenges faced by new teachers in their professional life. The researchers were teacher educators who worked closely with the teachers to uncover the issues they face before they join the workforce and during their initiation into the profession. The researchers used the findings to design support mechanisms. Some of the questions that the researchers focus on are on how participants view their lives and the things they take for granted.

To ensure that they have correctly captured the perspectives of the participants, some researchers with videotapes show them to the participants to confirm the feedback from their source. Other researchers ask the participants comprehensive questions to get and understanding their perspective.

### **4.2.4: Inductive**

Qualitative data is analyzed collecting research data and then drawing conclusions from the observations made. This means that the researchers do not hold a hypothesis prior to undertaking the research. They do not conduct the research with an aim of approving or disapproving the hypothesis. When a qualitative researcher wants to develop a theory, they

reconnect it basing on the available information. The theory takes direction as the researcher collects data and spends time with the participants. The theory develops as they gather more data.

#### 4.2.5: Descriptive nature

Qualitative research relies on words and visuals instead of numerical data. It encompasses various forms such as memos, videotapes, photographs, and interview transcripts. The data collected is analyzed in its original recorded format. When gathering data for qualitative research, the researcher pays close attention to minor details, considering even seemingly insignificant elements as potentially valuable (Leedy& Ormrod, 2009). It is advised that qualitative researchers view everything as a potential clue that can contribute to a comprehensive understanding of the research topic.

Table 1: Advantages and Disadvantages of Qualitative Research

Advantages	Disadvantages
Involves evaluations that are in-depth and detailed	The quality achieved in the research process relies on the expertise and efforts of the researcher; the limitation is that the process of research can be biased and subject to the interests (personal) of the researcher
Interviews are flexible and not limited to particular issues; also, researchers can redirect the discussions to understand and clarify significant issues.	It consumes much time to interpret and analyze data.

There is a possibility to review the research when fresh information and findings emerge quickly.	It is not usually an acceptable research process in the scientific communities.
Data-dependent on human experience, which is believed to be much more compelling compared to quantitative research	It sometimes fails to uphold anonymity and confidentiality during the presentation of findings.
Less intense since data can be obtained from a smaller sample	It is tedious and time-consuming to present findings in visual ways
It saves on cost as it uses a smaller sample size unlike other research methods. More data is collected from each participant hence a small sample size. It is therefore recommended in situations when data is urgently needed.	The inability of qualitative research to represent statistical data makes it unreliable in some research.
It is a content generator. This research method enables collection of ideas on a specific group of people and then turning the ideas into important content for the research.	Data can be lost in case the researcher fails to recognize it. The researcher only collects the data they have observed. This taints the accuracy of the results.
Qualitative data is attitude based. The symbols that make a person unique can be obtained and utilized to recognize others who possess the same qualities hence making it possible for	It is difficult to reproduce results from qualitative research because it is based on individual attitudes which vary. This makes qualitative data tough to verify.

companies to design commodities that have a great value.	
Qualitative research encourages creativity. In fact it is the driving force. Research participants are encouraged to answer the research questions the way they feel like rather than trying to please the researcher. The collected data is therefore more accurate.	This research method can generate deceptive conclusions since the conclusions cannot be applied to the entire population.

### 4.3: Advantages of a Qualitative Study over a Quantitative Study

Qualitative and quantitative study techniques are significant in the progress of research. The qualitative technique, on the other hand, gives crucial data for developing a variable, such as data on user requests, partner behavior, and usage conditions. Furthermore, unlike a quantitative research study, the results of a qualitative inquiry show the characteristics of elements that are difficult to quantify. Furthermore, qualitative research can disclose subtleties about human behavior, emotion, and personality traits that quantitative studies cannot. User needs, user behaviors, preferences, requests, routines, and other significant details may be found in qualitative research projects.

While quantitative analysis is commonly standardized to compare statistics, it also requires flexibility, allowing the researcher to adjust as the circumstance changes during the session. In contrast to quantitative research, qualitative research typically entails naturalistic observation and structured interviews (Leedy & Ormrod, 2009). Naturalistic observation is a sort



of ethnography. The researcher should gather and observe the perspectives, needs, pain points, and actions without completely appreciating the data's relevance.

Rather of assessing the statistics after they've been collected; researchers usually look at the data's patterns. The study looks for comparable claims from various research participants when assessing trends. Hearing a single word from one responder is an anecdote; hearing a word from two respondents is a coincidence; hearing a word from three respondents is a trend. A qualitative data gathering and analysis approach may be found and used in a range of situations. These areas include soft science data, fieldwork, journalism, filmmaking, art and music performance, and quilting. A qualitative approach may help ethnography, montage, and bricolage (Denzin, 2005).

In most circumstances, qualitative research calls for open-ended questions that delve deeper into the issues, and the questions should not allow the informant to take the lead. When conducting a qualitative study, however, the researcher should refrain from asking leading questions. When responding to open-ended questions, the respondent has no choice, thus they might depict themselves in a number of ways. Non-leading questions, on the other hand, often allow respondents to reply based on their own preferences.

Exploitative qualitative research is exploitation in its most basic form. In qualitative research, smaller sample sizes are usually employed. A small sample size can give a lot of information in qualitative research. A huge amount of data must be collected in order to obtain better results from quantitative analysis. As a result, qualitative research saves money by yielding more information from fewer samples. Qualitative research investigates all facets of a study topic or problem and provides extremely detailed information ("23 Advantages and

Disadvantages of Qualitative Research," n.d.). Qualitative data, on the other hand, is more abstract and may be unrealistic; as a result, it is not entirely reliable in problem-solving.

#### **4.4 Qualitative Analysis**

There exist various approaches that can be used in analyzing qualitative data. Content analysis, discourse analysis, narrative analysis, grounded theory, and theme analysis are examples of these. They are discussed further in detail

Content analysis is the most common method of analyzing qualitative, quantitative, and occasionally in studies that use both qualitative and quantitative data. The method uses various analytical techniques in addition to research frameworks and utilizes several analytical approaches to produce results according to the underlying circumstances. The method involves classifying data, summarizing it and then tabulating it.

Procedures involved in content analysis enable replications which eliminate the biasness of the researcher on the outcomes of the study. The data used in content analysis is used to test theories and answer research questions. Krippendorff (2004) adds that data for content analysis passes a message from the source to the receiver and other consequential matter. According to Marsh and White (2003), photographs on the website can be used to indicate more than one meaning when combined with a narrative and can be put through content analysis individually or by looking at how the images and text relate. According to Beaugrande and Dressler (1981), data for content analysis can be tested by seven factors. They include; intentionality, acceptability, enlighten, circumstantial, consistency, interrelatedness, and narratives. In summary, the text for content analysis is made up of different components to give it meaning. The person who writes the message plans on communicating their perspective. The recipients of the communication

comprehend it and expect it to be relevant. The text may incorporate current and anticipated data. The text should be produced in the appropriate circumstances. The text follows a specific pattern.

### Applications of Content Analysis

Content analysis is useful in the following ways;

In the trial and enhancement of survey before being used to collect data.

To recognize the purpose, focal point, and the inclination of communication of the participant of the research.

To ascertain the cognitive and state of mind of the respondents in the research.

Describe attitudinal and behavioral responses to communications

To disclose the structure and direction of the communication content.

To divulge the dissimilarity in communication content among respondents in different nations or demographics.

To recount the default setting and interactive responses of participants to the researcher's queries.

To scan the interviews conducted by the researcher in an aim to ensure that they supplement quantitative data.

Content analysis has been selected as the methodology for this study due to its capacity to explore implicit assumptions (latent content) alongside explicit statements in a text (Guthrie et al., 2004). It is a method employed for the systematic, qualitative, and reliable examination of published information (Ellinger et al., 2003). It is well-suited for comprehensive literature reviews (Cullinane and Toy, 2000; Pasukeviciute and Roe, 2005) and the qualitative analysis of generated data.

The initial step in content analysis involves identifying the documents to be analyzed and determining the units of analysis (Guthrie et al., 2004). The selection of documents to serve as source data for content analysis is influenced by factors such as their availability, accessibility, and relevance (Cullinane and Toy, 2000). Given that this study aims to evaluate diverse research approaches in business logistics, logistics-related journals were purposefully chosen as the foundation for the sample. Rankings of logistics journals were employed to ascertain those considered of the highest quality and thus representative of cutting-edge logistics research. Four journals were cited from the top ten in academic rankings according to Gibson and Hanna (2003) and Gibson et al. (2004).

Content analysis typically focuses on smaller units of analysis, such as paragraphs, sentences, words, or characters, and may also examine elements like the layout of advertisements to assess the communicative effectiveness of a report (Unerman, 2000). However, complete articles can also serve as the unit of analysis in content analysis (Larson and Poist, 2004). Table 3.1 presents a summary of these measures and outlines the actions undertaken in this analysis to ensure objectivity, validity, and reliability.

In terms of quantitative measures within content analysis, it is postulated that frequency serves as an indicator of the importance of the subject matter (Guthrie et al., 2004). The process of quantifying judgments distinguishes content analysis from literature reviews (Kassarjian, 1977). However, an excessive focus on quantity at the expense of the quality of disclosures is recognized as a significant limitation of content analysis (Pasukeviciute and Roe, 2005). Moreover, it is equally intriguing to investigate what reports do not explicitly state, in addition to

their actual content (Unerman, 2000). Leveraging this aspect of content analysis, the researcher will present qualitative findings alongside the quantitative analysis of the review.

Content research includes searching for essential elements in the disaggregated data, which is probably the most common way to deal with the objective inspection of resources. It entails decreasing content to protect the primary substance while creating an acceptable corpus that accurately reflects the primary material through consideration (Addo, Guegan, & Hassani, 2018). The text is rewritten, summarized, or preoccupied and lowered for this aim. The subject is clarified, explained, and commented on. The content is not entirely set in stone. Thus, a lexicosyntactic definition is tried initially, followed by a tight setting analysis and a comprehensive setting inquiry.

Furthermore, an "explanatory rework" of the individual piece of text is made, and the explanation is examined about the overall environment. Arranging: this is similar to the approach employed in traditional substance examination and is also recognized as the essential content research strategy to sift through a specific design from the material. The text's content, structure, and scalability can be categorized here. The first step is determining the research units (Assarroudi et al., 2018). The organization pieces are placed on a few hypothetical premises, and the class arrangement's highlights are determined. As a result, definitions are established, and critical models with coding rules for discrete classes are selected. During the initial review of the material, the information sections are identified, and they are handled and removed in a quick inspection. Assuming that the categorization structure is relevant, it is reviewed, revised, and assessed, necessitating a material review.

The qualitative content analysis does not provide satisfying answers to the problems of how the categorization structure is produced and where the classes are derived. However, within subjective approaches, it is vital to cultivate the components of understanding and shaping categories as closely as possible to the material. The basic idea of the method is to devise a measure of a definition based on the hypothetical premise and the examination question, which will define which sections of the printed information, will be considered (Lindgren, Lundman, & Graneheim, 2020). This is how the material is handled, and classifications are made possible little by little. The classes are updated in a critique circle, then reduced to essential types and evaluated for consistency. Text coding is typically delegated to many coders because of consistency issues. The expert can determine whether the advancements being tested are shared and whether many coders can consistently apply similar codes.

One element that differentiates qualitative content assessment is its attempt to reconcile the subjective exploration worldview's promise of receptivity with the speculative insightful worldview's demand for hypothesis-driven examination. Qualitative content analysis is thoroughly systematized regardless of this receptivity, and the material is deconstructed piece by piece. This combination adds to its high complication-handling capacity. As a result of its all-encompassing and broad approach to researching information material, objective content analysis can (nearly) entirely handle and cover the intricacies of the social circumstances investigated and the social information gained from them (Kuckartz, 2019). Simultaneously, the qualitative content analysis uses a standard-based, strategically controlled methodology to manage and gradually reduce the complication. The synopsis, elucidation, and arrangement systems lessen the difficulty and channel critical investigation issues in an iterative cycle (Assarroudi et al., 2018). As a result, subjective substance examination is a natural fit for the

concept of contextual investigation study, which is to aid in comprehending complicated social aspects.

As an outcome of the interviews, the following results were obtained. The central question was always predicated on the agreement of the interviewees, and the responses were given the option of agreeing or disagreeing with the inquiry questions. The respondents nodded in agreement and decided to attend the meeting. Following the arrangement, questions were modified as follows. The following outcomes were attributed to the majority of the cases based on the responses

## **4.5 Types of Content Analysis**

The two most common content analysis methodologies are conceptual and relational content analyses. Conceptual analysis tests for the presence and prevalence of concepts in a text. Relational analysis enhances conceptual analysis by concentrating on the connections between thoughts in a text. Each type of analysis can produce a variety of outcomes, results, and interpretations.

### **4.5.1 Conceptual Analysis**

In conceptual analysis, an idea is chosen for examination, and the analysis comprises quantifying and tallying its existence. The main goal is to examine how frequently particular keywords arise in the data. Term definitions can be either explicit or indirect. Concrete words are easy to identify. Implicit phrase coding is more complex since you must decide on the amount of implication and make subjective judgments (an issue for reliability and validity). As a result,

coding implicit words may necessitate the need for a dictionary, contextual translation rules, or a combination of the two.

### ***Steps to perform a conceptual content analysis in general***

Selecting the Analytical Level: Choose from word, word sense, phrase, sentence, or themes.

Determining the Number of Concepts to Code For: Compile a list of predefined or interactive categories or concepts. Decide between Option A, allowing for category additions during coding, and Option B, adhering to a predetermined set. Option A facilitates the incorporation and analysis of novel and impactful information. Option B enables focused exploration of specific concepts within the data.

Coding for Concept Existence or Frequency: Determine whether to code for the presence of a concept or its frequency. This decision alters the coding process. For concept existence, a researcher counts it once if it appears in the data, regardless of frequency. For frequency, the researcher tallies how often a notion occurs.

Differentiating Between Concepts: Establish coding rules that logically categorize similar word fragments, such as "hazardous" and "dangerousness." Rules can group these fragments together or create distinct codes. Consider the level of implication – employing suggestive words versus explicit terms. For instance, "hazardous" vs. "frightening" vs. "that person could injure me." Implied notions like "dangerous" may not necessitate separate categories.

