Journal of Building Construction and Planning Research, 2024, 12, 69-85
https://www.scirp.org/journal/jbcpr
ISSN Online: 2328-4897
ISSN Print: 2328-4889

Evaluating the Effectiveness of Consultants' Roles in Improving Value for Money in Public Infrastructure Projects in Ghana

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How to cite this paper: Abu, S., Kheni, N.A. and Abudi, A. (2024) Evaluating the Effectiveness of Consultants' Roles in Improving Value for Money in Public Infrastructure Projects in Ghana. *Journal of Building Construction and Planning Research*, **12**, 69-85.
https://doi.org/10.4236/jbcpr.2024.123004

Received: February 28, 2024
Accepted: September 17, 2024
Published: September 20, 2024

Abstract

Ghanaian construction projects encounter a number of challenges, including low health, safety, and environmental requirements, poor performance, and time and cost overruns. To provide value for money (VFM) on government infrastructure projects in Ghana, this research assesses the roles of project consultants, specifically architects and quantity surveyors, and highlights important obstacles. A cross-sectional survey design involving architects and quantity surveyors yielded a 96% response rate after 100 questionnaires were distributed. Consultants' responsibilities also include monitoring standards compliance, providing advice on delays, controlling budgets, and advising on project completion dates. Difficulties encompass a lack of promptness in decision-making, unethical conduct, political pressure, and inadequate focus on contract administration and construction audits. Project urgency, longevity, political clout, timely decision-making, and team experience are important variables that impact VFM. Policy makers and construction management practitioners should take note of the implications for Ghana's public infrastructure projects.

Keywords

Consultants, Value for Money, Physical Infrastructure, Ghana

1. Introduction

The construction industry is a fundamental component of a country's growth, acting as a concrete measure of a nation's economic advancement through the

construction of physical infrastructure such as buildings, bridges, and roads. It serves as a powerful force that propels the operations of both the public and private sectors, significantly shaping the overall path of a nation's growth. Undoubtedly, the optimal operation of the construction sector is crucial for promoting sustainable growth on a global scale. The construction industry relies heavily on the concept of value for money (VFM), which encompasses both the functionality and cost-effectiveness of building projects. VFM, or value for money, provides stakeholders with the assurance that their investments will result in the best possible outcomes in relation to the resources used. Timely and successful completion of projects is crucial in this setting, as extended delays or abandonment can greatly burden investors and clients, limiting their future opportunities.

However, achieving Value for Money (VFM) in construction projects is sometimes hindered by numerous problems, especially in the context of government-funded infrastructure projects. [1] and [2] have conducted studies that have highlighted important elements that contribute to project failures and shortcomings. These factors include delays, cost overruns, inadequate supervision, and the complexity of projects. These problems not only hinder the attainment of value for money but also diminish public trust and confidence in the effectiveness of government activities. Furthermore, the importance of consultants in guaranteeing value for money (VFM) is a crucial yet relatively uninvestigated factor, especially in low and lower-middle-income nations such as Ghana. Consultants, such as architects and quantity surveyors, have a considerable impact on the entire project process. However, their role in achieving value for money (VFM) has not been thoroughly studied in a systematic manner. [1] provided insight into several aspects that hinder the effectiveness of consultants, including the urgency of projects, political influences, and the dynamics of decision-making. Expanding upon this basis, this paper aims to fill the knowledge vacuum by assessing the efficacy of consultants' contributions in improving value for money (VFM) in public infrastructure projects in Ghana. The study has a specific objective of analysing the roles of architects and quantity surveyors in achieving value for money (VFM) in government construction projects. Additionally, it tries to identify the main obstacles that prevent the attainment of VFM in the Ghanaian environment. This research aims to provide insights into the complex relationship between consultant involvement and its impact on value for money (VFM) in order to guide policy interventions and strategic efforts that can improve the efficiency and effectiveness of public infrastructure investments in Ghana. The study aims to provide practical insights for stakeholders in the construction industry by analysing project deadlines, quality benchmarks, and cost concerns. The ultimate goal is to promote sustainable development and prosperity in the region. This publication aims to explore the intricacies of Value for Money (VFM) in construction projects, specifically examining the significant influence of consultants in moulding project outcomes and promoting national development in Ghana.

