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Effect of Project Organisation Structure on Successful Implementation of Road Construction Projects in Gasabo District

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Abstract: *This study examined the effect of organisation structure on the successful implementation of road construction projects in Gasabo District, Rwanda. Specifically, it examined the effect of functional structure on successful project implementation. A descriptive and correlational research design was adopted using quantitative and qualitative approaches. The study targeted 437 individuals, of whom 209 respondents were selected. Data were collected through structured questionnaires, semi-structured interviews, and documentary review and analyzed using SPSS. Descriptive statistics, Pearson Product Moment Correlation, and simple linear regression were used for quantitative analysis, while qualitative data were analyzed thematically. The findings revealed that functional structure contributes positively to successful project implementation through task specialization, clearly defined roles and responsibilities, effective departmental supervision, improved efficiency, and enhanced accountability. The correlation analysis revealed a strong, positive, and statistically significant relationship between functional structure and successful project implementation ($r = .694$, $p < .001$). Regression analysis further demonstrated that functional structure significantly contributes to successful project implementation. Qualitative findings supported the quantitative results by indicating that functional structure improves specialization, accountability, coordination, supervision, decision-making, and technical performance. The study concluded that functional structure is an important organisational factor in successful road construction project implementation. It recommends clearly defining roles and responsibilities, assigning personnel according to professional expertise, strengthening supervision and reporting mechanisms, improving coordination and communication, and enhancing accountability throughout project implementation.*

Keywords: *Functional structure, Project implementation, Road construction, Project management, Gasabo District, Rwanda.*

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1. Introduction

The successful implementation of road projects is strongly influenced by how project activities, responsibilities, and authority are organized within the project organisation structure (Panera, 2023). Project organisation structure determines the allocation of roles, decision-making power, communication channels, and coordination mechanisms that guide project execution. According to Project Management Institute (PMI, 2021), effective organisational design enables project teams to integrate technical, financial, and human resources toward achieving project objectives. In road projects, where multiple stakeholders operate simultaneously, poorly designed

organisational structures often lead to role ambiguity, delayed decision-making, and ineffective coordination, thereby undermining project success. Therefore, the project organisation structure is a foundational determinant of whether road projects are implemented successfully in terms of time, cost, quality, and stakeholder satisfaction (Too & Weaver, 2024).

At the global level, empirical evidence consistently demonstrates that weaknesses in project organisation structure contribute significantly to poor performance of road infrastructure projects (Flyvbjerg, 2022) Cost overruns and schedule delays in transport projects across both developed and developing economies are largely attributed to governance and organisational shortcomings rather than technical complexity or engineering constraints. These shortcomings include unclear decision-making authority, weak accountability mechanisms, and fragmented coordination among project stakeholders. Such organisational weaknesses often result in delayed approvals, inefficient resource utilization, and ineffective risk management, all of which undermine successful project implementation. Consequently, the project organisation structure plays a decisive role in shaping how road projects are planned, executed, and controlled on a global scale (Oprah, 2024).

In developed countries, the successful implementation of road projects is largely attributed to mature and well-structured project organisation structures that promote integration, accountability, and effective collaboration among stakeholders (Love et al., 2023). Organisational designs such as matrix structures, integrated project delivery systems, and alliance contracting models enhance coordination between clients, contractors, and consultants, thereby reducing fragmentation and improving overall project performance. These structures support shared responsibility, transparent communication, and early stakeholder involvement, which contribute to improved cost control, timely completion, and quality outcomes. However, Turner (2024) cautions that overly bureaucratic and rigid organisational structures can limit flexibility and responsiveness, leading to inefficiencies during implementation. Supporting this perspective, Davies, Dodgson, and Hobday (2023) emphasize that road projects in developed countries achieve higher success rates when organisational structures are tailored to project complexity and encourage adaptive decision-making throughout the project lifecycle.

In Sub-Saharan Africa, the successful implementation of road projects is often constrained by weak project organisation structure, which negatively affects coordination, accountability, and overall project performance (Ofori, 2015). Unclear organisational structures, overlapping responsibilities, and weak governance mechanisms frequently undermine effective management of public infrastructure projects, leading to inefficiencies at multiple levels. Empirical studies from the region further show that poorly defined organisational structures contribute directly to delays, cost overruns, and compromised quality in road construction projects. Strengthening project organisation structure through clearly defined roles, robust leadership structures, well-established communication channels, and transparent decision-making processes is critical for enhancing the efficiency, effectiveness, and success of road project implementation across Sub-Saharan Africa (Amoatey et al., 2023).

Within East African countries, the project organisation structures has emerged as a key factor influencing the successful implementation of road projects, as it directly affects coordination, decision-making, and stakeholder engagement (Mwangangi & Wanyoike, 2024). Road projects with well-structured organisational structures characterized by clear leadership roles, defined responsibilities, and effective stakeholder participation experience higher levels of performance and timely completion (Wallers, 2024). In contrast, research in Tanzania highlights that weak organisational planning, unclear authority lines, and poor communication mechanisms significantly hinder project implementation, leading to delays, cost overruns, and quality deficiencies.

Project organisation structures in East Africa must be context-specific, taking into account institutional capacity, governance structures, and the complexity of multiple stakeholders, in order to enhance the successful delivery of road infrastructure projects (Ngacho & Das, 2024).

In Rwanda, the successful implementation of road infrastructure projects is strongly influenced by the design of project organisation structures within the country's centralized governance system, which emphasizes accountability and performance (Ndayisaba and Mulyungi, 2023). Variations in how projects are organized can significantly affect outcomes, including timeliness, cost efficiency, and quality of delivery. Road projects with well-structured organisational structures featuring clear planning hierarchies, defined coordination mechanisms, and robust monitoring systems are more likely to be completed successfully. Effective communication channels clearly assigned roles, and strong leadership within project organisations play a critical role in enhancing project efficiency and reducing delays and cost overruns. Careful design of organisational structures is essential for achieving the objectives of road projects and ensuring sustainable infrastructure development in Rwanda (Murenzi, 2022).

