Volume 11, Issue 8, August– 2026 International Journal of Innovative Science and Research Technology
ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug1385

Effect of Total Quality Management on Project Performance, a Case of Construction of Karenge Water Treatment Plant Expansion Project

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Publication Date: 2026/09/08

Abstract: This study examined the effect of Total Quality Management (TQM) on the performance of the Karenge Water Treatment Plant Expansion Project in Rwanda. Specifically, it assessed the effects of quality planning, quality assurance, and quality control on project performance. The study adopted descriptive and correlational research designs and used a quantitative approach. The target population comprised 175 respondents who were selected using the census method. Data were collected through structured questionnaires, of which 169 were completed and returned, representing a response rate of 96.6%. Data were analyzed using descriptive and inferential statistics. The regression results revealed that quality planning positively influenced project performance, with a one-unit increase resulting in a 0.090-unit increase in performance. Quality assurance also had a positive effect, producing a 0.029-unit increase in project performance, while quality control recorded the strongest contribution, with a 0.526-unit increase. The regression model explained 34.3% of the variation in project performance, and the overall model was statistically significant. The study concluded that quality planning, quality assurance, and quality control contributed positively to the performance of the Karenge Water Treatment Plant Expansion Project, with quality control making the strongest unique contribution. The study recommended updating project quality management plans, establishing clear acceptance criteria and inspection schedules, conducting periodic independent quality assurance reviews, strengthening personnel training and document control, and consistently applying approved inspection and testing procedures to improve project performance.

Keywords: *Total Quality Management, Quality Planning, Quality Assurance, Quality Control, Project Performance*.

How to Cite: Philbert Nsabimana; Dr. Luqman Afolabi; Tunezerwe Emmanuel (2026) Effect of Total Quality Management on Project Performance, a Case of Construction of Karenge Water Treatment Plant Expansion Project.
International Journal of Innovative Science and Research Technology, 11(8), 3098-3105.
https://doi.org/10.38124/ijisrt/26aug1385

I. INTRODUCTION

The construction industry plays an important role in local and global economic development through its contribution to Gross Domestic Product (GDP), employment creation, and the provision of essential infrastructure (Ozcelik, 2026). Construction projects, however, continue to experience challenges associated with delays, cost escalation, poor workmanship, and inadequate quality management. Effective management of budgets, contracts, administration, subcontracting, safety, and quality is therefore essential for successful project delivery (Ghansah & Edwards, 2024). Total Quality Management (TQM) provides an integrated approach that shifts attention from merely detecting defects to continuous improvement across project activities and organizational processes.

Globally, TQM has been associated with improved client service, reduced rework costs, continuous improvement, and better project outcomes. Nevertheless, its implementation continues to face challenges resulting from differences in project environments, inadequate quality practices, limited coordination, and resistance to change. In China, quality challenges such as cracks, air pockets in off-site manufactured components, and poor sleeve grouting have affected construction quality, while projects in Canada have experienced increased costs and delays associated with inadequate quality control and poor interdepartmental coordination (Liu et al., 2022). Similar challenges have been reported in the United Kingdom and Turkey, where weaknesses in quality assurance and quality control have contributed to financial losses, rework, structural problems, and project delays (Ghansah & Edwards, 2024; Ozcelik, 2026).

In Africa, ineffective implementation of quality management systems has remained a significant challenge within the construction sector. Ghana, Nigeria, and South Africa have experienced inadequate quality planning, fragmented stakeholder participation, insufficient site inspections, defective materials, non-compliance, rework, and structural deficiencies (Adewumi, 2024; Ajayi et al.,

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2024; Bukari et al., 2026). These weaknesses have contributed to cost and schedule overruns and reduced the ability of construction projects to achieve their intended outcomes. Effective quality planning, assurance, and control are therefore increasingly important for strengthening construction project performance.

