

INFLUENCE PROCUREMENT PROJECT PLANNING TECHNOLOGY ON THE PERFORMANCE OF PROJECTS AT KENYA ELECTRICITY GENERATING COMPANY

Musyimi Anna Mbesa¹, Dr. Morrisson Mutuku²

^{1,2}Department of Management Science, School of Business, Economics and Tourism, Kenyatta University, Kenya

DOI: <https://doi.org/10.5281/zenodo.14221724>

Published Date: 26-November-2024

Abstract: Kengen projects necessitate a comprehensive strategy to ensure successful execution. Nevertheless, the company encounters constraints related to funding, workforce, and equipment, which impede project completion. Unanticipated occurrences such as adverse weather conditions, disruptions in the supply chain, and changes in regulations have led to delays and escalated expenses. Furthermore, Kengen has been unable to achieve a significant strategic objective concerning the Hydro Plaza Building in Seven Folks, primarily due to delayed payments, procurement difficulties, and unforeseen project requirements. Therefore, this study seeks to investigate the influence of procurement project planning technology on the performance of projects at Kenya Electricity Generating Company. The study employed a descriptive research design. The focus of this research was on five projects at the Kenya Electricity Generating Company. A total of 95 employees participated as respondents, which included 25 project managers and 70 project team members overseeing these projects. Given the limited population size, a census was conducted involving all 95 respondents. A pilot study was executed with 10 respondents at the Kenya Power and Lighting Company located in Nairobi City County, Kenya. The research ensured the validity of the questionnaire through content validity, criterion validity, and face validity. Quantitative data were gathered via questionnaires and analyzed using descriptive statistics, including mean and standard deviation. Additionally, a multiple linear regression analysis was conducted to explore the relationship between independent and dependent variables, with the results presented in tables and figures. The study found that there exist a statistically significant correlation between procurement project planning technology and project performance within the organization. The study concludes that employees within the organization acknowledge and appreciate the adoption of technological solutions. The research suggests that the organization ought to implement an all-encompassing procurement management software that seamlessly integrates with current systems, including enterprise resource planning systems, to optimize processes, enhance data precision, and foster collaboration among various departments.

Keywords: Procurement project planning technology, Project Performance.

1. INTRODUCTION

An effectively managed project is of paramount importance to an organization's success, as it guarantees optimal resource utilization, adherence to timelines, and the achievement of objectives within the allocated budget (Artgowan & Mathieu, 2019). Haverila, Haverila, and Twyford (2021) assert that proficient project management enhances productivity, elevates

work quality, and boosts customer satisfaction, while also fostering a favorable reputation for the organization. This, in turn, aids in attracting new clients and retaining current ones. Ultimately, the successful execution of projects plays a crucial role in the overall growth and profitability of the organization. By emphasizing efficiency in project management, an organization can strategically position itself for sustained success and prosperity in a competitive business environment.

Gonzalez, Alarcon, and Mundaca (2018) highlight that organizations can enhance project performance by establishing clear goals and objectives, creating effective communication channels, ensuring the availability of sufficient resources and support, performing regular performance assessments, and utilizing feedback mechanisms to resolve any issues or challenges that may emerge during the project. Similarly, Changalima and Mdee (2023) identify several strategies that organizations employ to improve project performance, which include the adoption of project management methodologies and tools, the appointment of skilled and experienced project managers, the promotion of a collaborative and supportive team environment, the provision of ongoing training and development opportunities for team members, and the use of technology to optimize project processes and enhance efficiency.

Organizations can enhance project performance through procurement by formulating a detailed procurement strategy that is in harmony with their project goals and objectives. It is essential to conduct comprehensive assessments of potential suppliers to verify that they possess the requisite capabilities, resources, and proven track record to fulfill project demands (Aliza, Stephen, and Bambang, 2018). Furthermore, Araujo, Alencar, and Miranda (2021) emphasize that cultivating robust relationships with suppliers is vital for the success of projects. Organizations should foster open communication, collaborate on project planning and execution, and provide constructive feedback regarding supplier performance. Consequently, regular meetings and performance evaluations can be instrumental in identifying and resolving any issues or concerns that may emerge throughout the project.