2. Literature

2.1. Overview of Consultancy Services in the Building Construction Industry

The construction industry is complex and diverse, with several aspects such as the range of work, use of technology, types of clients, and involvement of different firms. To simplify this intricate nature, it is necessary to categorise and arrange the sector in a manner that mirrors the organisation of construction procedures. Traditionally, the construction process is carried out by two main groups: consultants and contractors, who both work to fulfill the client's objectives. Consultants consist of various specialists, such as architects, engineers (both structural and services), and quantity surveyors. They offer design management services in exchange for a fee [3]. Contractors, however, are business entities that have the responsibility of providing materials, carrying out building duties, and functioning with the intention of making a profit. Consultants work on a project basis, frequently performing highly specialised duties inside construction projects. The composition of consultants involved in the project varies, encompassing pivotal positions such as project managers, architects, structural engineers, building services engineers, and cost consultants. In addition, external technical inspectors that work on the client's side, such as Commissioning Authorities, have important responsibilities in guaranteeing the quality and adherence to regulations of a project. Consulting firms often highlight their extensive range of specialised professionals, who can offer expertise that is beyond what an internal team may give. By consistently participating in comparable projects, consultants amass a vast amount of knowledge and skill, which allows them to predict and resolve possible concerns before they become expensive and time-consuming problems. Consultants play a crucial role as helpful collaborators for clients and stakeholders, providing valuable perspectives and advice throughout the whole duration of a project. By involving consultants at an early stage, especially during the initial design phase and project mobilisation, clients can make use of their specialised knowledge to make the project execution more efficient and reduce potential risks [4]. The proactive problem-solving style of consultants, along with their ability to anticipate obstacles, greatly enhances project success and client satisfaction. The partnership between consultants and clients in the construction business is a symbiotic relationship, where consultants use their specialised skills and knowledge to help clients achieve their project objectives in an efficient and effective manner.

2.2. Consultants

An architect's tasks include spatial design, technical building design, spatial planning, and aesthetic considerations [5]. Nevertheless, the field of architectural practice is constantly changing [6]. Architects frequently engage in collaboration with quantity surveyors to accurately predict costs, allowing for the establishment of budgets and supporting effective cost control. Quantity surveyors typically provide cost engineering services, but their ability in cost estimation is crucial for

project planning [1]. Conversely, a consultant focuses on delivering specialised guidance to clients, organisations, or individuals on a range of topics. Within the realm of construction projects, engineers frequently act as consultants and represent the employer's interests. Their primary role is to guarantee that projects are carried out according to the specified quality standards, within the allocated timeframe, and within the financial limitations. This ensures that the client receives good value for their investment [7]. According to [3], project managers have a wide range of skills that are crucial for successfully carrying out projects. These skills include planning, problem-solving, decision-making, communication, responsibility, team-building, and time management. Their position is crucial in orchestrating the endeavours of many parties and guaranteeing the triumph of the project. Construction consultants, usually referred to as the design team, have many responsibilities in ensuring the seamless advancement of construction projects. Their duties encompass coordinating the construction process, delivering design and cost estimating services, taking into account environmental and societal consequences, and guaranteeing that the design solutions provide cost-effective value to the client [3]. As per the guidelines outlined in FIDIC IV, consultants are responsible for tasks including reviewing and revising design details, overseeing contractor activities, conducting quality control tests, examining contractor invoices, assessing claims and extension requests, and creating progress reports FIDIC IV cited in [3]. Consultancies are ideal partners for clients that need full project support due to their knowledge and specialised talent pool. Consultants play a crucial role in improving the efficiency and effectiveness of construction projects by assisting in the prevention of delays, attainment of operational goals, enhancement of return on investment, and streamlining of the construction process [4]. They are engaged in a wide range of operations, such as design development, project management, contract administration, construction oversight, sustainability advisement, and project development assistance [4]. Consultants are crucial in the construction business since they utilise their specialised knowledge, extensive experience, and available resources to assist clients in efficiently and effectively accomplishing their project goals. Consultants play a crucial role in the entire process of designing and completing construction projects, making significant contributions to their success and long-term viability.