Within East Africa, construction projects in Kenya, Tanzania, Uganda, and Rwanda have experienced cost overruns, delays, material waste, and inadequate project controls associated with weaknesses in quality management (Tukundane & Yang, 2024). Tanzania has experienced challenges related to increased material costs, while quality problems and rework in Kenya have contributed to delays, financial losses, and contractual disputes (Nindie, 2023; Gacheru, 2025). Uganda has similarly faced challenges associated with weak project controls, schedule development, and risk management. These experiences demonstrate the importance of establishing effective quality management systems throughout the construction project lifecycle.

In Rwanda, weaknesses in quality management have been associated with time and budget overruns, structural deficiencies, rework, and safety risks in construction projects. More than 45.8% of construction projects were reported to experience schedule and cost overruns associated with inadequate management and site leadership (Tukundane & Yang, 2024). Niyonizera and Wabala (2025) also identified poor quality control and inadequate preliminary design documents among the factors contributing to delays and cost escalation in Rwandan construction projects. Defective materials, poor workmanship, design changes, and inadequate supervision have further increased the need for effective quality management practices.

The Karenge Water Treatment Plant Expansion Project in Rwamagana District was undertaken within this broader infrastructure context to contribute to meeting increasing water demand. However, the project faced quality-related concerns, including inadequate preliminary designs, rework arising from defective materials, and weaknesses in quality control, which could increase project lifecycle costs. At the broader water-sector level, non-revenue water was reported at approximately 39%, while electricity represented a substantial proportion of operation and maintenance costs associated with water pumping (Ogata et al., 2024). The expansion therefore required strict adherence to technical specifications and effective quality management to minimize non-conformities, structural problems, delays, and unnecessary costs.

Despite increased investment in infrastructure development in Rwanda, water construction projects continued to experience delays and cost overruns associated with weaknesses in quality management systems. The challenges surrounding the Karenge Water Treatment Plant Expansion Project highlighted the importance of ensuring that quality was effectively planned, assured, and controlled throughout project implementation. Without appropriate quality management practices, defects and non-conformities could result in rework, increased costs, delayed completion, and reduced project performance.

Previous studies examined different aspects of TQM and construction project performance. Ajayi et al. (2024) examined the impact of TQM on construction project delivery in Nigeria, while Alhmoudi and Bennett-Gillison (2026) investigated enabling and constraining factors affecting TQM implementation in the United Arab Emirates construction industry. In Rwanda, Baributsa and Njenga (2023) examined project cost control and construction project performance. However, limited empirical evidence existed on how specific TQM practices—particularly quality planning, quality assurance, and quality control—affected the performance of large public water infrastructure projects in Rwanda. This study addressed this contextual and empirical gap by focusing specifically on the Karenge Water Treatment Plant Expansion Project in Rwamagana District.

This study therefore assessed the effect of Total Quality Management on the performance of the Karenge Water Treatment Plant Expansion Project in Rwanda.

➢ *The Study was Guided by the Following Specific Objectives:*

- To assess the effect of quality planning on the performance of the Karenge Water Treatment Plant Expansion Project.
- To examine the effect of quality assurance on the performance of the Karenge Water Treatment Plant Expansion Project.
- To evaluate the effect of quality control on the performance of the Karenge Water Treatment Plant Expansion Project.

➢ *The Study Tested the Following Null Hypotheses:*

- H01: There is no significant effect of quality planning on the performance of the Karenge Water Treatment Plant Expansion Project.
- H02: There is no significant effect of quality assurance on the performance of the Karenge Water Treatment Plant Expansion Project.
- H03: There is no significant effect of quality control on the performance of the Karenge Water Treatment Plant Expansion Project.

II. LITERATURE REVIEW

This section reviews the key concepts, theories, and empirical studies related to Total Quality Management and project performance. It focuses on quality planning, quality assurance, quality control, and project performance, and identifies the research gap addressed by the study.