Procurement planning, as articulated by Nissen (2019), allows organizations to assess actual performance against the planned project activities and timelines, facilitating communication among departments regarding any discrepancies that may arise, thereby enabling necessary adjustments. Furthermore, it provides a platform for all stakeholders to convene and discuss the essential requirements they deem necessary. According to Krähler and Strausz (2022), procurement planning delineates the process of supplier selection, encompassing the identification of project needs through to the finalization of the contract. It also substantiates the necessity for engaging an external supplier. Consequently, procurement planning significantly improves project performance by allowing project managers to evaluate the reasonableness of their requirements and expectations, as well as the feasibility of executing the plan within the proposed project timeline.

In the realm of project management, government-funded initiatives have recently become a significant topic of conversation. Projects focused on infrastructural development, characterized by substantial human engagement and social interactions, can be viewed as highly dynamic human systems (Upchurch, 2020). In the context of Pakistan, Noor, Khalfan, and Maqsood (2021) emphasize the presence of obstacles within the project approval process, which contribute to challenges in implementation. Additionally, the motivations for embracing non-traditional approaches, as opposed to conventional methods, are also constrained. Likewise, Saqib, Farooqui, and Lodi (2023) indicate that procurement-related elements, including the project delivery system, bidding methods, and contract mechanisms, are of considerable significance. Moreover, factors associated with acquisition are ranked among the top five categories of critical success factors in Pakistan.

In several developed countries, the energy sector has faced criticism for inefficiencies in multiple areas, including overruns in time and budget, low productivity levels, inadequate quality, and a lack of customer satisfaction. Specifically, energy projects in Sweden are often marked by high levels of complexity, customization, and uncertainty, which contribute to extended project timelines (Eriksson & Nilsson, 2020). Eriksson and Vennstrom (2021) have noted that collaborative procurement methods enhance cooperation among project stakeholders, resulting in improved performance of construction projects within the Swedish sector. Therefore, to ensure effective governance of construction projects in Sweden, it is essential to implement a holistic and integrated approach to procurement practices.

The public procurement framework in Ghana has evolved from a largely unregulated environment to one characterized by rigorous regulations (PPOA, 2009). However, despite these advancements, the procurement system continues to encounter significant challenges. According to the World Bank Report (2022), the annual absorption rate of project funds remained below 10%, a situation attributed to limitations within the procurement process. Addo and Ackah (2022) indicated that financial appraisal and the standardization of input specifications are frequently undertaken to improve the effectiveness of

projects financed by the district development fund in Ghana. They also advised that project and procurement committees should minimize the allocation of resources to supply chain risk management, as an overemphasis on this aspect could negatively affect the performance of projects supported by the District Assemblies' Common Fund (DACF) in Accra, Ghana.

Delays in project execution represent a critical challenge within both the Nigerian power sector and renewable energy initiatives. This issue is widespread across projects of different magnitudes. It is important to highlight that project delivery in Nigeria has been consistently affected by such delays (Ogundari & Otuyemi, 2019). As noted by Changalima and Mdee (2023), successful contractors in the Nigerian energy industry comply with the established design standards while under the oversight of consultants. Consequently, the process encompasses various stages, including design, tendering, and construction. Nevertheless, the effectiveness of projects in Nigeria's energy sector is shaped by multiple factors, including the attributes of project owners, contractors, and consultants, as well as the procurement frameworks in place. In spite of these challenges, the procurement process continues to pose difficulties for the design teams, contractors, and investment managers involved.

Kiage (2021) notes that the implementation of an e-government procurement system in Kenya offers numerous benefits for both the government and suppliers. A significant advantage of such a system is the increased efficiency it introduces to the procurement process. Kamoni (2022) highlights that procurement planning optimizes routine activities such as documentation, vendor registration, and bid submission, which in turn minimizes the time and effort needed to carry out these tasks. As a result, this leads to faster procurement cycles, shorter delivery times, and ultimately, greater efficiency in government procurement. Therefore, effective procurement planning has the potential to strengthen the relationship between the government and suppliers by enhancing the efficiency and transparency of procurement processes.

Procurement project planning technology, as articulated by Ibem and Laryea (2018), involves the systematic creation of a diagrammatic plan by procurement professionals. This plan delineates the specifics of what, which, when, and how purchases will be executed within a predetermined timeframe. User departments generally seek the prompt fulfillment of their requirements, and procurement planning provides a structured approach to achieve this objective. According to Dorling (2022), user departments often favor procurement methods that address their immediate needs while adhering to budget limitations, rather than strictly following the legally mandated procurement processes. Consequently, the delayed initiation of procurement activities frequently results in late project implementations. It is, therefore, crucial to synchronize delivery timelines with contractual commitments during the procurement planning phase.

