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Capital Budgeting Implementation by Public Sector Construction Firms in Tanzania's Housebuilding Industry: An Exploratory Study

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Abstract: This exploratory study investigates the implementation of capital budgeting practices (CBP) by selected public sector construction firms (PSCF) in Tanzania. This investigation seeks to assess the extent, to which such practices are used for effective investment decision-making, with a particular focus on the country's housebuilding sector. A case study research design was adopted to collect data from five Tanzanian PSCF, serving as cases through a mix of questionnaires, interviews and document reviews. The emergent data was analysed using thematic analysis. An appreciable level of CBP implementation was observed in all the cases. The internal rate of return (IRR), net present value (NPV) and payback period (PBP) capital budgeting techniques (CBT) were observed to be mostly used by these PSCF, while sensitivity analysis was widely deployed for risk mitigation. The influence of top management in decision-making, political influence and lack of advanced software were some of the implementation challenges identified. The findings contribute to the elucidation of CBP implementation praxis in the public sector organisation context in developing countries, as it relates to the housebuilding industry in Tanzania's unexplored context. The study proves to be a valuable resource for public sector entities in developing countries intent for facilitating effective investment decision-making about infrastructure procurement and it contributes to improving knowledge of CBP implementation, consideration of risk mitigation factors and post-project implementation audits by public sector firms.

Keywords: Capital budgeting practices, Capital budgeting techniques, Housebuilding in Tanzania, Public sector construction firms, Public housing development

INTRODUCTION

The construction industry continues to make significant contributions towards improving levels of economic growth and citizens' well-being (Awuzie and McDermott, 2019). However, the industry's ability to successfully deliver projects in a sustainable manner, remains under scrutiny (Sospeter, Rwelamila and Gimbi, 2020; Babatunde, 2018; Damoah and Kumi, 2018). This scrutiny is the result of a plethora of failed and abandoned projects, dissatisfied clients and the prevalence of anthropogenic activities and resource wastage, associated with the industry (Zuofa, 2014; Adil, Abdulmajid and Mahdi, 2019; Atamewan, 2020). Relevant

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literature is replete with details of the industry's shortcomings, particularly related to the developing country (Alao and Jagboro, 2017; Damoah et al., 2021). The prevalence of scholarly work also articulates solutions to these challenges and is indicative of ongoing efforts to redeem the industry's image for societal advancement (Anantatmula, 2015; Demirkesen and Ozorhon, 2017; Habibi, 2017; Audu, 2018; Koolwijk et al., 2018; al-Fadhali et al., 2019).

The housebuilding sector appears worst hit – judging by the housing deficit observed in developing countries (Abdul-Rahman, Wang and Ariffin, 2015; Doraisamy, Akasah and Yunus, 2015; Wuni et al., 2018; Adil, Abdulmajid and Mahdi, 2019; Kavishe, Jefferson and Chileshe, 2019; Owusu-Manu et al., 2019; Atamewan, 2020). In Tanzania, successive studies have illustrated the severity of housing challenges experienced, which hamper the country's bid to bridge the housing deficit. Kavishe, Chileshe and Jefferson (2018) and Kavishe, Jefferson and Chileshe (2019) have proposed the adoption of public-private partnership (PPP) arrangements as a panacea, while other scholars have suggested the development of appropriate skillsets for enhancing efficient delivery of housing by public sector organisations (Rakodi, 1991; Sospeter, Rwelamila and Gimbi, 2020; Masaro and Dimoso, 2021).

Based on these studies, the primary role of public sector organisations in the delivery of housing stock in Tanzania is clear. Any attempt to improve the effective supply of public urban housing stock should incorporate an in-depth understanding of the motives, behind the housing-related investment decisions of public sector construction firms (PSCF), with an interest in public housing development. Investments in public housing remain laden with uncertainties and risks, which need to be considered at the project definition and initiation phases. Evolving modalities for managing these uncertainties and risks, as well as comparing alternative project proposals at these phases is imperative.

The utility of capital budgeting practices (CBP) for engendering effective investment decision-making in firms has been observed (Batra and Verma 2017; Siziba and Hall 2021; Sospeter, Rwelamila and Constantine, 2021). In whatever form, investment capital is often considered a limited resource, signalling the need for its effective management (Obi and Adeyemo, 2014). To enable the effective management of limited capital resources during investment cycles, organisational managers must carefully implement CBP with appropriate skills, to avoid incurring major long-term losses (Su, Yang and Dutta, 2021).

The CBP consists of capital budgeting techniques (CBT), risk management techniques (RMT), capital budgeting procedures and non-financial information (Graham and Sathye, 2017). These CBT include internal rate of return (IRR), net present value (NPV), payback period method (PPM), accounting rate of return (ARR), returns on investment (ROI), real options valuation (ROV) and the profitability index (PI) (Ahmed, 2013; Al-Mutairi, Naser and Saeid, 2018). On the other hand, RMT consist of sensitivity analysis, scenario analysis, break-even analysis, simulation analysis and decision tree analysis (Ho and Pike, 1991; Lamb et al., 2019).

These RMT support the CBTs in the assessment of uncertainties associated with investment decisions, whereas the CBP details the procedure, which needs to be complied with, to arrive at construction project-related investment decisions (Graham and Sathye, 2017; Sospeter, Rwelamila and Gimbi, 2020). The contributions of CBP towards improved investment decision-making in firms and the financial performance of firms situated in the public and private sectors, enjoy wide global reportage.

