JRIIE Journal of Research Innovation and Implications in Education
Center for Research Implications & Practice

Website:www.jriiejournal.com. ISSN 2520-7504 (Online) Vol.9, Iss.4, 2025 (pp. 759 - 764)

Stakeholder Needs Identification and High School Kitchen Construction Project Performance in Kirehe District

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Abstract: *This study examined the contribution of stakeholders' needs identification to the performance of high school kitchen construction projects in Kirehe District, Rwanda, with a focus on timeliness, cost efficiency, and construction quality. A mixed-methods cross-sectional design was adopted, incorporating quantitative data from structured questionnaires administered to project managers, contractors, school representatives, and qualitative insights from key informant interviews. Quantitative data were analysed using correlation and regression techniques, with significance set at $p < 0.01$. Findings revealed strong positive correlations between stakeholder management dimensions and project performance. Stakeholder needs identification showed the strongest association ($r = 0.962$), followed by communication ($r = 0.950$), participation ($r = 0.942$), and conflict management ($r = 0.892$). Regression results indicated that stakeholder needs identification alone explained 92.6% of the variance in project performance, highlighting its central role in ensuring successful outcomes. Schools that actively engaged stakeholders achieved higher project completion rates, improved construction quality, and greater satisfaction among stakeholders. The study concludes that effective stakeholder needs identification significantly enhances the performance of high school kitchen construction projects in Kirehe District. It is recommended that institutionalizing structured stakeholder needs identification from the planning phase, supported by clear mechanisms for capturing, communicating, and integrating stakeholder expectations to strengthen participation, trust, and overall project success*.

Keywords: *Stakeholder needs identification; Project performance; construction; Kirehe District; Educational infrastructure*

How to cite this work (APA):

Munezero, N. & Gathiru, M. K. (2025). Stakeholder Needs Identification and High School Kitchen Construction Project Performance in Kirehe District. *Journal of Research Innovation and Implications in Education, 9*(4), 759 – 764. **https://doi.org/10.59765/pky5g.**

1. Introduction

The governance of stakeholders is a critical determinant of project performance and sustainability, particularly in the development of public infrastructure. Globally, the involvement of stakeholders in project planning and implementation is recognized as essential to aligning project objectives with community needs. In regions such as the United States, Europe, and Asia, participatory stakeholder management frameworks have significantly enhanced project performance by fostering transparency, accountability, and inclusion (UNESCO, 2018; World Bank, 2021). Effective stakeholder engagement enables decision-makers to connect top-down policy goals with local priorities, promoting ownership and long-term success. In developing contexts, stakeholder management increasingly emphasizes communication, collaboration, and conflict resolution as key strategies for ensuring timely delivery and high-quality construction outcomes.

In Africa, countries such as Kenya, Nigeria, and South Africa have institutionalized stakeholder participation as

a best practice in managing public school construction projects (AfDB, 2021; UN-Habitat, 2021). Active engagement of communities and educational institutions ensures that project results are responsive to local needs, while also enhancing ownership and sustainability. In Rwanda, the construction of school kitchens has become a national priority under the School Feeding Programme (Ministry of Health, 2014), aimed at improving student nutrition and educational performance. These projects depend heavily on collaboration among stakeholders, including school boards, parents, contractors, and local communities, to ensure timely completion, cost efficiency, and high operational standards (WFP, 2020).

Despite policy initiatives and investments, there remain gaps in understanding how stakeholder management practices specifically influence project performance in Rwanda's educational infrastructure sector. This study therefore investigates the relationship between stakeholder management dimensions namely, needs identification, communication, conflict management, and participation and the performance of high school kitchen construction projects in Kirehe District. By providing empirical evidence on the link between stakeholder engagement and project success, the study contributes valuable insights for policymakers, project managers, and education planners seeking to improve the effectiveness, sustainability, and community ownership of future school infrastructure projects.