Kenya Electricity Generating Company PLC (KenGen) is recognized as the leading electric power generation entity in East Africa. Founded in 1954 under the Kenyan Companies Act as Kenya Power Company (KPC), KenGen is primarily tasked with the generation of electricity through the development, management, and operation of power plants. Following its establishment, the shareholders appointed East Africa Power & Lighting Company (EAP&L) to manage KPC. In 1983, EAP&L evolved into Kenya Power & Lighting Company. In 2006, the Government reduced its stake in the company by 30% through a successful Initial Public Offering, leading to KenGen's official listing on the Nairobi Securities Exchange (NSE). Over the years, the company has consistently worked to enhance shareholder value by prioritizing profitability and sustainable growth. In line with its strategic objectives, shareholders participated in a successful rights issue in 2016.

2. STATEMENT OF THE PROBLEM

Project performance within Kenyan Parastatals is shaped by numerous factors, such as political interference, insufficient transparency and accountability, limited funding, ineffective project management practices, and corruption. These challenges can result in delays, budget overruns, and, ultimately, project failure (Raymond & Ndunge, 2019). According to Kimeo and Achuora (2020), enhancing project performance in Kenyan parastatals necessitates that the government confront these fundamental issues and enact reforms that foster good governance, accountability, and transparency. This approach should involve bolstering oversight mechanisms, improving project management skills, and investing in training and capacity development for personnel. By tackling these obstacles, Kenyan parastatals can enhance their project performance and achieve more favorable outcomes for the nation.

The Government of Kenya has issued Executive Order number 6, mandating all government agencies to adopt e-Procurement Systems to enhance transparency, accountability, and efficiency. In the case of KenGen, the SAP Supplier Relationship Management (SRM) system was deemed the most suitable option, taking into account compliance with the

Public Procurement Act and its integration with the existing ERP system. However, Kimalu (2021) notes that public entities' procurement systems generally lack well-defined policies that would facilitate the process and attract potential suppliers. Currently, KenGen is encountering difficulties in project procurement planning due to limited financial resources, which hampers its ability to engage the most suitable suppliers and acquire necessary materials. Additionally, challenges such as supply chain disruptions, political interference, economic downturns, and the need for suppliers with the requisite expertise and experience further complicate the procurement of materials and services for their projects.

3. LITERATURE REVIEW

Theoretical Literature Review

Resource Based View Theory

Barney (1991) presented the Resource Based View (RBV) theory, which asserts that a firm is composed of physical capital resources, human capital resources, and organizational resources. A key tenet of this theory is that organizational resources and capabilities can vary significantly between firms, and these differences can be enduring. The RBV highlights the importance of a firm's unique characteristics, which are challenging to duplicate, as critical factors for achieving business profitability, superior performance, and competitive advantage. As noted by Barney (1991), effective project management is derived from resources that are valuable, rare, difficult to imitate, and not easily substituted.

Wei, Liu, and Tsai (2016) emphasized the essential role of project resources in the processes of planning and allocation. Inadequate planning and resource allocation can hinder the ability to deliver projects on time and achieve high-quality outcomes. This insight is particularly relevant to the study, as it underscores the importance of how organizations oversee project performance in relation to their available resources and capabilities. Furthermore, for resources to enhance project performance, they must possess characteristics that are valuable, rare, and challenging to replicate or replace.

Empirical Literature Review

The research undertaken by Issa (2018) sought to evaluate the impact of procurement planning on the performance of projects within humanitarian organizations in Somalia. This investigation utilized a descriptive research design and focused on a population of 110 employees. A stratified random sampling method was employed to select 33 participants for the study. Primary data was gathered and subsequently analyzed. The findings demonstrated that the proficiency of personnel in procurement planning significantly affected the performance of humanitarian projects. Furthermore, the results highlighted that budgeting processes in procurement planning played a crucial role in influencing project performance within these organizations.