Creating Coding Rules: Develop systematic guidelines for translating text into codes, promoting consistency and coherence. Validity in content analysis is upheld by adhering to these guidelines.



Handling Irrelevant Content: Decide whether to ignore irrelevant content (e.g., common English words like "the" and "and") or incorporate it if it contributes to the coding outcome.

Text Encoding: Text can be encoded manually or with software. Software can automatically and efficiently code input classifications. Manual coding aids error detection (e.g., typos, misspellings) and ensures accurate category preparation, particularly for implicit data.

Reviewing Findings: Draw inferences and generalizations where possible. Adjust, discard, or refine the coding system to address irrelevant, undesirable, or unused text. Interpret results carefully due to the quantitative nature of conceptual content analysis. Broad trends and patterns are often discernible.

#### **4.5.2 Relational Analysis**

Just as in conceptual analysis, a theory is selected for assessment in relational analysis. However, the focus of this analysis lies in examining the interconnections between concepts. Independent concepts are considered devoid of inherent significance, and meaning is derived from the associations forged between them.

Before embarking on a relational content analysis, it is crucial to define a research topic and opt for a subject or patterns to scrutinize. The research question should be sufficiently delimited to allow for the synthesis of concept categories without ambiguity. Subsequently, a suitable text is chosen for evaluation. The content for analysis should be chosen judiciously, striking a balance between providing ample information for a comprehensive analysis and avoiding an excess of data that could overly complicate and prolong the coding process, impeding the derivation of meaningful and valuable insights.

### *Steps in undertaking relational analysis*

Once the sample has been chosen, the researcher must decide what types of relationships to look into and at what level of analysis: word, word sense, phrase, sentence, themes.

Divide the text into groups and assign a code to each word or pattern. The existence of meanings or words can be coded by a researcher.

Examine the analogies: once the words have been coded, the text can be examined for the following: Relationship strength: the degree to which two or more concepts are linked: Are concepts positively or negatively related to one another as a sign of a relationship: Relationship direction: the different types of relationships that different categories have.

The claims or propositions are coded, which distinguishes conceptual analysis from the relational analysis.

Conduct statistical analyses: During coding, search for differences or correlations among the selected variables.

Draw out abstractions, such as thought processes and judgment modeling.

### **4.5.3 Reliability and Validity of content analysis**

#### **Reliability**

Given the inherent human element in researchers, it is inevitable that coding errors cannot be entirely eliminated; however, they can be mitigated. An acceptable level of reliability, often deemed satisfactory, hovers around eighty percent. The evaluation of content analysis reliability hinges on three primary factors, expounded upon below:

- **Stability:** This pertains to the tendency of coders to consistently reclassify identical material in a consistent manner over an extended period.

- **Reproducibility:** This aspect concerns the probability that a group of coders will uniformly categorize content into the same set of categories.
- **Criterion Correlation:** The extent to which the categorization of content aligns statistically with a predetermined criterion or benchmark.

These factors collectively contribute to determining the reliability of content analysis, striving to enhance its accuracy and credibility despite the inherent limitations tied to human involvement.

### **Validity**

The validity of content analysis is assessed through three distinct criteria:

- **Integration of Sections:** Validity is enhanced by establishing cohesion among sections through the integration of multiple filters. This process results in a cohesive and unified definition for each category. Notably, the scope of a concept category, which can serve as an expressive parameter, can be expanded by incorporating various classifiers. These classifiers introduce substitutes or indirect variables to enrich the category's dimensions.
- **Generalization to Theory:** The degree to which the results can be extrapolated to a broader theoretical context hinges on precise definitions of conceptual classes. The derivation of these definitions and their reliability in accurately capturing the essence of the concept being studied play a pivotal role in ensuring the validity of the analysis.
- **Conclusive Scenarios:** The validity is further assessed by evaluating whether the findings can be extended or supported by alternative scenarios. This consideration ensures that the conclusions drawn from the analysis remain robust and applicable across varying circumstances.

These criteria collectively contribute to evaluating the validity of a content analysis, encompassing aspects of coherence, theoretical applicability, and the ability to withstand alternative interpretations.

### *Steps in Qualitative Content Analysis*

Data collection: Both verbal and non-verbal data is collected for analysis. Some of the sources of information include interviews, surveys and online feedback. The elements that are scrutinized in undertaking content analysis are: words, characters, themes, paragraphs, concepts, items, and semantics. To ensure there is adequate data for content analysis, all the applicable information should be collected. Sampling of the content is also undertaken. The sample should be selected in the right time and its size should be sizable to reflect the entire population.

Ascertaining classification categories: The data for content analysis is assessed according to existing rules and then categorized in non-conflicting groups. Categorizing the content into groups facilitates easier analysis. The researcher can focus on each category individually and yield a better outcome.

Coding the content: The content is coded by assigning a mutually exclusive number to each of the categories. Coding dictate how the content will be observed in a given set of information. Coding will help identify the length of the message, strength towards a certain direction, frequency of the code and direction of the content.

Scrutinizing the soundness and reliability of the codes: checking and testing the codes helps in ensuring the results are compatible. The validity of the sample is also tested before being analyzed. The researcher should ensure that the data is reliable and does not vary during the evaluation process. The data should also be confirmed to be stable and accurate.

Analyzing and presenting results: The results from the analysis should be available in the form of a report for the recipient to understand easily. Prior to presenting the results in a report format, the final results have to be assessed, direction ascertained and then arranging the information in a series. The researcher should ensure that the introduction of the report indicates the duration of the study, location, goal of the study, elaborate on the approaches and designs applied during the study and the sources of data. The elements that should feature in the results section include a comprehensive analysis and summary of observations that were recorded, vital findings, and an elaborate detail of characters that were discerned while conducting the study. Data presented in the form of graphs and models should support the results. The information should be clearly articulated for easier understanding of the recipients. The last section of the report should offer recommendations to the users of the information on how to further actions basing on the findings of the research.

### *Advantages of Content Analysis*

Content analysis serves as a direct examination of communication through textual content. Over time, it yields valuable historical and cultural perspectives. The coded representation of text enables statistical analysis. It offers a non-intrusive approach to scrutinizing interactions. Moreover, it delves into intricate models of human thought and language utilization. This method facilitates both qualitative and quantitative analysis, and when executed correctly, it is acknowledged as a relatively precise research approach.

Notably, content analysis stands out as a straightforward and cost-effective research method. Its potency amplifies when integrated with complementary approaches like interviews, observation, and the utilization of archival records. This amalgamation enhances its efficacy as a

formidable research tool. Particularly advantageous for analyzing historical data, content analysis is adept at unveiling temporal trends. Furthermore, it nurtures a more intimate connection with the data, fostering a comprehensive understanding of the subject matter.

### *Disadvantages of Content Analysis*

Engaging in content analysis can indeed consume a significant amount of time, potentially requiring thorough and patient examination. This method becomes more susceptible to inaccuracies, particularly when delving into relational analysis to extract deeper layers of interpretation, necessitating careful handling. Moreover, content analysis frequently encounters situations where it lacks a strong theoretical underpinning or tends to overextend its reach, drawing generalized conclusions about linkages and implications without due diligence. Its reductionist nature becomes apparent, especially when grappling with intricate texts, simplifying complex ideas. Often relying solely on word quantification, it might overlook the contextual nuances in which a work emerged or the subsequent developments post-creation. Additionally, automating or computerizing specific content analysis processes can pose challenges, adding a layer of complexity to its implementation.

#### **4.5.4: Discourse Analysis**

This technique is used to study language in either written or spoken form in comparison to the physical environment in which the interaction occurred. The method stresses the meaning of words in its context. The technique begins by clearly outlining the research question and then responding to them by choosing a selection of material that is relevant. Secondly, you need to identify the historical and social setting in which the content was created and is intended to be consumed. Gather information on the content's creation date and location, the creator, who

produced it, and who it was distributed to. Thirdly, the researcher has to study multiple aspects of the content, such as words, phrases, paragraphs, and general structure, for traits, themes, and connections that are relevant to your research topic. Finally, you examine your findings and draw conclusions (Luo, 2020).

#### **4.5.5: Narrative Analysis**

In this technique, the researcher concentrates on a certain subject and examines data gathered through case studies, questionnaires, observations, or other comparable approaches. The researcher can also modify the raw qualitative data. The research findings are scrutinized and perused. The researcher should possess substantial information about the subject before undertaking narrative analysis. To obtain this data, they have to conduct personal interviews and gather vast quantities of material from them. They can also draw on other sources, such as available literature and personal reminiscences.

#### **4.5.6: Grounded Theory**

Grounded theory seeks to uncover or develop theory using evidence that has been collected methodically and analyzed through comparative analysis. While grounded theory is naturally adaptable, it is a difficult approach to master. As a result, new scholars try to comprehend the discourse as well as the actual implementation of grounded theory concepts and processes.

#### **4.5.7: Thematic Analysis**

It is frequently used to describe a group of texts, such as an interrogation or extracts. The researcher carefully studies the data to uncover common themes — subjects, concepts, and

meaning patterns that appear again. It follows the following procedure: Comprehension, scripting, topic generation, subject review, theme definition and naming, and theme documentation.





## **5.0 ANALYTICAL METHODS (QUALITATIVE AND QUANTITATIVE)**

### **5.1 The effect of capital budgeting on the growth of microfinance institutions**

Managers may use a simple criterion to make capital budgeting decisions: invest in projects that have a positive net present value and avoid those that have a negative one (Brealey and Myers, 2010). Businesses that follow this criterion, according to capital budgeting theory, will make investment decisions that maximize shareholder wealth. Because it gives a full appraisal of a project's contribution to shareholder wealth, net present value is the most commonly employed capital planning technique. According to capital budgeting theory, the primary goal of a firm's shareholders is to maximize the firm's value. Furthermore, the organization should have unlimited access to financial markets, which would allow it to fund any value-added operations. Companies may segregate their investment and finance choices if certain assumptions are satisfied, and they should engage in any projects with a positive net present value (Brealey and Myers, 2010).

When the investment horizon is long, the net present value theory of how investments should be chosen provides decision-makers with a tool to evaluate several potential possibilities. The concept is founded on the notion that investments (loans) are made in order to get future benefits, but that these benefits should be repaid with the loan. The aim is for investments to be self-sustaining, which means the loan should create enough income to support the loan payments. If more money is required to complete the repayment, the investment is called bad (Milgrom and Roberts, 1990). When a borrower applies for a loan, the lender looks at the same things that the borrower looks at (in the case of a company, the benefit is often a stream of

income). The lender considers a loan to be an investment, whereas the borrower considers it to be a benefit (in the case of a company, the benefit is often a stream of income). The lender charges an interest rate to make money accessible to the borrower, which represents the lender's cash flow. Banks charge their borrowers interest rates and pay interest on their deposits (from whom the banks are essentially "borrowing" funds). Business bonds also pay interest (coupons). When evaluating this form of investment, decision-makers typically consider the interest rate earned on their assets. This rate of return can be used to assess asset performance over time.

Examining the risk in investment selections as well as the profitability criterion for investment selection indicated a significant gap between theory and reality in capital budgeting. The two types of appraisal methods are discounted and non-discounted appraisal procedures. M&M's capital structure theory isn't relevant. Modigliani and Miller (1958) further demonstrated that the theory-practice gap in capital budgeting may be bridged by focusing on increasing company value as the primary goal of investment choices and developing a criterion for choosing between different temporal patterns of share prices. Modigliani and Miller (1958) acknowledged that PBP and AP, rather than the IRR and NPV, were widely used at the organizations he visited, and that there was a need to figure out why executives chose PBP and AP and how to make the IRR and NPV more relevant.

Financial managers use investment and financing alternatives, as well as their interconnections, to help them provide appropriate replies to the firm's investments and how they should be paid for (Myers and Brealey, 2010). This, they believe, is the key to effective financial management. In theory, a company's choice to embark on a new project should be based on whether the initiative would boost the company's shareholders' wealth. Inconsistencies exist in the way capital budgeting is taught and implemented. If a project's net present value (NPV) is

positive, corporate finance students are often taught that it will improve shareholder value. Only the project's systematic risk concerns to investors with well-diversified portfolios; its idiosyncratic risk should be ignored. Most capital budgeting courses overlook capital market flaws such as high-cost external borrowing and bankruptcy expenditures. Harvey, Graham, John, and Campbell are four friends (2001).

Bennouna et al. (2010) researched on how capital budgeting methodologies influence the development of micro-finance firms in Mombasa. The study found a strong link between net present values as a capital budgeting tool and Mombasa's microfinance firms. The likelihood of micro-finance enterprises to rely on Net Present Value to know their present value, ensure the sustainability of their long-term investments, and ensure that these micro-finance enterprises do not waste resources because net present value is also a finance saving technique is clearly characterized by this relationship. The findings revealed that microfinance businesses have a significant proclivity for adopting the net present value capital planning technique. Secondly, internal rates of return, it was discovered, play a critical role in microfinance firms' investment analysis. Knowledge on the micro-finance rate of return helps in determining interest rates. As a result, the business is able to save money and make good decisions. Lastly, payback period was found to be primarily utilized for short-term investments as it is cost effective as microfinance entities can foresee loan repayments.

## 5.2 Qualitative Analysis Application

### 5.3.1: Content Analysis

Frequency is commonly assumed to indicate the significance of a given topic in terms of quantitative measures within content analysis (Guthrie et al., 2004). In contrast to literature reviews, content analysis provides a quantitative assessment of findings (Kassarjian, 1977). Nonetheless, a significant drawback of content analysis lies in its tendency to prioritize the quantity of disclosures over their quality (Pasukeviciute and Roe, 2005). Moreover, exploring the information that reports omit can be as intriguing as analyzing their explicit content (Unerman, 2000). Leveraging this approach, the researcher aims to present not only quantitative but also qualitative findings, effectively combining both aspects in the content analysis review.

#### *Team member Related Factors*

SMEs with highly engaged staff have a higher potential for success. Appropriate stimulus plans, together with a sufficient level of education and consistent representative ability growth, are projected to increase the quality of credit books and advance administration quality, increasing the bar for former clients' trust and recruiting new ones. Furthermore, an effective incentive structure may push employees to make better decisions, resulting in fewer fraudulent practices and higher reimbursement rates. Increasing the total level of training for clients is not a straightforward problem.