➢ *Conceptual Review*

- *Total Quality Management*

Total Quality Management refers to an organization-wide approach aimed at continuously improving processes, reducing defects, and increasing customer and stakeholder

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug1385

satisfaction (Nindie, 2023). In construction projects, TQM promotes a shift from detecting defects after they occur toward preventing quality problems throughout the project lifecycle. Effective implementation of TQM has been associated with reduced rework, lower quality-related costs, improved operational efficiency, and greater stakeholder satisfaction. However, its implementation may be constrained by weak workforce skills, inadequate standards, limited training, supply-chain challenges, and resistance to change (Alawag et al., 2023; Adewumi, 2024). Alhmoudi and Bennett-Gillison (2026) further showed that leadership commitment and employee training are important factors influencing successful TQM implementation in construction organizations.

- *Quality Planning*

Quality planning involves establishing quality objectives, standards, procedures, responsibilities, and measurable criteria before and during project implementation (Tang, 2021). Effective quality planning enables project teams to identify requirements early, minimize scope changes, allocate resources efficiently, and reduce defects and rework. Studies have shown that quality planning positively influences operational outcomes such as defect reduction, cost control, timely delivery, and compliance with project requirements (Ajayi et al., 2024; Niyonizera & Wabala, 2025). Nevertheless, quality planning may become ineffective when it is poorly integrated with organizational operations or when inadequate resources and training limit implementation. Therefore, effective integration between project plans, stakeholders, and supply chains is essential for achieving better project performance.

- *Quality Assurance*

Quality assurance is a preventive and process-oriented approach designed to ensure that project activities follow established standards and procedures. It focuses on preventing defects before they occur through standardized processes, compliance monitoring, documentation, staff competence, and continuous review (Owolabi et al., 2024). Effective quality assurance can reduce costly rework, improve workflow efficiency, strengthen stakeholder confidence, and enhance compliance with project specifications. Standardized quality assurance processes also improve communication among project participants and support better cost and schedule performance (Ghansah & Edwards, 2024; Gacheru, 2025). However, quality assurance practices may be weakened by employee resistance, limited participation, and excessive emphasis on compliance rather than continuous quality improvement (Adewumi, 2024).

- *Quality Control*

Quality control refers to the continuous inspection, testing, measurement, and comparison of project outputs against established quality standards (Baributsa & Njenga, 2023). It helps project managers identify defects, monitor compliance, minimize waste, and implement corrective actions. Continuous quality inspections throughout the project lifecycle can improve project performance by reducing material losses, preventing rework, and ensuring that project outputs conform to technical requirements (Alzoubi et al., 2022; Ozcelik, 2026). Although some studies suggest that quality control inspections may increase project duration because of the time required for testing, other studies indicate that effective quality control reduces overall delays by identifying defects before they become more costly to correct (Ajayi et al., 2024; Adewumi, 2024).

- *Project Performance*

Project performance refers to the extent to which a project achieves its planned objectives in relation to time, cost, quality, scope, and stakeholder expectations (Alhmoudi & Bennett-Gillison, 2026). These dimensions are interrelated, meaning that changes in one area may influence the others. In construction projects, effective quality planning, assurance, and control can contribute to improved performance by reducing defects, minimizing rework, controlling costs, and supporting timely project completion. Project performance therefore depends not only on completing activities but also on achieving required technical standards, efficient resource utilization, and stakeholder satisfaction (Ajayi et al., 2024; Tukundane & Yang, 2024).

➢ *Theoretical Review*

- *Rational Comprehensive Planning Model*

The Rational Comprehensive Planning Model provides a systematic approach to identifying problems, setting objectives, evaluating alternatives, selecting appropriate actions, and monitoring implementation. The model emphasizes evidence-based decision-making and clearly defined performance criteria (Tang, 2021; Anam & Al Faizi, 2026). In this study, the model supported quality planning by explaining how clear objectives, technical standards, resource requirements, alternatives, and monitoring mechanisms could be established before implementation. It was therefore relevant in examining how quality planning influenced the performance of the Karenge Water Treatment Plant Expansion Project.

- *Assurance Theory*

Assurance Theory emphasizes proactive verification, accountability, compliance, and the prevention of project problems before they negatively affect project outcomes. It supports continuous examination of governance, risk, and control systems to ensure that activities comply with established requirements (Owolabi et al., 2024). Within the Karenge Water Treatment Plant Expansion Project, the theory was relevant in explaining how quality assurance procedures, technical standards, documentation, and compliance monitoring could reduce rework, waste, and operational failures. The theory therefore underpinned the relationship between quality assurance and project performance.

