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Evaluating the Impact of Capital Budgeting Techniques on Sustainability of Investment Projects in Local Authorities in Zambia– a case study of Shang'ombo Town council

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Abstract

This research focused on assessing the effect of capital budgeting techniques on the sustainability of investment projects in local authorities in Zambia. The study was carried out in Shang'ombo district. A qualitative research approach was adopted and used a case study research design. The data used in the study was collected using in-depth interviews from forty-three (43) officials who are experts in budgeting and investment administration. Data was analyzed using themes. According to the study findings it was established that there was inconsistency in the application of investment appraisal techniques and in most cases no application at all, lack of capacity and inadequate expertise in application of investment appraisal techniques and failure to incorporate environmental and social components in the investment appraisal techniques were the challenges faced. In Zambia, local authorities play a significant role in driving regional development through capital investments such as infrastructure and community projects. Local authorities in Zambia engage in investment projects known as commercial ventures in order to increase its financial capacity and financial sustainability. The study therefore recommended the Council to be consistent in the use of capital budgeting techniques in order to eliminate or reduce on investment failure and improve on the sustainability and viability of commercial ventures. The study also recommended the Council to consider capacity building for staff in investment administration and budgeting and incorporate environmental, social and economic aspect when choosing any type of investment appraisal for it to be effective and efficiency. This may address the challenges faced in investment appraisal techniques. Finally, the study recommends that other researchers extend the scope by studying more than one council and increased sample size and improve the contribution to the body of knowledge on the subject matter.

Keywords: Investment Appraisal Techniques; Capital Investment Projects; Sustainability; Viability; Budgeting

1. Introduction

Investment appraisal techniques also known as capital budgeting techniques are an important tool for evaluating the sustainability and potential returns of capital investments. They play a critical role in ensuring that investments are sustainable and beneficial in the long-term.

An investment is the allocation and substantial consumption of resources, material and human in addition to financial one (Avram et al, 2009).

According to local government Act 16 (2) of 2019, local authorities in Zambia are mandated to generate own revenue to support infrastructure development and promote economic development. To increase the revenue base, local authorities venture into various capital investments such as guesthouses, bars and restaurants etc. These investments are crucial for improving the quality of life for the residents and fostering sustainable development.

According to (Ishtiaq et al. 2017) investment appraisal techniques are divided into two categories namely discounted cash flow and non-discounted cash flow techniques. Non-discounted cash flow is the method in which time value of money is not considered. The Payback Period (PBP) and the Accounting Rate of Return (ARR) are the two main types of non-discounted methods. Discounted cash flow is the vice versa of the non-DCF. The DCF techniques also include the Net Present Value method (NPV), the Internal Rate of Return method (IRR), and Profitability Index (PI). This technique helps to forecast relevant future cash flows and take the issue of time into account by discounting the cash flows back to present value (Gowthan & Magdalene, 2017).

Payback Period (PBP)

The payback period method tells the duration it is expected to take to recover the principal investment from the net cash flows of an investment or project. Payback period is said to emphasize the management's concern with liquidity and the need to minimize risk through a rapid recovery of the initial investment. The use of the payback method as the only or the major method seems to be more commonly used in small and medium-sized companies. The major deficiencies of the payback method are that it ignores cash flows after the payback period and that it does not measure the time value of money in correct manner. This method is commonly used in pure profit evaluations as a single criterion and also sometimes used when focusing on aspects such as liquidity and project time risk. The obvious cases of profitable and unprofitable investments are sorted out, when the payback method is used as the first screening device, leaving only the investments that have survived the screening process in the middle group to be scrutinized by means of more advanced and more time-consuming calculation methods based on discounted cash flows (DCF), such as the Internal Rate of Return (IRR) and Net Present Value (NPV) methods. However, it should be noted that there are many companies of considerable size, where the payback period is used as the single criterion in investment evaluations (Awomewe & Ogundele, 2008).

Accounting Rate of Return (ARR)

Also known as the average rate of return, bases project evaluation on average income rather than the projects cash flows this technique produces a percentage rate of return figure which is then used to rank the alternative investments (Killit & Nganda, 2014). The main advantages of this method are its simplicity of understanding and usage, given that the figures used in calculations are those provided by accounting reports. However, this method presents some important weaknesses. First, it does not take into account the time value of money. There is no objective way of determining the minimum acceptable rate of return (Afonso & Cunha, 2009).

Net Present Value (NPV)

Net Present Value (NPV) is the present value of the cash flows at the required rate of return of your project compared to your initial investment. For instance, in computing the projects net present value, the cash flows occurring at different points in time are adjusted for the time value of money using a discount rate that is the minimum rate of return required for the project to be acceptable. Projects with positive net present values (or values at least equal to zero) are acceptable and projects with negative net present values are unacceptable. In case the project is rejected, it is rejected because cash flows will also be negative. The NPV compares the value of the dollar today to the value of that same dollar in the future taking inflation and returns into account. The advantages of the net present value method is that it is consistent with the theory of wealth maximization, it considers the time value of money, and also makes use of all the project cash flows throughout the duration of the projects life (Nwokoye & Imegi, 2015). The disadvantages are that it requires estimates of cash flows which is cumbersome to calculate and it requires some guesswork about the entity's cost of capital. Assuming a cost of capital that is too low will result in making sub optimal investments, and assuming a cost of capital that is too high will result in forgoing too many good investments.

Internal Rate of Return (IRR)

The internal rate of return (IRR) is the discount rate often used in capital budgeting that makes the net present value of all cash flows from a certain project equal to zero. This in essence means that IRR is the rate of return that makes the sum of present value of future cash flows and the final market value of a project (or investment) equals its current market value. The internal rate of return provides a simple hurdle, whereby any project should be avoided if the cost of capital exceeds this rate. According to (Umair, 2015), the internal rate of return is that discounted rate at which the presented value of projected future cash flows calculated for each project, equal to present value of initial investment and it causes the net present value equal to zero. IRR and NPV are best but conflicting results arise when we do rank of mutually exclusive projects. When time and cash flows of projects differ with one another then conflicts arise. If IRR is less than the required rate of return then project must be rejected because it will give the negative NPV (Umair, 2015).

Profitability Index (PI)

Profitability Index (PI) is the ratio of the present value of future cash benefits at the required rate of return to the initial cash outlay, and thus referred to as "Benefits-Cost Ratio" Project is considered to accept if Profitability index is greater and equal to 1 (Umair, 2015). The advantages of PI is that it recognizes time value of money, and it is consistent with wealth maximization principle. The disadvantages are that it requires estimates of cash flows, which is cumbersome to calculate. At

times, it fails to indicate the correct choice between mutually exclusive projects (Saleh, 2005).
In recent years, Shang'ombo Town Council has undertaken significant capital investments in infrastructure and other services. However, the sustainability of these investments remains a critical concern.
Preliminary research found it profoundly surprising that despite the huge potential impact of better capital allocation, there are two main problems regarding investment appraisal practices in European countries. Primarily, a large part of even the largest European corporations does not use advanced investment appraisal techniques or apply them only to a limited extent. In Africa, particularly Zambia, most public sector entities such as local authorities do not regularly use investment appraisal techniques. In addition, there has not been research into practical applications of investment appraisal methodologies that would cover the entire single market (Marcin & Dariusz, 2020).
In many developing countries in Africa, the implementation of public investment projects has often remained weak enquiring a modernization of decision-making, structure processes and regulatory frameworks. Investment activities at national and municipality levels is often systematically constrained by the constitution of a country such as unitary state with much centralized decision-making processes. According to the International Monetary Fund, the benefits from investments projects worldwide are approximately thirty (30) percent lower than what is technically possible due to inefficiencies in planning funding and implementation of public investment projects (Gunther & P, 2022).The sustainability of capital investments is a critical area of focus in public sector management, particularly in developing countries like Zambia. Investment appraisal techniques play a pivotal role in ensuring that capital investments are both viable and sustainable over the long term. Investment appraisal techniques are methods used to evaluate the viability and profitability of investment projects.
In the case for Shang'ombo, sustainable capital investments are crucial for promoting economic development, social well-being and environmental conservation. Shang'ombo Town Council play a vital role in the delivery of public services and infrastructure development. However, there is need to assess the effect of capital budgeting techniques or investment appraisal techniques employed by these two councils on its capital investments in relation to sustainability.