Although many studies have focused on CBP global implementation (Alleyne, Armstrong and Chandler, 2018; Graham and Sathye, 2017; Nurullah and Kengatharan, 2015; Hanaeda and Serita, 2014; Batra and Verma, 2017; Mollah, Rouf and Rana, 2021; Al-Mutairi, Naser and Saeid, 2018; Kim et al., 2020; de Sousa and Lunkes, 2016), literature detailing the sub-Saharan African experience remains scant (Correia and Cramer, 2008; Hall and Millard, 2010; Kiget, 2014; Monakgisi, 2015; Katabi and Dimoso, 2016; Siziba and Hall, 2021; Sospeter, Rwelamila and Constantine, 2021). A cursory look at these studies highlights a focus on firms that operate in the private sector. An exception to this observation is the study by Kim et al (2020), where they mention the use of a capital asset pricing model (CAPM) by public sector firms.

This is considered a theory-practice gap, as public sector firms are actively involved in the commissioning of capital investments and an investigation into the contributions of the CBP towards decision-making around such investments is important. This is to ensure that the public sector projects are not being commissioned on a whim, resulting in a waste of taxpayers' funds. The quest to bridge this gap has resulted in this study, using a public sector housebuilding ecosystem exemplar in a developing country context – Tanzania.

Despite its apparent usefulness to public and private sector firms, there is little knowledge concerning the extent to which CBPs are practiced by PSCF in Tanzania. In particular, the PSCF involved with public housing, the commonly used CBTs, the determinants of the choice of these CBTs, the factors influencing such practice and the risk mitigation measures adopted. As CBPs differ according to the level of investment and the sector of the economy, studies must be undertaken to reveal the challenges associated with its implementation by PSCF in Tanzania. This is the gap that this study seeks to bridge.

As its central proposition, this study opines that an efficient CBP within PSCF focusing on public housing delivery will result in optimal decision-making and eventually, in successful project implementation and organisational performance in Tanzania. To this end, this study seeks to answer the research question: "How do PSCF in the Tanzanian housebuilding sector engage in capital budgeting practices to improve project and firm performance?"

This study is necessary, when one considers the findings reported by another study conducted around the similar phenomenon in the Tanzanian context. In their study, Katabi and Dimoso (2016) establish that most small and medium enterprises (60.3%) rely on gut feelings to arrive at their investment decisions, while a meagre 22.5% and 17.3% use ARR and PPM respectively (Sospeter, Rwelamila and Constantine, 2021). An even fewer percentage of these firms (8.8%) use either NPV or IRR. It is hoped that this study can appraise the CBP implementation status in Tanzanian public sector firms operating in the housebuilding sector, as the careful selection of housing projects were advocated by a World Bank report focusing on Tanzania (World Bank, 2016) as a salient requirement for facilitating project viability. This selection process is enshrined in CBP implementation.

The rest of the article is structured with the next section to provide a comprehensive review of relevant literature. The research methods used in eliciting data and analysing the data are presented and justified in Research Methodology. The next two sections detail the presentation of the findings and profiling of the case study organisations and participants, respectively. Another section consists of a discussion of the study's findings. The study's conclusion and implications of the study are further articulated in this section.

REVIEW OF RELATED LITERATURE

Capital Budgeting Process

Capital budgeting practices are central to the survival of firms (Bennouna, Meredith and Marchant, 2010). These practices inform capital decisions made by firms and in turn, make a significant impact on the firm's performance in the long-term (Fehrenbacher, Kaplan and Moulang, 2020). The capital budgeting process is described as the process of establishing which investment projects will culminate in the maximisation of shareholder value (Hermes, Smid and Yao, 2007; Sospeter, Rwelamila and Constantine, 2021).

The process consists of eight distinct yet interrelated phases, namely, strategic planning, identification of the investment opportunities, preliminary screening of identified projects, financial appraisal of screened projects, consideration of qualitative factors in project evaluation, final accept/reject decision of projects, project implementation and post-implementation audit/project reviews (Batra and Verma, 2014). The strategic planning phase consists of all processes involved in the definition of the firm's strategy and understanding of available resources and the identification of opportunities phase focuses on the articulation of possible investment opportunities or projects, which align to the firm's strategic objectives.

The CBTs remain central to the success of CBP implementation in firms. CBT are classified into two main categories, namely, sophisticated CBT (SCBT) and non-sophisticated CBT (NSCBT) methods (Hermes, Smid and Yao, 2007; Sarwary, 2019). The SCBT techniques, such as NPV and IRR utilise discounted cash flow (DCF) analysis, while the NSCBT techniques like PPM and ARR do not. Scholars have argued for the sole use of SCBT methods, highlighting their potential to engender increased capital investment and long-term earnings for the firm (Kengatharan, 2016) while noting that the use of NSCBT might deter capital investments (Siziba and Hall, 2021).

The choice of CBT to be implemented at a firm for capital investment decision-making is influenced by factors, including the preference of the manager, the nature of the risk assessment, the environment within the decision is being made and the level of economic development (Hermes, Smid and Yao, Sarwary, 2019). Ahmed (2013) identifies the firm's size revenues, profitability, leverage level, expenditure, familiarity with the project, resource availability and the level of education of decision-makers, as factors likely to influence CBT preferences.