In the study conducted by Erick (2019), the impact of procurement planning on project performance was examined through a survey targeting Swedish construction clients. A procurement model comprising eight hypotheses was first established based on an extensive literature review. Subsequently, empirical data gathered from a survey of 106 Swedish construction clients were employed to evaluate this model using multivariate statistical methods. The findings from hierarchical regression analyses indicated that cooperative procurement practices positively affected collaboration among project stakeholders, which subsequently enhanced project performance.

Muhwezi, Musiime, and Onyutha (2020) undertook a research project aimed at assessing the effects of procurement planning processes on the performance of construction projects within local governments in Uganda. The study utilized a descriptive research design and employed a purposive sampling method to select a total of 81 participants. Data was gathered through the distribution of questionnaires, and the analysis was conducted using SPSS software. The results revealed that insufficient procurement planning led to considerable budget shortfalls, with an average score of 1.86, which significantly impacted the performance of construction projects. Additionally, the research highlighted that the prompt allocation of funds for construction initiatives played a critical role in enhancing their performance.

Muksha (2021) conducted a study examining the impact of information technology on project management performance. The research focused on project managers and site engineers engaged in the Vision City Project Phase 1. A total of 55 respondents participated, from which a sample was selected. The researcher utilized cluster sampling by categorizing housing projects in Kigali into two distinct clusters. Both primary and secondary data sources were employed in this investigation. Descriptive analysis was conducted to interpret the data gathered from the participants. Additionally, ordinal

logistic regression was utilized to explore the relationship between the dependent and independent variables at a 5% confidence level. The findings indicated a significant relationship between information technology and the performance of project management in the Vision City Project Phase 1.

Ogero (2022) carried out a study examining the influence of project management information systems on project performance specifically within the construction industry in Nairobi County, Kenya. The research focused on a population of 98 individuals, from which a sample size of 80 was derived using the Krejcie and Morgan table (1970). Participants were selected through purposive sampling methods. The analysis of data utilized descriptive statistics and correlation techniques, specifically employing Karl Pearson's coefficient of correlation, to assess the relationship between the dependent and independent variables. The study's results indicated that the adoption of Project Management Information Systems significantly improved project performance, while also meeting time, budget, and quality requirements, thereby fulfilling project objectives.

4. RESEARCH METHODOLOGY

The study employed a descriptive research design. The focus of this research was on five projects at the Kenya Electricity Generating Company. A total of 95 employees participated as respondents, which included 25 project managers and 70 project team members overseeing these projects. Given the limited population size, a census was conducted involving all 95 respondents. A pilot study was executed with 10 respondents at the Kenya Power and Lighting Company located in Nairobi City County, Kenya. The research ensured the validity of the questionnaire through content validity, criterion validity, and face validity. Quantitative data were gathered via questionnaires and analyzed using descriptive statistics, including mean and standard deviation. Additionally, a multiple linear regression analysis was conducted to explore the relationship between independent and dependent variables, with the results presented in tables.

5. FINDINGS

The research aimed to determine the degree to which the technology used in procurement project planning affects the performance of projects at Kenya Electricity Generating Company, as reported by the respondents. The results are presented as follows;