1.2 Research Questions and Hypotheses

The problem under investigation is inconsistent application of capital budgeting techniques on capital investments at Shang'ombo Town Council. There has been inconsistency in the application of capital budgeting techniques on capital investments at Shang'ombo Town Council leading to delayed completion of the Council lodge due to incorrect project timeline and misallocation of resources. Documentation review revealed that no capital budgeting technique was used to determine its sustainability. According to (Hall & Mutshutshu, 2013), there is limited research on capital budgeting process of state-owned enterprise such local authorities, in Africa, which include Zambia.
In Zambia, local authorities play a significant role in driving regional development through capital investments such as infrastructure and community projects. Despite the critical importance of these investments, the appraisal techniques employed by local authorities to ensure sustainability of these capital investments remains a concern. Capital investments face challenges such as cost overruns, delayed completions hence raising questions about the appraisal methods employed. The Auditor General cited some local authorities in its report on local government accounts dated 31st December 2022 for failure to operationalize capital projects on time and in some cases failure to continue operations.
Shang'ombo Town council, a rural local authority in the western Province of Zambia has a number of capital projects as captured in its published financial statements dated 31st December 2022, such as the council butchery, market shelter, toilets and a lodge under construction, some from which it collects fees and charges and are run as commercial ventures. However, some of these projects such as the butchery is currently not operational. This is because of the inconsistency or no application of capital budgeting techniques by the council leading to unrealistic expenditure and inaccurate calculations of returns and return periods.
It is from this background that the study sought to evaluate the impact of capital budgeting techniques on the sustainability of capital investment projects and bridge the knowledge gap in literature about capital budgeting techniques in local authorities in Zambia.

1.3 Research Objectives

- To evaluate the current investment appraisal techniques used by Shang'ombo Town Council.
- To identify the challenges faced by Shang'ombo Town Council in implementing Investment appraisal techniques.
- To assess the effectiveness of the investment appraisal techniques in ensuring the sustainability of capital investments.

1.4 Research Questions

- What are the current investment appraisal techniques used by Shang'ombo Town Council?
- What are challenges does Shang'ombo Town Council face in ensuring sustainability of capital investments?
- How effective are the current investment appraisal techniques in ensuring sustainability of capital investments?

2. Literature Review

This section focuses on the examination of relevant literature related to the objectives and research questions, establishing a basis for understanding the key issues and the context of the study.

2.1 Literature Review matrix

Table 1: Review Matrix

SN	Authors	Title	Year	Country	Methodology	Key Findings	Literature Gaps
1	Marcin Pawlak & Dariusz Zarzecki	*Investment Appraisal Practice in the European Union Countries*	2020	Poland	Nil	Large part of even the largest European corporations do not use advanced investment appraisal techniques or apply them only to a limited extent and there has not been a research into practical applications of investment appraisal methodologies that would cover the entire Single Market.	The Methodology used in the study was not indicated or mentioned.
2	Shaheen, Abbas, Saleem, Ullah	*Systematic Literature Review on Capital Budgeting Techniques*	2025	Parkstan	Real options analysis and simulation models	Identifies key CBTs (e.g., NPV, IRR), ESG factors, and sustainability considerations and highlights that modern techniques should incorporate sustainability metrics.	Lacks public-sector and local authority focus, especially in developing countries like Zambia.
3	Odunnaike, J.S & OlagokeSalami, S. O.	*A review of conceptual and practical problems in the evaluation of development projects in Nigeria.*	2020	Nigeria	Nil	Development Projects executed by the Government of Abia State and Abuja Investment and Property Development Company (AIPDC) were some of the projects that failed due to appraisal problems	The method used in the research not indicated.
4	William Smart Inyang & Bassey Eyo Bassey	*Capital Budgeting Techniques and Government Capital Projects in Nigeria: A Conceptual Approach*	2021	Nigeria	Nil	The ineffectiveness use of Capital Budgeting Techniques contributed to underfunding of capital projects in Nigeria.	No research Methodology indicated.
5	Lesorogol, Achimba & Opondo	*Budget Control on Capital Project Delivery*	2024	Kenya	Quantitative	Budget control practices significantly impact delivery of capital projects.	Does not directly assess sustainability dimensions or CBT choice effects.
6	Siziba, Simiso & Hall, J.H.	*The evolution of the application of capital budgeting techniques in enterprises*	2021	South Africa	Longitudinal	six capital budgeting techniques, namely, (NPV), (IRR), (PBP), (ARR), (ROI), (ROV), are the most popular methods for evaluating capital investments and (ROV) being the least used.	The formula used to select the sample size not indicated.
7	Gcabashe & Pillay	*Promoting Financial Management in Local Municipalities through Accountability*	2025	South Africa	Qualitative case analysis	Financial management and accountability are critical for sustainable municipal operations; capacity and governance matter.	Not directly assessing capital budgeting techniques or specific sustainability impacts of investment projects.
8	Michael Kaoma & Erastus Mwanaumo	*The role of Investment Appraisal Techniques in Enhancing Financial Sustainability of small scale Enterprises in Solwezi Zambia.*	2025	Zambia	Mixed - Method	There is a significant positive relationship between the frequency of investment appraisal techniques and SME financial sustainability.	The formula used to generate the sample size and population was not indicated.
9	Clare Malata & Chisala C Bwalya	Examining the Effectiveness of Budgeting Processes on Organizational Performance: A Case Study of the Lusaka City Council	2026	Zambia	Mixed-Method	weak coordination, delayed approvals, and limited stakeholder engagement continue to undermine fiscal discipline and service effectiveness	Number of correspondents not mentioned.
10	Vernon Jones Mwaba & Chisala C Bwalya	*Examining the Effectiveness of Budgeting and Financial Management in Public Institutions: A Case Study of Chibombo Town Council.*	2026	Zambia	Mixed - Method	Budgeting processes were characterized by a lack of transparency, inadequate stakeholder involvement and misalignment with strategic goals, while financial management is crippled by ineffective internal controls and outdated systems	Number of correspondents not mentioned.

Bassey, et al., (2020) Conducted a study titled "Capital Budgeting Techniques and Government capital projects in Nigeria: A conceptual approach". The research obtained relevant data and information from the internet, journal articles, and literature reviews. The study concluded that it is the ineffective use of capital budgeting techniques that has contributed to poor funding and abandonment of capital projects in Nigeria. The study concluded that the ineffective use of capital budgeting techniques led to poor funding and abandonment of capital projects in Nigeria.

In the study done by (Inyang & Egbunike, 2019), "The use of Investment Appraisal Techniques and Capital Investment Decisions of cross river state Government of Nigeria", the study adopted descriptive study methods and self-administered questionnaires across 20 selected ministries, departments and agencies. It was found that capital investment decisions involve making choices among competing capital projects. Investment decisions must therefore be in conformity with the chosen appraisal methods so that project failures do not occur. Investment appraisal methods are selected without taking cognizance of the capital projects that make faster and more profitable returns while the present value method is suitable for the appraisal of large projects that are mutually inclusive and independent.