#### *Risk Analysis*

Most respondents identified market risks, liquidity concerns, credit risks, and operational risks. The current economic crisis in Lebanon is a market risk that affects nearly every SME. The

risk of losing purchasing power if the value of your speculations does not keep pace with growth. After some time, expansion dissolves the purchasing power of cash, resulting in a similar amount of cash purchasing less labour and products (Addo, Guegan, & Hassani, 2018). Expansion risk is critical if one has money or obligation speculations, for example, securities. Shares provide some expansion insurance because most businesses can reduce the fees, they charge their customers. As a result, stock quality should rise in lockstep with the expansion rate. Land provides some security because property managers can raise rents after a certain period. The possibility that the uncertainty downtown will be reduced due to an unexpected event, such as the loss of their businesses. This could force people to sell investments they had planned to hold for a long time. Organizations may lose money if they have to sell while the business sectors are down—the risk of not selling one's speculation at a reasonable price or drawing reserves when needed.

#### *Client Related Factors*

Client-related aspects allude to the objective of an SME, which is undoubtedly the most distinctive feature of traditional loan specialists. For example, a lack of client data hampers the SME's potential to cultivate superior administrations and goods that boost consistency and attract new consumers. The clients' low educational level reduces their financial understanding and capacity to quickly appreciate their rights and obligations, resulting in client income unpredictability, impacting the SME's productivity and growth. Low population density would also raise an SME's transportation and time expenditures; Chao-Beroff et al. (2000) discovered that SMEs serving irregularly inhabited areas would incur up to 20% of advance payment.

As client awareness and data increase, maintaining existing clients should become less burden, assuming that SMEs will use the gathered data to serve their current clients better.

Because communication between loan officials and clients is vital in the microfinance business, developing representative competence and training is critical for better understanding and serving consumers.

### *Impact of the Pandemic*

While no one was spared during the COVID-19 epidemic, the effects were unevenly distributed across customers and institutions, and not all of the repercussions were bad. The COVID problem has impacted most, if not all, SME customers, either directly or indirectly. The direct repercussions were caused by corporate closures, either forced or voluntarily, or by personal decisions to temporarily suspend activities for personal reasons such as health risks or family obligations. Indirect effects include the disruption of supply chains and reduced demand for particular goods and services provided by SME clients as a result of the obligatory closure triggered by the COVID pandemic.

### *Implications for Business Continuity*

Even those designated important commercial activities have to conform with increased physical separation measures and higher sanitary rules during an emergency. Many companies shuttered under the state of emergency, with the service sector (especially street sellers, restaurants, hairdressers, and beauty salons) suffering the brunt of the losses. The first businesses to close or substantially restrict operations were shops, market trading activities, personal transportation, and construction. The bulk of individuals who did not have to close their doors did so in agriculture, which had a less immediate impact. Given the nature of agriculture and the gap between production and market sales, this might be a one-time occurrence.

Businesses that were able to swiftly convert to new marketing and sales channels, such as internet retailing, were less likely to close. Nonetheless, to meet the new business methods, they had to make more internal modifications. Businesses that were unable to adjust to new ways of conducting business that were compliance with social distancing rules, or operations that could not be adapted, such as personal services such as hairdressing or cleaning, were hit the hardest, with a larger rate of permanent closures. Because not all business lines had to cease or slow down at the same time or at the same rate, multi-activity firms fared better than single-activity enterprises in general. Finally, many entrepreneurs and company owners have voluntarily halted operations owing to infection or personal situations, accounting for up to 20% of certain SMEs' customer base. Despite the fact that the situation is severe and the odds of restarting a firm or returning to pro-COVID sales levels are small, the number of genuine permanent closures among microfinance clients is rather low. Despite the fact that their business models will almost certainly alter, most firms and entrepreneurs are optimistic about their capacity to recover and continue.

Only a small fraction of SME clients reported no change in sales or turnover, and even fewer said they had increased. Customers in some industries have had smaller sales revenue decreases than the bulk of micro- and small enterprises, including nursing homes, construction, industrial production, information technology, manufacturing, and home-based craft production. Most SME customers relied on national government-sponsored economic assistance to stay afloat if such assistance was available. However, the scope and length of these assessments were usually limited, and self-employed and small business owners frequently failed to fulfill requirements intended for bigger businesses. Many people lacked the expertise and awareness of how to use the resources that were made accessible to them, even when help was provided.

Most SME clients do not have any paid employees outside the owner, and if they do, it's usually family members. Those with workers took paid leave or arranged for work from home, especially when government income assistance programs permitted them to keep paying wages. To retain team members on the job, one-third of customers had to lower their salary. The majority of people who wish to take advantage of government aid prefer to combine taxes and deferred social benefits with other options like direct wage support or a loan repayment moratorium. Only a tiny proportion of the population likes to rely completely on tax advantages from the government.

When the state of emergency is removed, most consumers anticipate their company to resume normal operations, but this is not always the case. Many consumers' expectations are predicated on the capacity of the economy to stabilize and the willingness of governments to help throughout the transition phase. There's also the possibility that the recuperation will be lengthy. Entrepreneurs in cities are more pessimistic about future recovery than those in rural areas.

Despite this, many respondents remain undecided about their intentions, preferring to wait and see what happens after the state of emergency is lifted. They are unable to identify their abilities to restart their enterprises or which form of support would be most advantageous. It's also worth mentioning that more than a quarter of consumers fear they won't be able to borrow money anytime soon as a result of economic uncertainty and losses incurred during the present crisis.

Microfinance institutions were mostly unaffected by the epidemic, and most SMEs were able to swiftly adjust to the new scenario. None of the SMEs have experienced severe losses that would force them to close or liquidate. This highlights the internal operations and governance



mechanisms of SMEs' resiliency in the face of a crisis. Unlike SMEs in other areas of the globe, where portfolio quality has deteriorated dramatically, European SMEs have maintained, if not improved, their risk levels compared to pre-pandemic levels. Macedonia's and Bosnia and Herzegovina's SMEs have been steady, and their portfolios have done well. SMEs in several countries showed a spike in PAR, with some substantially tripling their PAR30 during the pandemic, according to one group. However, this was from a low base of 2.1 percent to 4.4 percent.

PAR30 findings are much higher in several Western European SMEs. These higher percentages, however, reflect the nature of their financing, which concentrates on start-ups and early-stage companies, which have a considerably weaker potential to weather the crisis than more established enterprises. Finally, the PAR30 numbers for SMEs are uninspiring, since they demonstrate no substantial decline in portfolio quality. However, this first conclusion must be altered in at least two ways. To begin, numerous authorities permitted the rescheduling and inclusion of pandemic relief loans into the normal portfolio, deeming them performing loans. SMEs' publicly stated PAR metrics may not correctly represent the underlying quality of their portfolios, even if they are accurate and established according to regulatory regulations, because these loans may not be performing.

Once the moratoria have expired, which should be before the end of the year in most cases, the actual quality of the portfolio will be disclosed. Second, it is yet too early to determine the entire extent of the epidemic's influence on borrowers' financial circumstances. Many borrowers were able to use government and SME-sponsored support programs to satisfy their financial commitments and repay their loans. If such assistance becomes unavailable in the near future, this may alter.

Not unexpectedly, demand for loans has declined, especially in the early phases of the epidemic, when the situation was uncertain and consumers had little inclination to take on further debt. The situation, however, differs from SME to SME and nation to country. Several SMEs reported a considerable decline in loan applications during the epidemic, and this trend is unlikely to alter very soon. When compared to pre-pandemic levels and a similar period last year, loan distribution of new loans has reduced by 60% or more for several SMEs. Despite this, most SMEs report increasing demand for new loans, notably in June and July, when economies began to open up and market demand and business potential became obvious.

On the other hand, this new criterion is separate from prior ones. Smaller quantities are sought for the loans, which are largely for working capital to cover immediate operating demands. Few loans for investment and business expansion are being sought, which is in line with the existing circumstances and business predictions for the foreseeable future. SMEs, on the other hand, may be able to tap into a new market of small enterprises that were formerly supported by banks but are now unable to do so owing to bank lending restrictions. Credit rationing. In some cases, client demand for new loans may be reduced, resulting in SMEs reducing credit for one of three reasons.

In order to fund new loans, several SMEs were compelled to limit the number of loans they could provide due to a lack of capital. Even if SMEs have sufficient assets to cover new loans, some have implemented distribution limitations to mitigate credit risk in these uncertain times. In addition, the majority of SMEs updated their risk assessment rules and techniques, resulting in stricter credit evaluations and the exclusion of certain economic operations that may be considered high risk in terms of pandemic effect. SMEs did not adjust their product offers in

general, although some features and qualifications, such as interest-free periods for the first three months of a loan, may have changed.

In reaction to and as a result of the present crisis, some SMEs released new products. These were generally short-term liquidity solutions aimed to help clients deal with cash shortages and business demands in the short term. During the epidemic, this was the situation, and national governments and development organizations responded by introducing small-business-specific emergency financing packages. In some cases, SMEs were entitled for help from such programs.

### *Working with Clients*

Communication and consumer interaction altered substantially throughout the epidemic. Due to the impossibility to do due diligence and monitoring on-site, new digital communication channels were devised, which most SMEs used to some extent and have since expanded. SMEs began to communicate with consumers using alternative channels such as Skype, Zoom, WhatsApp, or Viber, and loan applications were made available online or via mobile phones. They also changed a number of processes and standards to suit the present circumstances, such as substituting electronic records for physical documents when possible and permitted. It's still unclear who struggled the most with the ten-fold communication gap. Clients had to learn new methods to interact, while SMEs had to make considerable internal adjustments to their operational practices. Even if the majority of people have smartphones, we cannot assume that every customer knows how to submit vital papers in digital format or sign loan agreements online. Most SMEs opt to adjust and change their risk management to accommodate for the heightened risk posed by COVID-19 exposure. Time- and risk-adjusted cash flow estimations

(such as discounted cash flows), a reduction in maximum loan amounts, and adjustments relating to new legislation governing commercial operations like restaurants and tourism firms were among the improvements made.

The increased risk rules may also cause some types of corporate activities to be excluded or reduced in the total loan portfolio. In order to adequately account for the current economic circumstances, some SMEs have opted not to adjust their risk management techniques until the crisis has passed.

### *Internal Business Procedures*

Lockdowns and social distance limitations have had a considerable influence on microfinance companies' internal working arrangements, just as they have on other firms. SMEs have begun to use home-based bookkeeping and operate in smaller groups that rotate around the office, needing adjustments to a variety of technology and communication methods. SMEs have shuttered their usual offices and transferred their meetings to a co-working environment, relying on work from home in some situations. For loan officers who are used to being out in the field and having direct physical touch with consumers, working from home and virtual cooperation proved particularly difficult.

To comply with the social distance requirements, SMEs that continued to operate out of their offices had to invest in safety equipment like as masks, disinfectants, and other preventative measures. Clients might apply for loans and repay them online and digitally, requiring SMEs to build online loan applications and implement online payment systems. Despite the fact that there is still work to be done, all SMEs now have online loan applications and payment systems. Some

SMEs that had created online platforms in addition to traditional loan application procedures prior to the crisis witnessed a rise in the usage of digital applications during the pandemic.

### *Accounting and finance*

The majority of SMEs in Beirut were in solid financial form, with only a handful showing signs of liquidity challenges, which had been a key concern for SMEs since the beginning. Most SMEs started the year with a good financial buffer and no worries about liquidity. Lower loan demand helped to address liquidity worries at the same time. Despite previously negotiated and signed contracts, several SMEs that ran out of capital had trouble collecting financing from investors who were hesitant to contribute cash during the epidemic. Simultaneously, a group of microfinance investors developed a one-of-a-kind liquidity product for SMEs, giving them with instant cash.

### *Cost-cutting*

Several SMEs indicated that they had to decrease operating costs in order to survive the crisis and retain a good financial position. All forms of training and professional development, as well as compensation levels, furloughing or laying off personnel, and delaying some expenditures until after the epidemic, were eliminated.

SMEs' prospects have been affected by the present epidemic. SMEs are being pressured to reopen, which is not the case. The changes made in response to the outbreak are projected to continue, with SME operations becoming more automated and impersonal than before. As a result of the pandemic, the future of credit distribution has changed, and the pace of digital transformation has accelerated.

### 5.3.2 Quantitative data analysis

The survey will be sent to a group of 80-120 workers and coded in SPSS in addition to data analysis. Inferential statistics, for example, can be used to identify the cause-and-effect relationship between essential variables. T-tests such as ANOVA, Chi-square, and Paired sample t-tests will be used as a result. To validate any association between capital budgeting procedures and financial risk trends, a bivariate study, such as the Pearson Product Moment Correlation, will be undertaken. To further confirm the datasets' panel link, several regressions will be done in parallel.

#### Research strategy

The sample is representative in the sense that individuals of the same community from which it was chosen have the same attributes, and so the sample features are common to the larger population after the research, which is the study's major purpose). Both secondary and primary sources will be necessary to fully appreciate the scope of the study subjects. The Lebanon Chamber of Commerce will provide secondary statistics. The survey procedure will commence after that. Because the hypotheses can only be replied with a yes or no, it's inconvenient. It contains no further information, such as qualitative research (Saunders et al., 2007).

Surveys demonstrate a high degree of overall ability in depicting a large group of people. Due to the large number of people who respond to the survey, the data obtained provide a better picture of the relative characteristics of the general population, including the research can extract data that is close to the fundamental natural characteristics of the larger population when compared to other data gathering methods.

Users are only required to cover the cost of producing a single survey questionnaire when conducting surveys. If a larger general population sample is needed, an incentive, whether monetary or in-kind, as minimal as \$2 per page, can be offered. In contrast, data collection methods like focus groups and personal interviews demand more time and effort from researchers.

Surveys prove to be highly suitable for scientific research, as they present a uniform stimulus to all participants, eliminating the potential influence of observer subjectivity. The dependability of surveys is notably high, effectively mitigating the researcher's personal preconceptions.

The outcomes are precise: Since survey questions undergo rigorous vetting and harmonization, all respondents are exposed to the same definitions. Consequently, the gathered data can be measured with heightened precision.

