



Public Participation and Performance of Railway Transport Infrastructure in Kenya: A Case Study of Standard Gauge Railway

Misheck Muriungi Guantai¹, Gladys Nafula²

¹ Postgraduate Student

² Lecturer, the Management University of Africa

ABSTRACT :

Public infrastructure projects such as the Standard Gauge Railway are essential for driving economic growth, job creation, and regional integration in Kenya. Despite their national importance, many projects continue to face delays, disputes, and stakeholder dissatisfaction, often linked to weak or insufficient public participation. This study examined the influence of public participation on the performance of the SGR project in Kenya, focusing on four key dimensions: public awareness, public involvement approaches, inclusivity, and feedback mechanisms. The study adopted a descriptive research design and collected data from a diverse group of stakeholders, including government officials, civil society representatives, and local community leaders. Findings indicated that all four participation dimensions contributed positively to project performance. Effective feedback mechanisms and diverse engagement approaches emerged as the most influential factors, while public awareness and inclusivity also played significant roles in shaping perceptions and outcomes. Respondents noted that while communication on project goals was generally strong, there were notable gaps in addressing community concerns, ensuring inclusivity, and maintaining consistent follow-up. The study concludes that meaningful and structured public participation is a critical determinant of success in major infrastructure projects. Strengthening awareness campaigns, enhancing inclusivity, maintaining continuous stakeholder engagement, and institutionalizing responsive feedback systems are vital for improving project efficiency, transparency, and long-term sustainability. The findings provide practical insights for policymakers, project managers, and development partners seeking to enhance governance and accountability in Kenya's public infrastructure initiatives.

Key Words: Feedback Mechanisms, Inclusivity, Public Involvement, Public Awareness

1.0 INTRODUCTION

1.1 Background of the Study

Public infrastructure performance plays a pivotal role in driving economic growth, enhancing productivity, and creating employment opportunities across the globe. Quality infrastructure reduces transaction costs, improves competitiveness, and directly stimulates trade and investment (World Bank, 2019) for example, the Global Infrastructure Hub (2021) projects that an additional \$15 trillion investment in infrastructure by 2040 could increase global GDP by 0.6% annually. Moreover, the International Labour Organization (ILO, 2022) notes that infrastructure projects can create up to 30 direct and indirect jobs per \$1 million invested. In this regard, efficient infrastructure systems such as transport networks, energy grids, and water supply chains become essential enablers of socio-economic development, poverty reduction, and inclusive growth.

Around the world, investments in infrastructure have showcased the interconnectedness of public participation and project performance. In the United States, large-scale projects like the California High-Speed Rail have faced delays partly due to inadequate stakeholder engagement, resulting in lawsuits and rising costs (Flyvbjerg, 2017). Conversely, participatory frameworks implemented in projects like the Seattle Sound Transit expansion demonstrated how effective public involvement can enhance timely completion and community acceptance. Such examples highlight the significant role that variables like public awareness, inclusivity, and feedback mechanisms play in shaping the performance of infrastructure projects.

Looking at Europe, nations like Germany and the Netherlands have institutionalized public participation through laws mandating community consultation in major infrastructure undertakings. For instance, Germany's Federal Transport Infrastructure Plan integrates public hearings at multiple project stages, reducing the risk of costly revisions later (Schweikert, 2018). In Netherlands, participatory design workshops have improved infrastructure project acceptance and sustainability by aligning projects closely with community expectations. These approaches underscore how public involvement approaches and feedback directly affect project outcomes.

Progressive participation models continue to shape infrastructure governance in Asia. In South Korea, the Eco Mobility project in Suwon empowered residents via a working group and community surveys to co-design urban mobility solutions, enhancing inclusivity (KIEAE, 2024). Similarly, the Yongsan Park development in Seoul engaged citizens through 28 public forums and multiple surveys between 1996 and 2019 (Choi, 2022). At the national level, participatory budgeting has democratized decision-making: since 2011, Seoul's citizens have directly voted on hundreds of district projects annually (Wikipedia, 2025). In India, grassroots activism remains impactful, for instance, in 2025, community groups used social media and

direct outreach to ensure timely delivery of Mumbai's Gokhale Bridge project (Times of India, 2025). These cases affirm that inclusivity and feedback mechanisms are instrumental to infrastructure performance.

Closer to home in Africa, infrastructure performance often suffers due to weak public participation frameworks. In Nigeria, the Lagos Light Rail project has been delayed by over a decade partly because of limited stakeholder consultation (Adeleke et al, 2021). Conversely, Rwanda's participatory approach to road expansion projects, involving local councils and community forums, has resulted in higher quality infrastructure delivered within budget and timelines (Nsengiyumva & Habimana, 2020). These cases illustrate how awareness campaigns and structured public involvement approaches can influence project performance positively.

In Kenya, public infrastructure development such as Standard Gauge Railway has been central to national economic planning, accounting for over KES 327 billion in investment (Kenya National Bureau of Statistics, 2023). However, studies have shown mixed outcomes regarding performance, partly linked to the extent and nature of public participation (Kimani & Karanja, 2022). While the SGR has improved freight efficiency and reduced transport costs by up to 40%, instances of land compensation disputes and local resistance point to gaps in inclusivity and feedback mechanisms (Mwangi, 2021). This situation underlines the need to comprehensively investigate how public participation dimensions like awareness, public involvement approaches, inclusivity, and feedback mechanisms affect the performance of the SGR project.