(Maimuna & Musa, 2023) Researched on "The role of Investment Appraisal/ Capital Budgeting Techniques in Evaluating the profitability of projects". The study found that capital budgeting techniques commonly used in evaluating the profitability of projects are payback method, accounting rate of return, Net present value, Internal Rate of Return and Profitability Index. He also found that most companies' especially small manufacturing firms do not make use of sophisticated investment appraisal techniques instead; they rely on non-discounted techniques, which ignore Time value of money.

A further study done by (Lindval & Larsson, 2017) titled "Investment appraisal in the public sector-incorporating flexibility and environmental impact". The research used a systematic approach to sensitivity analysis. The research found that real asset investment appraisal in the public sector often requires that objectives beyond return on investment are taken into account. Recently environmental impact and climate change issues are often used to motivate investments. The study also investigated the application of real option valuation and multi criteria decision analysis in the appraisal of a public sector investment in the form of a logistics park aimed to reduce emissions from cargo traffic.

(Fatoki, 2010) Investigated on the Impact of investment appraisal techniques on the profitability of small manufacturing firms in the Nelson Mandela Bay metropolitan area, South Africa. The study used survey data generated from one hundred and twenty-four small manufacturing firms in the dispatch. Ascertained by statically testing the hypothesis of the study that small manufacturing firm owners do not use sophisticated investment appraisal techniques when evaluating their proposed projects. A multiple regression analysis was used to confirm the impact of investment appraisal techniques on the profitability of small manufacturing firms. It was concluded that the use of sophisticated investment appraisal techniques has a negative impact on the profitability of small firms and it was recommended to improve the managerial and financial skills of the owners of small manufacturing firms.

(Monakgisi, 2015) Researched on capital budgeting processes for public sector development projects in South Africa. Qualitative research was done where interviews were held with key stakeholders involved with capital investment authorizations and management in South African state-owned entities (SOE) to find out what capital budgeting processes are followed by state owned enterprises. Despite the use of capital budgeting processes with public sector entities, there are differences in the application for each stage of the process i.e., identification, selection, authorization, implementation and control and post auditing stages.

Research conducted by (Marcin & Dariusz, 2020) on Investment appraisal practice in European union countries revealed that a large part of even the largest European corporations do not use advanced investment Appraisal techniques or apply them only to a limited extent. Secondly, there has not been research into practical applications of investment appraisal methodology that would cover the entire single market, the European area and Switzerland. It was recommended that further research should identify the differences regarding the use of investment appraisal methods between countries as well as sectors.

(Odunnaike, et al., 2020) conducted research on A review of conceptual and practical problems in the evaluation of development projects in Nigeria. The traditional and modern methods such as IRR, ARR, and payback methods were discussed. Development projects executed by the government of Abia state and Abuja investment and property development company were some of the projects that failed due to appraisal problems among others. It was concluded that viability appraisal which is the bedrock of any successful investment, should be seriously and accurately handed by experts and it must not only be carried out for the sake of approval but must be holistically adhered to. It was recommended that state surveyors and valuers and other development appraisers should embrace the use of modern development appraisal techniques that incorporate risks while executing tasks of investment appraisal in order to enhance appraisal accuracy.

A study on capital budgeting by (Sravana pelli bhuvana, 2024) stated that capital expenditure require large outlays of funds and firms must ascertain the best way to raise and repay these funds. Capital budgeting provides a wide scope for financial managers to evaluate different projects in terms of viability to be taken up for investments. It helps in exposing the risks and uncertainty of different projects by keeping a check on over or under investment. Management is provided with an effective control on cost of expenditure projects and the fate of a business is decided on how optimally the available resources are used.

(Michelon, et al., 2021) Investigated on the "Use of capital budgeting practices, an integrative review" and the study aimed

at highlighting the relationships between these characteristics and the use of capital budgeting practices. It was found that the theory practice gap is both related with the organization and managerial characteristics from the practical point of view but requires a review by academicians. Organizations should seek professionals with experience in capital projects appraisal and who are familiar and knowledgeable in the use of adequate practices for decision-making.

2.2 Capital budgeting techniques

Payback Period (PBP)

When doing an investment, there is always, a concern on how long the project will return the amounts invested. This investment return period is what is simply called Pay Back Period. According to Ross et al, (2001) payback period is the length of time future cash flows take to recover the initial investment. It is stated that if a project's payback period is less than or equal to a pre-determined period, it is acceptable. The project with the shortest payback period is always the favourable. However, this approach is widely used by smaller firms (Pike and Neale, 2003), and the rationale behind it is that, the project with the shortest payback period has the shortest risk. Arnold (2005) states that although this technique is simple to use and understand, management should note that it does not take time value of money into account, and also ignores cash flows beyond the cut-off date (Liyambo, 2006).

Discounted Payback Period

The amounts an investment pays back is sometimes discounted as a way of having an almost accurate figures returned by the investment. This method is simply called Discounted Pay Back Period. Discounted payback is the period required to recover initial cash outflow when the cash inflows are discounted at the opportunity cost of capital (Arnold 2005). Discounted Pay Back Period is an improvement of simple pay back method and takes into account time value of money (Liyambo, 2006).

Accounting Rate of Return (ARR)

This method calculates the ratio of the accounting profit generated by an investment project to the required capital outlay, expressed as a percentage. It is also known as return on investment (ROI) or return on capital employed (ROCE). The ARR evaluates the project on the basis of its profitability over its entire asset life (Lumby, 1994). It is suggested that if the ARR is greater than, or equal to, a hurdle rate then a decision to accepts the project should be made.
Formula:

$$\text{ARR (Total investment)} = \frac{\text{Average annual profit}}{\text{Initial capital invested}} \times 100$$

Or

$$\text{ARR (average Investment)} = \frac{\text{Average annual profit}}{\text{Average capital invested}} \times 100$$

The ARR technique is easily calculated since accounting data is used and the input required is the projected profits. It is also often favoured by managers because it is an evaluation measure that is broadly consistent with return on capital employed and a ratio on which their own performance is measured. However, it ignores time value of money. For example, there is no allowance for the fact that cash received in year one is more valuable than an identical amount received in year three. More importantly, it is flawed, because it uses profits rather than cash (Liyambo, 2006).

Net Present Value (NPV)

Net Present Value is defined as the value of cash flows adjusted for time value of money. As the name implies, the net present value technique is the present value of all projected cash flows after netting out the initial capital (Pike and Neale 2003). The present values are achieved by discounting the cash flows at the company's cost of capital. NPV works on the principle that an investment is worthwhile undertaking if the present value of the proceeds from an investment are at least equal to - if not greater than - the inputs. The NPV is cash flow-based and measures in absolute terms. It takes the time value of money into consideration and considers all cash flows. The flaws of the NPV method are that the method relies on accurate inputs such as discount factor and the right cash flows to derive the correct values. It could also be a tedious method because of the great number of calculations required (Liyambo, 2006).

Internal Rate of Return (IRR)

According to (Pike and Neale, 2003), Internal Rate of Return is defined as a discount rate that makes the NPV equal to zero. It is also the rate that causes the present value of net future cash flows to equal the investment outlay, thereby making the NPV zero. The decision rule is that if a project's IRR is greater than the cost of capital or the project's required rate of return (RRR) then accepts, otherwise reject the project.

Modified Internal Rate of Return (MIRR)

According to Arnold (2005), MIRR is the rate of return which equates the initial investment with a project's terminal

value where the terminal value is the future value of the cash inflows compounded at the required rate of return (the opportunity cost of capital).It is determined by calculating the rate that causes the present value of the terminal value of a project's inflow to equal the present value of the outflows, with terminal value being determined by re-investing at the cost of capital.