Qualitative data will be gathered through a singular semi-structured questionnaire featuring open-ended questions. The evaluation of this data will be facilitated by the Statistical Package for Social Sciences (SPSS), a tool proficient in handling both small and extensive data sets and facilitating the generation of descriptive statistics. The presentation of data may involve various formats, including explanatory notes, tables, pie charts, and bar graphs. Additionally, descriptive data can be effectively showcased through the utilization of tables, pie charts, and bar graphs.

Table 2: Advantages and Disadvantages of Quantitative Research

<b>Advantages</b>	<b>Disadvantages</b>
Given that its basis is on a large random	Positivism is often criticized for its limitation in

sample, it is possible to generalize the data findings to an entire (whole) population.	encompassing the broader connotations of social phenomena, resulting in an inability to delve into the profound meanings inherent within a given social phenomenon.
Embedded within a positivist paradigm, it entails the measurement of variables, enabling the depiction of relationships existing between these variables.	In the realm of quantitative research, positivism falls short in providing an explanation for the intricate processes that mold or sustain a particular social reality. Additionally, it does not adequately address how individuals perceive, construe, or make sense of their own behavior and that of others.
It requires less time and is more cost-effective to execute.	It possesses the potential to offer a mere snapshot of the phenomenon under scrutiny, assessing variables solely within a predetermined timeframe.
It can be done anonymously. It is not a requisite for the participants to be identified.	It tends to encourage insecure responses and findings as it does not create room for physical encounters.
It does not require direct observation during data collection. The researcher can collect the data passively. The researcher can give the participants the surveys to fill them by themselves over a period of time and then focus on other activities.	Due to the necessity to function under conditions unique to the group, quantitative research can often produce results that are significantly different from those seen in real-life samples. This allows researchers to alter the results regardless of whether or not the samples are randomized.



<p>Data collected in quantitative research is reliable and disagreeable as the method employs considerable attention.</p>	<p>It does not allow investigation of the answers presented by the respondents. The researcher cannot return the survey to the participants for further queries.</p>
<p>The findings obtained during data collection will tell you which statistical tests to perform.</p>	<p>It is not easy to create a research model for data collection and analysis. The researcher must ensure that there is no room for errors during the model formulation as it affect the findings.</p>
<p>This makes your data evaluation and presentation of the conclusions simple and free of subjectivity and inaccuracy.</p>	<p>It is only limited to numbers and figures. It makes the quantitative method unfit for queries that need certain feedback and is devoid of a human element.</p>
<p>The collected and analyzed data is genuine as it can yield same results when subjected to several examinations.</p>	<p>Data from studies can be modified to produce a subjective result. The results that follow cannot be appropriately evaluated if numbers are not given their entire context or are acquired in an inaccurate or deceptive manner. Bias, opinion, and basic errors all work to stymie the experimental process, and must be factored into your test design.</p>

### **5.3 Ethical Considerations**

Like any other research, the current study is susceptible to ethical issues. According to Frels and Onwuegbuzie, there are various reasons why ethical rules should be respected when doing research (2013). Truth, knowledge, and error avoidance are all aims that ethical norms support. Prohibiting the falsification, fabrication, or distortion of research data, for example, promotes the truth while also helping to avoid mistakes. Second, because research necessitates a high degree of coordination and collaboration among many individuals from diverse organizations and areas, the ethical standards used to promote the principles essential for collaborative work were strictly adhered to. Such principles include accountability, trust, fairness, and mutual respect.

Third, various ethical principles have been established to guarantee that researchers are held accountable to the public. Fourth, following ethical norms aids researchers and their organizations in gaining public support for their study. When people feel a study project will be of high quality and integrity, they are more likely to support it. Finally, many of the ethical concepts discussed in the research contribute to the promotion of a range of other important social and moral objectives, including human rights, social responsibility, legal compliance, animal welfare, and health and safety.

Ethical concerns must be evaluated since they have a substantial influence on the study's trustworthiness. The research will be conducted in compliance with established research ethics. Managers who take part in the research may be certain that their identities and the documentation they must supply will be kept private. It shall be assured that the managers only utilize the documents collected for the indicated reasons. In addition, the study will extensively depend on secondary data from past studies. Academic integrity is assured when such data is updated and

the sources are recognized. Only scientific procedures should be used in the research. The overall reliability and validity of the research process and its findings will improve as a result of this.

The CEOs will be notified of their ability to withdraw from the research if the questions make them uncomfortable or if they have other personal reasons to do so. Furthermore, the obtained data is supposed to be anonymous, and the executives' confidentiality is ensured. This implies that no one response will be linked to a specific executive, and they will not be identified as the questions' responders elsewhere. After that, the researcher will go on to the next phase. The executives will be asked questions in the questionnaire, which will be recorded using an audio recorder. The researcher will next use the audio recorder to transcribe the material. Each transcript will be transmitted to the appropriate executive for verification in text form. The data will be extensively evaluated and analyzed using content analysis once the executives have verified the language.

### **Conclusion**

The goal of this study was to present a public picture of SMEs in Lebanon, including how they make financial decisions, the relationship between decision rules and financial development and profitability, and how to deal with financial risk in order to solve the challenges of Lebanese SMEs. The study will use a positivistic explanatory research methodology to provide an adequate explanation of the different capital budgeting and risk assessment methodologies used or disregarded by managers of SMEs operating in the Lebanese area. By incorporating the interpretivism research philosophy, the study will conduct a comparative analysis of several capital budgeting models, allowing for the selection of the most appropriate business model. The research will then collect data using both a primary and secondary methodology to better

understand the capital budgeting and risk management scenarios of SMEs operating in the nation. It would gather primary data using a combination of qualitative and quantitative methods.

Interviewing SME managers to obtain insight into their capital budgeting process to be integrated in the business process would be used to acquire qualitative data. It would also conduct a questionnaire survey to verify the data and obtain further information on the capital budgeting items to be used in the business scenario. Several capital budgeting approaches were discovered by the researchers throughout the study, which are applied not just in Lebanon but also by other global organizations. Net present values, internal rate of return, modified internal rate of return, hurdle rates, and payback time are examples of these strategies. The benefits of the methodologies have been thoroughly explained in the research, with NPV emerging as the best option for analyzing microfinance financial institutions, small and medium-sized businesses, and large corporations that outsource their operations or fill in any market gaps.

## 6.0 RESEARCH FINDINGS

### 6.1 Qualitative Research Findings

Most respondents identified market risks, liquidity concerns, credit risks, and operational risks. The current economic crisis in Lebanon is a market risk that affects nearly every SME. The risk of losing purchasing power if the value of your speculations does not keep pace with growth. After some time, expansion dissolves the purchasing power of cash, resulting in a similar amount of money purchasing less labor and products (Addo, Guegan, & Hassani, 2018). Expansion risk is critical if you have money or obligation speculations, for example, securities. Shares provide some expansion insurance because most businesses can reduce the fees they charge their customers. As a result, stock quality should rise in lockstep with the expansion rate. Land provides some security because property managers can raise rents after a certain period.

The possibility that the uncertainty downtown will be reduced due to an unexpected event, such as the loss of their businesses. This could force people to sell investments they had planned to hold for a long time. Organizations may lose money if they have to deal while the business sectors are down—the risk of not selling one's speculation at a reasonable price or drawing reserves when needed. To sell the belief, one may need to accept a lesser price. For example, the venture may not be dealt with excluded market resources.

"The scale of the market, extreme weather conditions, and losses are some of the risks that affect my firm," one responder noted. The majority of these threats also affect other businesses. I mitigate risks by first identifying them and then seeking solutions. As a result of risk analysis, I can make informed decisions, preventing my company from failing."

Risk analysis is unparalleled in providing objective assessments of specific risk elements for determining the viability of long-term investments. With current market weaknesses and the unknown of what is to come, it is only prudent to defend and protect their business with master speculation experiences. Another person stated that, for example, a risk study might help connect innovation-related objectives with its business systems if the company is in the IT business. Regarding capital planning, assigning assets to important capital uses can result in more substantial incentives for investors, but only if the firm has employed safe contributing methods.

One of the most challenging decisions that business owners must make—and one that has attracted the most attention—is selecting a few capitals venture options. It is not difficult to calculate return on investment under any set of assumptions that makes this type of decision so difficult (Janekova, Fabianova, & Kadarova, 2021). The issue is with the premises and the implications of those assumptions. Every hypothesis transmits its own risk, which is frequently massive. When these weaknesses are consolidated, they may shape an absolute vulnerability of fundamental proportions. One cannot determine a reasonable return rate unless one evaluates (a) when the speculative reserves are depleted and (b) when the profits are realized.

Examining framework and hypotheses is more difficult because they frequently differ in volume and time range during which should be made and benefits should be obtained. More effective rates can meet a comparative requirement for susceptibility protection. The business aims to make a profit proportional to its incurring risk. In situations characterized by considerable risk associated with multiple agreements, expenses, costs, and similar factors, the presence of incentives from Endeavour serves as motivation to acknowledge and accept such risks (Taherdoost & Brard, 2019). However, a critical concern emerges: management must possess a comprehensive understanding of the risks they are assuming, as well as the probability

of attaining the desired benefits. The calculation of rates of return, based on a combination of crucial, routine, and optimistic assessments, in tandem with evaluating the potential upsides of assessed parameters at high, medium, and low levels, can aid in the identification of opportunities (Manni & Faccia, 2020). These estimations encompass a spectrum of potential outcomes, delineating their scope. Nevertheless, they do not furnish decision-makers with insight into whether the positive or negative effect is more probable, or more crucially, whether the typical outcome is significantly more plausible than the alternative extreme. Consequently, while this approach holds promise, it falls short of providing a sufficiently clear perspective to facilitate decision-making.

"As each facet of decision evaluation is prone to uncertainty, it becomes imperative for executives to possess a lucid comprehension of how the uncertainty surrounding the primary criteria influences the anticipated returns," articulated one interviewee. Consequently, I employ a methodology that accommodates the inherent variability within all crucial attributes." In light of the unpredictability inherent in foresight, the objective is to provide a transparent depiction of the relative risk and the probability of achieving success or encountering setbacks. Maximizing the utility of the accessible forecasts hinges on simulating the interplay of these elements as the future unfolds. Employing computational tools to execute the requisite calculations offers a relatively straightforward approach."

### **SMEs Reactions to the Financial Crisis**

Institutions and agencies at all levels responded to the coming health crisis by implementing a range of humanitarian measures within their scope of authority and competence. Despite the fact that SMEs operate in a variety of contexts and environments, their answers to the COVID-19 problem appear to be relatively similar. The following are the most typical

answers, however not all SMEs employed all of the methods and instruments. Controls on the inside SMEs must alter their internal procedures to adapt to the changing environment. The following are some of the metrics we used:

- Implementation of a business continuity plan: these often overlooked and forgotten procedures were put into effect during the crisis to help the company adjust to changing conditions and reassign roles in ways that were not possible during regular operations.
- Virtual work arrangements: All SMEs implemented virtual work arrangements, which required employees to work from home and communicate and cooperate via technology. Despite advances in mobility and social distance, the majority of SMEs continue to operate in a virtual environment. Some, on the other hand, have claimed that they will return to face-to-face customer interactions in the future.
- Office safety protocols: All SMEs developed new health and safety standards, including social distance, cleanliness, and collaboration guidelines.

There are other ways that SMEs respond to crises:

- Institutions can concentrate on internal capacity creation in the face of severe economic difficulties in the region. Some of anti-crisis strategies include overhauling internal controls, simplifying processes, and proper management of problem loans.
- SMEs can seek alternative sources of funds. Securitization is one of these innovative alternatives. SMEs need to work closely with other financial institutions like banks. SMEs should adopt low-cost financing by borrowing direct loans from banks.

### **Lending Methodologies**

During the crisis, new lending fell as consumers sought less credit, and SMEs curtailed loan issuance due to new but poorly understood risks. New loans were issued despite this, and



existing loans required to be managed on a regular basis, prompting many SMEs to modify their lending processes and cash management systems.

The following are some of the most common loan modifications made by SMEs:

- Loan applications and approvals through the internet: While most SMEs provided online application options, the crisis made any other form of completing a loan application impossible. As a result of the crisis, institutions and customers have been forced to exploit previously underutilized online and physical resources.
- Digital disbursements and collections: SMEs that still dispensed cash and collected cash loan repayments had little choice but to quickly develop online solutions based on banks, mobile phones, or credit and debit cards.
- Remote monitoring: Because onsite and face-to-face monitoring were impractical, SMEs used technology to track their customers' capacity to repay loans. The majority of clients utilized video-capable mobile phones and used Skype, Zoom, WhatsApp, Viber, and other communication services.

### **Debt Restructuring and Short-Term Loans**

During the early months of the COVID crisis, the most common SME response was debt rescheduling, followed by the availability of additional emergency loan choices. The following alternatives were reported by the majority of SMEs:

- Internal loan moratoriums and rescheduled loans: While almost every SME used some form of loan repayment moratorium and rescheduling, the methods used varied. While some SMEs offered loan rescheduling to all customers (a rare occurrence), the majority took a more cautious approach, providing loan moratoria on a case-by-case basis and only to those who asked for it and made a compelling argument. The majority of the

rescheduling took place on a monthly basis, allowing SMEs to request loan repayments as soon as their customers' businesses reopened.

- External loan moratoria: SMEs implemented required loan moratoria if the government and regulators imposed them, in addition to or in conjunction with possible internal rescheduling.
- Loan options for post-crisis situations: During the financial crisis, most SMEs severely curtailed new lending, while a few SMEs developed emergency loan programs to help their customers receive cash. In these uncertain times, borrowers may be hesitant to take on extra debt, therefore demand for new products like these has been low.

### **Management of customer relationships**

SMEs personal ties and on-site interaction with clients were greatly impacted by the crisis, separating them from faintish. Despite the fact that the connection remained personal and intimate, it had to be converted to virtual channels via technology. One of two strategies was used by the great majority of SMEs:

Contacts with loan officers: During the financial crisis, loan officers called their customers to find out how they were doing financially. Most consumers were called at least once throughout the crisis, and loan officers spoke with their clients on a frequent basis.