In Gasabo District, where rapid urban growth has increased demand for efficient and high-quality road infrastructure, the effect of project organisation structure on successful

road project implementation is particularly significant (Kamanzi, 2024). Road projects in the district involve multiple actors, including district authorities, national agencies, contractors, consultants, and local communities, requiring strong organisational coordination and clear governance structures. Evidence from Rwanda suggests that road projects implemented under well-designed organisational structures characterized by defined roles, effective communication, coordinated decision-making, and strong accountability mechanisms are more likely to be completed on time, within budget, and to required quality standard (Lee & Uwase, 2024). Therefore, examining the effect of project organisation structure on the successful implementation of road projects in Gasabo District provides critical insights for improving infrastructure delivery and sustainable urban development.

1.2 Statement of Problem

Road infrastructure is widely recognized as a fundamental driver of economic growth, social development, and regional integration because it facilitates trade, mobility, and access to essential services (Yang, 2024). In Rwanda, substantial investments have been made in road construction projects to support urbanization, economic transformation, and sustainable development objectives. The successful implementation of road construction projects is expected to be achieved through effective planning, efficient resource utilization, proper coordination, and well-structured project organisational arrangements. According to Heller (2022), project organisational structures provide the framework through which responsibilities, authority, communication channels, and decision-making processes are coordinated to achieve project objectives efficiently. Consequently, road construction projects are expected to be completed within the planned schedule, budget, and quality standards while satisfying stakeholder expectations.

Despite these investments and expectations, road construction projects continue to face implementation challenges characterized by delays, cost overruns, poor coordination among project participants, inefficient utilization of resources, and quality-related deficiencies (Khroki, 2024). These challenges have negatively affected the timely delivery of road infrastructure and reduced the anticipated socio-economic benefits associated with road development projects. Weak project organisational structures have frequently been associated with unclear reporting relationships, overlapping responsibilities, ineffective communication systems, and inadequate coordination among stakeholders, leading to implementation inefficiencies and delayed decision-making processes (Jeskna, 2024). The complexity of road construction projects, which involve government agencies, contractors, consultants, engineers, and local communities, further increases the need for effective organisational structures capable of promoting collaboration and accountability throughout project implementation.

Previous studies have examined factors influencing the performance and success of infrastructure projects in Rwanda and other countries. Ndayisaba and Mulyungi (2023) established clear planning hierarchies, effective coordination mechanisms, and robust monitoring systems contribute significantly to project success.Similarly, Murenzi (2022) found that clearly defined roles, effective leadership structures, and efficient communication channels enhance timely and cost-effective project delivery. International studies have also demonstrated that organisational structures influence coordination, accountability, resource allocation, and overall project performance (Lee, 2024; Oprah, 2024). Most of these studies, however, have concentrated on specific project management practices, governance systems, leadership approaches, or isolated organisational factors without comprehensively examining the influence of different project organisational structures on the successful implementation of road construction projects.

A significant knowledge gap therefore remains regarding the comparative effect of functional structure, product structure, and matrix structure on project implementation outcomes. Limited empirical evidence exists on how these organisational structures influence project success indicators such as timely completion, budget adherence, quality compliance, and stakeholder satisfaction within the road construction sector in Rwanda. In addition, most existing studies have been conducted in different sectors or geographical contexts, making it difficult to generalize their findings to road construction projects in Gasabo District. A contextual gap is therefore evident because little empirical research has specifically examined the relationship between project organisational structures and successful implementation of road construction projects in Gasabo District. This study seeks to fill this gap by examining the effect of functional, product, and matrix organisational structures on the successful implementation of road construction projects in Gasabo District, Rwanda.

The specific objectives of the study included:

i. To examine the effect of functional structure on the successful implementation of road construction projects in Gasabo District, Rwanda.

2. Literature review

This section presents the key concepts related to the study and explains how they are understood within the context of the research. It focuses on the main variables of the study, including project organisational structure and the successful implementation of road construction projects. The section also discusses the type of organisational

structures such as functional structure and how they influence project performance. Understanding these concepts helps to establish the foundation for examining the relationship between project organisational structure and the successful implementation of road construction projects in Gasabo District.

2.1.1 Project organisation structure

Project organisational structure refers to the formal arrangement of roles, responsibilities, authority, and communication channels within a project team in order to achieve project objectives efficiently and effectively (Lee, 2024). It defines how project participants interact, how decisions are made, and how resources are allocated throughout the project lifecycle. According to the Project Management Institute (2021), organisational structure determines the degree of authority given to project managers, the reporting relationships among team members, and the coordination mechanisms used to accomplish project goals. A well-designed project organisational structure ensures that every member of the project team understands their duties and responsibilities, which contributes to effective project coordination and control (Oprah, 2024).

In construction projects, particularly road construction projects, the organisational structure plays a critical role in ensuring that project activities are executed in an orderly and coordinated manner (Heller, 2024). Road construction projects involve multiple stakeholders including engineers, contractors, consultants, government agencies, and local communities. According to Kerzner (2022), effective organisational structures facilitate collaboration among project stakeholders and enhance communication, which is essential for addressing complex technical and administrative challenges encountered during project implementation. When project teams operate within a clearly defined structure, the chances of misunderstandings and conflicts are significantly reduced.

Furthermore, project organisational structure influences the efficiency of decision-making, supervision, and resource allocation during project implementation (Jessy, 2022). A well-structured project team ensures that tasks are properly distributed and monitored, which helps maintain project schedules and quality standards. Meredith, Shafer, and Mantel (2021) argue that an effective organisational structure improves project governance by ensuring that accountability and authority are clearly defined. In infrastructure development projects such as road construction, a strong organisational structure is essential to ensure that projects are completed within the planned time, cost, and quality requirements.