- *Control Theory*

Control Theory explains how performance can be maintained through continuous measurement, comparison of actual results with expected standards, feedback, and corrective action. In water infrastructure projects, measurements and monitoring provide information that enables managers to identify deviations and take corrective

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug1385

measures before problems become severe (Kerkar, 2020; Schiele et al., 2024). The theory was relevant to this study because quality control involved inspections, testing, performance monitoring, and corrective actions aimed at ensuring that construction outputs met established project standards.

➢ *Empirical Review*

- *Quality Planning and Project Performance*

Empirical studies have demonstrated that structured quality planning contributes to improved project outcomes. Amaral Féris et al. (2021) found that structured planning and knowledge development improved project planning quality, while Pop and Ţîţu (2020) emphasized the importance of standardized quality planning procedures in preventing defects and non-conformities. Syreyshchikova et al. (2021) similarly showed that quality planning approaches could help translate stakeholder requirements into technical specifications. However, these studies largely focused on software, manufacturing, and aerospace environments rather than public water infrastructure projects. This created the need to examine quality planning within a large construction project such as the Karenge Water Treatment Plant Expansion Project.

- *Quality Assurance and Project Performance*

Gacheru (2025) examined quality assurance practices among building contractors in Nairobi and demonstrated the importance of effective quality assurance systems in construction performance. Ghansah and Edwards (2024) highlighted the growing contribution of digital technologies to construction quality assurance, while Owolabi et al. (2024) emphasized the role of technical specifications in ensuring compliance and reducing quality failures. However, most of these studies focused on general building construction, organizational practices, or technology adoption. Limited evidence existed regarding the direct influence of quality assurance on the performance of a large water treatment infrastructure project in Rwanda.

- *Quality Control and Project Performance*

Studies have also shown that effective quality control can strengthen project performance. Ozcelik (2026) examined the relationship between quality assurance, quality control, TQM, cost efficiency, and rework in construction projects and demonstrated the importance of quality control in minimizing financial exposure and defective work. Liu et al. (2022) identified quality control as a major challenge in off-site construction and emphasized the growing role of digital technologies in quality monitoring. However, these studies were conducted in contexts that differed from traditional on-site water infrastructure construction in Rwanda. This justified examining quality control within the Karenge Water Treatment Plant Expansion Project.

➢ *Research Gap*

Previous studies established that Total Quality Management practices influence construction project outcomes, but significant contextual and empirical gaps remained. Most previous studies were conducted in manufacturing, software development, building construction, off-site construction, or contexts outside Rwanda. Studies conducted in Rwanda largely concentrated on cost control and general construction performance rather than examining the combined and individual effects of quality planning, quality assurance, and quality control on large public water infrastructure projects. Furthermore, limited empirical evidence existed on how these three TQM dimensions affected project performance within the specific technical and institutional environment of a water treatment plant expansion project. This study addressed this gap by examining the effect of quality planning, quality assurance, and quality control on the performance of the Karenge Water Treatment Plant Expansion Project in Rwamagana District, Rwanda.