Economic Value Added (EVA)

According to (Pike and Neal, 2003), Economic Value-Added method is as a post-tax accounting profit generated by a firm reduced by a charge for using the equity (usually, cost of equity times book value of equity). EVA is a residual income measurement, which subtracts the cost of capital from net operating profits after tax generated in the business Adler (2000). Davidson (1999) notes that financial institutions have started to use EVA, as internal cash flow valuation, and shareholders value creation on projects. It has shown that shareholder value is maximized if and only if the firm makes only those decisions that generate positive net present values. Net present values are calculated by discounting the incremental cash flows of a decision. These may be different from the cash flows that physically relate to a project or investment object. The Payback period and accounting measures are illegitimate shortcuts, and there is a need to develop proper decision-making tools for the problems they try to address. Since all criteria are optimal only to the degree that they agree with the NPV rule, it is best to use the NPV rule rather than anything else (Liyambo, 2006).

Benefits – Cost Ratio

According to (Kee & Robbins, 1991) Cost Benefit is a model that relates investment potential benefits with its associated costs and that its frequent application ratio relative to the NPV and IRR may be as a result of its unique ability to incorporate qualitative attributes of an investment. In their study they found that the benefit – cost ratio and non-quantitative evaluations are the most frequently used techniques in the public sector. Therefore, an investment with more benefits at the same or less cost would be selected. According to (Chan, 2004), an analysis of whether a capital projects benefits outweighs its cost is still lacking. He further adds that although cost tends to be fairly clear, it is difficult to define benefits of capital projects in the public sector.

The decision rule is to accept project's whose BCR is greater than 1. Although the BCR method is similar to a large extend to NPV method, the main difference is that the BCR methods measures the efficiency of the project while the NPV method measure the size of the net benefit which is measure using the currency (Rand). According to Smith (1969) this explains the widespread use of BCR in the public sector. (Adewele & Olayi, 2004) found that the majority in the Kwara state Nigeria prefer the use of benefit – cost ratio and payback period techniques compared to IRR and NPV. Possible reasons for this may be due to the simplicity, versatility and flexibility of the BCR and PBP techniques.

Morgenroth (2011) concludes in his study that according to evidence, the expected costs and benefits of projects do not go according to plan and that estimates are subjected to systematic preference which appears to be common (Monakgisi, 2015).

Cost benefit analysis

To ensure that the resource allocation on capital investments meet the intended benefits for the community and economic welfare, a cost benefit analysis is done. The advantages of a cost benefit analysis are:

- It provides a consistent approach to a wide range of government projects
- The discounting techniques that are used to reduce money outlays at different times to true comparability have become generally understood
- The concept of economic welfare provides an alternative basis for the appraisal of government projects (Monakgisi, 2015).

2.3 Importance of Capital Budgeting in Public Sector

According to Graham (2011), the following are the key features of the Public Sector:

- Public sector is broad and involves all organizations that receive funding from public sources such as taxes, fees or licenses. This include government enterprises
- Public sector has multiple goals
- Public sector often use private sector to deliver public goods
- The public sector is a democratic institution, meaning that all assets created belong to the taxpayers and therefore Government need to be transparent and account for all resources used.

According to (Kee & Robbins, 1991), the public sector's priority is not to maximize value but rather to allocate the scarce resources in a manner that will maximize the quantity and quality of the public service programs. This is against the norm of most public sectors, whose main aim is revenue generation and cost saving. The scarcity of resources and infrastructure concerns has brought attention to how capital decisions affect operating expenditure (Bozeman, 1984). A further highlight by Kee & Robbins (1991) suggest that citizens have continued demanding for more accountability from public sector administrators regarding the utilization of scares resources. Capital budgeting techniques makes it easier to evaluate competing capital investment projects (Chan, 2004). While capital projects may yield benefits in growth, they are normally associated with high risk and irreversible loss that can be detrimental to the public sector and its stakeholders (Monakgisi,

2015). Therefore, sound and profitable capital budgeting decisions can have a positive influence on the financial performance of a public sector enterprise (Yadav, 2005). According to (Panday, 2009), Capital Budgeting is important due to the following reasons:

- Capital budgeting provides better management and planning of funds.
- The unpredictability of the future creates a risk for the organization and therefore projects are evaluated in terms of risk and return
- Investment decisions are often complex and irreversible

Bozeman (1984) also highlighted the following as benefits of capital budgeting:

- Improved public understanding and knowledge of what the benefits of the public's money are
- Legislative decision making will be improved
- Politics will be incorporated into the process by giving decision makers choices whose costs and benefits are clearly more defined.
- "Future budget will not lose its control feature but will build upon a total systems approach that incorporates the capital budgeting process but not eliminate the concept".
- More effectiveness of the management control due to established relationships between capital and operating expenses.
- Increased agency innovation

2.4 Capital Budgeting Process

Capital budgeting is one of the four financial decisions which help in deciding what type of a project to invest in taking into consideration its value, risk and benefits. Each step of planning and budgeting involves establishment of goals by the community, by individual departments, by executives and by the legislature and unlike the private sector, projects in the public sector attract political interest and political transactions that require a political decision matrix (Bozeman, 1984). According to Jacobs (2009), an effective capital budgeting process is one that forms an important section of the overall budgeting system and that a well-designed public financial system supports each aspect of the system, including capital spending. Capital budgeting involves some of the following stages:

Identification of investment opportunities

The first step in the capital budgeting process is to identify capital investments that are in line with the objectives of the organization. To generate investment project proposals that are in line with the organization's objectives and strategies, an efficient administrative procedure is required (Egbide, Uwalomwa & Agbude, 2013). Pinches (1981) highlights that; "the identification of potential capital projects is directly linked to the governments' policies on regulation, monetary/fiscal incentives and the overall leadership posture of the firm's management". Due to the contribution of these projects to the firm's value, in the context of this study, economic growth, it is important for Managers to constantly search for new methods, processes, plants, products and finally chose which projects to invest in (Belkaoui, 2001). This is important in order to avoid needless analysis (Caleb et al, 2013). Examples of capital asset procurements by the public sector are expanding the public utility services, improving the public and goods transportation system or purchasing the central computer system (Kee & Robbins, 1991).

2.5 Development and evaluation

The profitability and global attractiveness of an investment proposal is analyzed and evaluated by using relevant data and detailed information for each alternative (Maccarrone, 1196). He further adds that evaluation techniques depend on the environmental factors and investment characteristics of the organization. The limitation of data and an information system which cannot provide accurate, timely data results in the limitation that only a few alternatives are considered during the development stage (Pinches, 1981). Nunn (1990) support this by stating that city governments can establish information systems that are effective enough to timeously give information regarding the conditions of the infrastructure. This will also indicate when and where maintenance, replacement or expansion may be required. This is concurred by Nshisso (2008) when he did a comparison data between 2 countries; a developing country and a developed country. He found that the data for the developed country was for year 2007 while the date for the developing country was prior to year 2000 which means that funding required for capital projects in the developing country will be based on inaccurate data. It is important for periodic audits of the information submitted to be done by operating departments as this will encourage departments to provide meaningful and realistic data (Millar, 1988 pg. 74)". According to Chan (2004), the evaluation of a capital project should include the identification of funding alternatives, debt requirements, cash flow and long term tax implications, reserve funds draws and user rates. (Flyvbjerg et al, 2003) found that major public policy problems exist due to the extensiveness of the misinformation in the planning of transport infrastructures projects and its justification for the implementation of such projects. He further highlights that the problem of misinformation is an issue of power and must be dealt with using mechanisms of accountability commonly used in liberal democracies to control power. A similar finding is realized from Millar (1988) where he mentions the availability of data as a serious obstacle and how many operating departments lack the expertise and capacity to generate and analyze sophisticated data systems.