2.3. Concept of Value for Money and Related Terminologies

Within the construction sector, the notion of value is complex, encompassing the inherent significance and value of a project. As per the Cambridge International Dictionary of English, the term "value" refers to the importance or worth of anything. In the field of construction, a project is considered to provide value for money when the final structure is built using top-notch materials and utilises suitable construction techniques, resulting in long-lasting, visually appealing buildings that successfully serve their intended purpose and prioritise user comfort. [8] provide an additional definition of value for money (VFM) as a metric that gauges

a client's contentment in attaining their project goals. Value for money (VFM) is attained when the service provided is commensurate with the price paid. It is crucial to understand that VFM does not mean the same thing as using inexpensive materials, labour, or solutions. Rather, it refers to carefully planned solutions that are long-lasting and bring satisfaction to both the customer and the end-user. Value for money in construction projects covers both usefulness and cost. Cost pertains to the efficient deployment of resources for the project, ensuring effectiveness in expenditure. Time is a critical factor, as it is necessary to adhere to project timeframes in order to deliver value. Finally, ensuring high quality is of utmost importance, as the end outputs should demonstrate the most efficient utilisation of resources in order to accomplish the desired objectives. Transparency, accountability, competitiveness, justice, and efficiency are all important characteristics that contribute to providing value for money [9]. [10] define value for money as a definite guarantee that the funds spent have yielded the most optimal outcomes. [11] highlights the significance of achieving a harmonious equilibrium among economy, efficiency, and effectiveness, commonly referred to as the three E's. This involves minimising costs, maximising outputs, and fully attaining the targeted goals. [12] emphasise the need of being clear and responsible about how public funds are used, while the World Bank [13] defines Value for Money (VFM) as the optimal utilisation of resources in a way that is effective, efficient, and inexpensive. The National Audit Office [14] emphasises that achieving good value for money involves efficiently using resources to attain desired results. It is important to recognise that value for money does not only depend on getting the lowest starting price, but rather on finding the optimal balance between whole life costing and quality [9]. Ultimately, the several definitions all come together to suggest that value for money acts as a mechanism to guarantee that resources are the greatest advantages. **Table 1** below presents a summary of key definitions and an operational definition by the authors.

Table 1. Definitions of value for money by various authors.

Author (Year)	Definition	Remarks
[10]	Value for money is used to describe a clear assurance to ensure that best results possible have been obtained from the money spent.	The Emphasis of definition is end results/objectives.
[11]	Value for money is striking the balance between the three E's; economy (cost minimization), efficiency (output maximization) and effectiveness (full attainment of the intended results).	The thrust of the definition is on cost, efficiency and effectiveness.
[12]	VFM indicates the need for transparency and accountability in spending public funds and for obtaining the maximum benefit from the resources available.	Emphasis is on transparency, accountability, and obtaining maximum benefit.

Continued

[9]	VFM does not mean a tender must be awarded to the lowest tenderer thus not about achieving the lowest initial price but the optimum combination of whole life costing and quality.	Emphasis is on lifecycle costing and quality.
[8]	Views VFM as a measure of a client's satisfaction in achieving their objectives in a project.	Emphasis is on client satisfaction.
[14]	Good value for money is the optimal use of resources to achieve the intended outcomes.	The focus is the optimal use of resources.
Researcher's operational definition of Value For Money	Value for money is operationally defined as a means by which checks are imposed on the use of resources to ensure ultimate benefits are derived from money spent.	Based on the various definitions stated, the author gives an overarching or operational definition.

Source: Authors (2021).

From the above definitions of Value For Money (VFM) given by various authors, the authors define value for money as a means by which checks are imposed on the use of resources to ensure ultimate benefits are derived from money spent.

3. Methods

The study utilised a cross-sectional survey design, adopting a deductive research approach that integrates descriptive and explanatory aspects to fulfil the research aims. The chosen technique aims to methodically analyse the responsibilities of architects and quantity surveyors in guaranteeing cost-effectiveness within the construction industry. A cross-sectional survey design enables the gathering of data from a varied sample of participants at a certain moment in time. This approach is especially suitable for obtaining a brief and accurate representation of the existing practices, views, and behaviours associated with the study issue. The study utilises a deductive research approach, which entails testing hypotheses that are taken from existing ideas or conceptual frameworks. The study employed deductive reasoning to demonstrate causal linkages between the responsibilities of architects and quantity surveyors and the achievement of value for money in construction projects. The study employed quantitative data collection methods to get empirical information regarding the roles of architects and quantity surveyors in assuring cost-effectiveness. Quantitative research is centred around numerical data and statistical analysis in order to reveal patterns, trends, and relationships within a dataset. This methodology enables a methodical analysis of a substantial sample size, yielding findings that can be applied to a broader context of the research subject. According to Bowling and Ebrahim (2005), a descriptive survey research seeks to provide an accurate depiction of individuals, events, or circumstances. In this study, a quantitative research approach was used to collect information that attempted to describe the responsibilities of numerous architects and

quantity surveyors in assuring cost-effectiveness. This study aims to gain a thorough understanding of the roles of architects and quantity surveyors in maximising value for money in building projects by utilising a cross-sectional survey design, deductive research approach, and quantitative data analysis.