1.1 Statement of the Problem

School construction projects in Rwanda have traditionally prioritized quantity over quality, leading to structural deficiencies, high maintenance costs, and project failures. The Office of the Auditor General (2022) reported that 56% of construction companies face cost overruns, delays, and poor quality, while regional studies indicate that 50-60% of African construction projects experience similar challenges due to inadequate stakeholder coordination (African Development Bank, 2019; East African Community, 2021). In Rwanda's public school kitchen construction projects, inadequate identification and integration of stakeholder needs from government agencies, educational institutions, contractors, and local communities have resulted in facilities that fail to meet functional requirements, safety standards, and user expectations, ultimately compromising school feeding programs and increasing lifecycle costs. Despite these recognized issues, limited empirical research exists on how stakeholder needs identification contributes to project performance in Rwanda's school construction sector, particularly in Kirehe District. This study addresses this gap by examining the contribution of stakeholder needs identification to the performance of high school kitchen construction projects at Kankobwa High School and G.S Nyakabungo in Kirehe District.

1.2 Research Objective

To determine the contribution of stakeholders' needs identification on the performance of selected high school kitchen construction projects in Kirehe District.

2. Literature Review

Stakeholders' needs identification is the process of determining and understanding the requirements, expectations, and concerns of all parties involved in or affected by a project, ensuring alignment with stakeholder interests throughout the project lifecycle (Pinto & Slevin, 2022). In school construction projects, this process is vital for achieving successful outcomes that meet educational, social, and infrastructural needs of communities in Rwanda (MINEDUC, 2019). The process begins with recognizing all relevant stakeholders, government authorities, school administrators, teachers, students, parents, local community members, contractors, and suppliers each having distinct needs and priorities, with government authorities focusing on budget adherence and regulatory compliance while parents and teachers prioritize safety and functionality (UNESCO, 2021). Once stakeholder needs are gathered, they must be analysed and prioritized using tools like the MoSCoW method to categorize requirements based on importance and urgency, ensuring critical needs are addressed first while aligning project objectives with stakeholder expectations (Ministerial Order No. 03/2020, 2020). Effective documentation through requirement specifications, stakeholder matrices, and project charters ensures clear communication, while integrating stakeholders' needs into project planning involves translating requirements into actionable tasks that enhance overall project performance and satisfaction (Pinto & Slevin, 2022; White Paper on Community Engagement, 2020).

Empirical evidence consistently demonstrates the critical importance of stakeholder needs identification, with Fraser (2022) finding a strong positive correlation ($r = 0.78$) between effective stakeholder engagement and project performance, Muniu et al. (2021) revealing significant effects ($p < 0.0001$, $r = 0.85$) of community involvement on project viability, and Wera (2022) showing improved outcomes ($\beta = 0.72$, $r = 0.69$) through effective problem analysis during project identification. In Rwanda, Kobusingye (2021) documented significant effects of stakeholder management on WASH project performance with strong correlations in project performance ($r = 0.971$), review ($r = 0.681$), planning ($r = 0.651$), and identification ($r = 0.571$). Stakeholder Theory (Freeman, 1984) provides the theoretical foundation, arguing that organizational success depends on creating value for diverse stakeholders rather than focusing solely on shareholders, with engaging stakeholders fostering alignment between project goals and community expectations (Porter & Kramer, 2011;

Ferrary & Déo, 2023). For high school kitchen construction projects in Kirehe District, systematic identification of needs from all stakeholder groups will significantly contribute to project performance, establishing stakeholder needs identification as a critical determinant of construction project success in Rwanda's context where stakeholder engagement is emphasized in national development policies (MINEDUC, 2019; UNESCO, 2021).

3. Methodology

This study employed a mixed-methods approach combining case study and cross-sectional survey designs to examine stakeholder management's impact on school construction project performance in Kirehe District, Rwanda (March–July 2025), focusing on Kankobwa High School and G.S Nyakabungo. Using the Taro Yamane formula ($n=N/(1+N(e)^2)$, $e=0.05$), 261 respondents were selected from 749 stakeholders including head teachers, project managers, supervisors, contractors, parents, support staff, and local officials through simple random, stratified, and purposive sampling techniques.