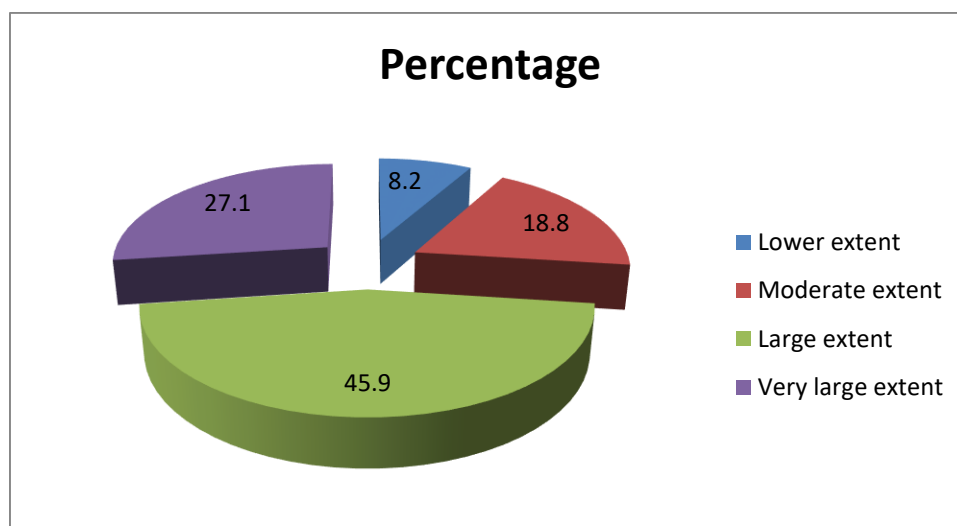


Figure 1: Project Procurement Planning Technology

The results indicate that a notable segment of the participants, specifically 45.9%, perceive that technology used in procurement project planning significantly affects the performance of projects at Kenya Electricity Generating Company. Furthermore, 27.1% of the respondents expressed that this effect is very substantial, while 18.8% acknowledged a moderate impact, and 8.2% observed a lesser degree of influence. These findings align with an earlier study by Issa (2018), which demonstrated a significant correlation between the implementation of technology in procurement processes and enhanced project performance metrics.

Table 1: Project Procurement Planning Technology

Statement	M	SD
Coordination of procurement efforts aids in locating and acquiring the best goods and services for the business.	3.52	1.476
Coordination of procurement helps guarantee that contracts are awarded in a timely and economical manner.	4.62	0.377
Technology greatly contributes to the procurement process's increased speed and efficiency, which saves time.	4.51	0.486
Technology effectively conducts audits, which makes the procurement process transparent.	4.23	0.768
Organizations can match their procurement strategies with business objectives by setting procurement objectives	4.61	0.388
Establishing procurement goals ensures that the function is seen as strategic rather than administrative and fosters departmental synergy	4.56	0.439
Aggregate score	4.34	0.656

The study found an average mean score of 4.34 and a standard deviation of 0.656, indicating strong agreement among respondents on the positive impact of technology in procurement project planning at the Kenya Electricity Generating Company (KenGen). A mean score of 4.34 suggests that most participants view technology as significantly influential in enhancing project efficiency and effectiveness. The low standard deviation reflects a strong consensus on this importance. Therefore, findings emphasize that technology is a crucial factor for improving project management outcomes at KenGen, highlighting the need for ongoing investment in technological advancements and training.

The study participants showed strong consensus on key procurement practices, indicated by high mean scores and low standard deviations. They agreed that effective procurement coordination is essential for timely and cost-effective contract awards, with a mean score of 4.62 and a standard deviation of 0.377. This highlights the importance of optimizing resource allocation and minimizing delays for overall operational efficiency. Participants also emphasized the need to align procurement strategies with broader business objectives, reflected in a mean score of 4.61 and a standard deviation of 0.388. They believe that clear procurement goals are crucial for integrating procurement activities with strategic vision, enhancing organizational performance. Furthermore, they recognized that establishing procurement objectives elevates the function from administrative to strategic, supported by a mean score of 4.56 and a standard deviation of 0.439. This strategic positioning fosters collaboration among departments, leading to better outcomes. Lastly, participants acknowledged the significant role of technology in enhancing the speed and efficiency of procurement activities, with a mean score of 4.51 and a standard deviation of 0.486. They believe that leveraging technology streamlines processes and improves overall effectiveness.

Participants in the study strongly agreed on the importance of technology and coordination in the procurement process. They noted that technology is vital for streamlining audits, enhancing efficiency, transparency, and accountability, with a mean score of 4.23 and a standard deviation of 0.768, indicating high consensus. Additionally, they emphasized the need for effective coordination in procurement to timely and cost-effectively acquire appropriate goods and services, reflected in a mean score of 3.52 and a standard deviation of 1.476, showing moderate agreement with a wider range of opinions. Overall, the findings highlight the significant benefits of both technology and coordination in improving procurement and organizational performance.