1.2 Statement of the Problem

Public infrastructure remains a cornerstone of socio-economic transformation, with robust systems directly contributing to increased productivity, reduced transaction costs, and expanded market access. In Kenya, the Standard Gauge Railway (SGR) represents one of the largest public infrastructure investments in recent history, valued at over KES 327 billion (Kenya National Bureau of Statistics, 2023). Launched to improve freight movement efficiency by cutting transport costs by 40%, the SGR was also envisioned to create jobs and stimulate growth along the Northern Corridor (World Bank, 2019). Despite these aspirations, evidence indicates that the SGR has struggled to achieve optimal performance, grappling with issues such as underutilized capacity, delayed ancillary facilities, and persistent land compensation disputes (Mwangi, 2021).

While Kenya's Constitution (2010) mandates stakeholder engagement in public projects, gaps remain in translating these provisions into practice for large-scale infrastructure. The Office of the Auditor-General (2021) flagged inadequate community consultations as a key driver of compensation disputes along the SGR corridor. Similarly, Wanjohi (2020) found that poor engagement strategies in Kenya's informal settlement upgrading projects contributed to mistrust and resistance. However, most studies have concentrated on either urban housing or devolved county projects, leaving the participatory dynamics specific to mega-transport infrastructure like the SGR underexplored. This creates a contextual gap in understanding how public participation, when inconsistently applied, affects such high-value investments.

Existing research has often examined public participation from a broad governance lens without disentangling how its specific dimensions public awareness, public involvement approaches, inclusivity, and feedback mechanisms impact project performance. For instance, Otieno and Musyoka (2021) analyzed general stakeholder involvement in rural electrification projects, while Njenga and Mwaura (2020) focused on participatory governance in urban water systems. Their studies highlighted the importance of participation in improving trust and reducing project disputes but did not isolate the individual effects of awareness campaigns, inclusivity strategies, or feedback loops on core infrastructure performance metrics such as timelines, quality standards, and community acceptance. This signals a conceptual gap, limiting a nuanced understanding of which facets of participation are most critical for infrastructure success.

Many studies on public participation in Kenya and the region have leaned heavily on qualitative or purely descriptive designs. Chepkemai et al. (2022), examining stakeholder involvement in the LAPSET corridor, relied on case narratives without quantitative measures, restricting their capacity to establish the strength of relationships between participation and project outcomes. Likewise, Ayuba et al. (2019) in Nigeria and Boateng (2017) in Ghana used exploratory designs that provided valuable context but lacked inferential analysis to rigorously test hypotheses. This has left a methodological gap, necessitating empirical studies that employ robust quantitative approaches to systematically assess how dimensions of public participation influence infrastructure performance.

Globally, countries like Germany and Japan have demonstrated that structured participatory frameworks contribute to superior infrastructure outcomes by minimizing conflicts and enhancing project legitimacy (Schweikert, 2018). In many Africa contexts, weak participatory practices have led to project delays and financial losses. Adeleke (2021) documented how limited stakeholder consultations contributed to the decade-long delay of Nigeria's Lagos Rail project. However, few studies have connected these international lessons directly to Kenya's flagship infrastructure investments, compounding the contextual knowledge gap.

Given these clear contextual, conceptual, and methodological gaps, this study sought to systematically examine the effect of public participation through its dimensions of public awareness, public involvement approaches, inclusivity, and feedback mechanisms on the performance of the Standard Gauge Railway project in Kenya. By addressing these gaps, the study not only enriched empirical literature on infrastructure governance but also provided actionable insights to policymakers, project managers, and development partners aiming to optimize public infrastructure outcomes in similar contexts.

Objectives of the Study

1.3.1 General Objective

The study sought to assess the effect of public participation on the performance of the railway infrastructure project in Kenya, a case study of Standard Gauge Railway project in Kenya.

1.3.2 Specific Objectives

- i. To assess the effect of public awareness on the performance of the Standard Gauge Railway project in Kenya.
- ii. To assess the effects of public involvement approaches on performance of the Standard Gauge Railway project in Kenya

- iii. To determine the effect of inclusivity in public participation on the performance of the Standard Gauge Railway project in Kenya.
- iv. To analyze the effect of public feedback mechanisms on the performance of the Standard Gauge Railway project in Kenya.

1.4 Significance of the Study

Policymakers and regulatory bodies like the Ministry of Transportation, Infrastructure, and Housing and Urban Development will find this study to be especially helpful in formulating policies in Kenya and elsewhere. Through an empirical demonstration of the ways in which public participation dimensions, public awareness, public involvement approaches, inclusivity, and feedback mechanisms impact the Standard Gauge Railway (SGR) project's performance, the results will offer practical insights for creating more robust engagement frameworks. These insights will help promote transparency, reduce project delays linked to community resistance, and enhance the overall success of mega infrastructure projects.

From a practical perspective, the study will benefit project managers, engineers, and implementing agencies like Kenya Railways Corporation by identifying specific areas where stakeholder engagement can improve project outcomes. Evidence-based strategies derived from the research will guide the adoption of more effective, inclusive participation approaches that foster community ownership and cooperation. For local communities and civil society organizations, the findings will reinforce the value of meaningful engagement in influencing projects that impact their livelihoods, land, and environment, thereby strengthening participatory governance and social accountability.