3.1. Sample and Sampling Techniques

The study focused on professionals in the field of built environment consulting, specifically architects and quantity surveyors, who work in the Upper West and Ashanti Regions of Ghana. The decision was made based on the substantial influence, whether direct or indirect, that these factors had on the concept of value for money in the study's environment. There were a total of 100 participants, with 40 from the Upper West Region and 60 from the Ashanti Region. The selection of architects and quantity surveyors was based on their crucial responsibilities in influencing the efficiency and effectiveness of building construction projects. The sampling methodology employed a purposeful selection procedure, wherein specific criteria such as a minimum of three years' experience as a consultant and membership in either the Ghana Institute of Architects or Ghana Institution of Surveyors were utilised. This guaranteed that the participants had the necessary knowledge and association to make valuable contributions to the study. A snowball sampling strategy was used to target the required people. This strategy established initial communication with persons who fulfilled the specified criteria, who in turn encouraged contacts with other possible responses, thereby creating a network of recommendations. This technique was specifically developed to collect valuable views from skilled and knowledgeable experts, allowing for a thorough investigation of the topic of value for money in building construction projects in the designated regions of Ghana.

3.2. Instruments

A bespoke questionnaire was developed in partnership with an acclaimed quantitative researcher to collect data for this study. Based on a thorough examination of relevant literature, a detailed questionnaire with limited response options was created to investigate the research goals and objectives. The questionnaire was carefully designed to match the study's goals, making it easier for respondents to choose from pre-established possibilities. The questionnaire consisted of two sections: Section A and Section B. Section A was dedicated to collecting pertinent background information, such as the respondents' gender, qualifications, years of experience, age, and professional status as either an Architect or Quantity Surveyor. Section B explored the objectives of the study and was separated into two thematic categories, with each topic matching to a certain objective. The initial section delineated the diverse functions performed by project consultants in guaranteeing optimal cost-effectiveness. Participants evaluated the frequency of these positions using a scale that ranged from 1 to 5, with 1 representing "not at all" and 5 representing "always." The second part focused on identifying the primary

obstacles to achieving optimal cost-effectiveness. Participants expressed their level of agreement or disagreement with items on a scale ranging from 1 to 5, with 1 indicating "strongly disagree" and 5 indicating "strongly agree." Before the primary data collection, a preliminary test of the questionnaire was carried out to improve the tool and resolve any uncertainties. The final questionnaire provided to respondents was adjusted based on feedback from the pilot study. Participants were guaranteed that the information submitted would be only utilised for academic reasons. The researcher upheld objectivity and complied with ethical principles that govern research operations. Prior to filling out the questionnaire, participants received a detailed explanation of the research goals to ensure clear comprehension.

4. Results

The data collected from the field survey was then analyzed using the Statistical Package for Social Sciences (SPSS version 20), focusing on descriptive statistics, t-tests and factor analysis techniques. Data screening included data editing, data coding and data entry. Out of the 100 questionnaires that were administered, 96 were returned representing 96% response rate. The questionnaires received returned were devoid of excessive loss of data and incomplete filling. The reason for the high response rate in comparison with past studies in similar settings was as a result of the researcher having personal contact with the respondents and follow up meetings to impress on them on the importance of the research study.

4.1. Demographic Information about Respondents

The demographic data of the respondents focused on gender, age, educational level, respondents working experience and professional category. Eighty-two respondents representing 79% of the respondents were males, while 17% were females. The results show that the majority of the respondents who form part of this study were males. The majority of the respondents were concentrated within two age ranges, thus 31 - 40 years and 41 - 50 years. It is shown that 13 of the respondents forming 14% were below 30 years, and five of them representing 5% were 51 years and above. Thirty-five respondents forming 36% were within the age bracket of 31 - 40 years, while forty-three of them forming 45% representing the majority were within the age bracket of 41 - 50 years.

It was observed that the professional status of the respondents in the construction industry was high. More so, 35% of the respondents were Bachelor`s degree holders, sixteen percent (16%) were Post Graduate, while Master's degree represented forty-nine percent (49%). Information from the study on the educational qualification of the respondents is an indication that respondents possess an appreciable level of education necessary to have a significant impact in the construction industry.