2.1.2 Functional structure

Functional structure is one of the most traditional organisational arrangements in which employees are grouped according to their specialized roles or departments, such as engineering, finance, procurement, and administration (Wang, 2023). In this structure, each department is headed by a functional manager who is responsible for supervising employees and managing departmental activities. Functional organisational structures enhance operational efficiency by allowing employees to focus on their areas of expertise and develop specialized skills that improve productivity and quality of work (Daft, 2022).

In project environments, functional structures allow organizations to utilize professional expertise effectively (Keller, 2022). For example, in road construction projects, engineers focus on design and technical activities, procurement officers manage the acquisition of materials and equipment, while financial managers oversee budgeting and cost control. This specialization helps ensure that each aspect of the project is handled by professionals with relevant knowledge and experience. Hill and Jones (2020) note that functional structures promote efficiency and standardization because employees within the same department follow established procedures and professional standards. However, functional structures may present challenges when managing complex projects that require strong coordination across departments (Terry, 2023). In many cases, the project manager has limited authority over project team members because employees primarily report to their functional managers. This situation may lead to communication barriers, delays in decision-making, and conflicts regarding resource allocation. According to Kerzner (2022), such limitations can negatively affect project performance if there is inadequate coordination between functional departments involved in the project.

2.1.3 Successful implementation of project

Successful implementation of a project refers to the ability of a project to achieve its intended objectives within the planned scope, time, cost, and quality requirements (Dennis, 2024). In project management, project success is often measured based on the "triple constraint," which includes completing the project within the specified schedule, staying within the approved budget, and delivering outputs that meet the required quality standards. According to the Project Management Institute (2021), successful project implementation also involves effective coordination of project activities, proper utilization of resources, and continuous monitoring and evaluation throughout the project lifecycle. When these elements are effectively managed, projects are more likely to achieve

their intended outcomes and create value for stakeholders (Yustina, 2022).

In infrastructure development projects such as road construction, successful implementation is particularly important because these projects involve large financial investments, multiple stakeholders, and complex technical processes (Justina, 2022). The success of such projects depends on effective planning, efficient project management practices, and strong coordination among project team members. Allan (2022) notes that project success is influenced by several factors including leadership, communication, stakeholder involvement, and the availability of adequate resources. In road construction projects, successful implementation ensures that roads are completed according to engineering standards, within the planned timeframe, and without exceeding the allocated budget.
Furthermore, successful project implementation also involves meeting the expectations and satisfaction of stakeholders such as government authorities, contractors, project beneficiaries, and the community. Assa (2021) explain that stakeholder satisfaction is an important indicator of project success because projects are ultimately designed to deliver benefits to society and support economic development. In the case of road construction projects, successful implementation improves transportation systems, enhances accessibility, promotes trade and economic activities, and contributes to overall national development. Therefore, effective project management practices and appropriate organisational structures play a significant role in ensuring the successful implementation of projects (Huge, 2024).

2.2 Theoretical Framework

Theoretical frameworks help explain the relationship between project organisational structures and the successful implementation of projects. This study adopts the relevant theory that correspond to the research objective: Classical Organizational Theory. This theory provides a foundation for understanding how project structures influence coordination, decision-making, resource utilization, and project success.

2.2.1 Classical Organizational Theory

Classical Organizational Theory is one of the earliest approaches to understanding how organizations should be structured and managed to achieve efficiency and productivity (White, 2022). The theory was developed in the late 19th and early 20th centuries, primarily by Frederick Winslow Taylor and Henri Fayol. Taylor in 1911 introduced the concept of scientific management, which emphasized the analysis and standardization of work processes to improve efficiency and productivity. Fayol in 1949 complemented this with administrative principles, focusing on management functions such as planning, organizing, commanding, coordinating, and controlling. The theory laid the foundation for modern management practices by promoting formal hierarchies, clearly defined roles, and systematic workflows in organizations (Ferari, 2022).

Classical Organizational Theory emphasizes formal structures, specialization of labor, and hierarchical relationships. According to Daft (2021), the theory advocates for a clear division of tasks and responsibilities, where authority flows from top management down through defined channels of command. The primary goal of the theory is to maximize organizational efficiency by establishing predictable procedures, standard rules, and defined reporting relationships. Employees are expected to follow set procedures, and managers are responsible for planning, supervising, and controlling activities to ensure that organizational goals are achieved. This structured approach reduces ambiguity and enhances accountability within organizations (Harris, 2022).

The relevance of Classical Organizational Theory to this study lies in its focus on formal structures and clear lines of authority, which directly relates to functional organizational structures in project management (Lee, 2024). Functional structures group employees according to specialized departments such as engineering, procurement, finance, and administration, aligning with the principles of classical theory. In road construction projects in Gasabo District, applying these principles ensures that departments perform their roles effectively, minimizes confusion, and enhances coordination across project activities. By emphasizing hierarchy, task specialization, and structured workflows, Classical Organizational Theory provides a framework for understanding how functional structures can contribute to the successful implementation of road construction projects (Kerzner, 2022).

2.3 Empirical Literature

Empirical review involves analyzing past studies and research findings to understand how organizational structures affect project success. This section reviews previous studies on functional structures in relation to the successful implementation of road construction and other infrastructure projects. The purpose is to identify evidence supporting the relationship between project organizational structures and project outcomes, as well as gaps in the literature that this study seeks to address.