In terms of theoretical contribution, the study will enrich academic literature in development studies, project management, and governance by providing empirical evidence from Kenya on the link between public participation and infrastructure performance. It will fill contextual and methodological gaps, serving as a reference point for comparative studies in other countries or sectors. Additionally, development partners and international donors funding large-scale infrastructure initiatives will find the results useful for shaping stakeholder engagement guidelines and funding conditions, ensuring that participatory approaches are embedded to mitigate risks and enhance developmental impact.

2.0 LITERATURE REVIEW

2.1 Theoretical Literature Review

2.1.1 Stakeholder Theory

The Stakeholder Theory, introduced by Freeman (1984), argues that an organization's success depends on how well it manages relationships with all parties affected by its operations, not just shareholders. It emphasizes ethical responsibility, accountability, and legitimacy in balancing diverse stakeholder interests such as communities, government bodies, and civil society. The theory assumes that recognizing and addressing stakeholder concerns builds trust and ensures project continuity, although critics like Jensen (2002) caution that managing multiple interests can dilute strategic focus and make performance measurement difficult. Empirical studies reveal that weak stakeholder engagement frameworks often lead to project delays and shallow compliance. In this study, the theory explains how effective public participation through awareness campaigns, inclusive meetings, and feedback systems strengthens stakeholder relationships and enhances the performance of the Standard Gauge Railway, as supported by research in Kenya by Wanjohi (2020).

2.1.2 Ladder of Citizen Participation

Sherry Arnstein's (1969) Ladder of Citizen Participation categorizes citizen involvement into eight levels, ranging from manipulation to full citizen control, showing that true participation involves sharing decision-making power. While scholars like Collins and Ison (2009) note that this model can oversimplify complex participation dynamics, its clarity makes it a valuable tool for assessing the degree of stakeholder influence. The framework assumes that higher levels of participation enhance transparency, empowerment, and project legitimacy, though implementing full citizen control can be challenging in contexts with limited civic skills or technical expertise (Quick & Feldman, 2011). In this study, the ladder helps assess whether public awareness and involvement in the SGR project genuinely empower communities or merely inform them. Its relevance is supported by Chepkemai (2022), who used it to analyze participation levels in major infrastructure projects in Kenya and Nigeria.

2.1.3 Inclusivity and Equity Framework

Andrea Cornwall's (2008) Inclusivity and Equity Framework focuses on the fairness and quality of public participation, ensuring that women, youth, minorities, and marginalized groups have genuine opportunities to influence decisions. Rooted in principles of equity, representation, and the removal of participation barriers, the framework assumes that inclusive engagement leads to more legitimate and conflict-free outcomes. Later adaptations integrated gender and socio-economic perspectives aligned with global inclusivity efforts such as those of UN Women (2016). Despite its strengths, scholars like Gaventa (2006) warn that hidden power structures may still silence vulnerable voices, and studies in Africa by Musa et al. (2022) and Boateng (2017) show that inclusivity initiatives can sometimes lead to elite dominance. In this study, the framework helps evaluate whether diverse groups actively shape decisions in the SGR project, drawing on insights from Wanjohi et al. (2020), who found that inclusivity improved project acceptance and reduced disputes in Kenyan slum upgrading projects.

2.1.4 Feedback Loop Theory

Archon Fung's (2006) Feedback Loop Theory highlights the importance of continuous, two-way communication between communities and decision-makers, where public input not only informs but also receives timely responses from implementers. It evolved from earlier participation models by emphasizing transparency and adaptability through sustained feedback mechanisms (World Bank, 2017). The theory assumes that structured feedback enhances trust, legitimacy, and project responsiveness, though maintaining such systems can be resource-intensive and may cause frustration if feedback is ignored or delayed (Irvin & Stansbury, 2004). Studies in Kenya and Uganda by Karanja and Ombati (2021) and Tumusiime & Mbabazi

(2019) show that poor feedback processes can escalate conflicts. In this study, the theory underpins the analysis of feedback mechanisms in the SGR project, supported by Matheka (2022), who found that responsive systems in Kenya's county projects improved satisfaction and delivery outcomes.

2.2 Empirical Literature Review

2.2.1 Public Awareness and Performance

Public awareness initiatives play a vital role in shaping community perceptions of infrastructure projects by fostering understanding and reducing resistance. In Addis Ababa, Ethiopia, targeted information campaigns during road construction reduced conflicts and enhanced residents' sense of ownership (Kasahun, 2021). Similarly, in Nairobi's urban water projects, early dissemination of information strengthened local support (Njenga & Mwaura, 2020). However, these studies did not establish quantitative links between awareness and performance indicators such as timelines or quality, revealing a methodological gap. The current study extends this knowledge by examining these relationships in Kenya's transport infrastructure sector. In Kenya's LAPSET corridor, structured awareness programs helped address compensation issues early, minimizing opposition and improving relations (Chepkemai, 2022). Comparable findings from Nairobi's slum upgrading initiatives showed that organized information sessions promoted smoother implementation and social cohesion (Wanjohi, 2020). Evidence from Tanzania also indicated that informed communities are more cooperative in water projects (Mwita, 2020). Nonetheless, these studies mainly focused on perceptions rather than measurable performance results. This research therefore addresses this gap by assessing how public awareness translates into concrete performance outcomes on the Standard Gauge Railway project.