CBP Implementation Challenges

The implementation of CBP is fraught with challenges, which have undermined its potential to engender optimal capital investment decisions. Several studies have highlighted the challenges negating effective CBP implementation (Kengatharan, 2016; Mbabazize and Daniel, 2014; Monakgisi, 2015; Su, Yang and Dutta, 2018). According to Kengatharan (2016) and Graham and Sathye (2017), CBP implementation is negatively affected by the "country effect influence". The "country effect" encompasses factors, such as the nature of in-country economic policies, taxation system, government control, political factors, culture of the people and infrastructure availability. Scholars have also identified the non-level or

low level of involvement of professionals during the capital budgeting process, as a challenge (Kengatharan, 2016; Graham and Sathye, 2017).

Overconfidence, on the part of top management has also been identified as a factor negating effective CBP implementation. According to Kiget (2014), overconfidence occurs when the organisation's executives are highly motivated in their ambition to make investments, without considering the real demand. This may lead to the creation of underperforming building projects or so-called "white elephant projects". Other factors identified by Kiget (2014) include a lack of certainty in the firm's cash flow, prevailing corporate tax and the limitations evident in a firm's strategic plan. Markovics (2016) mentions the lack of objective and exact method for discount rate determination as a salient challenge.

Within the South African context, Monakgisi (2015) reveals that capital budgeting principles are not thoroughly applied, due to the need to execute projects that are classified as emergencies and projects initiated based on political pressure. A further challenge identified is the lack of support from top management (Monakgisi, 2015). In India, discounted cash flow techniques (NPV and IRR) are used as a secondary technique, because of the difficulty in understanding them and the lack of qualified personnel implementing their use (Batra and Verma, 2017). Mbabazize and Daniel (2014) reveal that inflation poses a challenge to optimal capital budgeting practices, as it affects the overall estimation. The lack of advanced software for computational analysis is also identified as a challenge directly negating effective estimation and indirectly undermining CBP implementation (Mbabazize and Daniel, 2014).

Based on the foregoing, it can be determined that the implementation of the CBP process is largely influenced by country effects, a plethora of politically exposed projects requiring urgent attention and delivery, the presence of adequate knowledge and skillsets among relevant stakeholders and advanced computational software.

RESEARCH METHODOLOGY

This study has adopted a case study research design, focusing on CBP implementation by PSCF operating within the Tanzanian housebuilding sector. The emphasis has been placed on the PSCF that implement housing projects in Dar es Salaam, which is the country's capital city and happens to be among the fastest-growing cities in East Africa. These PSCF serve as cases, while the CBP implementation process is the unit of analysis.

Case Study Research Design

Yin (2013) reiterates the suitability of the case study research design, when the researcher desires to investigate a phenomenon in its natural setting. The research design is deemed appropriate in situations where the researcher is intent on eliciting data from a particular context, using a multiplicity of methods (Yin, 2013). The utility of the case study research design has also been proven within the remit of implementation research (Awuzie and McDermott, 2017). This study aligns with these situations, as it seeks to explore the implementation of a phenomenon (capital budgeting practice) by PSCF (context) using a juxtaposition of methods – namely,

interviews and document analysis for data collection. Internal management reports and an establishment mandate were reviewed.

Data Collection

The essence of reviewing the documents was to obtain information about the organisations and the number of projects completed and those that are ongoing. As part of triangulation of findings, information from the documents was important to complement what has been obtained through interviews or survey results. As part of fulfilling the requirement of an exploratory/qualitative study and to achieve the research objective, data was obtained from a combination of data collection methods, e.g., interviews, questionnaires and document reviews. The data collection method through documentary review was an important input into the current study.

PSCF Chosen

The five PSCF include the National Social Security Fund (NSSF), National Housing Corporation (NHC), Watumishi Housing Company Limited (WHC), Tanzania Building Agency (TBA) and the Public Service Social Security Fund. Data was collected from purposively selected participants within these PSCF through a mixture of questionnaires, semi-structured interviews and document reviews.

Questionnaire

The questionnaires and interview guide were designed and targeted at the personnel responsible for decision-making processes, relating to housebuilding projects in these PSCF. The questionnaire comprised on the following sections was administered to each organisation and all five organisations responded and returned the questionnaire to the researcher, indicating a response rate of 100%:

1. The first section sought to elicit the general demographic information on participating personnel responsible for the decision-making process in the organisation. Accordingly, this section had closed questions on attribute variables of age, education, position, experience in the organisation and building project experience.
2. The last section comprised questions seeking to understand the level of knowledge about CBPs and extent of CBT deployment in their organisations alongside facilitating a ranking of the prevalence of deployment, etc. The respondents were asked to rate the extent to which they use capital budgeting techniques using a 5-point Likert scale (1 = "Not at All"; 2 = "Little Extent"; 3 = "Moderate Extent"; 4 = "Great Extent"; 5 = "Very Great Extent"). Respondents were asked to rate their level of agreement with challenges in capital budgeting practices implementation in housebuilding using a 5-point Likert scale (1 = "Strongly Disagree"; 2 = "Disagree"; 3 = "Undecided"; 4 = "Agree"; 5 = "Strongly Agree"). Questions in this section also sought to determine the reasons for preference of one CBT over the other, risk mitigation tools and CBP implementation challenges experienced in the selected PSCF.