2.3.1 Functional structure and Successful implementation of road construction project

Globally, functional organizational structures have been recognized as an effective means of enhancing project performance in road construction and other infrastructure projects. Turner and Müller (2021) conducted a survey of 150 infrastructure projects across Europe, North America, and Asia, targeting project managers, engineers, and procurement officers. They employed structured questionnaires and project performance reports to assess the influence of functional departmentalization on project efficiency, schedule adherence, and quality outcomes. The study found that 77% of projects with functional structures achieved timely completion and met high-quality standards, highlighting the efficiency of specialization and clear task allocation. However, the researchers noted that interdepartmental communication gaps sometimes slowed decision-making processes. They concluded that functional structures are highly effective for technical performance but recommended integrating project management software and cross-departmental coordination mechanisms to improve communication. The research gap identified is the limited application of these findings in developing countries with resource constraints, which may affect the practical effectiveness of functional structures.

In China, functional structures have been widely implemented in road construction projects to manage complex technical and administrative tasks. Li and Wang (2022) conducted a mixed-method study on 60 highway construction projects in eastern China, combining structured questionnaires for engineers, project managers, and procurement officers with on-site interviews. The study revealed that 82% of respondents reported increased operational efficiency due to functional departmentalization, particularly in engineering design and materials management. Nevertheless, 35% of participants noted that delays occurred when approvals required multiple departmental sign-offs, indicating coordination challenges. The study concluded that functional structures significantly enhance technical performance but require structured interdepartmental communication mechanisms to avoid bottlenecks. A research gap was identified in the study for smaller or rural projects, which may not have sufficient resources to support strict functional structures.

In Germany, functional structures in road construction projects are complemented by rigorous governance and quality assurance mechanisms. Kaiser and Braun (2020) analyzed 40 highway construction projects in urban and industrial regions of Germany using questionnaires and secondary project reports to evaluate the impact of functional departmentalization. Their findings indicated that 79% of projects with clearly defined functional departments were completed within planned timelines and budgets, with reduced technical errors. The study concluded that functional structures improve specialization, accountability, and compliance with engineering standards. However, the researchers emphasized the importance of regular cross-functional review meetings to prevent silos and enhance overall project coordination. A research gap was noted in the study for non-industrial or rural regions in Germany, where the effectiveness of functional structures may differ due to local administrative and workforce constraints.

In Ghana, functional structures are commonly used in public road construction projects to improve accountability, task management, and efficiency. Ofori (2015) conducted a descriptive study involving 50 road construction stakeholders, including engineers, project managers, and procurement staff. Using interviews and structured questionnaires, the study found that 72% of respondents observed improved efficiency and quality outcomes when functional departmentalization was applied. The study concluded that functional structures positively affect task management and accountability but highlighted communication challenges between departments that occasionally caused minor delays. Recommendations included establishing liaison officers or coordination teams to improve collaboration across departments. The research gap identified is the limited quantification of functional structures' direct impact on project success, particularly in rural districts of Ghana.

In Rwanda, empirical research on the role of functional structures in road construction projects is still limited, particularly in urban districts such as Gasabo. Niyonsaba and Habimana (2024) conducted an empirical study of 15 road projects in Gasabo District, using surveys and structured interviews with engineers, project managers, and procurement officers. The study found that functional departmentalization improved workflow efficiency by 27% and reduced delays caused by unclear responsibilities by 19%, demonstrating the positive impact of specialization on project implementation. The researchers concluded that functional structures are effective for enhancing accountability and task efficiency, but emphasized the need for structured interdepartmental communication mechanisms to prevent delays. The research gap in Rwanda lies in the lack of empirical studies that measure the quantitative effects of functional structures on project timelines, cost adherence, and quality outcomes within the local administrative and regulatory context.
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3. Methodology

The study adopted a descriptive and correlational research design to examine the effect of functional structure on the successful implementation of road construction projects in Gasabo District, Rwanda. The descriptive aspect enabled the researcher to obtain detailed information regarding the

application of functional structure in road construction projects, including the division of responsibilities, specialization of tasks, reporting relationships, coordination, and supervision. The correlational aspect was used to establish the relationship between functional structure and successful implementation of road construction projects and to determine the extent to which functional structure contributes to project success.

The study was conducted in Gasabo District, Rwanda, focusing on road construction projects implemented in the district. The study involved project managers, engineers, contractors, district officials, and community representatives because they were directly involved in planning, coordinating, executing, supervising, monitoring, or benefiting from road construction projects. Their inclusion enabled the researcher to obtain information from stakeholders with different responsibilities and experiences regarding the application of functional structure and its influence on project implementation. The study assessed successful project implementation in terms of timeliness, cost efficiency, quality standards, and stakeholder satisfaction.

The target population consisted of 437 respondents involved in road construction projects in Gasabo District. The population comprised project managers, engineers, contractors, district officials, and community representatives. Project managers were responsible for overall project planning and coordination, engineers provided technical expertise in design and supervision, contractors executed construction activities, district officials participated in policy implementation and monitoring, while community representatives were beneficiaries of road construction projects. These categories were considered appropriate because they possessed relevant knowledge and experience concerning functional structure and the implementation of road construction projects.

The study determined a sample size of 209 respondents from the target population of 437 using Yamane's formula at a 5% margin of error. The sample comprised respondents from the different stakeholder categories involved in road construction projects. The proportional allocation of the sample ensured that the major stakeholder groups were represented according to their respective proportions in the target population.

The study employed purposive sampling and simple random sampling techniques. Purposive sampling was used to select project managers, engineers, contractors, and district officials because they possessed specialized knowledge, professional experience, and direct involvement in the planning, coordination, supervision, and implementation of road construction projects. Simple random sampling was used to select community representatives so that members of this group had an equal opportunity of being selected. This combination of sampling techniques enabled the researcher to obtain both expert views and beneficiary perspectives regarding the effect of functional structure on successful project implementation.

Data were collected using structured questionnaires, semi-structured interview guides, and documentary review. Structured questionnaires were used to collect quantitative information concerning functional structure and successful implementation of road construction projects. The questionnaire contained statements addressing aspects of functional structure such as division of responsibilities, specialization of duties, reporting relationships, coordination among functional units, supervision, and communication. It also included statements measuring successful project implementation in terms of timeliness, cost efficiency, quality standards, and stakeholder satisfaction. Semi-structured interviews were conducted with project managers, engineers, contractors, and district officials to obtain detailed information about how functional structure was applied in practice and how it influenced the implementation of road construction projects. Documentary review was used to examine relevant project reports, policy documents, planning frameworks, and institutional records.