2.2.2 Public Involvement Approaches and Performance

Public involvement approaches such as town hall meetings and stakeholder workshops play a critical role in shaping infrastructure project outcomes by promoting ownership and minimizing conflict. In Abuja, participatory meetings on highway projects resulted in design adjustments that reduced disputes and strengthened community support (Ayuba et al., 2019). Similarly, in Kenya's Murang'a County, structured workshops and focus group discussions enhanced satisfaction in rural electrification projects (Otieno & Musyoka, 2021). However, these studies did not evaluate how involvement approaches influenced technical outcomes like timelines or quality, creating a conceptual gap that the current study addressed by examining their effect on the Standard Gauge Railway (SGR) project's performance.

Across various contexts, consultation strategies have consistently demonstrated potential. In Kenya's LAPSET corridor, inclusive forums mitigated resistance by engaging local stakeholders (Chepkemai, 2022), while in Nigeria, multi-stakeholder consultations improved sustainability in housing projects without linking them to operational outcomes. Likewise, gender-sensitive approaches in Ghana's market redevelopment projects achieved community acceptance but did not measure cost or quality impacts (Boateng, 2017). These cases reveal a methodological gap where participation's social benefits are emphasized, yet its direct influence on infrastructure performance remains underexplored a gap this study sought to fill.

2.2.3 Inclusivity and Performance of Public Infrastructure Projects

When infrastructure planning includes a broad range of stakeholders, project outcomes are more likely to reflect community needs and minimize conflict. In Nairobi's slum upgrading projects, inclusive planning produced designs aligned with local preferences, though impacts on timelines or quality were not statistically analyzed (Wanjohi, 2020). Similarly, involving women traders in Ghana's market redevelopment reduced post-completion disputes, while youth participation in Nigerian road projects enhanced community ownership and reduced vandalism (Onyekachi, 2019), yet none of these studies linked inclusivity to measurable performance outcomes.

Across broader contexts, inclusion of marginalized groups such as women and youth in Nigeria's urban infrastructure projects improved legitimacy and reduced opposition (Musa, 2022). In Rwanda, engagement of local councils and community associations ensured more sustainable outcomes with fewer operational challenges (Nsengiyumva & Habimana, 2020). Despite these encouraging findings, past research has not directly assessed inclusivity's impact on key performance indicators such as quality, timeliness, or cost efficiency. Addressing this gap, the current study seeks to quantify how inclusivity as a dimension of public participation influences the performance of Kenya's SGR project.

2.2.4 Public Feedback Mechanisms and Performance

Constructive feedback mechanisms play a vital role in minimizing disruptions and enhancing the success of infrastructure projects. In Nairobi County, grievance redress desks for road projects expedited compensation resolutions, reducing construction delays (Karanja & Ombati, 2021). In Uganda, digital feedback tools improved community trust in energy projects (Tumusiime & Mbabazi, 2019), while similar county-level channels in Kenya enhanced stakeholder satisfaction but did not assess impacts on project quality or timelines (Matheka, 2022).

At a global level, weak feedback systems have been linked to project delays and cost overruns (Flyvbjerg et al., 2017), though most evidence comes from literature reviews rather than empirical data. For instance, during Kenya's SGR development, insufficient feedback processes extended compensation disputes and hindered progress (Mwangi et al., 2021). Despite these insights, few studies have quantitatively examined how feedback mechanisms influence infrastructure performance. The present study addresses this gap by empirically analyzing the effect of feedback systems on the technical performance of the SGR project.

2.3 Summary of Research Gaps

Table 1: Summary of Research Gaps

Author(s) & Year	Title	Methodology	Key Findings	Research Gap	Focus of Current Study
Njenga & Mwaura	Participation in Nairobi water	Cross-sectional survey &	Awareness reduced misunderstandings &	Did not examine technical performance impacts	Relate awareness to infrastructure outcomes in

(2020)	projects	regression	improved support	(conceptual gap)	SGR
Ayuba et al. (2019)	Stakeholder involvement in Nigerian highways	Descriptive survey with regression	Meetings led to design modifications that reduced disputes	No link to timelines or quality indicators (conceptual gap)	Test involvement approaches on SGR performance
Wanjohi et al. (2020)	Inclusivity in Nairobi slum upgrading	Descriptive case study & thematic analysis	Inclusive planning reduced disputes	Did not statistically test impact on performance (methodological gap)	Analyze inclusivity effects on SGR performance
Karanja & Ombati (2021)	Grievance systems in Kenyan road projects	Cross-sectional survey with regression	Grievance desks reduced compensation delays	Did not assess quality/timelines (conceptual gap)	Assess feedback mechanisms on SGR performance
Mwita (2020)	Awareness in Tanzanian water infrastructure	Descriptive survey & chi-square	Awareness improved cooperation	No measurement of delivery timelines or quality (evidence gap)	Examine awareness and SGR delivery outcomes
Tumusiime & Mbabazi (2019)	E-feedback in Ugandan energy projects	Surveys with descriptive analysis	Mobile reporting improved trust	Did not test infrastructure delivery outcomes (methodological gap)	Statistically analyze feedback vs SGR performance
Mwangi et al. (2021)	Compensation & disputes in Kenya's SGR	Case study	Weak feedback delayed compensation	No statistical link to infrastructure performance (methodological gap)	Quantitatively link feedback mechanisms to SGR delivery