Client polls: Client surveys were conducted by a number of SMEs in order to have a better understanding of their clients' difficulties and challenges.

Several SMEs began to provide webinar training on business topics, even if they did not provide business help to their borrowers or expand their services. Some SMEs that provide mentoring and coaching services also provided training and support to their coaches to help them transition to virtual support.

To ensure that clients take advantage of loan opportunities and additional assistance programs offered by national and local governments, some SMEs supplied relevant information. However, it had not been dispersed fairly. SMEs did not urge consumers to apply for such programs in addition to giving information.

### **Supervision of risk management**

Almost every SME is in favor of changing how they assess borrowers' risk, while not all of the adjustments have been institutionalized as standards and procedures. The bulk of the changes are related to the company's vulnerability to pandemic risks, such as the impact of social isolation on the industry's capacity to function or its location. These temporary protections will be included into regular plans and processes once these risks are more recognized and assessed.

Despite initial concerns, just a few SMEs reported experiencing fluid issues, prompting them to curtail, if not totally cease, lending and spending in the near future. As previously stated, certain SMEs may be able to obtain funding from lenders in addition to investors as part of existing contracts. Others, on the other hand, were forced to enter into arduous talks in order to obtain finance. Larger SMEs were able to acquire cash loans from local banks to help them deal with cash shortages, allowing them to pay employees and satisfy other immediate needs. Individual SMEs who lacked the necessary funds were forced to take more harsh steps, such as lowering staff compensation or eliminating positions. Most SMEs, on the other hand, began the crisis with relatively high liquidity levels, helping them to weather the storm with minimal damage. Additional Conditions In addition to the most typical COVID solutions, each SME took a number of actions that were necessary given the circumstances of each region and the specific requests of regional authorities. In certain circumstances, SMEs wrote to government officials on

their own or through national organizations, demanding assistance for their businesses and clients.

### **Client Related Factors**

Client-related aspects allude to the objective of an SME, which is undoubtedly the most distinctive feature of traditional loan specialists. For example, a lack of client data hampers the SMEs potential to cultivate superior administrations and goods that boost consistency and attract new consumers. The clients' low educational level reduces their financial understanding and capacity to quickly appreciate their rights and obligations, resulting in client income unpredictability, impacting the SMEs' productivity and growth. Low population density would also raise an SMEs transportation and time expenditures; Chao-Beroff et al. (2000) discovered that SMEs are serving irregularly inhabited areas would incur up to 20% of advance payment.

As client awareness and data increase, maintaining existing clients should become less burden, assuming that SMEs will use the gathered data to serve their current clients better. Because communication between loan officials and clients is vital in the microfinance business, developing representative competence and training is critical for better understanding and serving consumers. Few local and global organizations offer four-year college educations, one-year confirmations, and more limited authentications in microfinance; as a result, Lebanese SMEs should explore hiring representatives with such credentials and stimulating existing staff to pursue specific training. Representative impetus plans have been thoroughly examined in the literature. All experts agree that they have a clear impact on representative execution. Faisal Ahammad et al. (2015) demonstrate that inspiration enhances HR policies, such as monetary reasons, impacting worker usefulness and execution. According to Ogonnaya et al. (2017),

presentation-related compensation is directly related to worker job satisfaction, representational responsibility, and faith in the administration.

The primary conclusion is that will microfinance is usually seriously influenced simply by lifestyle and atmosphere, combined with Kerala's communitarian lifestyle and well-being express functioning since essential development individuals. As seen by simply method of some sort of interest-driven combination tactic associated with combatting poverty by the approach of a selection linked to network progress routines, the non-benefit launch and standard bank addition models let companies target far more totally in their particular policy riders of objective. This kind of context analysis also uncovers a great, interesting advantage of government help in the particular microfinance business, considering that endowments have increased the particular segment's surge whilst simultaneously revealing this to the increased level of national political risk.

The ask for considered the outcomes of Micro Credit score rating Savings plus Loan products Limited's microfinance organizations plus commodities in the particular execution involving SMEs in Ghana's Sunyani Municipality, in inclusion to the hurdles that these two skilled in handling every other, based to (Awuah and Addaney, 2016). The specific study on finance fundamentals has a significant impact on SMEs. When SMEs criticized the businesses of basic microfinance principles, their revenue, income, and resource bottom part expanded eventually. Kihara (2016) conducted another research nevertheless within Kenya, this period concentrating on the particular impact of SMEs inside the Nairobi Region. The particular query was performed with respect together with the well-defined analysis strategy. The results demonstrated that one would discover a special and minimum relationship between microcredit

and SMEs' monetary gainfulness, as correctly as a particular and meaningless website between small dimension funds and SMEs' financial execution.

Depending on the findings, microcredit and smaller-scale finance have a small influence on SMEs' financial performance. The particular objective of this particular Ethiopian query (Azeref & Gelagil, 2018) was to look at banking institutions in particular development of small and medium businesses and offer suggestions centered on typically the conclusions. The span regarding the bank loan, the particular convenience which often typically the terms was pleased, follow-up besides overseeing, and the certain development of SMEs all had a new clear romantic relationship. Inside any circumstance, excellent negligible effects. Based on typically the findings, the legislature and deceptive budgetary instincts should decrease standard barriers to be able to SMEs financing, make money-related instincts things combined with services with no unachievable criteria and even lower having prices, and create devices of preparing to get SMEs when that they will get a personal bank loan by lowering vintage barriers to SMEs financing, creating money-related instincts items jointly with services with no unachievable criteria and even lower obtaining rates and establishing equipment of preparation to have SMEs when they get a private loan. Generally, the findings, generating files widely offered, besides innovation, is beneficial with the enhancement.

Obsessive social indications have a long report and are apparent in Lebanon, showing that they happen to be more mournful than lovely. Based on the World Bank's primary statistic, twenty-eight per cent of the Lebanese population is usually present in poverty. Much more than one away, there every several folks in Lebanon who live in lower-income, according to recent exploration carried out by typically the World Bank and even Lebanon's Main Government of Data. Microfinance has the likelihood of an advantage culture, from the individual to the group

daily. The personal, collecting and daily papers may well become applied to manage artistic effect. 1st and even primary, both about someone and group/nearby level, the course to microfinance generally adds to a better and even longer pay location. This finishes in a new comprehensive strategy meant for reaching positive cultural outcomes. Various types of social results were uncovered inside prior social results studies at different dimensions:

- The community people's party
- On a personal/domestic phase
- At a local degree

Because of this, the SMEs goal and even eyesight and the aims and visions regarding the stakeholders typically influence the social element. However, the consumers of SMEs range regarding their financial deals might set up a standard. Typically, the items and companies provided to consumers may either help or impede community advancement; therefore, really important to provide the finest possible item/service typically to the optimal possible consumer based on their needs plus the ability to spend. The state areas own the top need for SME twigs or credit officials. Typically, the large number of active borrowers plus outstanding debts can also contribute to the pain relief of desolation. Devoid of discounting the value of total twelve-monthly bank loan expenses and your number of men and women with bad credit score records in boosting living standards. Even though half each community, microfinance institutions may well be ready to assist the essential role of which women be inside the workplace.

### **System Related Aspects**

The system-related related aspects" refers to SMEs internal processes and cycles and their impact on an organizations' growth and profitability. Extortion, such as defilement and misappropriation, would boost the SMEs operating costs to adverse levels of productivity and

development (Aboagye and Otioku, 2010). Misconduct and, ultimately, credit risk would come from helpless decision-making and an inability to sustain the vast volume of advanced books (Chambo, 2004). Although more competition tends to improve the quality and quantity of foundation services, it can also raise the expenses of an SME (McIntosh et al., 2005; Assefa et al., 2013). The lack of contributor subsidies and a cash shortage to lend to clients hinders SME growth (Bogan, 2012). Even though SMEs can grow their lending capacity by using client-owned stores, this option is severely limited in poor communities and non-existent in countries such as Lebanon, where SMEs are forbidden from offering storage services. In addition to the previously mentioned difficulties, a fragile foundation and an immature administrative framework would negatively influence SME production and development. According to McIntosh et al. (2005), increased competition causes a decrease in reimbursement execution and reserve funds kept by the local officeholder bank, encouraging clients to accept different loans.

“I believe that increased coordination and data sharing across SMEs and raising lending standards while increasing productivity is critical to mitigating the negative consequences of competition.” More than 62 per cent of survey respondents viewed coordination and data sharing arrangements as significant answers to their problems. Furthermore, the proposed arrangements are consistent with Assefa et al. (2013), who believe that identifying ways to ensure lending principles, improve data sharing, and advance proficiency can help mitigate the negative impact of competition while not jeopardizing the development of the microfinance sector.

### **Team member Related Factors**

Employees are the foundation of any business, so representative-related variables are at the top. SMEs with highly engaged staff have a higher potential for success. Appropriate stimulus plans, together with a sufficient level of education and consistent representative ability



growth, are projected to increase the quality of credit books and advance administration quality, increasing the bar for former clients' trust and recruiting new ones. Furthermore, an effective incentive structure may push employees to make better decisions, resulting in fewer fraudulent practices and higher reimbursement rates. Increasing the total level of training for clients is not a straightforward problem. It is outside the reach of SMEs, but the essential thing for SMEs is that clients are informed of their financial rights and obligations. Calderone et al. (2018) found that after completing a monetary proficiency program, investing funds in the treatment group increased by 49 per cent due to decreased enticement product consumption.

Such mindfulness can be attained through a public mission led by Lebanese SMEs in collaboration with the Ministry of Social Affairs (MoSA) and the establishment of higher education institutions. Many interviewees were confident that, if correctly designed, such a mission could expand the mindfulness complex, as interviewees successfully participated in a similar mission coordinated by MoSA and the Arab Open University (AOU) in 2015 to promote awareness among Lebanese youth about the value of the business venture. Several meetings were held in various locations throughout Lebanon. Together with other AOU trainers, the writers of this piece offered foundational preparation on the various parts of launching a business. The results were unmistakable: more than 24 members out of 51 had the option of starting their private enterprises. Following our discussions with Lebanese SMEs, an organization is being explored between the SMEs and the MoSA to launch such a mindfulness campaign across Lebanon in 2019. The next issue, a lack of customer data, may also be addressed while conducting the previously described mindfulness program. Members may be requested to take a brief and introductory survey while attending meetings throughout Lebanon, which may include, but is not limited to, questions regarding their financial requirements. Furthermore, SMEs could

work with the Lebanese Central Administration of Statistics to undertake an interest survey among the poor and low-wage people to measure current interest in monetary administrations (reserve funds, credit, installments, moves, and protection).

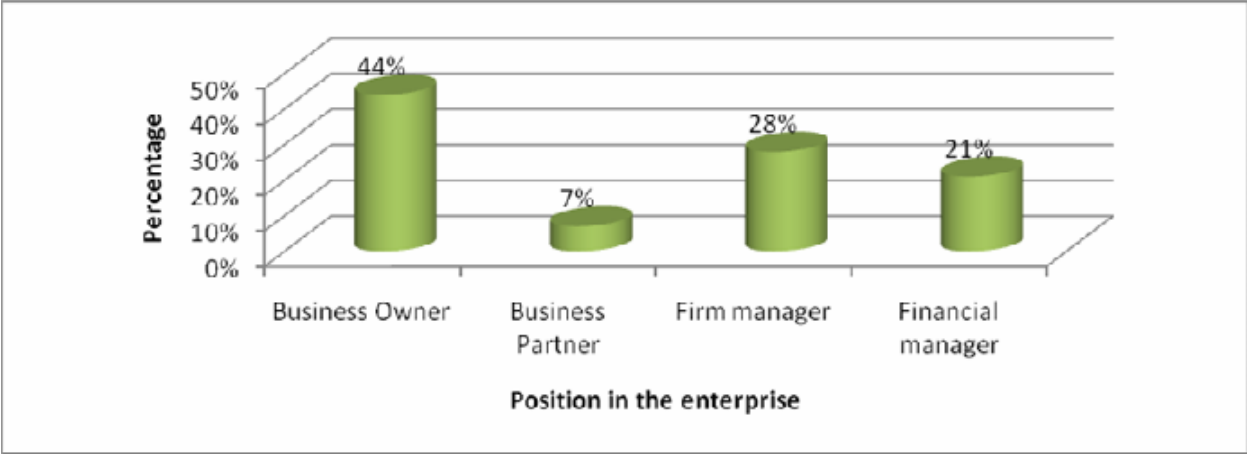
## **6.2 Quantitative research findings**

This chapter offers a presentation of the outcomes and analysis of the data gathered through the methodologies delineated in chapters four and five. It encompasses several aspects, including demographic information about the respondents, the extent of financial planning practices within SMEs, the specific financial planning activities undertaken by these SMEs, the financial controls employed by them, and the resultant impact of these financial planning activities on SME performance.

The study involved the distribution of 99 questionnaires to various enterprises situated in Beirut City Centre. Among these, 76 questionnaires were successfully collected, completed, and utilized for the study's purposes. This attainment translates to a response rate of 76.76%. As per Mugenda & Mugenda (2003), response rates of 50% are considered adequate, 60% are deemed good, and 70% are classified as excellent benchmarks for a study's response rate.

The study collected data on the respondents' positions who took part in this study. The findings are found in figure 6.1.