2.6 Theoretical and Conceptual Framework

Capital budgeting theory

According to (Batra & Verma, 2014) Capital Budgeting is one of the most important decisions faced by the financial management of any organization. Capital Budgeting Theory deals with the process of planning and managing a firm's long-term investments. It emphasizes the importance of proper evaluation methods like PB, ARR, IRR and NPV to ensure investments are made in projects that will yield returns over time. The theory also deals with the mechanisms used by an organization to make evaluation decisions on how to allocate resources among investment projects (Al-Mutairi et al., 2018) and assessing the investment projects that will create benefits for periods of over one year and that will assist the company to obtain revenue or reduce future costs.

Stakeholder theory

This theory suggests that the aim of a business is to create as much worth as possible for stakeholders. This implies that for success and sustainability over time, managers must keep the interest of the suppliers, customers, employees, shareholders and communities aligned and heading in the same direction. (Freeman, et al., 2010) asserts that a stakeholder is a group or an individual that affects or can be affected by an organization. Stakeholders can come from within the business or from outside the business. Such stakeholders include employees, suppliers, stockholders, government, customers, non-profit groups and the local community.

The council as an organization therefore, have numerous stakeholders whose interest they seek to meet. As key stakeholders in the commercial ventures established by the Council, the community members therefore should be able to benefit from these ventures sustainably.

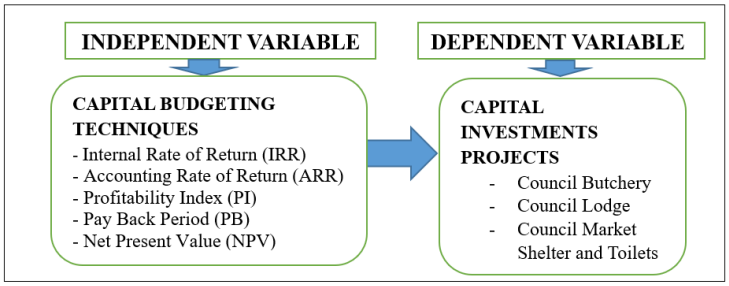

Figure 1: Conceptual Model of Study
Source: Researcher's own illustration

3 Research Methodology

The research adopted a case study research design. This choice was made to systematically collect information on impact of capital budgeting techniques on viability and sustainability of capital investments in local authorities in Zambia. It encompasses details about the population, sample selection, sampling techniques and data collection instruments and data analysis procedure. According to (Zikmund, et al., 2010), a methodology section should elucidate technical procedures in a manner that suits the intended audience. This involves elucidating the research and sample design,outlining the data collection process and fieldwork procedures,as well as detailing the analysis of the collected data. The study employed a qualitative method research approach.

3.1 Research Philosophy

The philosophical underpinning for this study is drawn from the understanding that the phenomenon being studied affects behavioral aspects of humans. Philosophy can be viewed through, ontology and epistemology. This study adopted ontology. Ontology in business research can be defined as "the science or study of being" (Blaikie & Thomson, 2010) and it deals with the nature of reality. Ontology is a system of belief that reflects an interpretation by individual about what constitutes a fact. In this study, ontology is applied as far as the central question of the research hinges on assessing the effect of capital budgeting techniques on investment appraisal in Shang'ombo district. To address this, an aspect of ontology being interpretivism was considered. Interpretivism perceives that reality is subjective, and is socially constructed by the observer through their experience of it, as opposed to being independent of the observer. Formally, interpretivism can be defined as ontological position which asserts that social phenomena and their meanings are continually being accomplished by social actors (Bryman, 2012). This research therefore, adopted interpretivism in order to explore individual experience and uncover insights into the nuances of human behavior and helped the researcher gather insightful information and understanding of the phenomena of capital budgeting techniques.

3.2 Research Design

A research design according to (Kontari, 2004) is a conceptual structure within which research would be conducted aimed at providing for the collection of relevant evidence with minimal expenditure of effort, time and money. Cooper and

Schindler (2003) summarize the essentials of research design as an activity and a time-based plan; always based on the research question; guides the selection of sources and types of information; frame work for specifying the relationship among the study variables and outlines the procedures for every research.

This study adopted qualitative research design in order to obtain an in- depth understanding of the effect of capital budgeting techniques on the viability and sustainability of investment projects in local authorities in Zambia.

The qualitative research approach

This study adopted a qualitative design. There is consideration which should be made when choosing which qualitative method to employ. According to (Wadhua & Varpio, 2015) the epistemological position should be considered as the philosophical principles which underpins the research which will influence the chosen qualitative approach. The qualitative method should also complement the research questions. The qualitative research approach refers to all non-numeric data or data that have not been quantified and can be a product of all research strategies (Saunders & Thornhill, 2009). The findings from other studies (literature review), supported by Capital budgeting and Stakeholder theories, were used to determine the interview questions. Creswell (2012) defines an interview as a data-collection instrument, involving a face-to-face conversation between a researcher and a participant that includes the transfer of information from the participant to the interviewer. Interviews are primarily a qualitative research method and occur when researchers present one or more participants with general, open-ended questions, and record their answers (de Trigueros, 2017; Quad, 2016). Interviews are proclaimed useful to uncovering the story behind a participant's experiences and for pursuing in-depth knowledge concerning a topic (Quad, 2016).

The interview method was opted as a qualitative means of collecting data from the experiences of the natural setting and observations made from introspection, life story and historical perceptions and this laid the ground for the use of qualitative research to find out the impact of appraisal techniques of the sustainability of investment project in local authorities in Zambia. Qualitative research through interviews allowed for open-ended interviewing with participatory and narrative explanation of life experiences and perceptions. The researcher had the flexibility of allowing the responses to be fully probed and explored spontaneously by the interviewee. This provided full insights of what was obtaining on the ground without creating assumptions of the purported situation. Further, the researcher was able to collect detailed information through follow up questions and probing to achieve in-depth of answer in terms of penetration, exploration and explanation, which was adequate for constructive assumptions. The interview method was appropriate, as interviews are generative in the sense that new knowledge or thoughts are created as the interview is in progression. The advantage in this situation was to get as many insights as possible regarding the research study when primary data was collected. The desktop research was essential in acquiring additional information regarding the research practices of academics.

The researcher in this study was involved in interviewing the participants as a means of collecting data. Ritchie and Lewis (2003) observed that in qualitative research the research interviewers are themselves research instruments and there are some key requirements of them that they need to meet to ensure that the primary data was collected. In the quest to undertake the research, the researcher prepared a guided open-ended interview question, which were used to elicit information from the interviewee. Before undertaking this process, the researcher had to explain the background of the study to the participants to create an understanding of the subject matter under study. The process clarified some discontentment that participants had before the interview. Further, the researcher explained and assured the respondents on ethical issues by highlighting some of the steps taken to obtain permission from the institution to ensure security and workers protection for divulging information relevant to the study. Creswell (2002) cited Marshall and Rossman (1999) who stated that it is important to gain access to research or archival sites by seeking the approval of "gatekeepers." This helped to interview respondents even during working hours provided they were available for the task (Twambo, 2018). During the interview process, the researcher played a critical role of managing the interviews.

The researcher had to control the flow of the discussion by being curious in order to probe further. According to Ritchie and Lewis (2003), an enquiring mind is an essential asset in an in-depth interview. In addition, Ritchie and Lewis (2003) cited Thompson (2000) who stressed that in-depth interviewing requires interest in and respect for people as individuals, and is not for people who cannot stop talking about themselves (Twambo,2018). Therefore, the role of the interviewer was to establish a good rapport with the participant at ease and create a climate of trust that would create a desirable environment for collection of data. Creating the right rapport is about demonstrating interest and respect and showing an understanding and empathy. Interviewees tend to respond positively where an ideal environment is accorded and this is what the researcher provided.