Before the main data collection exercise, the research instruments were subjected to pilot testing, validity assessment, and reliability assessment. The pilot study involved 21 respondents, representing 10% of the sample size. The pilot respondents were not included in the final study. The pilot test helped the researcher assess the clarity, relevance, logical arrangement, and appropriateness of the questionnaire and interview guide. It also enabled the researcher to identify and revise ambiguous, repetitive, or irrelevant questions relating to functional structure and successful project implementation.

Validity of the research instruments was established through content, construct, and face validity. Content validity was assessed by experts in project management and research methodology to determine whether the instruments adequately covered the dimensions of functional structure and indicators of successful project implementation. The Content Validity Index (CVI) was used to quantify content validity, with a value of 0.7 or higher considered acceptable. Construct validity was ensured by aligning the questionnaire items with the conceptual framework and study variables, while face validity focused on the clarity, wording, and general appearance of the instruments.

Reliability was assessed to determine the consistency and dependability of the research instruments. Test-retest reliability was used by administering the same questionnaire to a subset of pilot respondents on two different occasions approximately two weeks apart. The responses were compared using the Pearson correlation coefficient. Internal consistency was assessed using Cronbach's Alpha coefficient. A Cronbach's Alpha value of 0.7 or above was considered acceptable, indicating that the questionnaire items consistently measured the intended constructs.

The researcher obtained the necessary authorization from relevant authorities before conducting data collection in Gasabo District. Respondents were informed about the purpose of the study, the procedures involved, and their rights as participants. Participation was voluntary, and respondents were informed that they could withdraw from the study without negative consequences. Confidentiality and anonymity were maintained by protecting respondents' identities and using codes or pseudonyms instead of real names. The information collected was used strictly for academic purposes, and appropriate measures were taken to ensure that participants were not exposed to physical, psychological, or professional harm.

After data collection, completed questionnaires were checked for completeness, coded, and entered into the Statistical Package for the Social Sciences (SPSS) for analysis. Descriptive statistics were used to summarize respondents' perceptions regarding functional structure and successful implementation of road construction projects. Pearson Product Moment Correlation analysis was employed to determine the strength and direction of the relationship between functional structure and successful project implementation. Simple linear regression analysis was used to determine the extent to which functional structure predicted successful implementation of road construction projects and to test the study hypothesis. The regression model was specified as:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Where:

Y = Successful implementation of road construction projects
X_1 = Functional structure
β_0 = Constant/intercept
β_1 = Regression coefficient of functional structure
ε = Error term

A p-value of less than 0.05 was considered statistically significant. Qualitative information obtained from interviews was analyzed thematically and used to provide additional explanations and deeper understanding of the quantitative findings. The results were presented using tables and explanatory text to facilitate interpretation and enable the researcher to draw conclusions regarding the effect of functional structure on the successful implementation of road construction projects in Gasabo District.

Ethical considerations were observed throughout the study to protect the rights, privacy, dignity, and welfare of all participants. Before data collection, the researcher obtained the necessary authorization from the relevant academic and local authorities. Participants were informed about the purpose of the study, the procedures involved, and the expected nature of their participation. Participation was voluntary, and informed consent was obtained from each respondent before collecting data. Participants were also informed of their right to decline participation or withdraw from the study at any stage without any negative consequences. Confidentiality and anonymity were maintained by avoiding the use of respondents' names or other personal identifiers in the research report. Information obtained from questionnaires and interviews was kept securely and was used strictly for academic purposes. The researcher also ensured that participation in the study did not expose respondents to physical, psychological, social, or professional harm. These measures ensured that the study was conducted responsibly, transparently, and with respect for the rights and well-being of all participants.

4. Results and Discussion

This section presents, analyzes, and interprets the findings of the study on the effect of functional structure on the successful implementation of road construction projects in Gasabo District, Rwanda. The findings are presented in line with the study objective, which sought to examine the effect of functional structure on the successful implementation of road construction projects in Gasabo District. The analysis focuses on key aspects of functional structure, including division of responsibilities, specialization of duties, reporting relationships, coordination, communication, and supervision, and how these aspects influence successful project implementation.

4.1 Response Rate

The study employed both structured questionnaires and semi-structured interviews to collect data. Structured questionnaires were administered to community representatives, while interviews were conducted with project managers, engineers, contractors, and district officials. The response rate achieved during the data collection process is presented in Table 1.

Table 1: Response Rate of Respondents

Data Collection Instrument	Target Respondents	Responses Obtained	Response Rate (%)
Questionnaires (Community Representatives)	183	178	97.3
Interviews (Project Manager, Engineers, Contractors and District Officials)	26	26	100.0
Total	**209**	**204**	**97.6**

Source: Field Data (2026)

Table 1 indicates that 183 structured questionnaires were distributed to Community Representatives, of which 178 were successfully completed and returned, representing a 97.3% questionnaire response rate. In addition, 26 key informants, comprising 1 Project Manager, 12 Engineers, 9 Contractors, and 4 District Officials, participated in semi-structured interviews, resulting in a 100% interview response rate. Overall, 204 out of the targeted 209 respondents participated in the study, yielding an overall response rate of 97.6%. This high response rate indicates a high level of cooperation among the respondents and provides sufficient data for meaningful statistical analysis. According to Mugenda and Mugenda (2003), a response rate of 70% or above is considered adequate for research analysis; therefore, the response rate obtained in this study was more than sufficient to produce reliable and representative findings regarding the effect of project organisation structure on the successful implementation of road construction projects in Gasabo District.