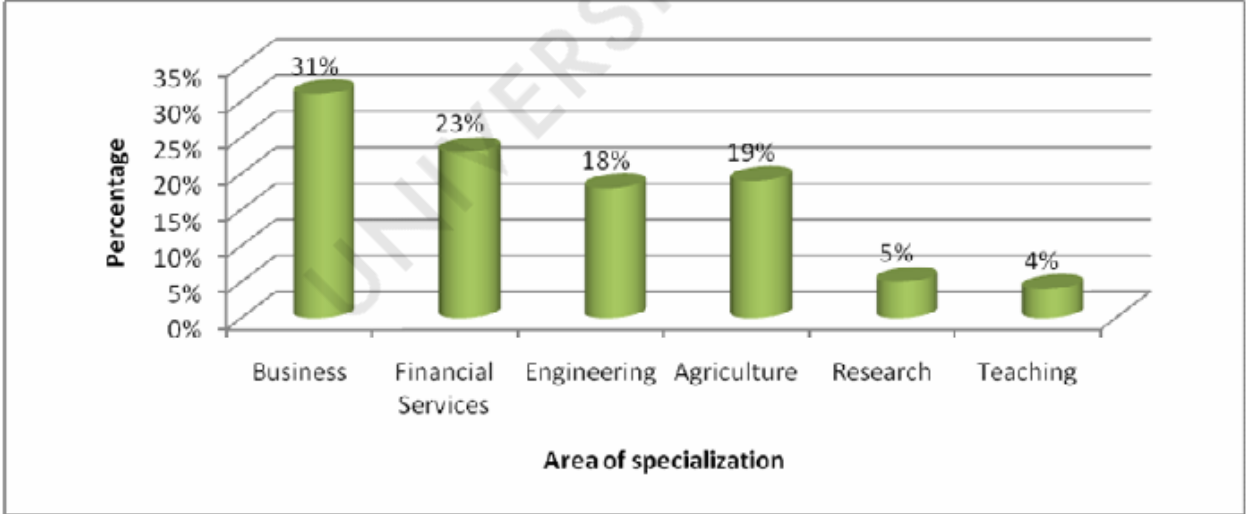
Figure 6. 1 Position in the enterprise



The information contained in figure 6.1 shows that most of the respondents who took part in this study were the business owners of their enterprises (44%). Approximately 28% of the respondents were firm managers of the enterprises (28%), 21% were financial managers, and 7% were business partners. Thus, the respondents who took part in this study had superior business knowledge.

The study collected data from different enterprises that had businesses in Beirut Town. The findings are shown in figure 6.2.

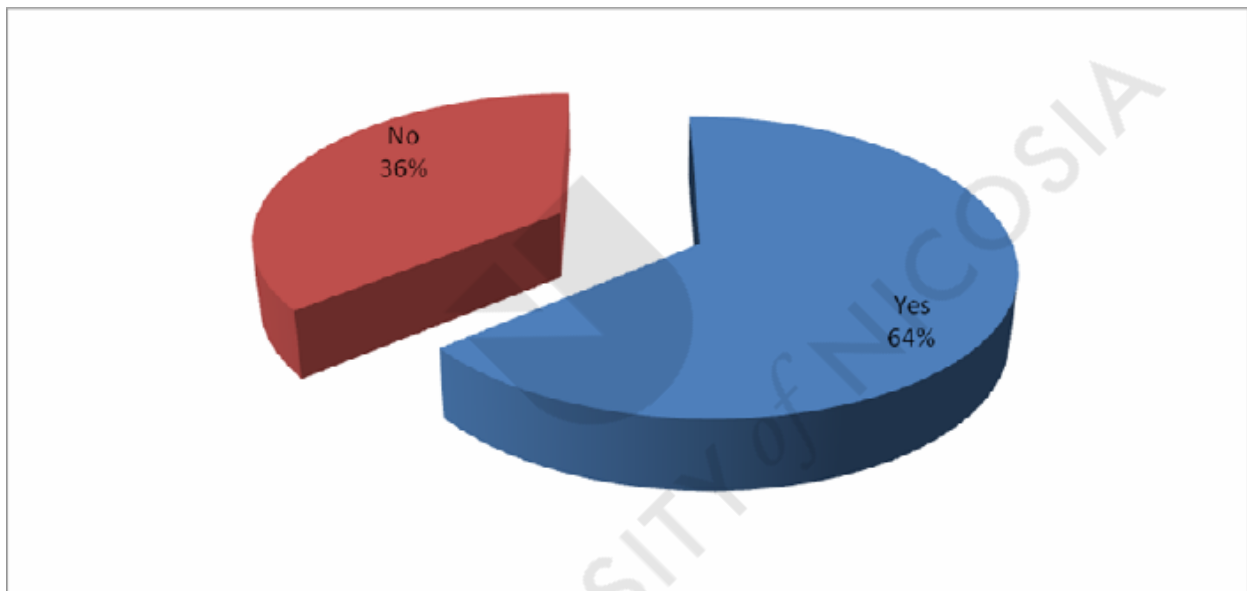
Figure 6.2 Area of Specialization



The information summarized in figure 6.2 shows the different types of enterprises from which the study collected dataset operated in Beirut Town at the time of the study. From the findings, most enterprises were general stores for goods (31%), 23% were financial enterprises, 19% were veterinary shops and other farm inputs, and 18% were engineering.

The respondents were requested to indicate whether their firms do financial planning. The results are shown in figure 6.3.

Figure 6. 3 Percentage of the firms doing financial planning



The information found in figure 4.3 shows the proportion of the enterprises which practiced financial planning in their future operations. From the results shown, the Majority of the enterprises (64%) used to do some planning on their finances while about 36% did not do thorough financial planning.

The study examined the diverse financial planning activities undertaken by the enterprises. Data collection was conducted using the Likert scale, and subsequent analysis encompassed descriptive statistics, including measures like mean and standard deviation. In

accordance with the scale, variables exhibiting a mean nearing 4.0 were indicative of a 'great extent' of engagement, those nearing 3.0 denoted a 'moderate extent', and those approaching 2.0 signified a 'low extent'. The utilization of standard deviation served to gauge the degree of dispersion and, consequently, consensus within the data.

Figure 6.4 Financial planning activities among the SMEs

	Mean	Std. Dev
Periodical Budget estimations	4.2	0.8
Creation of financial statements	3.4	0.7
Business Proforma creation	2.7	0.9
Activity based budgeting	4.1	0.6
Financial analysis	4.0	0.7

The information contained in table 4.1 shows the extent to which SMEs adopted financial planning practices in Beirut Town. According to the findings, the respondents adopted, to a great extent, periodical budget estimation (M=4.2), activity-based budgeting (M=4.1) and financial analysis (M=4.0). The SMEs created financial statements moderately (M=3.4) and business preformed (M=2.7). The business owners mainly carry out these functions for the small enterprises or managers for the medium enterprises.

The study identified specific activities aimed at controlling the operations of SMEs. The financial systems that were established are visually presented in Figure 6.5. Data collection involved employing the Likert scale, and subsequent analysis was conducted through descriptive statistics, including measures like mean and standard deviation. As per the scale's interpretation,

variables with a mean approximating 4.0 denoted a 'great extent' of involvement, those nearing 3.0 signified a 'moderate extent', and those approaching 2.0 indicated a 'low extent'. The utilization of standard deviation allowed for assessing the degree of dispersion within the data and, in turn, determining consensus.

Figure 6.5 Monitoring Activities

	<b>Mean</b>	<b>Std. Dev</b>
Recording the transactions of your business	4.1	0.8
Comparing cost and selling prices before buying stocks	4.2	0.9
Monitoring stock levels	3.8	0.6
Setting profit target periodically	2.4	0.5

Table 6.5 presents the data outcomes, displaying the findings regarding monitoring activities carried out by a selection of SMEs in Beirut. The study revealed that these SMEs consistently recorded their business transactions (M=4.1) and engaged in the practice of comparing costs and selling prices prior to stock purchase (M=4.0). Notably, SMEs dealing with products exhibited a substantial emphasis on determining stock levels (M=3.8). However, the study discovered that a majority of SMEs did not establish profit targets (M=2.4).

Furthermore, the study collected data concerning the timeframes within which SMEs conducted reviews of their financial practices. The visual representation of these results is illustrated in Figure 6.6.

Figure 6. 6 Time intervals between reviews on financial practices

	Monthly	Quarterly	Biannually	Annually	Biennially	2-5 years	Never
Budgeting	2%	6%	32%	60%	-	-	-
Proforma creation	-	-	-	35%	-	20%	45%
Income Statement Creation	-	8%	32	60%	-	-	-
Balance sheet creation	-	8%	30%	62%	-	-	-
Financial Analysis	-	10	25	65%	-	-	-

The data contained in figure 6.6 shows the time intervals taken by the SMEs to make reviews of their financial planning practices. From the findings, budgeting is done annually by most of the SMEs (60%), and perform a creation is not very commonly done by most of the SMEs but those who do so do it on an annual basis. Other financial practices such as the creation of financial statements (60%), drawing of balance sheets (62%), and financial analysis (65%) are mainly done annually though other SMEs do it biannually.

The study collected information on the effect of financial planning practices on the performance of SMEs. The results are shown in figure 6.7

Figure 6.7 Effects of Financial Planning on Performance

	<b>Mean</b>	<b>Std. Dev</b>
Capital Availability	4.1	0.6
Liquidity of the firm's Assets	3.1	0.7
Risk Management	3.8	0.9
Efficiency	4.2	0.7
Capacity to Attract Capital	3.2	0.8
Capacity to Embrace Opportunities	3.6	0.6

As depicted in Figure 6.7, it becomes evident that robust financial planning practices hold a pivotal role in the success of enterprises. The study underscores that sound financial planning practices wield a notably positive influence on the overall performance of firms. The findings reveal that these practices are instrumental in preserving capital (M=4.1), enhancing risk management capabilities (M=3.8), and optimizing the efficiency of SMEs (M=4.2). Moreover, financial planning was observed to fortify the ability of SMEs to seize opportunities (M=3.6). Furthermore, the study collected data pertaining to the performance of SMEs. These findings are visually illustrated in Figure 6.8.

Figure 6.8 Effect on the firm operations



	<b>Mean</b>	<b>Std. Dev</b>
Eased financial transactions	4.2	0.4
Eased Access to credit	4.3	0.8
Minimized cost in auditing	3.1	0.9
Minimized loss of cash during handling	3.8	0.7
Improved Efficiency the business	4.3	0.6
Increased returns through increased efficiency	4.1	0.8
Increased ability to attract shareholders	3.2	0.7

The impact of robust financial planning practices was strikingly evident and highly beneficial. As indicated by the findings, these practices have significantly alleviated financial transaction crises (M=4.2), facilitated improved access to credit (M=4.3), and effectively curtailed the loss of cash during handling (M=3.8). Furthermore, these financial practices have prominently contributed to the enhancement of overall efficiency (M=4.3) and consequentially amplified returns through heightened efficiency (M=4.1). However, it is noteworthy that the influence of financial planning practices was comparatively modest in two specific aspects. The effect on the cost of auditing (M=3.1) was found to be relatively limited, and a similar observation was made regarding the capacity to attract shareholders (M=3.2).

The researchers utilized a linear multiple regression test to examine the influence of financial planning approaches on the performance of small businesses. The next sections go over the findings in-depth. The extent of profit variations that the independent components can explain is depicted in Figure 6.9. R square has a value of 0.344. This suggests that the dependent

variable's independent factors account for 34.4 per cent of the variation. The remaining 65.6 per cent is due to other causes.

Figure 6.9 Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.587(a)	.344	.269	37.20627

Table 6.1 ANOVA

	Sum of Squares	Df	Mean square	F	Sig.
Regression	25453.840	4	6363.460	4.597	.004(a)
Residual	48450.731	35	1384.307		
Total	73904.571	39			

The data findings in table 6.1 show that the independent variables are statistically significant in predicting the financial performance of SMEs. The study established a significant value of  $p=0.004$  showing a statistical significance relationship.

Figure 6.10 Coefficients

	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	-39.619	23.043		-1.719	.094
Periodical Budget estimations	18.500	6.352	.514	2.912	.006
Creation of financial statements	7.801	8.808	.200	.886	.0382
Activity based budgeting	8.813	7.704	.249	1.144	.0260
Financial analysis	3.096	4.417	.118	.701	.0488

The data findings in table 4.8 show the coefficients of the regression test. According to the findings, Periodical Budget estimations (P=0.006), creation of financial statements (p=0.0382), activity-based budgeting (p=0.0260) and financial analysis (p=0.0488) were all significant in predicting the profits of the SMEs since all the p values were less than 0.05.

The resulting regression model was:

$$Y (\text{profits}) = -39.619 + 18.500 \text{ Periodical Budget estimations} + 7.801 \text{ creation of financial statements} + 8.813 \text{ activity-based budgeting} + 3.096 \text{ financial analysis.}$$

According to the calculations, earnings will fall by -39.619 units if all other conditions stay unchanged. While all other parameters remain constant, using Periodical Budget Estimates raises profits by 18.5 units. Increasing the utilization of financial statements created by one unit boosts

profitability by 7.801 units while all other factors remain constant. Similarly, increasing the activity-based budgeting by one unit while keeping all other parameters constant boosts profitability by 8.813 units. While all other factors remain constant, a single financial study increases earnings by 3.096 units. This demonstrates that using financial planning tools has significantly influenced profitability of small and medium-sized firms.

According to the report, approximately two-thirds of SMEs use the NPV method to evaluate investment projects, with IRR and PBP coming in second and third, respectively. According to the poll results, the "importance of the project" is vitally a significant element to consider when using a capital budgeting approach. The most common method for determining the minimum return a firm needs to justify a capital budgeting plan or the least required rate of return among the firms in the sample is to utilize the WACC method. The majority of respondents in Lebanon had the most difficulty capital budgeting owing to the substantial fixed cost component, according to the study. To mitigate unanticipated inflation, interest rate risk, term structure risk, GDP or business cycle risk, commodity price risk, and foreign currency risk, increases in the discount rate or decreases in cash flows were widely employed. In Lebanon, discount rates are frequently employed to reduce the risk of unanticipated inflation, interest rate risk, and foreign currency risk.

The model contains a number of factors that indicate capital budgeting decisions and procedures, as well as measure or appraise financial risk among the selected SMEs, after the qualitative study. The goal of capital budgeting will be to examine SMEs' investment evaluation judgments and see which ones are more common. The most prevalent capital budgeting methodologies used by SMEs in Lebanon are three. According to the study, financial planning

techniques such as periodic budget forecasting, financial statement preparation, activity-based budgeting, and financial analysis are positively associated to the performance of SMEs.

While no one was spared during the COVID-19 epidemic, the repercussions were unevenly distributed across customers and institutions, and not all of them were unfavorable. The COVID problem has impacted most, if not all, SME clients, either directly or indirectly. Individual decisions to temporarily discontinue activities for personal reasons such as health concerns or family obligations, whether forced or voluntary, had direct implications. Indirect effects of the COVID outbreak-induced forced shutdown include supply chain disruption and diminished demand for certain items and services supplied by SME clients.