3.0 RESEARCH METHODOLOGY

In The study employed a descriptive research design to investigate how public awareness, involvement approaches, inclusivity, and feedback mechanisms influence the performance of the Standard Gauge Railway (SGR) project in Kenya. This design was suitable for collecting quantifiable data and describing relationships among variables without manipulation (Mugenda & Mugenda, 2019). The target population consisted of 250 stakeholders: 120 local leaders, 80 civil society representatives, 30 Kenya Railways officials, and 20 county government officers. A stratified random sampling technique ensured proportional representation, yielding a sample of 154 respondents determined using Yamane's (1967) formula. Data were collected using a semi-structured questionnaire containing both closed- and open-ended items. Closed-ended items were rated on a five-point Likert scale, while open-ended items captured qualitative insights. A pilot study involving 15 respondents tested validity and reliability. Expert review established content validity and Cronbach's Alpha coefficients exceeded 0.7 for all constructs, confirming reliability.

After obtaining research approvals and informed consent, data were gathered through drop-and-pick and on-the-spot methods, ensuring confidentiality and voluntary participation. Quantitative data were analyzed using SPSS version 26, employing descriptive statistics (means, frequencies, and standard deviations), correlation, and multiple regression analysis to determine the relationships between variables. All ethical principles, including informed consent, confidentiality, and anonymity, were observed throughout the study.

4.0 RESEARCH FINDINGS AND DISCUSSION

Table 1 Response Rate

Category	Sample Size	Responses Received	Response Rate (%)
Local leaders (ward administrators, chiefs)	74	67	90.5
Civil society organization representatives	49	43	87.8
Kenya Railways Corporation officials	19	17	89.5
County government officials	12	11	91.7
Total	154	138	89.6

The study had 138 of the 154 questionnaires distributed being properly filled out and returned, yielding an overall response rate of 89.6%. The highest response rate among the groups was 91.7 percent for county government officials, 90.5 percent for local leaders, and 89.5 percent for Kenya Railways Corporation executives. The lowest, but still noteworthy, response percentage was 87.8% from representatives of civil society organizations. According to these findings, every significant stakeholder group was fairly represented in the research, which improved the validity and dependability of the conclusions. The high response rate significantly enhanced the quality of the data gathered by indicating that the respondents were very interested in the topic.

4.2 Descriptive Statistics

Table 2 Involvement Approaches

Statement	1 (SD)	2 (D)	3 (N)	4 (A)	5 (SA)
C1. Community meetings were organized to discuss the SGR project.	7 (5.1%)	12 (8.7%)	24 (17.4%)	58 (42.0%)	37 (26.8%)
C2. Stakeholder workshops provided an effective platform for dialogue.	10 (7.2%)	15 (10.9%)	22 (15.9%)	55 (39.9%)	36 (26.1%)
C3. Use of radio and local forums facilitated involvement.	8 (5.8%)	11 (8.0%)	20 (14.5%)	56 (40.6%)	43 (31.2%)

C4. Engagement approaches considered local customs and practices.	14 (10.1%)	18 (13.0%)	27 (19.6%)	50 (36.2%)	29 (21.0%)
C5. Different involvement channels (media, forums) complemented each other.	9 (6.5%)	13 (9.4%)	25 (18.1%)	57 (41.3%)	34 (24.6%)
C6. Involvement processes allowed meaningful contributions.	11 (8.0%)	16 (11.6%)	28 (20.3%)	52 (37.7%)	31 (22.5%)
C7. Follow-up sessions were held to update the community.	16 (11.6%)	19 (13.8%)	30 (21.7%)	47 (34.1%)	26 (18.8%)
C8. Involvement approaches helped address emerging concerns.	12 (8.7%)	17 (12.3%)	26 (18.8%)	53 (38.4%)	30 (21.7%)

The findings revealed that radio and local forums were the most effective public involvement approaches, with 71.8% of respondents affirming their role in facilitating engagement. Community meetings and barazas were also highly valued (68.8%), followed by stakeholder workshops (66.0%), which fostered structured dialogue among key stakeholders. However, 15.9% of respondents remained neutral, indicating that some groups were not fully engaged. Cultural sensitivity in engagement received moderate approval (57.2%), while follow-up mechanisms and sustained engagement were identified as weak areas, with only 52.9% acknowledging consistent updates. Overall, respondents viewed community meetings, local media, and workshops as the most impactful strategies but recommended strengthening engagement through regular follow-ups, use of digital platforms, inclusion of marginalized groups, and community capacity-building to enhance understanding and participation.

Table 3 Inclusivity in Public Participation

Statement	1 (SD)	2 (D)	3 (N)	4 (A)	5 (SA)
D1. Participation activities included women.	6 (4.3%)	11 (8.0%)	19 (13.8%)	59 (42.8%)	43 (31.2%)
D2. Youth groups were actively involved in consultations.	9 (6.5%)	14 (10.1%)	25 (18.1%)	56 (40.6%)	34 (24.6%)
D3. Marginalized and minority groups were well represented.	15 (10.9%)	18 (13.0%)	27 (19.6%)	50 (36.2%)	28 (20.3%)
D4. Engagements catered for diverse economic backgrounds.	11 (8.0%)	16 (11.6%)	26 (18.8%)	55 (39.9%)	30 (21.7%)
D5. The process was sensitive to cultural diversity.	10 (7.2%)	14 (10.1%)	24 (17.4%)	57 (41.3%)	33 (23.9%)
D6. Persons with disabilities were adequately included.	19 (13.8%)	22 (15.9%)	28 (20.3%)	45 (32.6%)	24 (17.4%)
D7. Timing of meetings accommodated varied community needs.	12 (8.7%)	17 (12.3%)	29 (21.0%)	52 (37.7%)	28 (20.3%)
D8. Inclusivity improved acceptance of the SGR project.	7 (5.1%)	13 (9.4%)	23 (16.7%)	54 (39.1%)	41 (29.7%)