Seventeen (17) of the participants representing 18% have been working in the construction industry for 1 - 5 years. Thirty-three (33) of them forming thirty-

four percent (34%) had served in the industry between 6 - 10 years. Thirty-eight (38) and eight (8) of the respondents had worked in the construction industry for 11-15 years and 16 years above respectively. It can be noted that the respondents have gained adequate experience in the construction industry. The majority of the respondents representing sixty-one percent (61%) were Quantity Surveyors, while Architects represented thirty-nine percent (39%).

4.2. Architects and Quantity Surveyors' Roles in Ensuring Value for Money

This section presents the roles of architects and quantity surveyors in ensuring value for money (VFM) in physical infrastructural projects. The data is summarized in Table 2, highlighting key responsibilities and their respective mean scores and standard deviations for both professions.

Table 2. Roles played by architects and quantity surveyors in ensuring value for money.

Major roles in achieving VFM for public infrastructural projects	Architects' rating			Quantity surveyors' rating		
	M	SD	Rank	M	SD	Rank
Analyse Client's project-related requirements	3.35	0.66	7th	2.92	0.85	9th
Prepare design brief in terms of function, cost, time, quality, and safety	3.81	0.59	2nd	2.58	0.87	12th
Full-time supervision of construction works/ activities for projects	2.80	0.90	10th	3.23	0.86	6th
Establishment of communication and reporting system for the project	2.60	0.92	12th	3.27	0.64	4th
Preparation of works breakdown structure before construction commences	3.44	0.75	6th	3.25	0.64	5th
Preparation of project master schedule with base-line	3.67	0.76	4th	2.81	0.68	10th
Checking & verification of designer's submissions (design basis reports, value engineering, cost-benefit analysis, drawings etc.)	3.94	0.71	1st	2.75	1.02	11th
Cost control during all stages of design and design development	3.50	0.65	5th	3.60	0.644	2nd
Review of technical specifications and Bill of Quantities (BOQ)	2.71	1.07	11th	3.71	0.79	1st
On-site design co-ordination and issue of drawings/clarifications	3.77	0.75	3rd	3.02	0.93	8th
Advice on probable date of timely project completion	3.08	1.01	8th	3.13	0.84	7th
Preparation of quality assurance/quality control plan and method	2.90	0.91	9th	3.54	0.74	3rd

Mean = M, Standard deviation = SD; Source: Field data, 2021.

Overall, Architects (mean = 3.35) and quantity surveyors (mean = 2.92) generally play a modest role in ensuring VFM, as reflected by their overall mean scores. For preparation of design briefs, Architects have a higher mean score (3.81) compared to quantity surveyors (2.58) in preparing design briefs that cover functional requirements, cost, time, quality, and safety, suggesting that architects are more involved in this critical planning stage. In relation to supervision and communication, Quantity surveyors (3.23) are rated higher than architects (2.77) in full-time supervision of construction activities. Quantity surveyors also have a higher score (3.27) compared to architects (2.60) in establishing project communication and reporting systems. For project breakdown and scheduling both architects and quantity surveyors actively prepare the project breakdown structure, with architects scoring slightly higher (3.44 vs. 3.25). besides, Architects lead in preparing the project master schedule (3.67) compared to quantity surveyors (2.81). For design verification and cost control, Architects are rated significantly higher (3.94) than quantity surveyors (2.75) in checking and verifying design submissions whereas, Quantity surveyors have a slight edge in cost control during all stages of design development (3.60 vs. 3.50). For technical specifications and BOQ review, Quantity surveyors score higher (3.71) than architects (2.71) in reviewing technical specifications and the Bill of Quantities (BOQ). Regarding on-site coordination, Architects score higher (3.77) than quantity surveyors (3.02) in on-site design coordination and issuing clarifications. Furthermore, Quantity surveyors are rated higher (3.54) than architects (2.90) in preparing Quality Assurance/Quality Control plans and methods in relation to quality assurance/quality control. By implication, the data suggests that while both architects and quantity surveyors play crucial roles in ensuring VFM, their contributions vary significantly in certain areas. Also, Architects are more involved in the initial planning and design verification stages, whereas quantity surveyors take the lead in on-site supervision, communication, cost control, and technical specification reviews. Moreso, the differences in mean scores highlight the complementary nature of their roles and underscore the need for collaboration to achieve optimal VFM in infrastructure projects. Besides, the modest overall scores indicate room for improvement in both professions to enhance their impact on VFM. The findings emphasize the importance of understanding and optimizing the distinct roles of architects and quantity surveyors in project planning, execution, and supervision. Effective collaboration and clearly defined responsibilities are essential to maximizing value for money in infrastructural projects.