The researcher's role was also to establish the credibility with the participants by asking relevant questions which were seen as meaningful by the participants and were based on the understanding of the research. This was important to avoid the diversion of the discussion from the research study. In this regard, the researcher had to be alert to contradictions with what was said earlier and explore in more detail the follow up questions. The researcher had also the role of collecting more data from the desk top in order to authenticate and cement what was collected from the interviews. Finally, the role of the researcher was to interpret the data collected from the research and report what was obtained from the study which will be available on the institutional repositories for future academic references.

3.3 Study Area

The study area was Shang'ombo Town Council (STC) in Shang'ombo district. Shang'ombo is a district situated in the remote area of Western Province of Zambia and borders the country of Angola. Therefore, findings from this study will

provide information for local authorities in remote and rural areas about capital budgeting techniques.

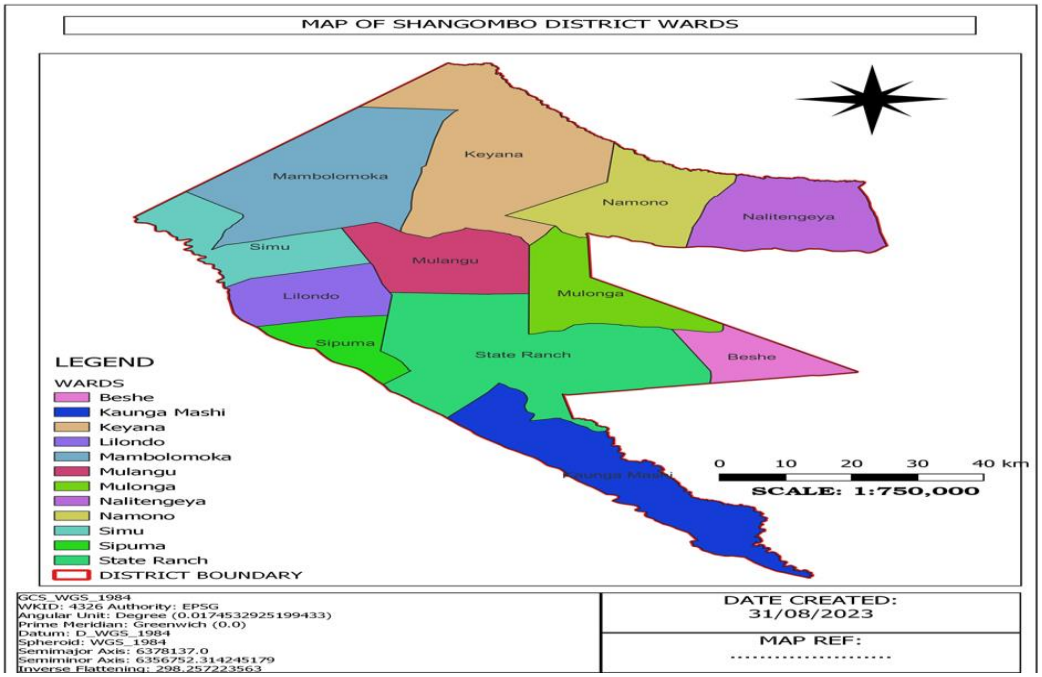

Figure 2: Map of Shang'ombo Constituency
Source: Shang'ombo Integrated development plan (IDP, 2023)

3.4 Study Population and Study Sample

The study population refers to the entire group of people or elements to which a research study is intended to apply or about which the study seeks to draw conclusions (Neuman, 2014). In line with the requirements of a mono study, the target population was made up of a technical diverse group of people. The target population for this research is individuals in Shang'ombo district. Specifically, the target population was be Shang'ombo Town Council staff purposively selected in order to collect technical data on the capital budgeting techniques on investment appraisal.

Sample size refers to the number of individuals or elements selected from a larger population to participate in a research study (Neuman, 2014). Conducting research on an entire population can be prohibitively expensive, time-consuming while using a sample allows for faster, cheaper and timely data collection and analysis (Fowler, 2013). When the sample is carefully chosen, the findings can be generalized to the broader population (Bryman, 2015). A study sample was four structures that will include a council butchery, council lodge, a market shelter and council toilet with 50 officials who were experts in Finance, Administration and Local Governance, purposively selected to help in providing insight on capital budgeting techniques on investment appraisal at Shang'ombo town council.

3.5 Sampling Techniques

Sampling is the process of selecting a subset of individuals, elements, or observations from a larger population for conducting research (Bryman, 2015). It is a fundamental step in the research process and is used to gather data from a manageable and representative portion of the population. Sampling is essential in research to make data collection more practical and cost-effective, while still allowing for valid and generalizable findings (Fowler, 2013).

In this study, a purposeful sampling was used. This technique, also known as selective or subjective sampling, depends on the researcher's judgment when deciding who to ask to participate (Kombo and Tromp, 2006). Purposive sampling is a non-random sampling technique where researchers intentionally select specific individuals or elements from the target population who can provide valuable insights, expertise, or unique perspectives on the research topic (Creswell and Creswell, 2017). Thus, to suit their needs, researchers may implicitly select a "representative "sample or target individuals who explicitly fit certain criteria. The benefit of judgment sampling is that it produces a variety of replies while taking up little time and money (particularly useful in qualitative research). However, in addition to volunteer bias, it is also vulnerable to researcher mistakes of judgment, and while the conclusions may be general, they may not always be.

3.6 Data collection Instruments

Data was collected through semi-structured interviews with Shang'ombo Town Council officials in order to obtain primary data and secondary data will be obtained through reports and gazettes.

3.7 Data Collection procedures and Analysis instruments

This study used both primary and secondary data. Primary data was collected using reports, articles and gazettes. Secondary data was collected through in-depth interviews that was conducted on purposively selected Council employees, which

included, director finance, director engineering, director planning, director administration and human resources, council secretary, council chairperson and an officer under middle management.
Data was collected through semi-structured interviews administered to council employees in order to gather qualitative data and to understand how capital budgeting techniques impact capital investments, its effectiveness and any challenges faced in its implementation.
The data analysis method adopted for this study was thematic analysis Thematic analysis. (Ryan & Bernard,2000) argued that that thematic analysis provides the basis of many other qualitative analyses and therefore, cannot be classified as a method in its own right. However, other researchers such as Braun & Clarke (2006) have argued that thematic analysis is a method for analysis. Thematic analysis is used to generate themes which capture a phenomenon which are then explained. Braun & Clark (2006) defined thematic analysis as a method used to identify, analyze and report themes within data.

3.8 Pilot and Diagnostic Tests

In order to establish the reliability and acceptable nature of the estimation results, the following pilot and diagnostic tests were conducted:

Conformability

Hayashi et al. (2019) defines conformability as the extent to which the outcomes reported by the researcher can be confirmed by other independent researchers when interpreting the same data. To ensure conformability of the outcomes of the study, the researcher kept an audit trail by keeping a record of all the research related activities and data, including the raw interview and journal data and the audio recording.

Transferability

Researchers should provide adequate information when presenting the results of the analysis, to ensure that readers would be able to independently determine whether the findings would be applicable to another setting (Hayashi et al., 2019). To ensure transferability of the outcomes of this study, the researcher clearly identified "investment viability" and "sustainability" from a municipality's perspective. These are principles of the theory of investment sustainability, that is one the theoretical perspectives of this study. Nearly all of the questions posed by the researcher were to obtain information that would allow the researcher to assess the impact of budgeting techniques on capital investments sustainability.

Credibility

Bertram and Christiansen (2014) credibility refer to the extent to which the data or the findings reflect the reality and lived experiences of the participants. The researcher employed telephonic audio recording when conducting interviews, to ensure that participant-responses were correctly captured.