The findings showed substantial progress in promoting inclusivity, with 74.0% of respondents confirming active involvement of women and 65.2% acknowledging youth participation. However, marginalized groups and persons with disabilities were less represented, with only 56.5% and about half of respondents, respectively, affirming their inclusion. This pointed to ongoing barriers such as inaccessible venues and limited communication adaptations. Inclusivity across socioeconomic and cultural lines was moderately positive, with 61.6% recognizing efforts to include different economic groups and 65.2% affirming respect for cultural diversity. While 68.8% agreed that inclusivity improved community acceptance and project legitimacy, participation gaps persisted for pastoralist communities, informal workers, and rural women. Respondents recommended targeted engagement forums, flexible meeting times, translation into local languages, and stronger roles for community-based organizations to ensure equitable and meaningful participation.

Table 4 Public Feedback Mechanisms

Statement	1 (SD)	2 (D)	3 (N)	4 (A)	5 (SA)
E1. There were clear channels to raise grievances.	8 (5.8%)	13 (9.4%)	27 (19.6%)	56 (40.6%)	34 (24.6%)
E2. Feedback provided was acknowledged by project implementers.	11 (8.0%)	15 (10.9%)	25 (18.1%)	55 (39.9%)	32 (23.2%)
E3. Complaints were handled in a timely manner.	14 (10.1%)	17 (12.3%)	29 (21.0%)	51 (37.0%)	27 (19.6%)
E4. Feedback mechanisms were accessible to all community members.	12 (8.7%)	18 (13.0%)	28 (20.3%)	50 (36.2%)	30 (21.7%)
E5. Suggestions provided by the public influenced project adjustments.	15 (10.9%)	20 (14.5%)	31 (22.5%)	46 (33.3%)	26 (18.8%)
E6. There were regular updates on how feedback was being acted upon.	17 (12.3%)	21 (15.2%)	30 (21.7%)	44 (31.9%)	26 (18.8%)
E7. Feedback systems helped prevent disputes.	13 (9.4%)	16 (11.6%)	32 (23.2%)	48 (34.8%)	29 (21.0%)
E8. Public feedback mechanisms improved trust in the project.	9 (6.5%)	12 (8.7%)	26 (18.8%)	53 (38.4%)	38 (27.5%)

The findings indicated that feedback mechanisms existed but were inconsistently effective. While 65.2% of respondents acknowledged clear grievance channels such as help desks and community forums, about 15% disagreed, pointing to limited accessibility and awareness. Feedback acknowledgment was relatively strong (63.1%), yet nearly one-fifth of respondents cited poor responsiveness and delays in complaint resolution. Only 57.9% felt feedback systems were easily accessible, suggesting exclusion of remote or marginalized groups, while just over half (52.1%) believed their input influenced project decisions. Similarly, only 50.7% received updates on how their feedback was handled, indicating that mechanisms were often consultative rather than transformative. Nonetheless, respondents agreed that feedback systems helped prevent disputes (55.8%) and build trust (65.9%), emphasizing their role in reducing project-related tensions. To improve these systems, participants recommended enhancing transparency, creating localized feedback centers, and integrating digital tools such as toll-free lines and SMS reporting platforms. Overall, the effectiveness of feedback processes was found to depend less on their existence and more on consistent follow-up and responsiveness to community concerns.

Table 5: Performance of the SGR Project

Statement	1 (SD)	2 (D)	3 (N)	4 (A)	5 (SA)
F1. The SGR project adhered to its planned timelines.	12 (8.7%)	15 (10.9%)	28 (20.3%)	52 (37.7%)	31 (22.5%)
F2. The project met expected quality standards.	9 (6.5%)	13 (9.4%)	27 (19.6%)	56 (40.6%)	33 (23.9%)
F3. Compensation issues were resolved satisfactorily.	18 (13.0%)	20 (14.5%)	31 (22.5%)	44 (31.9%)	25 (18.1%)
F4. Operational efficiency of the SGR meets community expectations.	10 (7.2%)	14 (10.1%)	29 (21.0%)	55 (39.9%)	30 (21.7%)
F5. The project has contributed positively to local economic growth.	7 (5.1%)	12 (8.7%)	25 (18.1%)	58 (42.0%)	36 (26.1%)
F6. The community is generally satisfied with the project outcomes.	11 (8.0%)	15 (10.9%)	28 (20.3%)	53 (38.4%)	31 (22.5%)
F7. There is evidence of reduced conflicts due to effective processes.	13 (9.4%)	16 (11.6%)	30 (21.7%)	51 (37.0%)	28 (20.3%)
F8. The SGR project is sustainable for the long term.	14 (10.1%)	18 (13.0%)	27 (19.6%)	50 (36.2%)	29 (21.0%)