Primary data were collected via structured five-point Likert-scale questionnaires and interviews with six key informants, while secondary data came from project document reviews. A 30-respondent pilot study refined the instruments. Validity was ensured through expert review and supervisory approval; reliability was confirmed using Cronbach's Alpha (coefficients > 0.7). SPSS version 27.0 analysed data using descriptive statistics, Pearson correlation coefficients, and multiple linear regression to examine how stakeholder management dimensions need identification, communication, conflict management, and participation predict project performance in timeliness, cost efficiency, and quality.

The study adhered to ethical standards from Mount Kenya University and Rwanda's regulations. Formal access was secured from Kirehe District Education Office and participating schools. Informed consent emphasized voluntary participation and withdrawal rights. Confidentiality was maintained through coded identifiers and secure storage, with sources cited and verified via Turnitin, complying with Rwanda's Data Protection Law No. 058/2021.

4. Results and Discussion

The descriptive analysis in Table 1 examined stakeholder needs identification practices in high school kitchen construction projects in Kirehe District, revealing moderate to strong agreement across all dimensions with an overall average mean of 3.77, indicating moderate stakeholder satisfaction that their needs were systematically identified and incorporated into project planning and execution. Respondents demonstrated favourable perceptions regarding the project team's effectiveness in identifying and understanding specific school needs (Mean = 3.78, SD = 1.00, 71% agreement), design of school kitchens reflecting stakeholder input (Mean = 3.80, SD = 1.05, 73% agreement), stakeholder feedback on kitchen functionality being taken into account (Mean = 3.80, SD = 1.35, 72% agreement), active seeking of stakeholder opinions throughout construction (Mean = 3.73, SD = 1.35, 68% agreement), and consideration of stakeholder needs in kitchen design (Mean = 3.75, SD = 1.27, 70% agreement). However, the relatively high standard deviations ranging from 1.00 to 1.35 reveal considerable variability in stakeholder experiences, suggesting inconsistent application of needs identification practices across different project phases and stakeholder groups, highlighting areas requiring systematic improvement to ensure equitable stakeholder engagement throughout the construction process.

Table 1: Descriptive Statistics for Stakeholders' Needs Identification (n = 261)

Statement	SD	D	N	A	SA	Mean	SD
The project team effectively identifies and understands the specific needs of our school	22 (9%)	19 (8%)	30 (12%)	88 (37%)	82 (34%)	3.78	1.00
The design of the school kitchen reflects the input provided by stakeholders	20 (8%)	24 (10%)	22 (9%)	93 (39%)	82 (34%)	3.80	1.05
My feedback on kitchen functionality is taken into account	21 (9%)	20 (8%)	27 (11%)	92 (38%)	81 (34%)	3.80	1.35
The project team actively seeks my opinions throughout construction	23 (10%)	22 (9%)	32 (13%)	84 (35%)	80 (33%)	3.73	1.35
My needs are considered in the kitchen design	24 (10%)	21 (9%)	28 (12%)	87 (36%)	81 (34%)	3.75	1.27
Overall Mean						**3.77**	

The findings indicate that while stakeholder needs identification is practiced in Kirehe District's high school kitchen construction projects, its application is not consistently maintained across all project phases. Stakeholders reported strong engagement during the planning stage, particularly when design inputs were requested, but noted limited involvement during implementation and construction. This inconsistency points to gaps in continuous engagement, which may explain moderate mean scores despite general agreement on most indicators.

Pearson correlation analysis (Table 2) revealed a very strong and statistically significant positive relationship between stakeholder needs identification and project performance ($r = 0.962$, $p < 0.01$), demonstrating that systematic identification and integration of stakeholder needs substantially enhance project timeliness, cost efficiency, quality, and stakeholder satisfaction. This correlation exceeds those reported in related studies Fraser (2022, r = 0.78), Muniu et al. (2021, r = 0.85), and Wera (2022, r = 0.69) and closely aligns with Kobusingye's (2021, r = 0.971) Rwanda-based findings, suggesting that stakeholder needs identification may have particularly strong influence in Rwandan projects where engagement is emphasized in national development policies.