4.3. Challenges to Achieving Value for Money for Public Infrastructural Projects

This Section discusses the challenges faced in achieving value for money (VFM) in public infrastructural projects, as perceived by architects and quantity surveyors. The data is summarised in Table 3, which highlights critical barriers and their respective mean scores and standard deviations for both professions.

Table 3. Barriers to achieving value for money for public infrastructural projects.

Challenges to achieving value for money for public infrastructural projects	Architects' rating			Quantity surveyors' rating		
	M	SD	Rank	M	SD	Rank
Tender Documents not properly prepared	3.83	1.28	9th	3.93	1.18	7th
Failure on the part of project engineers to clearly articulate the goods or services to meet their requirement	4.06	1.06	3rd	4.13	1.12	4th
Awarding contracts to companies belonging to themselves or relatives without undergoing thorough tender processes	3.92	1.18	7th	3.77	1.26	10th
Soliciting bribes in order to influence tender award decision	3.93	1.32	6th	4.15	1.18	2nd
Tender award decision	3.82	1.19	8th	4.10	1.10	5th
Failure to give the necessary approvals	3.94	1.19	5th	3.81	1.25	9th
Delay payment to suppliers or service providers	3.50	1.19	10th	4.15	1.25	3rd
Poor supervision	4.17	0.91	1st	4.21	1.01	1st
Project management team often ignore the importance of construction audit	4.02	1.21	4th	3.90	1.19	8th
Lack of political will to enforce the various legislation and Acts to ensure project performance	4.08	1.18	2nd	4.00	1.17	6th

Mean = M, Standard deviation = SD; Source: Field data, 2021.

For tender document preparation, both architects (mean = 3.83) and quantity surveyors (mean = 3.93) agree that improperly prepared tender documents are a significant barrier to achieving VFM. On the articulation of requirements, failure by project engineers to clearly articulate the goods or services needed is a notable challenge, with high mean scores from both architects (4.06) and quantity surveyors (4.13). Similarly with awarding contracts without proper tender processes, both groups identify the awarding of contracts to relatives or companies without thorough tender processes as a barrier, with mean scores of 3.92 (architects) and 3.77 (quantity surveyors). For soliciting bribes, the issue of bribery influencing tender award decisions is prominent, with mean scores of 3.93 (architects) and 4.15 (quantity surveyors). When it comes to payment delays, delay in payments to suppliers or service providers is another significant barrier, especially noted by quantity surveyors (4.15) compared to architects (3.50). However, both architects (4.17) and quantity surveyors (4.21) rate poor supervision as the most critical barrier in relation to poor supervision. For ignoring construction audits, the tendency of project management teams to ignore the importance of construction audits is highlighted with mean scores of 4.02 (architects) and 3.90 (quantity surveyors). Whereas, a lack of political will to enforce Legislation and Acts to ensure project performance is noted as a challenge, with mean scores of 4.08 (architects) and 4.00 (quantity surveyors). By far, both architects and quantity surveyors share similar

views on the major barriers to achieving VFM, indicating a consensus on the critical issues affecting public infrastructural projects. Besides. poor supervision, lack of clear articulation of requirements, and issues of corruption (bribery and improper tender processes) are significant barriers that need to be addressed to improve VFM. Additionally, the differences in mean scores between the two groups are minor, suggesting that both professions experience and perceive these challenges similarly. Addressing these barriers requires comprehensive strategies involving better tender preparation, clear project requirements, strict enforcement of procurement processes, timely payments, effective supervision, regular construction audits, and strong political commitment. The findings highlight the importance of tackling key barriers to ensure VFM in public infrastructural projects. Effective measures to improve tender document preparation, articulate project requirements clearly, enforce proper tender processes, prevent bribery, ensure timely payments, enhance supervision, conduct regular audits, and foster political will are crucial for improving project outcomes. The agreement between architects and quantity surveyors on these issues underscores the need for collaborative efforts in addressing these challenges.