More than 62 percent of survey respondents saw data sharing and cooperation as important solutions to their challenges. Furthermore, Assefa et al. (2013) think that establishing strategies to enforce lending principles, increase data exchange, and promote proficiency will assist offset the negative effects of competition without risking the microfinance sector's development. Also influencing their choice of capital budgeting approaches are market risks, liquidity issues, credit risks, and operational risks, according to the majority of respondents. The current economic situation in Lebanon poses a market risk to almost all SMEs. If the value of their speculations does not keep up with growth, people risk losing buying power.

Based on the above findings, this research narrows down to a model in line with both qualitative and quantitative findings. The model encompasses the use of financial planning tools, the most common capital budgeting methods employed, the challenges faced by SMEs, and the impact of external factors like the COVID-19 pandemic and market risks. The aim of this model is to examine the factors influencing capital budgeting decisions and their impact on the performance of small and medium-sized enterprises (SMEs) in Lebanon. The model will explore

the use of financial planning tools, the prevalent capital budgeting methods, the challenges faced by SMEs, and the influence of external factors such as the COVID-19 pandemic and market risks. This model highlights the factors influencing capital budgeting decisions and their implications for SMEs in Lebanon. Financial planning tools such as periodic budget estimates, financial statements, activity-based budgeting, and financial studies play a crucial role in improving profitability. The NPV method is the most widely used capital budgeting approach, followed by IRR and PBP. SMEs face challenges related to substantial fixed costs, market risks, liquidity, credit, and operational risks. Furthermore, the COVID-19 pandemic and market risks have had varying impacts on SMEs in Lebanon. Data sharing, cooperation, and risk mitigation strategies are identified as important solutions to overcome these challenges and enhance the performance of SMEs in the country.

## **7.0 Discussion and interpretation of the findings**

According to the research, most Beirut firms (65 per cent) employ financial planning in their operations. According to the survey's findings, around 36% of respondents do not engage in formal financial planning. According to a study done in Vietnam by Masurel & Smit (2000), enterprises with a formal planning system were more profitable than those without. Still, smaller businesses were less likely to have formal plans. As a result, SMEs in Beirut City who do not have a defined financial strategy are more likely to lose money. Understanding historical performance and turning that information into forward-looking objectives to align company outcomes with the corporate strategy is crucial to building shareholder value, according to Arnold and Chapman (2004). According to the findings, SMEs in Beirut Town used three primary methods of financial planning to a large extent: monthly budget estimations (M=4.2), activity-based budgeting (M=4.1), and financial analysis (M=4.0). SMEs keep records and prepare financial statements modestly (M=3.4). Small businesses (M=2.7) do not establish business plans, which exposes them to risk and instability. According to Hilton & Gordon (1988), financial planning converts an organization's broad objectives, strategies, and other plans into financial terms.

According to the survey's findings, most SMEs have control systems in place to guarantee that their businesses run properly. According to the study, SMEs (M=4.1) kept detailed records of their transactions. This made it easy for them to keep track of their records. According to the study (M=4.2), SMEs used to assess expenses and prices before carefully purchasing items. As a result, they avoided purchasing items and commodities with poor profit margins and goods with high holding costs and low-profit margins. More importantly, the research found that SMEs (M=3.8) used to calculate and monitor their stock levels, ensuring they stayed safe. On the

other hand, most SMEs (M=2.4) did not set a profit objective. This is consistent with the findings of a study conducted in Vietnam by Masurel and Smit in 2000, which found that enterprises with a formal planning system were more profitable than those without. The text also highlights the fact that smaller businesses are less likely to have formal plans, which is in line with the findings of Arnold and Chapman (2004) who emphasized the importance of understanding historical performance and turning that information into forward-looking objectives to align company outcomes with the corporate strategy. Moreover, the study found that SMEs in Beirut City used various methods of financial planning, including monthly budget estimations, activity-based budgeting, and financial analysis. This is consistent with the concept of financial planning discussed by Hilton and Gordon (1988), who argued that financial planning converts an organization's broad objectives, strategies, and other plans into financial terms. Finally, the study found that small businesses in Beirut City were less likely to establish business plans, which exposes them to risk and instability, highlighting the importance of having a defined financial strategy.

According to the findings of this study, the majority of SMEs only budget once a year (60 per cent). According to the survey, even though perform a manufacturing isn't common among SMEs, those who do make them consider yearly time intervals before generating others. According to the poll, 60% of SMEs produce annual financial statements, 62% construct annual balance sheets, 65% undertake financial analysis annually, and a few do it biannually. This shows that financial planning was done on a one-year basis.

According to the findings of the study, financial planning approaches helped SMEs sustain capital (M=4.1), improve risk management (M=3.8), and boost efficiency (4.2). Financial planning also significantly increases SMEs' capacity to exploit opportunities (M=3.6). According



to Metcalf (1976), financial performance analysis examines a company's financial strengths and weaknesses by establishing suitable links between the balance sheet and profit and loss account components.

Financial planning also helped to prevent cash loss during handling (M=3.8), mitigate financial transaction problems (M=4.2), and make loans more accessible to small enterprises (M=4.3). Furthermore, financial activities have better efficiency (M=4.3) and higher returns (M=4.1) as a result of enhanced efficiency (M=4.1). On the other hand, financial planning techniques had little impact on auditing expenses (M=3.1) and shareholder recruitment capability (M=3.2). According to researchers, SMEs in Lebanon are defined by the following features: ease of entry and exit; small-scale nature of activities; self-employment with a big number of family employees and apprentices; and a small amount of capital and equipment. The study had an R square value of 0.344, indicating that the selected financial planning practices explained 34.4% of the financial performance of the SMEs operating in Beirut Town at the time of the study. The realized ANOVA value was  $F= 4.597$ ,  $p=0.004$ . Thus, the financial planning practices were very significant to the financial performance of the SMEs operating in Beirut.

The study found that Periodical Budget estimations ( $P=0.006$ ), creation of financial statements ( $p=0.0382$ ), activity-based budgeting ( $p=0.0260$ ) and financial analysis ( $p=0.0488$ ) were all significant in predicting the profits of the banks since all the p values were less than 0.05. Further, the study established that financial planning practices such as periodic budget estimations, creation of financial statements, activity-based budgeting and financial analysis were all positively related to the performance of SMEs.

Because budget allocation takes time to pay off, it is a hazardous enterprise. To make educated investment decisions, firms must have a process to analyze the different investment

options accessible to them. Capital budgeting enables companies to evaluate various investment options to optimize shareholder value development. The majority of enterprises in Beirut Town (65%), according to the research, employ some type of financial planning in their operations. However, according to the study results, about 36% did not do formal financial planning.

According to the survey, only a few of the various financial techniques used in enterprises were used by SMEs in Beirut. The findings revealed that SMEs used budget predictions regularly and planned operations around their budgets. The SMEs also conducted financial analysis, particularly calculating profits and losses after transactions and making purchases. However, the survey discovered that SMEs did not generate financial statements in a timely and formal manner. Most SMEs lacked regular financial statements, while some had never generated financial statements. In addition, SMEs used proforma creation to a lesser extent. This suggests that the SMEs operating in Beirut Town did not undertake any costing at the research time. Aside from financial planning, the SMEs were found to have financial management mechanisms in place. According to the survey, SMEs kept thorough records of their business transactions and constantly assessed expenditures and selling prices before making purchases to avoid unexpected losses. SMEs who offer ordinary retail products maintain track of their stock levels.

The study's findings demonstrate that SMEs engaged in the aforementioned financial activities dur. According to the poll, SMEs budget every year. According to the data, SMEs create financial statements every year. In those SMEs that computed financial ratios and examined their financial success, financial analysis and computation of ratios were also done on an annual basis. The aforesaid financial planning techniques influenced the SMEs' performance. Those SMEs who practiced excellent financial planning reaped a lot of benefits. The study's

findings suggest that financial planning assisted businesses in maintaining capital and improving risk management. Financial planning also aided SMEs in increasing their efficiency and expanding their ability to take advantage of possibilities. This is consistent with previous research that has also demonstrated the benefits of financial planning for SMEs. For instance, a study by Chen and Chen (2011) found that SMEs that engage in financial planning are more likely to achieve financial goals and have higher financial performance. Similarly, a study by Lartey et al. (2018) showed that SMEs with better financial planning practices have higher levels of profitability, liquidity, and solvency. Moreover, the text mentions that SMEs who computed financial ratios and examined their financial success saw benefits from financial analysis and computation of ratios. This aligns with the findings of a study by Ali et al. (2015), which showed that financial analysis is an essential tool for SMEs to evaluate their financial performance, identify potential problems, and make informed decisions.

It was also clear that SMEs' financial planning influenced their operations and overall success. SMEs in Beirut Town adopted financial planning solutions that significantly benefited in lowering the financial transaction difficulty and enhancing credit availability. Human errors and mismanagement led to fewer losses for the firms and increased efficiency, which resulted in better earnings. Another advantage of financial planning was the ability to keep clean records. In times of need, the documents were used as collateral to secure loans for businesses. Furthermore, financial planning strategies provide a framework for SMEs to work toward specific goals over time. This finding is consistent with previous research that has also demonstrated the benefits of financial planning for SMEs. For instance, a study by Al-Musali and Al-Habsi (2016) found that financial planning improves financial management practices, enhances credit availability, and reduces the cost of borrowing for SMEs in Oman. Similarly, a study by Ntim et al. (2019)

showed that financial planning leads to better financial reporting, better access to finance, and higher levels of profitability for SMEs in Ghana. Moreover, the text highlights the importance of clean records in securing loans for businesses. This aligns with the findings of a study by Kallon et al. (2019), which showed that SMEs with better financial records are more likely to receive loans from financial institutions. Furthermore, the text mentions that financial planning strategies provide a framework for SMEs to work towards specific goals over time. This is consistent with the findings of a study by Pearce II and Robinson Jr. (2011), which showed that financial planning helps SMEs align their activities with long-term goals, improve decision-making, and enhance

## **7.1 Conclusion**

In my thesis, I looked at the factors that impact the capital budgeting techniques employed by microfinance organizations in Lebanon. Open-ended interviews and an open-ended questionnaire were used to ask different SMEs about budgeting practices. A multi-faceted strategy can expedite the growth of Lebanese SMEs, according to qualitative content analysis. Such an approach will close the financial access gap, foster a business environment, and improve human capital and infrastructure. These efforts can be strengthened by promoting entrepreneurship and reducing the role of the public sector as a competitor in the economy. The study concludes that most enterprises in Beirut Town do some financial planning practices. The SMEs, however, does not perform all the financial planning activities but do some of them.

### ***Practical Implications***

Strategies in Lebanon need to be custom designed to fulfill particular wishes and circumstances. However, key standards can help manual policymakers. These include

(i) boosting monetary get admission with the aid of using enhancing the provision of investment tailored to SME wishes (which includes new capital sources, inclusive of capital markets) and improving financial institution competition;

(ii) growing SME potential and capacity via focused expenditure—with the aid of using each the general public and the personal sectors—on training and key infrastructure; and (iii) fostering an allowing commercial enterprise surroundings with the aid of using specializing in growing commercial enterprise pleasant legal, regulatory and taxation frameworks to foster process advent and make sure a degree gambling discipline for SMEs with an individual consciousness on start-ups and younger firms. Improved governance which includes tax management and public procurement might also help.

According to the report, the most often employed financial planning strategies by SMEs in Beirut are periodic budget estimates, activity-based budgeting, and financial analysis. Calculating financial ratios and comparing their values to those of other firms is part of this process. According to the research, SMEs do not carry out several essential financial planning operations, such as compiling financial statements regularly and developing proformas, indicating that costing and cost efficiency are not appropriately managed by SMEs. According to the survey, SMEs in Beirut Town do several monitoring and control tasks, such as recording business transactions, comparing costs and selling prices while making purchases, monitoring stock levels, and risk management.

According to the survey, most firms execute annual financial planning responsibilities such as budgeting, financial statement production, financial ratio computation, and financial analysis. According to the research, financial planning has a beneficial influence on the performance of SMEs.

To begin with, financial planning helped SMEs keep capital, manage risks, improve operational efficiency, and increase their capacity to embrace new opportunities. Financial planning has also helped relieve financial crises, boost credit availability, reduce losses due to human error, offer collateral for loan security, and serve as a framework for company activities. Microfinance institutions, according to interviewees, handled the crisis successfully and had a high level of resilience in the face of a global epidemic. SME clients, on the other hand, have remained vulnerable throughout the crisis and have gotten very rudimentary assistance. While the situation of SMEs in this paper appears to be relatively positive, especially in comparison to SMEs in other parts of the world, it is important to remember that the pandemic is far from over and that we are still in the midst of a developing crisis with an unknown full impact at this time. As a result, the findings presented here should be seen as a firsthand account from the field, followed by a more in-depth study in the months ahead, once the COVID-19 pandemic's impacts have spread across the economy and the real impact will be apparent.

The research further notes that the most practised financial planning practises by SMEs in Beirut are periodical budget estimations, activity-based budgeting and financial analysis. This includes computation of financial ratios and comparing their values with other business. The study notes that some important financial planning practices are not undertaken by the SMEs such as drawing of financial statements on regular basis and proforma creation indicating that costing and cost effectiveness has not been well addressed by the SMEs.

The research findings shed light on the monitoring and control practices undertaken by SMEs operating in Beirut Town. These encompass various activities, including the meticulous recording of business transactions, thorough comparison of costs and selling prices during purchasing, vigilant monitoring of stock levels, and astute risk management. Furthermore, the

study draws a comprehensive conclusion regarding the financial planning practices adopted by these enterprises. Notably, budgeting, the preparation of financial statements, computation of financial ratios, and the conduct of financial analysis are carried out on an annual basis by a majority of these enterprises.

The study goes on to highlight the profoundly positive impact of financial planning on the performance of SMEs. Specifically, financial planning has played a pivotal role in preserving capital, effective risk management, heightened operational efficiency, and the expansion of SMEs' capacity to seize opportunities. Moreover, financial planning has demonstrated its efficacy in mitigating financial crises, enhancing access to credit, minimizing losses stemming from human errors, providing collaterals for securing loans, and furnishing a structured framework to guide business activities.