➢ *Conceptual Framework*

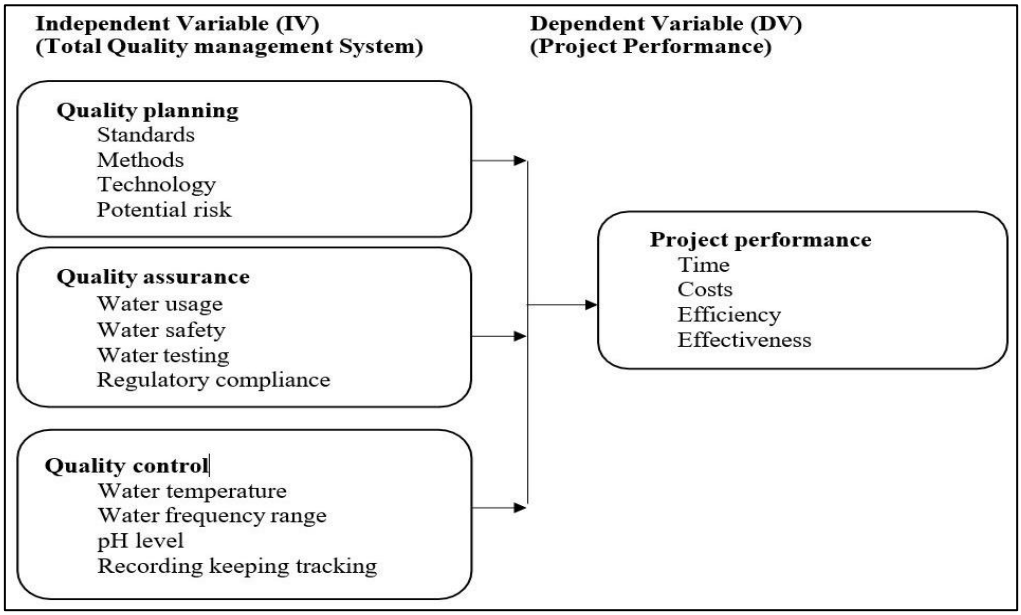

Fig 1 Conceptual Framework

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug1385

III. METHODOLOGY

➢ *Research Design:*

This study employed both descriptive and correlational research designs using a quantitative approach. The descriptive design was used to describe Total Quality Management practices in the Karenge Water Treatment Plant Expansion Project, while the correlational design was used to assess the relationships between quality planning, quality assurance, quality control, and project performance.

➢ *Population and Sample:*

The target population consisted of 175 respondents associated with the Karenge Water Treatment Plant Expansion Project, comprising 12 project management staff, 97 project implementers, and 66 project beneficiaries represented through their committees. Since the population was manageable, the study adopted the census method, whereby all 175 members of the target population were included in the study.

➢ *Data Collection Tools:*

The study used primary quantitative data collected through a structured questionnaire. The questionnaire consisted of closed-ended statements measured using a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. It covered respondents' demographic characteristics, quality planning, quality assurance, quality control, and project performance. Data processing involved editing, coding, and tabulation before entry into SPSS version 25 for analysis. Descriptive statistics, Pearson correlation, and multiple linear regression were used to analyze the data. The Content Validity Index (CVI) was 0.916 (91.6%), which exceeded the acceptable threshold of 0.80 and confirmed the validity of the research instrument.

➢ *Reliability:*

Reliability of the research instrument was assessed using Cronbach's Alpha. A pilot study involving 18 respondents from the Kanzenze Water Treatment Plant Expansion Project was conducted before the main study. The overall Cronbach's Alpha coefficient was 0.914 for 20 questionnaire items, exceeding the recommended threshold of 0.70 and demonstrating excellent internal consistency of the instrument.

Table 1 Reliability Statistics

Measure	Number of Items	Cronbach's Alpha	Interpretation
Overall research instrument	20	0.914	Excellent reliability

Source: Field Data, 2026

IV. FINDINGS AND DISCUSSION

A total of 175 questionnaires were administered to respondents, of which 169 were successfully completed and returned, representing a response rate of 96.5%. Three questionnaires were returned incomplete and three were not returned. The high response rate provided sufficient data for statistical analysis. The respondents included project management staff, project implementers, and project beneficiaries who were directly associated with the Karenge Water Treatment Plant Expansion Project.

➢ *Descriptive Findings*

The descriptive analysis assessed respondents' perceptions of quality planning, quality assurance, quality control, and the performance of the Karenge Water Treatment Plant Expansion Project using means and standard deviations.

- *Quality Planning and Project Performance*

The findings showed that respondents generally agreed that quality planning was practiced within the Karenge Water Treatment Plant Expansion Project, with an overall mean of 3.64 (SD = 0.716). Quality planning to facilitate project management recorded the highest mean of 3.71 (SD = 0.717), followed by planning to monitor and regulate water development providers at 3.66 (SD = 0.785). Planning for the development of water and safety protocols recorded a mean of 3.61 (SD = 0.838), while planning to support water procedure testing recorded 3.59 (SD = 0.847). These results indicated generally positive perceptions of quality planning practices within the project.