5. Discussions

5.1. Role of Consultants in Ensuring Value for Money for Public Infrastructural Projects

Respondents emphasised the crucial role of architects and quantity surveyors in project management and execution, in the context of delivering value for money in public infrastructural projects. Significantly, their responsibilities included tasks focused on maximising project results in terms of functionality, cost-efficiency, adherence to deadlines, and compliance with quality and safety criteria. Firstly, the investigation showed that consultants, especially architects, have a vital role in examining client project requirements, which is an essential step in customising project goals to effectively fulfil client wants. Architects are largely responsible for creating design briefs that include functional, cost, temporal, quality, and safety issues. This reflects their prominent position in determining project specifications. Furthermore, the study emphasised the need of consultants, namely quantity surveyors, in offering continuous oversight of building activities. By actively participating in the project, we guarantee compliance with technical specifications, design standards, and project schedules, which ultimately improves project efficiency and delivery. Furthermore, it was shown that consultants have a crucial role in creating efficient project communication and reporting systems, as demonstrated by their production of project breakdown structures prior to the start of construction. These structures enhance the efficiency of work planning, reduce project delays, and optimise the allocation of resources.

Moreover, consultants play an active role in overseeing cost control activities during the design and development phases, guaranteeing the project's feasibility and financial effectiveness. Quantity surveyors, specifically, were seen as crucial

participants in evaluating technical specifications and Bills of Quantities, which are necessary for precise project costing and budgeting. In addition, consultants, regardless of their area of expertise, offer significant guidance to project management teams regarding anticipated project completion deadlines, thereby enabling efficient project scheduling and allocation of resources.

In summary, the results emphasise the essential contribution of consultants, such as architects and quantity surveyors, in guaranteeing cost-effectiveness in public infrastructure projects. Their wide range of talents, which include project analysis, design, supervision, cost management, and advising functions, all contribute together to the success of the project. It is important to note that architects and quantity surveyors have different roles, but they must work together to achieve project goals. The statistical analysis conducted in the study provides additional support for the idea that both professional groups make similar contributions. This emphasises the significance of their mutually beneficial connection in delivering projects. The research findings align with prior studies. [1] highlighted the consultant's responsibility as the representative of the employer in guaranteeing that the project is finished to the appropriate standard, within the allocated budget and schedule. In a similar vein, [4] emphasised the responsibilities of consultants, which encompass design development, project management, contract administration, and providing guidance on sustainability. These duties coincide with the positions outlined in the present study. [3] also confirmed the diverse and complex responsibilities of consultants in delivering design and management services for construction projects.

5.2. Challenges to Achieving Value for Money for Public Infrastructural Projects

As stated by [15], the construction business in Ghana encounters various complex difficulties, such as exceeding time and cost limits, intervention from political entities, delayed payments to contractors, financial limitations, insufficient monitoring, and extended contract finalisation. These issues greatly hinder the functioning of the industry and have become intrinsic at every level of government projects, frequently sparking conflicts from the beginning to the end. The construction of a new court complex, which cost US$50 million and was supported by the Government of Ghana, sparked debate after faults were found during its development. In addition, public clients and end-users have strongly advocated for the achievement of value for money in publicly provided projects [16]. Ensuring cost-effectiveness is a significant issue in Ghana, especially in the public sector, where taxpayer money is used for infrastructure development. Maximising value for money is crucial at all stages of construction projects [17]. The attainment of value for money is heavily dependent on the capacity of construction professionals to provide optimal services to their clients [18]. [19] stated that value for money is achieved when projects are free of defects at completion, delivered on time and within budget, suitable for their intended purpose, visually appealing, backed by strong guarantees, and need minimum maintenance and public disturbance,

among other factors. Nevertheless, the high occurrence of inadequately implemented projects and the ongoing push for cost-effectiveness require an investigation of underlying shortcomings in attaining this objective within the construction sector in Ghana. The latest study's findings confirm the results of previous research. An example of a significant hindrance to achieving cost-effectiveness in the construction business is the improper production of tender documents [20]. Insufficient tender documents frequently result in confusion and modifications throughout project implementation, primarily owing to incomplete or inadequate information in bills of quantities (BOQs), drawings, and specifications. Similarly, inefficient procurement techniques lead to the squandering and depletion of cash, as demonstrated by the government's substantial yearly budget deficits resulting from inadequate procurement processes [21]. Additionally, the study emphasised the harmful consequences of late payments to suppliers or service providers on achieving cost-effectiveness in construction projects. Delays in payments, along with other problems like substandard work due to insufficient oversight and delayed acceptance of time extensions, contribute to inefficiencies and exceeding project costs [22]. Furthermore, the failure of project management teams to conduct construction audits was noted as a serious deficiency in achieving cost-effectiveness. The effectiveness of construction audits is often hindered by auditors' lack of expertise with building projects and contract terms [23]. Moreover, the persistent problem of public project abandonment in Ghana, which is caused by inadequate execution, political agendas, and lack of consistency during changes in administration, aligns with the conclusions of earlier research [24]. initiatives driven by political motivations frequently circumvent thorough scrutiny and evaluation procedures, resulting in the implementation of unfeasible initiatives without sufficient control. Ultimately, the study highlights the urgent necessity to tackle the highlighted obstacles in order to achieve optimal cost-effectiveness in Ghana's building sector. It is crucial to make efforts to simplify procurement processes, improve project supervision, speed up payment processes, and encourage transparency and accountability in project execution. These actions are necessary to boost industry performance and maximise the value obtained from building projects.