Dependability

Dependability is the extent to which different researchers, not involved in the study, would make identical observations and arrive at the same conclusions concerning a phenomenon, when following the same research steps applied by the researcher (Bhattacherjee 2012). Several scholars compare "dependability" in qualitative research to "reliability" in quantitative research as they both address issues of consistency in researchers' assessment of targeted variables (Kumar, 2011). The results of this study were compared with the outcomes of similar previous studies and the researcher accounted for any apparent variations.

Authenticity

Djurdja (2019) authenticity refers to the extent to which researchers exhibit a range of realities in a fair and faithful manner. It focuses on the contextual purpose of the research identifying the intended value of the research (Billups, 2014). Authenticity was ensured by structuring interview questions to derive relevant information that warrants achievement of the research objectives.
The table below shows information that was collected through face-to-face interviews using a questionnaire with open-ended questions:

This study adopted a pragmatic research philosophy, integrating both qualitative and quantitative research methods to provide practical insights into the effect of revenue collection on service delivery. The pragmatic approach allowed for a flexible combination of structured surveys and financial data, enabling the study to explore both empirical relationships and the underlying challenges local authorities faced in revenue collection. By combining deductive reasoning through regression and correlation analysis and qualitative insights from in-depth interviews, the study offered a comprehensive understanding of revenue collection and their impact on service delivery in local authorities in Zambia.
The research design adopted for the study was sequential explanatory, providing an efficient means of examining the relationship between revenue collection and service delivery. This design was appropriate as it allowed the researcher to collect quantitative data first and later qualitative data allowing the researcher to uncover the rationale behind the quantitative findings.
The study was conducted in Kalulushi district as it is peri-urban allowing the research to cater for both urban and rural local authorities. Local authorities in Zambia face unique challenges, including revenue collection and service provision.

For the sample, a total of 100 local taxpayers were selected using slovin formula, ensuring statistical reliability with a 95% confidence level and a 5% margin of error. Additionally, a purposive sample of 30 key informants was chosen to provide qualitative insights into the challenges KMC faced in collecting revenue. Simple random sampling was used to ensure proportional representation from various tax payers, such as business owners, property owners and mining companies.
Data was collected using a structured questionnaire, pre-tested on a small sample to ensure clarity and validity. The data collection procedure involved distributing questionnaires and following up with respondents to maximize the response rate. Regression and Correlation analysis, supported by descriptive statistics, was employed to model the relationships between revenue collection and service delivery. This method provided empirical evidence of the effect of revenue on the provision of services such as streetlighing, road maintainace and waste management.
Finally, the study followed ethical standards for research conduct. Informed consent was obtained from all participants, who were fully informed about the purpose of the study, their right to anonymity, and the voluntary nature of their participation. Participants were assured that their responses would remain confidential and would only be used for academic purposes. Ethical approval was granted by the University of Zambia's institutional review board to ensure the study complied with ethical guidelines (Bryman, 2016). Additionally, all data collected were securely stored in password-protected files and accessed only by the research team to maintain confidentiality and safeguard participant information. To further uphold ethical integrity, the researcher ensured that no participant was subjected to psychological, emotional, or professional harm throughout the research process.

4 Results and Discussion

4.1 Response Rate

The researcher targeted to interview 50 individuals from which 43 were responsive representing 86% response rate. In his studies, (Mugenda & Mugenda, 2003) concluded that the reaction rate of above 70% is very good. According to Thorpe et al (2009), the general guideline is that a response rate of 60% or higher is considered very appropriate for most research studies. This means that a response of 86% was very good for data analysis. Based on these assertions, this implies that the response rate for this study was adequate. With full participation, the research findings were more representative of the actual situation, reducing bias and improving the reliability of the conclusions drawn. The data was able to reflect the diverse perspectives of the experts involved. Table 2 below illustrates the level of response rate.

Table 2: Response Rate

Sample Target	Actual Response	Response Rate (%)
50	43	86

Source: Author, 2025

4.2 Demographic Characteristics

The purpose of this question was to outline the demographic information of the respondents. Primary data was collected to determine the views and opinions of the respondents. The collected data was used to answer the research questions. The following are the demographics of the respondents:

Respondents' Gender

In this area of the study, the researcher wanted to establish the gender category of the respondents. Figure 3 below illustrates the study findings.

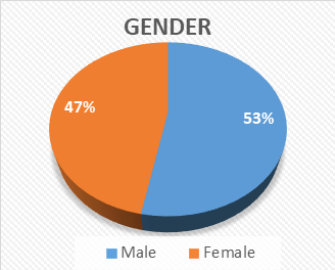

Figure 3: Respondents Gender
Source: Author, 2025

From the results in figure 3 above; 53% of the respondents were male, while 47% of the respondents were female. Based on these results, the study had a nearly balanced gender of the respondents. With nearly equal representation of males and females. The inclusion of both genders ensured that the research considers different viewpoints, preferences, and challenges faced by male and female stakeholders, allowing for more inclusive policy recommendations and improvements in capital budgeting techniques.

Respondents' Age Group

In this area of the study, the researcher wanted to establish the age category of the respondents. With 10% of participants aged 18-30, 77% between 31-50, and 13% above 50, the findings provided a clear picture of how each group influences the mechanism of capital budgeting. Younger individuals (18-30 years) brought a fresh perspective on modern and emerging needs for effective budgeting. The middle-aged group (31-50 years) represented the most active economic participants and therefore, provided insights into the greatest contributors to techniques in budgeting. Older participants (above 50 years) offered valuable insights based on experience, particularly on the sustainability of capital budgeting techniques and potential adjustments for future demographic trends. Figure 4 illustrates the study findings.

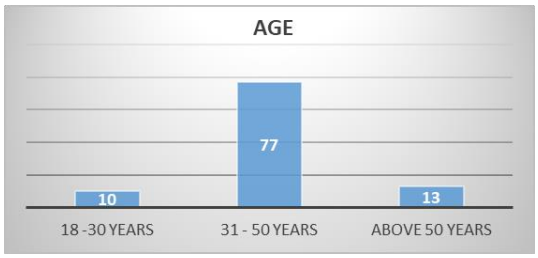

Figure 4: Respondents Age group
Source: Author, 2025

Level of Education

The researcher sought to find out the level of education of respondents. With regard to education levels of the respondents, 25% of the respondents had degree level of education, 53% of the respondents had Diploma education level, 47% had secondary level of education and 18% of the respondents had tertiary certificate level of education. A low percentage of individuals with Master's Degree of 4% had a high level of understanding about capital budgeting techniques and its importance in local authorities in relation to investment appraisal. This group engage in informed discussions and contributes positively to decision-making processes. Figure 5 below highlights the findings.

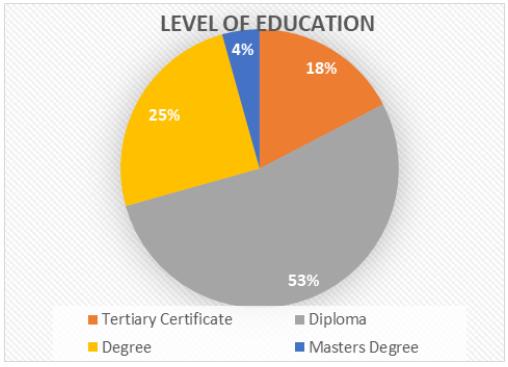

Figure 5: Respondents Level of Education
Source: Author, 2025

4.3 Discussion of Findings

Appraisal Techniques Used

The study found that the Council primarily rely on traditional investment techniques such as cost-benefit analysis (CBA), net present value (NPV), and internal rate of return (IRR). However, it was noted that these techniques are not consistently applied and, in most cases, not applied at all leading to the abandonment and failure to complete investment projects on time. The findings align with those of (Bassey, et al., 2020), who concluded that the ineffective use of capital budgeting techniques contributed to poor funding and abandonment of capital projects in Nigeria.