Interviews were conducted with the executive personnel responsible for planning and investments for each organisation selected to explore capital budgeting practices. The interviewees were members of senior and top management comprising of investment and or planning directors and project managers, who are familiar with decision-making practices in the PSCF.

The interview session was used to obtain respondents' ideas and opinions concerning capital budgeting practices in their respective organisations and normal practices (Yin, 2013). Questions posed during these interviews included: "How would you rate your knowledge of CBP?", "Which CBP technique is mostly preferred in your organisation and why?" and "What challenges are you facing when practicing capital budgeting?". Interviews were also conducted with key informants, such as investment and project managers (Kombo and Tromp, 2006).

Documents about the firm's mandate and structure and housebuilding projects were sourced from the PSCF and analysed using content analysis to obtain a brief description of the firm's mandate, its core functions, the number of projects it had executed and its philosophy, will be presented in the subsequent section.

The quantitative data was analysed using descriptive statistics, e.g., mean scores and frequencies. Qualitative interview data was used to complement the questionnaire results and was analysed using thematic content analysis. The themes used in this study were developed from questionnaire results with the exceptions of the three emergent themes. It was important to better explain, validate and or rectify the survey results. The narratives or quotes from the participants were matched with predetermined themes and presented in the next section.

DESCRIPTION OF CASES AND PARTICIPANTS' DEMOGRAPHICS

Profile of Case Firms

The five PSCF selected for this study are from the largest housebuilding firms in the country and either involved in a combination of activities, including building development for sale, or lease purposes. Details of these PSCF are presented in the following sub-section.

Case study 1: NSSF

The NSSF was established by an Act of Parliament No. 28 of 1997 to replace the defunct National Provident Fund (NPF). NSSF is the Tanzanian government agency responsible for the collection, safekeeping, responsible investment and distribution of retirement funds for employees across all sectors of the Tanzania economy, which do not fall under government pension schemes. NSSF is both a pension fund and a provident fund.

To run its activities smoothly, NSSF invests funds in various instruments, such as government securities, fixed deposits, corporate bonds, loans, equities and real estate. NSSF encompasses a Directorate of Planning, Investments and Projects (DPIP). This directorate, in relationship with other directorates, is responsible for deciding in which projects to invest and how such projects will be funded to completion. Of the NSSF's major housing projects/estate, 820 units have been completed and 439 units are in the finishing stage. NSSF also has other ongoing projects that are under construction.

Case study 2: NHC

The NHC was formerly established by an Act of Parliament No. 45 of 1962. After several successful years of operation, the activities of the NHC merged with those of the Registrar of Buildings, which was established by an Act of Parliament No. 13 of 1971 to register the buildings acquired through nationalisation. The current NHC was formed through an Act of Parliament No. 2 of 1990, after the dissolution of the Registrar of Buildings. Accordingly, the activities of the erstwhile body are subsequently vested in the NHC. Its mission is to provide and facilitate the provision of quality housing and other buildings for public use, operating on sound commercial principles. To accomplish its mission, NHC is involved with the construction of houses for sale; the construction of buildings as part of an approved scheme; arrangements with building contractors, planners, or consultants; and renting out and managing government and the corporation's properties and improvement of urban settlements. Within the NHC, there is a specific Directorate of Treasury and Business Development (DTBD), responsible for analysing building projects, initiating the projects after carrying out a market study and financing projects to completion. The NHC has a vast number of building projects with 1,092 reported as completed. In addition to these projects, NHC has completed other low-cost housing projects in-country. The corporation currently has about 29 ongoing projects, including office buildings and residential houses.

Case study 3: WHC

WHC is a public entity established in 2013 to implement the Public Servants' Housing Scheme (PSHS) in Tanzania. WHC also manages the Watumishi Housing Company-Real Estate Investment Trust (WHC-REIT). WHC-REIT is a collective investment scheme that mobilises investments from institutional and individual investors. The funds mobilised are used to construct affordable housing for public servants and private sector employees. WHC was formed by shareholders like the NHC, the NSSF, the Public Servant Social Security Fund and the National Health Insurance Fund. Its mission is to enable employees to create wealth and own affordable homes, through sound property development and fund management principles. The company has various building projects, 128 of which have been completed, while 652 are in progress.

Case study 4: TBA

TBA is a government institution under the Ministry of Works, Transport and Communications. It was established in 2002 as a successor of the Department of Buildings. In addition to acting as a developer, TBA provides maintenance services for government buildings and associated consultancy services. Its mission is to provide a quality and sound housing environment for the government and public servants. The agency is currently developing residential buildings in Dar es Salaam. The plan involves the construction of 851 buildings, but at the time of this study, only the first phase of development had been completed, with 219 buildings.

Case study 5: PSSSF

The PSSSF was formed through the Public Service Social Security Act No. 2 of 2018, after the merger of the four pre-existing pension funds – PPF Pension Fund, Public Service Pension Fund (PSPF), Local Authorities Pension Fund (LAPF) and Government Employees Provident Fund (GEPF). The pre-existing pension funds were merged to form one PSSSF to reduce operational costs and improve the quality of services.

The International Labour Organization (ILO) was among the advisors of the Government of Tanzania to take steps towards merging the pre-existing pension funds. The main purpose of the fund is to collect contributions and pay terminal benefits to public service employees. The fund manages all investment portfolios from the existing pension funds, which include real estate portfolios.