The findings were consistent with Alhmoudi and Bennett-Gillison (2026), who argued that effective quality planning improved project performance by clearly documenting project requirements, reducing scope changes, identifying failures earlier, and supporting cost and schedule performance. The results also supported the Rational Comprehensive Planning Model, which emphasized systematic objective setting, technical standards, evidence-based decision-making, implementation planning, and continuous monitoring.

- *Quality Assurance and Project Performance*

The findings revealed a high level of agreement regarding quality assurance practices, with an overall mean of 3.80 (SD = 0.647). Compliance with water safety regulations recorded the highest mean of 3.84 (SD = 0.597), followed by water testing for different parameters at 3.82 (SD = 0.620) and quality assurance for cleanliness and hygiene at 3.81 (SD = 0.645). Implementation of quality assurance throughout the water-processing stages recorded a mean of 3.75 (SD = 0.728). These findings demonstrated that respondents positively perceived the contribution of quality assurance to project implementation.

The findings agreed with Owolabi et al. (2024), who described quality assurance as a preventive and process-oriented approach that minimizes defects, reduces costly rework, strengthens process discipline, and increases stakeholder confidence. The findings also supported Assurance Theory by demonstrating the importance of continuous verification, accountability, compliance with

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug1385

established procedures, and prevention of quality failures.

- *Quality Control and Project Performance*

Quality control practices were also positively rated, recording an overall mean of 3.69 (SD = 0.756). Verification of established cleaning and sanitation activities received the highest mean of 3.89 (SD = 0.567). Continuous verification of water management processes recorded 3.75 (SD = 0.728), inspection of detailed water procedures recorded 3.65 (SD = 0.831), while water record-keeping and tracking recorded 3.49 (SD = 0.900). The findings therefore indicated that quality control was actively applied through inspection, verification, monitoring, and record keeping.

The results supported Baributsa and Njenga (2023), who emphasized that quality control involves continuously comparing project outputs with established quality standards and implementing corrective measures where deviations occur. The findings were also consistent with Control Theory, which emphasizes continuous measurement, feedback, comparison with established standards, and corrective action to maintain desired performance.

- *Performance of the Karenge Water Treatment Plant Expansion Project*

Respondents generally expressed positive perceptions regarding project performance, with an overall mean of 3.62 (SD = 0.852). Meeting technical specifications recorded the highest mean of 3.69 (SD = 0.786), followed by remaining within the approved budget at 3.67 (SD = 0.890). Completion of planned milestones on schedule and achievement of planned outputs both recorded a mean of 3.56, with standard deviations of 0.878 and 0.857, respectively. The findings indicated that the project performed positively in terms of schedule, budget, technical specifications, and achievement of planned outputs.

➢ *Correlation Analysis*

Pearson correlation analysis was conducted to determine the strength and direction of the relationship between the three Total Quality Management dimensions and project performance.

Table 2 Correlation Between TQM Practices and Project Performance

Variable	Pearson Correlation (r)	Sig. (2-tailed)	Interpretation
Quality Planning	0.256**	0.001	Weak positive significant relationship
Quality Assurance	0.328**	<0.001	Weak positive significant relationship
Quality Control	0.574**	<0.001	Moderate positive significant relationship

** Correlation is Significant at the 0.01 Level (2-Tailed).
Source: Field Data, 2026

The findings revealed that quality planning was positively and significantly correlated with project performance ($r = 0.256$, $p = 0.001$). Quality assurance also had a positive and significant relationship with project performance ($r = 0.328$, $p < 0.001$). Quality control recorded the strongest relationship with project performance ($r = 0.574$, $p < 0.001$), indicating a moderate positive association. Therefore, improvements in each TQM dimension were associated with improvements in project performance at the bivariate level, with quality control showing the strongest relationship.