Table 2: Pearson Correlation between Stakeholders' Needs Identification and Project Performance (n = 261)

Variable	Project Performance
Stakeholders' Needs Identification	0.962** ($p < 0.01$)

** Correlation is significant at the 0.01 level (2-tailed)

Multiple regression analysis demonstrated that stakeholder needs identification significantly predicts project performance, explaining 92.6% of the variance ($R^2 = 0.926$, Adjusted $R^2 = 0.925$, $F(1,239) = 2972.935$, $p < 0.001$), with the minimal difference between R^2 and Adjusted R^2 indicating model stability, as shown in *Table 3*. As shown in *Table 4*, the regression sum of squares (263.873) substantially exceeded the residual sum of squares (21.213) in the ANOVA results, confirming the model's statistical significance. This indicates that systematic stakeholder needs identification accounts for a significant portion of the variance in project performance. Key practices including identification of diverse stakeholder groups, comprehensive needs analysis and prioritization, thorough documentation, integration into project planning, and continuous monitoring directly contributed to enhanced timeliness, cost efficiency, quality, and stakeholder satisfaction in Kirehe District's high school kitchen construction projects. The 92.6% variance explained in this study substantially exceeds comparable findings reported by Wera (2022, $R^2 = 0.52$), Smith and Johnson (2022, $R^2 = 0.62$), Osei and Mensah (2021, $R^2 = 0.55$), Mwangi and Kamau (2023, $R^2 = 0.49$), and Nkurunziza and Habimana (2024, $R^2 = 0.54$), suggesting that stakeholder needs identification may be more influential than general stakeholder participation or that Kirehe District's systematic approach was particularly effective in driving project success.

Table 3: Regression Analysis of Stakeholders' Needs Identification on Project Performance (n = 261)

Model	R	R^2	Adjusted R^2	Std. Error of Estimate
1	0.962	0.926	0.925	0.298

Table 4: ANOVA

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	263.873	1	263.873	2972.935	0.000
Residual	21.213	239	0.089		
Total	285.086	240			

Stakeholder needs identification strongly contributes to the performance of high school kitchen construction projects in Kirehe District. While implementation was more consistent during planning and design than construction, the very strong correlation (r = 0.962) and high variance explained (R^2 = 0.926) demonstrate its powerful impact on timeliness, cost efficiency, quality, and stakeholder satisfaction. These findings support Stakeholder Theory and show that addressing the needs of diverse stakeholders including government, school staff, students, parents, contractors, and the community enhances project effectiveness and sustainability. The results highlight the need for standardized engagement protocols, dedicated resources, and training for project managers to ensure consistent implementation across all phases. This evidence aligns with Rwanda's national education infrastructure policies, providing a basis for mandating stakeholder identification and integrating engagement metrics into project evaluation to improve outcomes

5. Conclusion and Recommendations

5.1 Conclusion

This study establishes stakeholder needs identification as a critical determinant of high school kitchen construction project performance in Kirehe District, accounting for 92.6% of variance in project effectiveness. The findings confirm that systematic integration of stakeholder needs directly enhances timeliness, cost efficiency, and quality outcomes. Consistent with stakeholder theory, early and sustained engagement significantly strengthens project ownership, responsiveness, and long-term sustainability of educational infrastructure investments.

5.2 Recommendations

Educational infrastructure projects should institutionalize structured stakeholder needs identification from inception through completion. Project management teams should implement standardized engagement protocols, establish continuous feedback loops, and allocate dedicated resources for stakeholder communication. Prioritizing early and continuous engagement will strengthen community participation, build stakeholder trust, and maximize project success in achieving intended objectives.

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