Challenges Faced in the Application of Appraisal Techniques

According to (Schwartz, Corbacho and Kunke, 2008), application of appraisal techniques has numerous challenges which includes the following:

- Policy makers lack adequate information regarding the costs and benefits of investment projects and lack of citizen's incentives to support such projects.
- Due to the nature of policy making process, small and clearly identifiable groups could have an unequal impact on decisions taken by public authorities
- "The provision of the public sector of goods that serve as inputs to the creation of value added together with other production factors among them capital supplied by the private sector, may result in expenditure competition". Boothe (1993) explains from his study that capital budgeting in the public sector has a danger of potential loss of accountability which is due to the existence of two separate accounts, one for operational expenditure and one for capital. He explains

that this obscures the critical bottom line on which overall accountability is judged. He also found that political accountability would be enhanced if the public were fully aware of the future commitments implied by enlarging the stock of provincial capital (Boothe, 1993). His last finding was that current depreciation charges probably largely offset any reduction in the deficit that come from separating capital spending. A different set of political interest and political trade-offs that require a different political decision matrix is brought by each project in the public sector (Bozeman, 1984). He further explains that due to the financial and engineering aspects of the project, it becomes a technical decision that is difficult to handle by many resources in the political environment. The impact of this is that political flexibility and decision-making process is compromised due to systematizing the technical decision-making process. As a result, capital budgeting becomes a wish list.

The study findings revealed that there are challenges in the application of appraisal techniques at Shang'ombo Town Council. The most commonly cited challenge is limited capacity and expertise within the council in relation to application of investment appraisal techniques. The existing staff members often lack the technical skills necessary to use advanced investment appraisal methods, such as NPV or IRR, with the necessary depth. Thus, it can be concluded that the Council lacks the capacity to conduct detailed project appraisals. These findings are aligned with the research conducted by (Michelon, et al., 2021) where he highlighted that Organizations should seek professionals with experience in capital projects appraisal and who are familiar and knowledgeable in the use of adequate practices for decision-making. Therefore, the Council should invest in capacity building or engage external expertise specialized in investment appraisal techniques.

Effectiveness of Appraisal Techniques used

The researcher is of the view that, appraisal techniques that are considered effective normally incorporates environmental and social aspect.

Environmental aspect: (Global Reporting Initiative, 2011) highlighted that The environmental dimension of sustainability concerns an organization's impacts on living and non-living natural systems, including ecosystems, land, air, and water. Environmental Indicators cover performance related to inputs (e.g., material, energy, water) and outputs (e.g., emissions, effluents, waste). In addition, they cover performance related to biodiversity, environmental compliance, and other relevant information such as environmental expenditure and the impacts of products and services.

Producing sustainable products may produce, on the cash inflow side, additional revenues due to higher accepted selling prices for better-accepted products and better image. Eventually marketable by-products can be sold (Sookran & Kistow, 2011). Although this aspect of selling recyclable material is in principle well known it may be checked more systematically to take more profit of this aspect (Uphaus, 2021). There are a number of approaches to analysing and characterizing ecological aspects in payments. The German Ministry of Transport, Innovation and Technology for example proposes to take into ac-count cost of material for the production of products and other outputs, costs of waste and emission handling, costs of environmental management, research and development for sustainable products and others like insurances and image. To record sustainable aspects, these may be categorized in a kind of checklist for each area or process in each company individually. To do this, Siddikee focuses, in his pollution-orientated approach to green capital budgeting, especially on the environmental aspects of deforestation, water pollution, land pollution, sound pollution and light pollution (Siddikee, 2018).Concerning the character of cost aspects like damage/hazardous waste (DHW), research and development (RD), monitoring and testing (MT), fines, taxes, penalties and insurances (FTPI) as well as material savings (MS) can be distinguished and should be taken into account.

Social aspects: Social sustainability is somewhat hard to define, but in principle, compliance with the (local) labour law is the minimum standard. Fair conditions seem to be desirable to achieve anyway though. Such conditions are part of standards like SA 8000 (Social Accountability) which addresses especially absence of child labour, absence of forced or compulsory labour, health and safety, freedom of association & right to collective bargaining, absence of discrimination, adequate disciplinary practices, working hours and remuneration like equal pay. These aspects are relevant along the whole supply chain but really hard to measure, especially in the context of investments. But if an investment might involve e.g., production facilities abroad the national standards of the country of origin seem to be relevant (Uphaus, 2021).

The study findings highlighted that the current techniques, primarily focus on financial returns, with limited emphasis on environmental sustainability and social factors, which are crucial for sustainable development. It was observed that the appraisal techniques tend to overlook the long-term operational costs that are vital for the sustainability of capital investments. The findings were supported by a study done by (Lindval & Larsson, 2017) on Investment appraisal in the public sector-incorporating flexibility and environmental impact, who highlighted that environmental impact and climate change issues are often used to motivate investments and are essential for sustainability of an investment. It is therefore, recommended that Shang'ombo Town Council should also focus on environmental and social aspect in the application of investment appraisal techniques.

5 Conclusions and Recommendations

Capital budgeting techniques are fundamental in establishing the viability and profitability of an investment. Government institutions such as local authorities undertake Commercial ventures as a way of increasing their financial capacity. However, these commercial ventures do not to thrive and in most cases discontinue.

According to (Inyang & Egbunike, 2019) investment decisions must be in line with chosen appraisal methods so that project failure do not occur. In its annual report on local government accounts for the year ended 31 December 2022,

the Auditor General cited some local authorities for failure to operationalize capital projects on time and for failure to continue operations on commercial ventures. Among the councils cited was Shang'ombo Town Council.

It is against this background that the study sought to assess the effect of capital budgeting techniques on the sustainability of investment projects in local authorities in Zambia, a case of Shang'ombo Town Council. To achieve the research objectives, interviews were conducted among experts on investment administration and budgeting. The study had a sample size of 50 purposively selected individuals from the Council. The study used thematic data analysis. Data was analyzed through themes. From the findings, Shang'ombo Town Council normally relies on traditional investment techniques such as the Net Present Value (NPV), Internal Rate of Return (IRR), and Cost Benefit Analysis (CBA). However, there is inconsistency in the use of these Appraisal Techniques which led to discontinuing of some commercial ventures and failure to complete some investment projects as cited in the Auditor General's Report of 2022.From the findings the council also face numerous challenges spanning from limited capacity to inadequate expertise in appraisal techniques.

The study assessed the effect of capital budgeting techniques on the sustainability of investment projects in local authorities in Zambia, a case of Shang'ombo Town Council effect of revenue collection on service delivery, i.e., the impact capital budgeting techniques on capital investments (commercial ventures). The study therefore achieved all the objectives and gave the following recommendations.

Recommendations

- The council should be consistent in the use of capital budgeting techniques in order to eradicate the issues of investment failure and improve on the sustainability and viability of commercial ventures.
- The council should consider capacity building i.e., trainings and workshops on both basic and advanced capital budgeting techniques for staff in investment administration and budgeting. The Council should also consider acquiring budgeting software such as the Oracle Hyperion Planning, Enterprise Resources Planning and IBM Planning Analytics to enhance capital budgeting techniques.
- The council should incorporate environmental, social and economic aspect when choosing any type of investment appraisal for it to be effective and efficiency.

Recommendation for future studies

A study may be conducted on the assessment of the effect of capital budgeting techniques on the sustainability of investment projects in local authorities in Zambia, by studying multiple councils and increase on the study population and sample size.

Declaration of Competing Interests

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

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Ethical considerations

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

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