6. Conclusion

The study clarified the various viewpoints of project consultants, specifically architects and quantity surveyors, regarding their jobs, highlighting the importance of their specialised areas. Consultants do thorough examinations and evaluations of expenses, worth, and blueprints to guarantee the achievement of cost-effectiveness in projects. The general agreement among those surveyed emphasises the significance of consultants in evaluating technical specifications and Bills of Quantities (BOQ), with quantity surveyors being observed to perform this task more often than architects. Moreover, the findings emphasised the crucial importance of project consultants in ensuring cost-effectiveness in project building. Consultants have a vital role in examining the project requirements of clients and

creating detailed design briefs that prioritise factors such as cost, functionality, quality, time, and safety. This is done before the project begins. It is crucial to acknowledge that attaining value for money requires careful evaluation of cost, function, time, quality, and safety elements at every stage of the project's lifespan. In addition, architects and quantity surveyors are responsible for providing guidance to project management teams regarding project completion deadlines, as well as assuring compliance with technical requirements and design standards within predetermined schedules and budgets. Nevertheless, the study also revealed obstacles that impede the attainment of cost-effectiveness in public infrastructure projects. Granting contracts to companies owned by oneself or relatives without following the tender procedure has become a major impediment. Furthermore, the deficiency of project management teams in supervising construction audits and building inspectors throughout the initial stages of the project was recognised as a significant drawback. This weakness is caused by the insufficient proficiency of professional auditors and the restricted dedication of supervisory authorities to conduct timely project inspections. Moreover, the prevalence of public project abandonment in Ghana, which is caused by inadequate project implementation, political interference, unethical conduct among construction experts, and project discontinuance owing to changes in administration, highlights the necessity for complete reforms. Inefficient procurement procedures worsen the issue of delivering value for money by causing financial losses and project inefficiencies. To summarise, consultants have a crucial role in maximising the cost-effectiveness of public infrastructure projects. However, it is essential to solve the obstacles that have been identified in order to achieve the best possible project outcomes. In order to promote sustainable development and ensure cost-effectiveness in Ghana's construction industry, it is crucial to focus on improving procurement processes, enhancing project oversight, increasing transparency, and enforcing accountability.

7. Recommendations

The study's recommendations seek to bolster the efficacy of consultants and optimise cost-effectiveness in public infrastructure projects in Ghana. Consultants should first prioritise design and cost considerations by using multi-criteria analysis to pick criteria that are cost-effective, achieve client satisfaction, and offer value for money. This strategic approach guarantees thorough project planning and efficient allocation of resources to effectively meet the expectations of stakeholders. Furthermore, it is advisable to choose a lead consultant who will oversee and synchronise the actions and responsibilities of each individual consultant. The lead consultant, with extensive expertise in several consultant positions, is able to make well-informed decisions and promote effective teamwork, thereby improving project efficiency and reducing disagreements. Moreover, lobbying for construction audits is crucial in order to foster transparency and accountability in the implementation of projects. Enabling consultants to promote projects and carry out audits helps to identify and promptly address possible deficiencies and

inefficiencies, hence enhancing overall project results. Moreover, optimising contract procedures and fostering effective project completion are essential. Consultants must accelerate the processing of orders for contractors, give priority to issuing site instructions in a timely manner, and resolve conflicts in order to maximise project efficiency. Consulting organisations prioritise comprehensive background investigations and the selection of highly skilled professionals with exceptional interpersonal abilities to guarantee efficient teamwork and communication. Finally, it is of utmost importance to enhance public sector accountability through legislative measures. Public procurement agencies should ensure rigorous compliance with procurement procedures, and it is necessary to establish legal requirements for mandatory assessments of public sector construction projects. Implementing these methods will increase responsibility, reduce project cost overruns, and promote ongoing learning and improvement in project execution. Ghana can optimise the efficacy of consultants' involvement in public infrastructure projects and hence foster sustainable development and boost project outcomes by implementing these recommendations.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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