## **7.2 Limitations of the Study**

Five vulnerabilities were uncovered throughout the research detailed below: To begin, the researchers gathered data from Beirut-based SMEs. Failures were eliminated from the study since it was limited to SMEs that were still operational at the study time. As a result, it's logical to assume that organizations that have previously adopted financial planning are more likely to respond to surveys. As a result, the results may be biased.

Second, the study findings are difficult to compare due to differences in SMEs in terms of business type, industry, and time in operation. As a result, it'd be interesting to observe if there are any differences in financial planning levels based on sector participation. Finally, the study examined the overall influence of financial planning approaches on the financial performance of small businesses. However, there are other elements to consider when designing financial plans that were not covered in the study, such as sustainability, expansion, and customer retention.

Finally, for the study, data from SMEs was acquired. Large corporations operate in several ways, use a range of approaches, and apply various strategies to expand their market share. Although this is not a research limitation, the impact of financial planning strategies may differ depending on the size of the SME. Moreover, the study's 5-year time frame was too short, and the results may not be comprehensive or conclusive enough if SMEs with more than or fewer than five years in operation were studied.

## **7.3 Recommendations**

### **7.3.1 Policy Recommendations**

According to the poll, some SMEs do not include financial planning in their operations, leaving them vulnerable to unforeseen business risks and inefficiencies. According to authorities, SME owners should be more aware of financial planning in their operations. The majority of SMEs, according to data, do not create financial statements, and even fewer do so for proforma development. As a result, businesses have found it difficult to evaluate their performance and keep track of their expenditures. Financial statement compilation and business proformas are recommended for SMEs to develop a financial planning culture.

According to the report, SMEs evaluate their financial planning practices every year. It's tough to detect abnormalities early since this period is too long for close company monitoring. Biennial evaluations should be done to avoid substantial time gaps to alleviate the problem. According to the survey, financial planning is not automated in most SMEs. This puts the business at risk of human errors and inaccuracies that might have been prevented if technology had been employed instead. The research recommends that technology be employed in financial planning to make the process easier.



### **7.3.2 Further studies**

The research gathered data from Beirut's small enterprises. However, the findings on financial planning practices in Beirut may not be comparable to those in other cities. Consequently, a similar study in other places should be conducted to understand better the influence of financial planning on the performance of SMEs.

According to the research, other analogous studies on an industry-by-industry basis should be done to analyze the influence of financial planning on SMEs' performance. The recommendation that similar studies be undertaken on the influence of financial budgeting techniques on other firm performance measures such as sustainability, expansion, market share, and customer retention area unique contribution to knowledge made by this PhD. It also demonstrates organizations with various strategies and approaches to develop their market share and how the influence of financial planning methods changes between smaller and larger enterprises. According to the study, financial planning procedures include periodic budget forecasting, financial statement preparation, activity-based budgeting, and; according to analysis, which are favorably related to SMEs' performance.

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UNIVERSITY of NICOSIA

## **APPENDIX 1: INTERVIEW QUESTIONS, RECORDING AND TRANSCRIPTION**

**Dear Sir/Madam**

I am examining how capital budgeting practices are utilized by SMEs in Lebanon which serve as a reflection of the country in general. The objective is to identify the main capital budgeting techniques been applied by SMEs in Lebanon and how they have been useful to control financial risks

This study is designed:

- To investigate how financial managers in Lebanese SMEs have been integrating NPV, IRR, and PB among others in their value-asset process
- To analyze the effectiveness of risk-analysis approaches used by financial managers of SMEs in the capital budgeting decisions
- To examine the challenges of financial managers of SMEs when implementing advanced capital budgeting techniques like NPV, IRR, MIRR, DPB, and DCB.
- To create models for financial managers in the Lebanese SMEs as to how they might leverage their capital budgeting processes to overcome adverse outcomes of financial risks.
- To assess the risks associated with risk assessment models within the capital budgeting phenomenon.
- To conceptually relate risk discounted measures with risk analysis measures.

The impetus for this research is the prevalent problems in industries and the effect of globalization on industries which necessitates the use effective methods to analyze investment before decision is made.

Please take a few (approximately 15) minutes to complete respond to the following interview questions. You have our personal and professional assurance that all responses will remain anonymous. No results will be attributed to any particular person or organization.

**I would very much appreciate your assistance with this research. Your response is very important to the study, and we thank you in advance for your participation.**

Sincerely,

### **1. Qualitative interview introduction**

- *Primary goal: Learn how capital budgeting practices are utilized by SMEs in Lebanon which serve as a reflection of the country in general*

### **2. Verbal consent**

- *Would you like to participate in this interview?*

### **3. Background Information**

- *Overview: Invite interviewee to briefly tell me about him/herself: General information about background. This should mostly focus about their businesses, challenges and how it has enhanced their well-being, functionality and years of experience*
- *What type of activities does the business or company do?*

### **4. Choice of Investment Rule**

- *Can you briefly describe the business' investment decision making process?*
- *How does the business determine which investment should be pursued/ or has priority and which not? What are the most important factors to consider?*

- *What type of investment rule(s) is being used at the company? Why? (Net Present Value NPV, Internal Rate of Return IRR, Accounting Rate of Return ARR, Earnings multiple approach, Payback period, Discounted Payback, Profitability Index)*
- *What factors influence the use of the investment rule(s)? (financial, non-financial)*
  - *Are these factors specific to the entire organization`s functionalities/operations or to individual projects, organizational divisions and/or out personal preference (professional experience)?*
  - *How do you deal with sustainability issues? Do you use specific measurements?*
  - *How do you deal with social/human issues?*
- *Is there a hurdle rate (Minimum Acceptable Rate of Return (MARR)) set in the Capital budgeting process? Why/why not?*
- *In case an investment project has been accepted and is fully functional, what is the time frame for evaluating an investment?*
  - *Does this depend on size?*
  - *Have there been instances that an investment project had to be adjusted in order to meet expectations?*
  - *What values/factors determine the option to expand or abandon a project after it has been accepted?*

## **5. Cost of Capital**

- *How are investments financed? Is it with equity or with debt?*
- *To calculate the cost of capital, do you use one of the following models and why do you use this one in particular?*
  - *Capital Asset Pricing Model,*



- *Average historical returns, or*
- *Dividend discount model?*
- *When evaluating investment projects, does the company choose a standard cost of capital or different costs of capital?*
  - *Is this specific to project, entire business? Or has it multiple/combination of factors?*
  - *What elements define the business' cost of capital*

## **6. Risk Analysis**

- *What types of risks hinder the success of an investment decision? Are these risks specific to the company or type of business?*
- *How do these risks influence the capital budgeting structure of the business?*
- *What kind of risk analysis techniques does the company use to avoid investment losses? Why?*
- *How does risk analysis contribute to the company's investment decision making process?*

## APPENDIX 2: SAMPLE INTERVIEW RESULTS

1. Yes, I would like to participate in this interview
2. I am a businesswoman, self- employed. I deal with second-hand clothes. I have been selling clothes from 2015 that is about 5 years of working experience. This has been my main source of income. I pay rent, pay school fees for my children and provide for all house necessities using what I earn in this business. Just like any other business am faced with some challenges. For instance, sometimes the market demand is too low and I might end up not selling to my expectations, other challenges are like sometimes I lack enough capital to fund my work, adverse weather also affects the operation of my work, for example, heavy rains.
3. In my business, I make investment s decisions on myself but sometimes I get ideas from my friends and close relatives. I make decisions depending on what to invest in, the cost of items to invest in, the target group and even the rate of turn over the product will provide. I use the net present value to determine my investment. I ignore all the factors that affect this rule. I am not aware of what sustainability issues and human issues are. In my business I have set a minimum acceptable rate of return to make sure I always achieve the target and that the business does not fail. I always evaluate my business performance at the end of every month where I expect around 45,000 when the market size is small and about 60,000 an above during the peak season when the market size is large. I once had to reduce the prices of clothes in order to increase the demand for the business was almost failing and after the adjustment, there was a positive deviation. Factors such as the rate of turnover, the size of the market among other factors can make a business person abandon or accept a project.

4. Mostly I finance my Investments using loans which I pay at an interest rate of 8% every three months. I do not use any of the models as my capital is financed by loans. I use the different cost of capital depending on my ability to pay back the loan borrowed to finance capital and this applies to my entire business. I am not aware of the elements that constitute the cost of capital.
5. Some of the risks that affect my business are the size of the market, adverse weather conditions, losses among others. Most of these risks affect also other businesses. I eliminate the risks by first identifying it and then searching for solutions. Through risk analysis, I am able to make informed decisions hence preventing my business from collapsing.

#### **RESPONDENT 1**

The three capital budgeting measures might sometimes overlap, but this is not always the case. The relative relevance of different tactics is influenced by managerial preferences and selection criteria. There are, nevertheless, certain similarities in the merits and downsides of these frequently used valuation methods.

The IRR provides an easy-to-understand average performance of variable cash flows over the life of an investment.

#### **RESPONDENT 2**

Efforts to improve cash flow may take a long time to pay off. There is only so much work a corporation can do with limited resources. Prior to moving into the next level of expansion, management will work hard to recover their original investment.

Following the establishment of cash flow estimates, calculating the PB is simple.

### **RESPONDENT 3**

Capital budgeting choices should not be relied on the PB because of its shortcomings. This formula ignores the changing value of money, which is an important consideration (TVM).

Each year's pay-out is given equal consideration for computing the PB.

A fundamental tenet of finance is violated when such a mistake is made. However, using a model with a postponed payback time may be beneficial. A discounted cash flow model may be used to determine how long it will take to recover the investment's principal using TVM and the discounted PB period.

The discounted return on investment (ROI) and payback time do not account for the salvage value, which is a considerable negative cash flow at the conclusion of a project's life. Thus, the PB has no practical use.

### **RESPONDENT 4**

If you're looking for a benchmark metric to measure your company's capital structure against, the internal rate of return is an excellent choice. Investment returns on capital (IRR) may be evaluated using the net present value technique, which is comparable to the IRR model.

### **RESPONDENT 3**

Despite the fact that this figure may be determined using a financial calculator or programme, it has considerable limitations. Similar to the PB approach, IRR uses a benchmark figure rather than a true sense of the value that a project will provide to the company to determine which initiatives should be accepted.

### **RESPONDENT 5**

However, managers may be able to conclude that both projects A and B are helpful to the company in terms of the firm's bottom line, but they would not be able to tell which one would be better if only one could be approved.

During the emotional cycle, the SME use the net present value rule to choose whether to pursue a project, such as securing. If the expected NPV of a task is negative (0), the organisation is expected to produce an overall deficit. As a result, the corporation should abandon the project following the norm.

### **RESPONDENT 7**

Cash flow sources that don't fit into the traditional IRR model may pose complications even after the first investment has been made. Maintenance and repair capital expenditures can lead to unanticipated cash flows in capital planning. A single internal rate of return or several internal rates of return are possible outcomes.

The discounted PB period takes TVM into account and enables one to decide the time it may take to return to a great investment decision on a reduced income basis.

### **RESPONDENT 6**

Capital budgeting difficulties may be solved using the net present value methodology, which is the most reasonable and trustworthy method of valuation presently accessible. The after-tax cash flows may be divided by the project's weighted average cost of capital to estimate the profitability of a project. In contrast to the IRR technique, NPVs illustrate how lucrative a project is when compared to other alternatives.

However, if the project's net present value (NPV) is negative, the proposal should be rejected.

Projects with the greatest discounted value should be allowed if finances are restricted and all positive NPV projects cannot be started at once.

The NPV approach makes it clear how much extra money you'll make as a result of using it. In spite of the fact that discount rates might fluctuate, it is often possible to find major risks that aren't immediately apparent by looking at the NPV alone.

### **REPENDENT 8**

Even if the NPV's value-added number does not encompass the whole project span, there are legitimate concerns about it. The profitability index (PI) may readily solve this issue.

Calculate the return on investment by dividing the current value of future cash flows by the initial investment. The NPV is positive if the PI is more than 1, and negative if it is less than 1.

Despite its complexities, the weighted average cost of capital is an important indicator of investment quality.

### **APPENDIX 3: CONTENT ANALYSIS AND CATEGORIZATION**

To conduct content analysis and create categories, a systematic approach is followed to analyze and categorize qualitative data. Here is an example of how content analysis was conducted to create categories based on the provided information:

Research Objective:

The objective of this content analysis was to identify factors influencing capital budgeting decisions and their implications for SMEs in Lebanon.

Step 1: Familiarization with the Data:

The initial step involved thoroughly reading and understanding the provided information, including relevant paragraphs, statements, and key points related to capital budgeting, financial planning tools, common methods, challenges, and external factors.

### Step 2: Identifying Initial Codes:

In this step, initial codes were identified by highlighting key concepts, ideas, and themes related to the research objective. These codes served as the foundation for creating categories. Some initial codes for this analysis include financial planning tools, capital budgeting methods, challenges faced by SMEs, and external factors.

### Step 3: Creating Categories:

Based on the identified initial codes, categories were created to group similar concepts and ideas together. These categories provide a structured framework for organizing and analyzing the data. Here are some categories created for this content analysis:

#### Financial Planning Tools:

- Periodical Budget Estimates
- Utilization of Financial Statements
- Activity-Based Budgeting
- Financial Studies

#### Capital Budgeting Methods:

- Net Present Value (NPV)
- Internal Rate of Return (IRR)
- Payback Period (PBP)

#### Challenges Faced by SMEs:

- Substantial Fixed Cost Component

- Market Risks
- Liquidity, Credit, and Operational Risks

#### External Factors

- Impact of COVID-19
- Importance of Data Sharing and Cooperation
- Influence of Market Risks

#### Step 4: Data Coding:

The next step involved systematically coding the relevant portions of the provided information into the identified categories. Each statement or paragraph was assigned one or more codes/categories based on its content.

#### Step 5: Data Analysis:

Once the coding process was completed, the coded data within each category were analyzed to identify patterns, frequencies, and relationships. This analysis helped draw conclusions and insights related to the research objective.

#### Step 6: Interpretation and Reporting:

The final step involved interpreting the analyzed data within each category and reporting the findings in a clear and concise manner. The information presented in the model was derived from this content analysis process.