Respondents and Participants' Profile

Table 1 presents the demographic characteristics of five respondents obtained from the fieldwork, including their age, education, position, experience in the organisation and experience on building projects. The respondents were spread across various age groups: most were between 29 years to 39 years of age, followed by 40 years old to 50 years old. Due to the nature of the research topic, many managers or decision-makers have more than six years of experience in both the organisation and building projects. This presents an opportunity to explore information obtained from people, who seem to understand the matter at hand. The educational level of respondents was also determined during data collection; all respondents had a degree, while many had undertaken further education. This indicates that all the respondents have an adequate comprehension of the topic.

Table 1. Demographic characteristics of respondents and interviewed participants

Characteristics	Attribute	Respondents		Participants	
		Frequency	%	Frequency	%
Age	18 years old to 28 years old	1	20	–	–
	29 years old to 39 years old	2	40	2	40
	40 years old to 50 years old	2	40	2	40
	Above 50 years old	–	–	1	20
Total		5	100	5	100

(*Continued on next page*)

Table 1. *Continued*

Characteristics	Attribute	Respondents		Participants	
		Frequency	%	Frequency	%
Age	18 years old to 28 years old	1	20	–	–
	29 years old to 39 years old	2	40	2	40
	40 years old to 50 years old	2	40	2	40
	Above 50 years old	–	–	1	20
Total		5	100	5	100
Education	Certificate	–	–	–	–
	Diploma	–	–	–	–
	Degree	3	60	2	40
	Master's	2	40	3	60
	Doctorate	–	–	–	–
Total		5	100	5	100
Position	Junior management	1	20	–	–
	Senior management	3	60	3	60
	Head of department	1	20	1	20
	Top management	–	–	1	20
Total		5	100	5	100
Experience in the organisation	1 years to 5 years	2	40	1	20
	6 years to 10 years	3	60	3	60
	11 years to 15 years	–	–	1	20
	More than 15 years	–	–	–	–
Total		5	100	5	100
Building projects experience	1 years to 5 years	1	20	1	20
	6 years to 10 years	2	40	1	20
	11 years to 15 years	2	40	2	40
	More than 15 years	–	–	1	20
Total		5	100	5	100

PRESENTATION OF FINDINGS

The study's findings are presented according to pre-set themes, based on the questions which it sought to answer. Accordingly, responses from the survey and the interviews are presented in a complementary manner.

Knowledge Concerning Capital Budgeting Practices and Techniques

Table 2 presents result on the knowledge about capital budgeting. All participants (respondents and interviewees) indicate sufficient knowledge and awareness of CBP and CBTs. Whereas 40% of respondents indicate to have a good knowledge, 30% of respondents indicate to have little knowledge and the final 30% of respondents indicate to have very good knowledge.

Based on their confirmation of appreciable levels of awareness, participants were prodded to provide insight into CBT that they are conversant with. The presence of a considerable level of knowledge within firms about the utility of CBP practices remains essential in driving the improved implementation within such entities. Accordingly, questions relating to this theme sought to not only ascertain the degree of knowledge, but also to decipher the level of awareness about the types of CBT.

From the responses collected, it can be discerned that the participants are familiar with the PBP, NPV, IRR, ARR, profitability index, discounted payback period and modified IRR. This response is not surprising, as the participant selection criteria for the study, which was premised on the purposive sampling technique, implies that the participants are organisational executives involved with making investment decisions in their respective PSCF, as it pertains housebuilding for the public.

Table 2. Knowledge about capital budgeting

	Knowledge	Frequency	%	Valid (%)	Cumulative (%)
Valid	Little knowledge	3	30.0	30.0	30.0
	Good knowledge	4	40.0	40.0	70.0
	Very good knowledge	3	30.0	30.0	100.0
	Total	10	100.0	100.0	

Extent of CBT Deployment by PSCBFs

Table 3 presents the results and rankings on the extent of CBT deployment. The responses reveal an IRR with a mean item score of 4.6 is used to a very great extent, followed by NPV, with a mean score of 4.4 and PBP with a mean score of 4.2, while the Discounted PBP, profitability index and the ARR are shown to be used to a little extent and the modified IRR is not at all used with mean score of 2.8, 2.4, 2.4 and 1.0, respectively.

According to Table 3, it can be stated that good capital budgeting practices are currently been undertaken by the PSCF. However, the findings maintain that some techniques like IRR, NPV and PBP are used more frequently in certain PSCF, with IRR leading in use with a mean item score of 4.6, followed by NPV with a

mean item score of 4.4 and PBP with a mean item score of 4.2 than in others. This is because IRR and NPV are considered to give the most accurate results in determining future cash flows. This aligns with the findings in Kiget (2014), Markovics (2016) and Mbabazize and Daniel (2014).