These findings were consistent with Tang (2021), who emphasized the role of comprehensive quality planning in establishing standards, responsibilities, and measurable quality criteria. They also supported Owolabi et al. (2024), who associated quality assurance with defect prevention, reduced rework, and improved stakeholder confidence, and Baributsa and Njenga (2023), who emphasized continuous quality control as an important mechanism for maintaining conformity with established project standards.

➢ *Regression Analysis*

Multiple linear regression analysis was conducted to determine the combined and individual effects of quality planning, quality assurance, and quality control on the performance of the Karenge Water Treatment Plant Expansion Project.

Table 3 Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.585	0.343	0.331	0.49507

Source: Field Data, 2026

The model produced an R value of 0.585, indicating a moderate positive relationship between the combined TQM dimensions and project performance. The R^2 value of 0.343 indicated that quality planning, quality assurance, and quality control jointly explained 34.3% of the variation in project performance, while the remaining 65.7% was attributable to other factors outside the model.

The ANOVA results further showed that the overall regression model was statistically significant ($F = 28.660$, $p < 0.001$). This demonstrated that quality planning, quality assurance, and quality control collectively provided a statistically significant explanation of variation in project performance.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug1385

Table 4 Regression Coefficients

Predictor	B	Std. Error	Beta	t	Sig.
Constant	1.239	0.308	—	4.023	<0.001
Quality Planning	0.090	0.080	0.100	1.127	0.261
Quality Assurance	0.029	0.111	0.025	0.259	0.796
Quality Control	0.526	0.069	0.538	7.655	<0.001

Dependent Variable: Project Performance
Source: Field Data, 2026

The regression equation was expressed as:

Project Performance = 1.239 + 0.090(QP) + 0.029(QA) + 0.526(QC)

Quality planning had a positive but statistically insignificant effect on project performance (B = 0.090, β = 0.100, t = 1.127, p = 0.261). Therefore, although increased quality planning was associated with improved performance, its unique contribution was not statistically significant when quality assurance and quality control were simultaneously included in the model.

Quality assurance similarly had a positive but statistically insignificant effect (B = 0.029, β = 0.025, t = 0.259, p = 0.796). This indicated that quality assurance did not independently make a statistically significant contribution to project performance after controlling for the other TQM dimensions.

In contrast, quality control had a strong positive and statistically significant effect on project performance (B = 0.526, β = 0.538, t = 7.655, p < 0.001). Holding other variables constant, a one-unit increase in quality control was associated with a 0.526-unit increase in project performance. Quality control therefore emerged as the strongest and only statistically significant independent predictor of project performance in the regression model.

➢ *Hypothesis Testing*

Table 5 Summary of Hypothesis Testing

Hypothesis	p-value	Decision
H01: Quality planning has no significant effect on project performance.	0.261	Accepted / Failed to reject H01
H02: Quality assurance has no significant effect on project performance.	0.796	Accepted / Failed to reject H02
H03: Quality control has no significant effect on project performance.	<0.001	Rejected

Source: Field Data, 2026

Based on the regression results, H01 was not rejected because quality planning had no statistically significant independent effect on project performance (p = 0.261 > 0.05). Similarly, H02 was not rejected because the effect of quality assurance was statistically insignificant (p = 0.796 > 0.05). However, H03 was rejected because quality control had a statistically significant positive effect on project performance (p < 0.001).

V. CONCLUSION

The study concluded that Total Quality Management contributed positively to the performance of the Karenge Water Treatment Plant Expansion Project. Quality planning supported effective resource utilization and project implementation, while quality assurance contributed to compliance with established standards and improved project processes. Quality control also positively influenced project performance through continuous inspection, verification, and monitoring of project activities. Overall, quality planning, quality assurance, and quality control were positively associated with project performance. However, the regression findings showed that quality control made the strongest and only statistically significant unique contribution to project performance, while quality planning and quality assurance had positive but statistically insignificant individual effects. Therefore, strengthening quality control practices was particularly important for improving the performance of the Karenge Water Treatment Plant Expansion Project.

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