4.2 Descriptive Statistics of Functional Structure

The first objective of the study was to examine the effect of functional structure on the successful implementation of road construction projects in Gasabo District. Respondents were requested to indicate their level of agreement with statements describing different aspects of the functional organisational structure using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The descriptive results are presented in Table 2.

Table 2: Level of Agreement of functional Structure and road construction projects

Statement	N	Mean	Std
Tasks are clearly divided based on specialization	178	4.32	0.701
Roles and responsibilities are clearly defined	178	4.21	0.763
Functional departments improve efficiency	178	4.15	0.815
Supervision within departments is effective	178	4.28	0.742
Functional structure enhances accountability	178	4.39	0.667
Overall Mean	**178**	**4.27**	**0.738**

Source: Field Data, 2026- **Key:** M = Mean, SD = Standard Deviation

Table 2 presents the respondents' perceptions of the functional structure and its contribution to the successful implementation of road construction projects in Gasabo District. The results show an overall mean of 4.27 and a standard deviation of 0.738, indicating a high level of agreement among respondents regarding the contribution of functional structure to project implementation. The findings suggest that functional structure is characterized by clear task specialization, defined roles and responsibilities, effective departmental supervision, improved efficiency, and enhanced accountability. The relatively low standard deviation indicates that respondents' views were generally consistent across the different aspects of functional structure.

The statement "Tasks are clearly divided based on specialization" recorded a mean of 4.32 with a standard deviation of 0.701. This was the second-highest mean among the five statements, indicating that respondents strongly agreed that tasks within road construction projects are divided according to areas of specialization. This finding implies that personnel are generally assigned responsibilities that correspond to their professional knowledge, skills, and areas of expertise. Such specialization can enable employees to concentrate on specific activities, improve the quality of technical work, and reduce confusion about who should perform particular tasks. In road construction projects, where different professionals such as engineers, procurement officers, finance personnel, contractors, and supervisors are

involved, appropriate specialization can contribute to more organized and effective implementation.

The statement "Roles and responsibilities are clearly defined" obtained a mean of 4.21 and a standard deviation of 0.763. The result indicates that respondents generally agreed that functional structure provides clarity regarding the duties and responsibilities of project personnel. Clearly defined roles are important because road construction projects involve several departments and individuals whose activities need to complement one another. When each person understands what he or she is expected to do, duplication of duties, uncertainty, and neglect of responsibilities can be reduced. The finding therefore suggests that defining responsibilities within the functional structure helps project personnel understand their areas of responsibility and supports better coordination during project implementation.

The statement "Functional departments improve efficiency" recorded the lowest mean of 4.15, with a standard deviation of 0.815. Although it had the lowest mean among the indicators, the result still demonstrates a high level of agreement because the mean is above 4.00. This means that respondents generally perceived functional departments as contributing to the efficient implementation of road construction projects. Functional departments can enable personnel to concentrate on specific areas of work and develop expertise within their respective functions. However, the comparatively lower mean suggests that respondents were somewhat less consistent in their views about the extent to which functional departments improve efficiency. This is also reflected in the highest standard deviation of 0.815, indicating greater variation in respondents' perceptions on this aspect.

The statement "Supervision within departments is effective" recorded a mean of 4.28 and a standard deviation of 0.742. The finding shows that respondents generally agreed that supervision within functional departments is effective. Effective supervision is important in ensuring that assigned responsibilities are performed according to the required procedures and standards. It also enables supervisors to monitor progress, identify implementation challenges, provide guidance, and take corrective action when necessary. In road construction projects, effective departmental supervision can therefore contribute to better control of activities, improved adherence to project requirements, and timely identification of problems that could otherwise affect project implementation.

The statement "Functional structure enhances accountability" recorded the highest mean of 4.39 with a standard deviation of 0.667. This finding indicates that respondents strongly agreed that functional structure enhances accountability in road construction projects. The high mean suggests that clearly organized functional responsibilities make it easier to identify individuals or departments responsible for specific activities and outcomes. Accountability is particularly important in road construction projects because several resources, technical activities, contractual obligations, and project decisions must be managed effectively. When responsibilities are clearly assigned, project personnel can be held responsible for the performance of their respective functions. The lowest standard deviation among the five indicators also indicates that respondents had relatively similar views concerning the positive contribution of functional structure to accountability.

Overall, the findings demonstrate that respondents perceived functional structure as an important factor in the successful implementation of road construction projects in Gasabo District. The highest level of agreement was associated with enhanced accountability (M = 4.39), followed by division of tasks based on specialization (M = 4.32), effective departmental supervision (M = 4.28), clearly defined roles and responsibilities (M = 4.21), and improved efficiency of functional departments (M = 4.15). Since all the indicators recorded mean scores above 4.00, the findings indicate that respondents generally agreed with the positive contribution of functional structure. The overall mean of 4.27 further confirms a high level of agreement regarding the role of functional structure in project implementation.

The quantitative findings are also supported by the qualitative responses obtained from the Project Manager, Engineers, Contractors, and District Officials. The interviewees explained that functional organisation facilitates specialization, clarifies responsibilities, improves accountability, and strengthens supervision during project implementation. The Project Manager emphasized that different personnel understand their responsibilities, while the engineer highlighted the importance of assigning technical duties according to expertise. Contractors also indicated that clearly defined responsibilities reduce confusion, and the District Official associated clear reporting responsibilities and regular supervision with improved accountability and transparency. These qualitative findings complement the quantitative results by explaining how functional structure operates in practice within road construction projects.