Table 3. Extent of use of capital budgeting techniques in Tanzanian public organisations

Capital Budgeting Technique	Institutional Scores					Total Score	Mean Score	Rank
	NSSF	NHC	WHC	TBA	PSSSF			
Modified IRR	1	1	1	1	1	5	1.0	7
ARR	2	1	5	3	1	12	2.4	5
Profitability index	1	4	5	1	1	12	2.4	5
Discounted payback period	4	1	5	3	1	14	2.8	4
PBP	4	4	5	3	5	21	4.2	3
NPV	4	4	5	4	5	22	4.4	2
IRR	4	5	5	4	5	23	4.6	1

Determinants of CBT Preference

Table 4 presents the results on the preference of capital budgeting techniques over others. The results in Table 4 show that 100% of all interviewees agree that NPV and IRR are "used because of accuracy and reliability of results and they take into account the time value for money, respectively". The results further indicate that 100% of all respondents agree that PBP is "simple to undertake", while 80% of respondents agree that it is also used because of the accuracy and reliability of results. However, an interviewee highlights the inability of the PBP to cater for the time value of money, as a major constraint. According to the interviewee, PBPs should be combined with other techniques like IRR or NPV to give reliable results, as these techniques make up for this inadequacy, as it relates to the time value for money. Despite its inability to capture time value for money, PBP is described as the "most used, because its methodology is easily understood and easy to demonstrate" (Interviewee 4).

From Table 4, it is clear that the major determinants for the choice of CBTs within these organisations border mostly on the perceptions of the participants relating to their ease of use (PBP, IRR), consideration of the time value of money by certain methods (IRR and NPV), accuracy and reliability of results (PBP, IRR and NPV).

Table 4. Preference for techniques

Reason	Frequency of Responses						
	PBP	**ARR**	**DPBP**	**IRR**	**NPV**	**PI**	**MIRR**
Accuracy and reliability of results	4	N/A	N/A	5	5	1	N/A
Takes into account the time value for money	N/A	N/A	N/A	5	5	N/A	N/A
Simple to undertake	5	N/A	N/A	4	3	N/A	N/A
It is used by many	N/A	N/A	N/A	3	4	N/A	N/A
Any other reason (if yes, mention)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Risk Mitigation Tools Used to Justify Investments

The utility of risk mitigation tools for rationalising the choice of investments has been observed (de Assis et al., 2020). A decision to deploy a particular CBT towards rationalising a potential investment choice is expected to be accompanied by an appropriate risk mitigation tool (de Assis et al., 2020). Accordingly, participants to this study were asked about the extent of use of risk mitigation techniques when justifying their investment choices. Sensitivity analysis was indicated to be used most by all PSCF whose officials were interviewed, followed by break-even analysis, which had a response of 3 out of 5. Scenario analysis was found to be rarely used, while Monte Carlo simulation, real option and decision tree are completely unused.

Challenges in Capital Budgeting Practices Implementation in Housebuilding

Table 5 presents the challenges of practicing capital budgeting. The results show that "Lack of advanced software" ranks first, with a mean score of 4, followed by "Adherence to professional advice by top management", which has a mean score of 3. "Managerial influence in making decisions" has a mean score of 2.6, followed by "Poor involvement of professionals", which has a mean score of 2.4, "Lack of top management support" with a mean score of 2 and "Lack of knowledge among the practitioners", with a mean score of 2.

Table 5. Challenges in practicing capital budgeting

Challenge	Institutional Scores					Total Score	Mean Score	Rank
	NSSF	NHC	WHC	TBA	PSSSF			
Lack of knowledge about capital budgeting among practitioners	1	1	3	4	1	10	2.0	5
Lack of top management support	2	2	1	1	4	10	2.0	5
Poor involvement of professionals	4	2	1	1	4	12	2.4	4
Managerial influence in making decisions	1	4	2	5	1	13	2.6	3
Adherence to professional advice by top management	1	4	1	5	4	15	3.0	2
Lack of advanced and sophisticated software	4	1	5	5	5	20	4.0	1

During the interviews, the interviewees were also asked their opinions about other challenges encountered during the implementation of capital budgeting practices in their organisations.

Political Decisions

It was noted that political decisions represent a great challenge to capital budgeting practices in public organisations. Interviewee 2 asserts that "Political influence may have a negative effect on the process, culminating in decisions relating to a potential investment and subsequently results in the delay of project implementation". However, such political decisions cannot always be regarded as negating the quality of the investment decisions made by relevant parties.

For instance, it was reported that some projects are embarked upon by the government in furtherance of the implementation of certain policies and not necessarily for the purposes of profit-making. This perspective was shared by participants from PSCF, solely funded by the government, including the NHC and TBA. To buttress this perspective, Interviewee 5 maintains: "In such projects, some of which are financed by the government, it is not necessary to undertake various techniques to justify the investment, as the goal of the project may be to provide service to a certain community of people". Similarly, investments in some projects are initiated to hasten socio-economic and physical development (regeneration) in certain areas.

Decisions relating to such investments are not usually subjected to the CBP. For example, Interviewee 3 indicates that "The NHC implemented a project of constructing low-cost housing for various municipals councils in Tanzania, as a way to solve the housing problem for municipalities that lacked houses for municipal servants".

Access to affordable shelter is regarded as a social good, which the citizenry of any country is expected to be supplied with by successive governments. Therefore, public-sector investments in such projects should not be subjected to CBP. This was reported by Frost and Rooney (2021) who observe an overt concentration of organisations on the financial performance of investment options, when implementing CBPs and less emphasis on the sustainability performance of such options. The authors elucidate the significance of prioritising sustainability performance, when selecting among investment options. This is the case for public sector entities who have been reposed with public trust to engender the sustainable future, within their respective geographic and/or administrative contexts.