Regression Analysis Results

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.899	.808	.792	0.0023

The Correlation Coefficient (R value) of 0.899 indicates a strong positive correlation, suggesting that improved procurement planning significantly enhances project performance. The Coefficient of Determination (R square value) of 0.808 shows that about 80.8% of the variance in project performance is explained by procurement planning, highlighting its critical role in successful outcomes. The Adjusted R square value of 0.792 accounts for the number of predictors, indicating that 79.2%

of the variance in project performance is still explained by procurement project planning technology, providing a more accurate model representation. Therefore, other variables not studied are represented by the remaining percentage (20.8%). A Standard Error of 0.0023 indicates that the model's predictions closely align with actual data, reflecting high accuracy in forecasting project performance based on procurement planning

Table 3: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	112.965	1	112.965	183.08	0.002
	Residual	51.213	83	0.617		
	Total	164.178	84			

The ANOVA results indicate a significant relationship between project procurement planning technology and performance at Kenya Electricity Generating Company, with an F value of 183.08, well above the critical threshold. This suggests that variations in project performance are largely due to procurement planning technology rather than chance. The mean square value of 112.965 further confirms the strong effect of procurement planning technology on project outcomes. With a significance level of 0.003, far below the 0.05 threshold, the results are statistically significant, indicating only a 0.2% chance that the observed performance differences are due to random variation. Thus, effective procurement planning technology is linked to improved project performance.

Table 4: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.697	0.316		2.2057	0.002
	Project procurement planning technology	0.795	0.227	0.7061	3.502	0.003

The results indicate that the constant value of 0.697 which serves as a baseline reference point, indicating the expected level of project performance when all other variables are held constant. This suggests that even in the absence of specific procurement planning technology, there is a foundational level of performance that can be anticipated. The coefficients for the different procurement planning components are particularly noteworthy which indicates that an improvement on project procurement planning technology would improve project performance by 0.795.

Therefore, the equation formed is expressed as follows;

$$\text{Project performance} = 0.697 + 0.795 (\text{project procurement planning technology})$$

The project procurement planning technology showed a beta value of 0.7061, suggesting a high correlation between the technology used and the efficiency of project procurement procedures. The technology utilized for project procurement planning demonstrated a beta value of 0.7061, indicating a strong positive relationship between the technology employed and the effectiveness of project procurement processes. This suggests that as the quality or sophistication of the technology increases, the performance outcomes of the projects are likely to improve significantly. The significance value of 0.003 further reinforces this finding, as it is well below the conventional threshold of 0.05, indicating that the results are statistically significant.

6. CONCLUSIONS

The study concludes that the implementation of technological solutions is recognized and valued by the employees at Kenya Electricity Generating Company. Effective integration of advanced technological tools into the procurement processes leads to improved project outcomes, including reduced costs, shorter project timelines, and higher quality deliverables. A well-coordinated procurement process is critical for achieving timely and economical contract awards, which can ultimately enhance organizational performance. Clear objectives not only enhance the strategic value of procurement but also foster collaboration and synergy among various departments within the organization. This collaborative approach can lead to improved outcomes and a more unified direction in achieving organizational goals.

7. RECOMMENDATIONS

The study recommends that the organization should utilize comprehensive procurement management software that integrates with existing systems such as enterprise resource planning systems to streamline processes, improve data accuracy, and enhance collaboration across departments. Implement predictive analytics tools to forecast demand, assess supplier performance, and identify potential risks in the procurement process. This can help in making informed decisions and optimizing inventory levels. It may be beneficial for the Kengen to continue investing in technological advancements and training programs that enhance the skills of their procurement teams. By doing so, Kengen can further leverage technology to optimize project planning and execution, ultimately leading to better performance outcomes.