The findings showed that the SGR project was perceived as moderately successful overall. Most respondents (60.2%) agreed that it generally adhered to its schedule, though some phases experienced delays. Quality standards earned strong approval (64.5%), reflecting confidence in the project's technical performance, while compensation processes remained problematic, with only half satisfied and over a quarter expressing dissatisfaction due to land-related disputes. Operational efficiency was rated positively (61.6%), and economic impact received the highest endorsement (68.1%), emphasizing benefits such as job creation, trade stimulation, and improved market access. Community satisfaction (60.9%) indicated general appreciation despite persisting concerns. Moderate ratings for conflict reduction (57.3%) and sustainability (~60%) reflected progress in social cohesion but uncertainty about long-term maintenance and economic viability. Respondents praised the project's role in enhancing transport between Nairobi and Mombasa and strengthening Kenya's regional connectivity. However, persistent issues included unresolved compensation disputes, high transport costs, limited public involvement during planning, and environmental impacts. Overall, while the SGR achieved substantial infrastructural and economic gains, challenges related to inclusivity, affordability, and environmental sustainability continued to hinder its full success.

4.3 Inferential Statistics

Table 6: Correlation Analysis Results

Variables	Public Awareness	Involvement Approaches	Inclusivity	Feedback Mechanisms	Project Performance
Public Awareness	1	0.521	0.476	0.503	0.612
Involvement Approaches	0.521	1	0.498	0.529	0.655
Inclusivity	0.476	0.498	1	0.547	0.593
Feedback Mechanisms	0.503	0.529	0.547	1	0.678
Project Performance	0.612	0.655	0.593	0.678	1

The correlation analysis revealed strong positive relationships between all four dimensions of public participation and the performance of the SGR project. Feedback mechanisms showed the strongest association ($r = 0.678$), followed by involvement approaches ($r = 0.655$), underscoring the value of communication and engagement in building trust. Public awareness had a moderately strong correlation ($r = 0.612$), while inclusivity, though the weakest ($r = 0.593$), still contributed significantly by enhancing representation and social acceptance. The dimensions were also interrelated, with public awareness positively linked to involvement approaches ($r = 0.521$) and feedback mechanisms ($r = 0.503$), indicating that the participation components reinforced one another.

Table 7: Regression Coefficients

Variable	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig.
(Constant)	0.742	0.182	–	4.077	0.000
Public Awareness	0.218	0.064	0.224	3.406	0.001
Involvement Approaches	0.261	0.072	0.258	3.625	0.000
Inclusivity	0.186	0.067	0.197	2.776	0.006
Feedback Mechanisms	0.312	0.059	0.331	5.288	0.000

The regression analysis revealed that public participation significantly and positively influenced the performance of the SGR project, with all four dimensions, public awareness, involvement approaches, inclusivity, and feedback mechanisms, making meaningful contributions. Feedback mechanisms had the strongest impact, highlighting the value of responsive communication and grievance handling in building trust. Involvement approaches also played a major role by enhancing collaboration and community ownership, while public awareness moderately improved understanding and acceptance of the project. Inclusivity, though the least influential, remained significant by fostering fairness and social cohesion. Overall, the findings confirmed that transparent, inclusive, and well-structured participation processes are vital for the success and sustainability of large-scale infrastructure projects.

Table 8: ANOVA Results

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	42.718	4	10.68	62.987	0
Residual	25.282	133	0.19		
Total	68	137			

The ANOVA results showed that the regression model was statistically significant ($F = 62.987$, $p < 0.001$), confirming that public awareness, involvement approaches, inclusivity, and feedback mechanisms collectively had a meaningful influence on the SGR project's performance. The model explained 62.9% of the variation in project outcomes, indicating strong predictive power, while the remaining 37.1% was due to other external factors. The high F-value and low residual mean square (0.190) reflected the model's reliability and precision. Overall, the findings affirmed that structured and inclusive public participation, anchored in awareness, representation, involvement, and feedback is essential in enhancing project success, legitimacy, and sustainability in large-scale infrastructure initiatives.

Table 9: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.793	0.629	0.618	0.412

The model summary results revealed a strong positive relationship ($R = 0.793$) between the dimensions of public participation, public awareness, involvement approaches, inclusivity, and feedback mechanisms and performance of the SGR project. With an R^2 value of 0.629, these factors collectively explained 62.9% of the variation in project performance, confirming that public participation was a key driver of project success. The remaining 37.1% of variation was linked to external factors such as policy, financial capacity, political stability, and technology. The close alignment between R^2 (0.629) and Adjusted R^2 (0.618) indicated model robustness and reliability, while the low standard error (0.412) reflected high predictive accuracy. Overall, the findings demonstrated that structured and inclusive public engagement is essential in improving both the effectiveness and acceptance of major infrastructure projects like the SGR.

CONCLUSION

The study confirmed that public participation had a significant positive influence on the performance of the Standard Gauge Railway (SGR) project in Kenya. Regression results showed that public awareness, involvement approaches, inclusivity, and feedback mechanisms collectively explained 62.9% of the variance in project performance ($R^2 = 0.629$), demonstrating that participation was a substantive driver of infrastructure success rather than a procedural requirement. This finding supports prior literature emphasizing that citizen engagement enhances accountability, legitimacy, and sustainability in public projects.