Delays in Project Implementation

Interviewees indicate that some projects have undergone proper procedures in capital budgeting before they were implemented. Interviewee 4 notes "A big challenge is that some of the projects are financed by the government, so obviously this procedure causes delays in project implementation".

While a project may have been well-initiated, it must undergo various levels of approvals, which results in the delay of its implementation, leading to project cost overrun, since the review of the capital budget is not conducted at the beginning of the project. Factoring in these delays in the CBP, can render an otherwise potentially successful investment option unattractive to investor. Time remains a considerable factor in determining the success or otherwise, of a potential investment option, particularly as it concerns the housebuilding sector – as this sector is often susceptible to inflationary trends, which affect production costs.

Financing Challenges

Participants observe that some of the public institutions do not have funds available for investments, since they only rely on funds provided by the government. The process of obtaining funds from government coffers, or from institutional/individual funders is not only time-consuming, but also poses challenges to the timely realisation of potential projects or investment options.

Lack of Knowledge Among Staff

The lack of adequate knowledge among staff, as it pertains to CBTs, is suggested as a challenge to effective CBP implementation. Although most of the participants to this study maintain that they possess sufficient knowledge concerning these CBTs and CBP implementation, this could be attributed to the selection criteria used in recruiting participants. Participants maintain that there is a low level of awareness among their staff, attributing this to shortcomings of the recruitment process. The lack of considerable implementation of CBP in various projects is deemed to arise from a lack of capital budget knowledge among relevant stakeholders.

Top Management Decisions

It is observed that some major decisions in public institutions are influenced by top management to implement or meet the requirements of certain policies initiated by the government. Such decisions do not adhere to the capital budgeting process and create challenges for smooth capital budgeting practices. Interviewee 2 explains that "Top management investment decisions are implemented without recourse to the outcomes of CBPs". This is usually the case with organisations, which rely on government funds for investments in social facets.

Absence of Advanced Software and Common Ontology About Discount Rates

It was noted during interviews that, PSCF lack advanced software to vigorously practise capital budgeting. Interviewee 5 states, "The methods employed to arrive at feasible projects require advanced software and we do not have it". Such software is mostly used for computing CBPs relying on SCBTs like NPV and IRRs, which rely on discounted cash flow analysis and the like. Perhaps this is responsible for the increasing attraction of the participants to the PBP, which is considered easy and simple to undertake, despite their optimal utilisation of the NPV and the IRR, based on the reputation of these CBTs to provide more accurate and reliable results.

Table 6 presents a comparison of the relationship between the extent of use of the CBTs by the different case organisations and their source of funding. The findings reveal that techniques like IRR, NPV and PBP are used more frequently by PSCF, with IRR and NPV leading. MIRR, ARR and profitability index are less frequently used.

Table 6. Cross-case analysis

Aspects Compared and Capital Budgeting Practices	Institutional Similarities and Differences in Capital Budgeting Techniques				
	NSSF	**NHC**	**WHC**	**TBA**	**PSSSF**
Core activities	Provision of pensions	Property development and management	Provision of housing	Consultancy and provision of housing	Provision of pensions
MIRR	√	√	√	√	√
ARR	√√	√	√√√√	√√√	√
PI	√	√√√√	√√√√	√	√
DPBP	√√√√	√	√√√√	√√√	√
PBP	√√√√	√√√√	√√√√	√√√	√√√√
NPV	√√√√	√√√√	√√√√	√√√√	√√√√
IRR	√√√√	√√√√	√√√√	√√√√	√√√√

Despite the widespread use of IRR and NPV by the PSCF, it is noted that there is considerable ambiguity in setting the discounting rate in Tanzania, as organisations continue to use the bank's interest rate before tax, as the discount

rate. This contributes to the lack of a common ontology among the professionals and relevant stakeholders during capital budgeting on the appropriate discount rate.

DISCUSSION OF FINDINGS

The centrality of global capital budgeting practices in facilitating optimal investment-related decision-making across public and private sector organisations, continues to resonate within the realms of business, management and accounting studies. Scholars like Batra and Verma (2007) and Sospeter, Rwelamila and Constantine (2021) posit that projects initiated based on heuristics and without recourse to proper analysis using appropriate CBTs and risk mitigation strategies, are likely to fail or underperform. Owing to the increasing rate of failed, underperforming and abandoned projects in developing countries (Damoah et al., 2021; Damoah and Kumi, 2018), an investigation into the implementation of CBPs in arriving at investment decisions in these contexts has become imperative.

Based on the findings presented in the preceding section, it can be discerned that the factors influencing the quality of CBP implementation in the Tanzanian housebuilding context share considerable levels of similarity, with what has been reported elsewhere in the corpus of contemporary literature. It is observed that the study's participants are well-informed about a wide range of CBTs available for CBPs. They are also knowledgeable about CBP implementation and the utility of CBPs for effective decision-making, when selecting from a plethora of investment options in the Tanzanian housebuilding context.

This is indicative of a growing awareness of the criticality of CBPs in various economic sectors across different countries for investment decision-making (Batra and Verma, 2017; Alleyne, Armstrong and Chandler, 2018, Bennouna, Meredith and Marchant, 2010; Hanaeda and Serita, 2014). However, participants appear to be solely concerned with the financial performance of alternative investment options during the CBP implementation process, with little consideration about the sustainability performance. While deliverables associated with sustainability performance of investment options, like the delivery of affordable (low-cost) housing was highlighted by an interviewee, it is evident that such projects would not pass the CBP-enabled decision-making process. Frost and Rooney (2021) ask for a rethink by relevant stakeholders concerning the non-prioritisation of sustainability performance during the evaluation of alternative investment options. The housebuilding sector should not be an exception.