REFERENCES

- [1] Addo, S. K., & Ackah, D. (2022). Role of Procurement Practices on the Performance of Projects Funded by District Development Fund in Ghana: A Survey of Greater Accra. *Project Management Scientific Journal*, 3(7), 74 – 137
- [2] Aliza, A. H., Stephen, K., & Bambang, T. (2018). The importance of project governance framework in project procurement planning. *Procedia Engineering*, 14, 1929-1937
- [3] Araujo, M. C. B., Alencar, L. H., & de Miranda, C. M. (2021). Project procurement management: A structured literature review. *International journal of project management*, 35(3), 353-377
- [4] Artgowan, J., & Mathieu, R. G. (2019). The importance of management practices in IS project performance: An empirical study. *Journal of Enterprise Information Management*, 18(2), 235-255.
- [5] Changalima, I. A., & Mdee, A. E. (2023). Procurement skills and procurement performance in public organizations: The mediating role of procurement planning. *Cogent Business & Management*, 10(1), 2163562
- [6] Changalima, I. A., Mushi, G. O., & Mwiseje, S. S. (2021). Procurement planning as a strategic tool for public procurement effectiveness: experience from selected public procuring entities in Dodoma city, Tanzania. *Journal of Public Procurement*, 21(1), 37-52
- [7] Dorling, A. (2022). Successful information technology procurement. *Software Quality Professional*, 4(3), 21 – 26
- [8] Erick, E. R. (2019). *Effects of procurement on project performance: a survey of Swedish construction clients* (Luleå University of Technology, Sweden)
- [9] Eriksson, P. E. & Nilsson, T. (2020). Partnering the Construction of a Swedish Pharmaceutical Plant: Case Study'. *Journal of Management in Engineering*, 24 (4), 227-233
- [10] Eriksson, P. E., & Vennström, A. (2021). Effects of procurement on project performance: a survey of Swedish construction clients. In *CIB Joint International Symposium, Construction Facing Worldwide Challenges: 27/09/2009-29/09/2009* (pp. 19-28). ArCiBel Editores
- [11] Gonzalez, V., Alarcon, L. F., & Mundaca, F. (2018). Investigating the relationship between planning reliability and project performance. *Production Planning and Control*, 19(5), 461-474
- [12] Haverila, M., Haverila, K. C., & Twyford, J. C. (2021). Critical variables and constructs in the context of project management: importance-performance analysis. *International Journal of Managing Projects in Business*, 14(4), 836-864
- [13] Ibem, E. O., & Laryea, S. (2018). Survey of digital technologies in procurement of construction projects. *Automation in construction*, 46, 11-21
- [14] Issa, A. M. (2018). *Effects of procurement planning on the performance of projects among humanitarian organizations in Somalia: A Case of International Organization for Migration (Iom)–Somalia* (Doctoral Dissertation, Mua)
- [15] Kamoni, P. (2022). *Emerging Supply Chain Management Practices and Procurement Performance of Public Mega Projects in the Energy Sector in Kenya* (Doctoral dissertation, JKUAT-COHRED)
- [16] Kiage, J. O. (2021). Factors affecting procurement performance: A case of ministry of energy. *International journal of business and commerce*, 3(1), 54-70

- [17] Kimeo, J. M., & Achuora, J. (2020). Influence of contract administration on performance of Parastatals in Kenya. *International Journal of Supply Chain and Logistics*, 4(3), 70-91
- [18] Krähler, D., & Strausz, R. (2022). Optimal procurement contracts with pre-project planning. *The Review of Economic Studies*, 78(3), 1015-1041
- [19] Muhwezi, L., Musiime, F. T., & Onyutha, C. (2020). Assessment of the Effects of Procurement Planning Processes on Performance of Construction Contracts in Local Governments in Uganda. *Journal of Civil, Construction and Environmental Engineering*, 5(6), 151 – 169
- [20] Mukesha, S. (2021). *The impact of information technology on project management performance. A case study of Vision City Project phase I* (Doctoral dissertation, University of Rwanda)
- [21] Nissen, M. E. (2019). Procurement: Process overview and emerging project management techniques. *The Wiley Guide to Project Technology, Supply Chain & Procurement Management*, 4(1), 247 – 253
- [22] Noor, M. A., Khalfan, M. M., & Maqsood, T. (2021). The role of procurement practices in effective implementation of infrastructure projects in Pakistan. *International Journal of Managing Projects in Business*, 6(4), 802-826
- [23] Ogero, D. K. (2022). *Influence of project management information system on project performance in the construction industry: a case of Nairobi County, Kenya* (Master Project, University of Nairobi)
- [24] Ogundari, I. O., & Otuyemi, F. A. (2019). Project planning and monitoring analysis for sustainable environment and power infrastructure project development in Lagos State, Nigeria. *International Journal of Critical Infrastructures*, 15(1), 24-45
- [25] Raymond, N. M., & Ndunge, D. (2019). Determinants of Project Implementation Performance in Building Construction Projects in Selected Parastatals in Kenya. *Journal of Entrepreneurship & Project Management*, 3(5), 8 – 12
- [26] Saqib, M., Farooqui, R. U. & Lodi, S. H. (2023). Assessment of Critical Success Factors for Construction Projects in Pakistan. *Journal of Public Procurement*, 6(1/2), 70-79
- [27] Upchurch, R.S. (2020). A conceptual foundation for ethical decision making: A stakeholder perspective in the lodging industry. *Journal of Business Ethics*, 17(12), 1349-1361