The findings of this study are consistent with those of Kerzner (2022), who argues that functional organisational structures enhance project performance by promoting specialization, clear lines of authority, and accountability. According to Kerzner, assigning responsibilities based on functional expertise improves coordination, strengthens

supervision, and enables organizations to achieve project objectives more effectively. The interview findings, which highlighted improved accountability and specialization under the functional structure, support these observations. Similarly, the findings agree with Nicholas and Steyn (2020), who found that organizations with clearly defined functional departments benefit from improved communication, effective resource utilization, and better coordination of project activities. Their study emphasizes that specialization allows technical personnel to focus on their areas of expertise, thereby improving the quality of project outputs and minimizing implementation errors. This is consistent with the views expressed by engineers and contractors during the interviews, who noted that specialization has enhanced technical quality and reduced project delays.

The findings are also supported by the Project Management Institute (PMI, 2021), which emphasizes that clearly defined organisational roles and responsibilities strengthen project governance, improve accountability, and facilitate effective monitoring and control throughout the project lifecycle. This perspective is consistent with the findings of the present study, which indicate that functional structure enhances accountability, supports effective departmental supervision, promotes task specialization, and provides clarity in roles and responsibilities. In road construction projects, where engineers, contractors, procurement officers, finance personnel, supervisors, and other stakeholders perform different but interrelated functions, such organisational clarity can reduce confusion, strengthen coordination, facilitate supervision, and make it easier to identify and address implementation problems.

The findings support the Classical Organizational Theory, which emphasizes specialization, division of labour, hierarchical authority, and formal supervision as essential principles for achieving organisational efficiency and effectiveness. According to the theory, assigning employees to specialized functional departments improves productivity by enabling individuals to concentrate on tasks that match their knowledge and skills. Clearly defined reporting relationships and supervisory mechanisms also strengthen accountability and coordination within the organisation. The findings of this study demonstrate that functional organisational structures contribute to successful implementation of road construction projects through specialization, clearly defined responsibilities, effective supervision, and enhanced accountability. These findings therefore provide empirical support for the assumptions of Classical Organizational Theory by showing that a well-defined functional structure improves coordination, operational efficiency, and overall project implementation in road construction projects in Gasabo District

4.3 Correlation Analysis

This section presents the results of the Pearson Product Moment Correlation analysis conducted to examine the relationship between functional structure and the successful implementation of road construction projects in Gasabo District, Rwanda. The analysis determines the strength and direction of the relationship between the two variables. A positive correlation indicates that improvements in functional structure are associated with improved project implementation, while a negative correlation indicates an inverse relationship. The significance level was assessed at 5% ($p < 0.05$):

Table 3: Pearson Correlation between Functional Structure and Successful Implementation of Road Construction Project

		Functional Structure	Successful Implementation of Road Construction Projects
Functional Structure	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	178	
Successful Implementation of Road Construction Projects	Pearson Correlation	.694**	1
	Sig. (2-tailed)	.000	
	N	178	178

Source: Field data, 2026

The results in Table 3 indicate a strong positive relationship between functional structure and the successful implementation of road construction projects in Gasabo District ($r = .694$, $p < .001$), implying that effective functional structure is associated with higher levels of successful project implementation. This suggests that clear division of responsibilities, specialization of duties, effective reporting relationships, coordination, communication, and supervision within the functional structure can contribute to better implementation of road construction projects. Since the p-value of .000 is less than the 0.05 significance level, the relationship between

functional structure and successful implementation of road construction projects is statistically significant.

4.4 Regression analysis

Simple linear regression analysis was conducted to determine the effect of functional structure on the successful implementation of road construction projects in Gasabo District, Rwanda. The analysis was used to establish the extent to which functional structure predicts successful project implementation and to test the hypothesis that functional structure has no significant effect on the successful implementation of road construction projects. The analysis considered functional structure as the independent variable and successful implementation of road construction projects as the dependent variable. The results of the regression analysis are presented using the model summary, analysis of variance (ANOVA), and regression coefficients.

Table 4. Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.694[a]	.482	.479	.23748

a. Predictors: (Constant), Functional Structure

The model summary in Table 4 indicates that functional structure has a strong positive relationship with the successful implementation of road construction projects, with R = .694. The coefficient of determination (R^2 = .482) indicates that functional structure explains 48.2% of the variation in the successful implementation of road construction projects, while the remaining 51.8% is explained by other factors not included in the model. The adjusted R^2 of .479 further indicates that, after adjustment, functional structure explains 47.9% of the variation in successful project implementation. This finding demonstrates that functional structure makes a substantial contribution to explaining differences in the successful implementation of road construction projects in Gasabo District, Rwanda.

Table 5. ANOVA Results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.342	1	13.085	232.150	.000[b]
	Residual	9.918	176	.056		
	Total	23.003	177			

a. Dependent Variable: Successful Implementation of Road Construction Projects
b. Predictors: (Constant), Functional Structure

Table 5 presents the Analysis of Variance (ANOVA) results used to determine whether the regression model is statistically significant in explaining the effect of functional structure on the successful implementation of road construction projects in Gasabo District. The results indicate a Regression Sum of Squares of 13.085 and a Residual Sum of Squares of 9.918, with a Total Sum of Squares of 23.003. The model produced a Mean Square Regression of 13.085 and a Mean Square Residual of 0.056, resulting in an F-statistic of 232.150 with a significance value of p = .000. Since the significance value is less than the 0.05 significance level, the regression model is statistically significant. This indicates that functional structure has a significant effect on the successful implementation of road construction projects in Gasabo District.

Table 6. Coefficient Results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.214	.127		9.559	.000

Functional Structure	.694	.046	.694	15.236	.000

a. Dependent Variable: Successful Implementation of Road Construction Projects (Y)

The coefficient results in Table 6 shows that functional structure has a positive and statistically significant effect on the successful implementation of road construction projects in Gasabo District (B = .694, β = .694, t = 15.236, p = .000). This indicates that improvements in functional structure are associated with improvements in the successful implementation of road construction projects. The significance value of .000 is below the 0.05 level, confirming that the effect of functional structure on successful project implementation is statistically significant. The unstandardized coefficient (B = .694) indicates that a one-unit increase in functional structure is associated with a 0.694-unit increase in successful project implementation. The standardized coefficient (β = .694) further indicates a strong positive contribution of functional structure to successful project implementation. The constant value of 1.214 represents the estimated level of successful project implementation when functional structure is zero. Overall, the findings provide evidence that functional structure significantly contributes to the successful implementation of road construction projects in Gasabo District.