It is also observed that the IRR and NPV are proven to be the most used CBT by the organisations which participated in the study. The determinants of the choice of CBT adopted by participants are largely determined by their perceptions of the ease of use and the accuracy and reliability of the result accruing from the use of certain CBT. While the reasons given for the preference of certain CBT over others are in sync with what has been reported in similar studies (Alleyne, Armstrong and Chandler, 2018; Hanaeda and Serita, 2014), the non-interference of government via legislation or regulations in the choice of CBT to be adopted by these public sector organisations is noted. Scholars like Correia and Cramer (2008) and Sureka et al. (2022) mention the import of such prescriptions in engendering the use of certain CBT by organisations.

CBP implementation in the Tanzanian housebuilding subsector of the construction industry is significantly influenced by country effects as enunciated by scholars like Sospeter, Rwelamila and Gimbi (2020), Kengatharan (2016) and Graham and Sathye (2017). For instance, the source of funding for these case studies influenced their disposition towards the use of CBT and CBP in arriving at appropriate investment options. This is reflected in Table 6 which compares the relationship between the extent of use of these CBT by the different case organisations and their source of funding.

In the cases of NHC and TBA, two housebuilding organisations funded by government, inferences relating to the significance of political decisions in arriving at investible projects for political gains, and/or national policy imperatives, are elucidated. This is not the case with an entity like the WHC, which is reliant on funds accruing from institutional and individual investors in its capacity as a fund manager. The utilisation of more CBT by WHC in the engendering CBP implementation within its portfolio, when compared to other cases like the NSSF, NHC, TBA and PSSSF can be attributed to the increasing demand for favourable returns by these investors, amid a plethora of similarly performing investment options available to them across a range of time-intervals.

Other challenges established as negating CBP implementation in these organisations include the top management decisions, the lack of advanced software and knowledge for dealing with complex CBT deployment and a common ontology about discount rates. These challenges are not specific to the Tanzanian housebuilding context, as they bear semblance with factors established by other scholars like Hall and Millard (2010), Sospeter, Rwelamila and Constantine (2021) and Kim et al. (2020) among others. While scholars have suggested the need to assess the impact of personal, physiological and educational factors on CBP-related decision-making (Sureka et al., 2022; Mouna and Anis, 2017), such assessments fall outside the scope of this study. However, assessing these attributes among senior management of public sector organisations might highlight the nature of the top management decisions – especially as it relates to CBP-related investment decision-making.

CONCLUSIONS AND IMPLICATION OF FINDINGS

The contributions of effective CBP-related investment decision-making towards facilitating successful project delivery has been emphasised. A multiplicity of studies details the use of CBTs and CBPs in facilitating optimal decision-making concerning the selection of investment options from alternatives and successful project execution, but there is a scarcity of studies focusing on the construction industry context, particularly within the developing country context.

The significance of such studies cannot be overemphasised within such contexts, given the inability of previous and on-going research to offer solutions to the rising incidence of failed and abandoned projects. Extant studies focus on project management-related and procurement-related challenges, with scant attention to the governance-related challenges, like the choice of projects to embark on and the determinants of this choice. This is the gap which this study contributes towards bridging. To achieve this objective, the study explored the implementation of CBP within the context of the Tanzanian housebuilding sector, focussing on five public-sector organisations involved with housebuilding.

Findings from the study elucidate an increasing appreciation and knowledge of the usefulness of CBT/CBP among relevant stakeholders for making informed investment decisions. Participants indicate a significant level of usage of CBT and risk management tools for analysing alternative investment options. The IRR and NPV have proved to be the most utilised CBT, while the sensitivity analysis was observed as the most prevalent risk mitigation tool.

The participants maintain that their preference for CBT is predicated on perceptions about the ability to facilitate accurate and reliable results and ease of use. A list of challenges negating the effective deployment of CBT and CBP within the Tanzanian housebuilding sector were enunciated. These challenges range from the lack of a common in-country ontology concerning how the discount rates were calculated, to the lack of advanced software for carrying out computational analysis associated with CBT like IRR and political decisions, among others.

Considering its exploratory nature, this study did not intend to bring forth any generalisable results, but rather sought to provide insights into the nature of CBP implementation within the study context. Despite its limitations, particularly as it concerns the number of cases and participants per case and the non-consideration of replication logic during case selection, the study makes several cogent contributions, to the emerging discourse on the relationship between effective CBP implementation and successful project execution in the construction industry in developing countries.

It is expected that future studies would pick up the gauntlet and engage in further investigations around this theme, by perhaps comparing CBP implementation within private and public sector organisations operating within the housebuilding ecosystem in Tanzania and perhaps other countries in sub-Saharan Africa. These could assess the impact of CBP implementation on the sustainability and financial performance of capital infrastructure projects in these countries and, finally appraise the nexus between the individual attributes and entrepreneurial orientation of the chief executive officers of public and private sector-owned housebuilding organisations in Tanzania, on the prioritisation of capital budgeting-related investment decision-making practices.

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