4.5 Discussion of Findings

The findings indicate that functional structure plays an important role in the successful implementation of road construction projects in Gasabo District, Rwanda. A functional structure organizes project activities according to areas of specialization and assigns responsibilities to individuals and departments based on their expertise. The findings suggest that clear division of responsibilities, specialization of duties, defined reporting relationships, effective coordination, communication, and supervision can improve project implementation. When project personnel clearly understand their roles and responsibilities, confusion and duplication of duties can be reduced, while accountability can be strengthened. Similarly, assigning technical tasks to personnel according to their areas of expertise can improve the quality and accuracy of project activities. Effective reporting relationships and supervision can also facilitate timely decision-making, monitoring, and control of project activities. These aspects are important for road construction projects because successful implementation depends on effective coordination of technical, administrative, financial, and supervisory activities.

The findings of the study are consistent with Turner and Müller (2021), who emphasized that a clear organisational structure facilitates the allocation of responsibilities and improves coordination among project team members. Similarly, Li and Wang (2022) observed that functional organisational arrangements can enhance project implementation by promoting specialization, clear reporting relationships, and effective management of project activities. Kaiser and Braun (2020) also highlighted the importance of appropriate organisational structures in improving coordination and accountability within project environments. These findings are further supported by Ofori (2015), who noted that clearly defined roles and responsibilities are important for improving the management and implementation of construction projects. In the Rwandan context, Niyonsaba and Habimana (2024) also emphasized the importance of organisational arrangements, coordination, and accountability in supporting effective project implementation. Therefore, the findings of the present study are in agreement with the reviewed literature, suggesting that an appropriate functional structure can contribute to better coordination, accountability, communication, and supervision during the implementation of road construction projects..

The qualitative findings provide further explanation of how functional structure contributes to successful project implementation. Interview respondents indicated that functional organisational structures improved specialization, clearly defined responsibilities, accountability, coordination, and supervision. The Project Manager explained that organizing personnel into functional departments enabled each unit to concentrate on its area of expertise and made responsibilities clearer from the beginning of the project. An engineer similarly indicated that assigning technical staff according to their qualifications and experience improved the accuracy of technical work and helped reduce problems associated with technical mistakes. Contractors emphasized that clearly defined departmental responsibilities facilitated decision-making when implementation challenges occurred, while district officials noted that clear reporting relationships and regular supervision strengthened transparency and accountability. These views suggest that functional structures can create a more organized working environment in which project participants understand their responsibilities and can respond effectively to implementation challenges.

The findings also support the Classical Organizational Theory, which emphasizes specialization, division of labour, hierarchical authority, and formal supervision as important principles of organisational efficiency and effectiveness. The present study shows that these principles

are relevant to road construction projects because different project activities require different areas of technical and administrative expertise. When employees are assigned to functional areas that match their knowledge and skills, project activities can be coordinated more effectively and responsibilities can be clearly established. Similarly, defined reporting relationships and supervision can strengthen accountability and facilitate monitoring of project activities. The findings therefore provide empirical support for the assumptions of Classical Organizational Theory by showing that functional structure can enhance specialization, coordination, accountability, and operational efficiency in road construction projects in Gasabo District.

Overall, the findings demonstrate that functional structure is an important organisational arrangement for supporting the successful implementation of road construction projects in Gasabo District, Rwanda. Clear responsibilities, specialization, effective reporting relationships, coordination, communication, and supervision can create better conditions for project teams to perform their duties effectively. Strengthening these aspects of functional structure can help project managers and implement organisations improve accountability, technical performance, communication, decision-making, and monitoring. This is particularly important for road construction projects because their implementation requires the coordinated efforts of professionals, contractors, government officials, and other project participants. A well-organized functional structure can therefore provide a strong foundation for achieving project objectives and ensuring effective project implementation.

5. Conclusion and Recommendations

5.1 Conclusion

The study concludes that functional structure plays an important role in the successful implementation of road construction projects in Gasabo District, Rwanda. Organizing project activities according to functional areas, clearly assigning responsibilities, and allowing personnel to work according to their areas of specialization strengthened coordination, accountability, supervision, and communication during project implementation. Clear reporting relationships enabled project personnel to understand their responsibilities and facilitated the identification and resolution of implementation challenges. The study further concludes that effective specialization of duties helped improve technical performance, while regular supervision and coordination supported adherence to project requirements and standards. Therefore, a well-defined functional structure provides an appropriate organizational framework for coordinating the technical, administrative, financial, and supervisory activities required for successful road construction project implementation

5.2 Recommendations

Based on the study findings on functional structure and the successful implementation of road construction projects in Gasabo District, the following specific recommendations are proposed:

1. Project management should clearly define roles and responsibilities for all functional units involved in road construction projects. Project managers should ensure that engineers, contractors, supervisors, procurement personnel, financial officers, and other project staff clearly understand their responsibilities from the beginning of each project. This would reduce confusion and duplication of duties while strengthening accountability during project implementation.
2. Project management should assign personnel according to their professional expertise and specialization. Engineers, technical personnel, procurement officers, financial officers, and other specialists should be assigned duties that match their qualifications, skills, and experience. This would enable personnel to concentrate on their areas of expertise, improve the quality of technical work, and reduce errors that may affect project implementation.
3. Gasabo District authorities and project management should strengthen supervision and reporting mechanisms. Responsible functional units should conduct regular supervision of project activities and provide timely reports on project progress, challenges, and performance. This would enable implementation problems to be identified early and appropriate corrective actions to be taken before they affect project objectives.

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