Public awareness significantly contributed to project performance by increasing transparency and acceptance, although communication gaps remained regarding risks and compensation. Public involvement approaches were also highly influential, with stakeholder workshops, local forums, and radio programs fostering trust and ownership. Inclusivity, though weaker, was still significant, women and youth were fairly represented, while marginalized groups and persons with disabilities were less engaged, indicating the need for more equitable participation. The feedback mechanisms emerged as the strongest determinant of project performance. Effective grievance channels, acknowledgment of input, and timely responses strengthened accountability and trust, confirming that responsiveness is essential to successful community engagement.

5.2 RECOMMENDATIONS

The study recommends that future infrastructure projects implement transparent and inclusive public awareness strategies. Communities should receive clear, accessible information not only on project objectives and benefits but also on potential risks, compensation procedures, and timelines. This can be achieved through the use of simple language, translation into local dialects, and diverse communication channels such as barazas, local radio, and social media. Comprehensive and accessible communication builds trust and reduces community resistance. Public involvement should be a continuous process rather than a one-time activity. Regular consultation forums, participatory mapping, community advisory committees, and digital engagement tools can sustain dialogue and accountability throughout the project cycle. Active and ongoing involvement fosters a sense of partnership between implementers and communities.

Inclusivity must be strengthened by deliberately engaging marginalized groups, including women, youth, persons with disabilities, and minority communities. Meetings should be held at accessible venues and convenient times, with interpretation services and targeted outreach through local leaders and civil society organizations. Such inclusive practices ensure fairness and equitable distribution of project benefits. Feedback mechanisms should be institutionalized within project governance structures. Establishing clear grievance channels like as toll-free hotlines, liaison offices, and digital reporting platforms and providing timely updates on resolutions will enhance transparency, trust, and dispute prevention.

Public participation should be embedded as a continuous relationship rather than a procedural formality. This requires integrating participation frameworks into infrastructure policy and allocating adequate resources for awareness, consultation, inclusivity, and feedback. Institutionalizing these practices will promote higher levels of acceptance, accountability, and long-term sustainability in future projects.

5.3 Suggestions for Further Research

This study explored four core dimensions of public participation, public awareness, involvement approaches, inclusivity, and feedback mechanisms and their effect on the performance of Kenya's Standard Gauge Railway project. While the results were significant, further research is recommended in several areas. First, a longitudinal study could be undertaken to evaluate how public participation influences project performance across different phases, thereby revealing its long-term effects. Finally, qualitative methods such as interviews and focus group discussions could be used to capture richer perspectives, especially from marginalized and vulnerable groups. These insights would complement quantitative results and enhance the design of more inclusive and effective public participation frameworks in infrastructure development.

REFERENCES

- Adeleke, A. Q., Bahaudin, A. Y., & Kamaruddeen, A. M. (2021). The role of stakeholder management in the performance of mega infrastructure projects in Nigeria. *International Journal of Construction Management*, 21(4), 392–406.
- Ayuba, P., & Alabi, O. M. (2019). Impacts of stakeholder involvement in road construction projects in Nigeria. *International Journal of Project Management*, 37(5), 804–816.
- Chepkemai, J., Kiptum, G. K., & Nyandiga, C. O. (2022). Stakeholder involvement and implementation of large infrastructure projects in Kenya: The case of LAPSET corridor. *International Journal of Economics and Project Management*, 4(1), 34–48.
- Freeman, R. E., & Dmytriiev, S. D. (2023). *R. Edward Freeman's selected works on stakeholder theory and business ethics*. Springer.
- Flyvbjerg, B. (2017). *Oxford Handbook of Megaproject Management*. Oxford University Press.
- Gaventa, J. (2006). Triumph, deficit or contestation? Deepening the 'deepening democracy' debate. *IDS Working Paper*, 264.
- Karanja, J., & Ombati, J. (2021). Grievance redress mechanisms in infrastructure development: Evidence from Kenya. *Journal of Construction Policy and Practice*, 9(1), 22–37.
- Kasahun, B. T. (2021). Public awareness and community support in Ethiopian road development projects. *Journal of African Development Studies*, 13(1), 44–59.
- Kenya National Bureau of Statistics. (2023). *Economic Survey 2023*. KNBS Publications.
- Kimani, M., & Karanja, J. (2022). Public participation and performance of infrastructure projects in Kenya: The case of Standard Gauge Railway. *International Journal of Infrastructure Development and Management*, 5(2), 54–68.
- Kothari, C. R. (2021). *Research methodology: Methods and techniques* (5th ed.). New Age International Publishers.
- Matheka, B., & Nderitu, L. (2022). Community feedback mechanisms and performance of county projects in Kenya. *African Journal of Governance & Development*, 11(2), 87–99.
- Mugenda, O. M., & Mugenda, A. G. (2019). *Research methods: Quantitative and qualitative approaches*. ACTS Press.
- Musa, M., Okafor, E., & Nwachukwu, C. (2022). Promoting inclusivity in stakeholder participation for sustainable urban projects. *Sustainable Cities and Society*, 81, 103841.
- Mwangi, J., & Wambua, S. (2021). Land acquisition and performance of infrastructure projects in Kenya. *International Journal of Project Management & Development*, 3(1), 101–117.

- Mwita, J. (2020). Influence of stakeholder engagement on performance of water infrastructure projects in Tanzania. *Journal of African Public Administration*, 7(2), 64–78.
- Njenga, S., & Mwaura, F. (2020). Public participation in urban water projects in Kenya: Lessons from Nairobi County. *Water Policy*, 22(4), 578–594.
- Nsengiyumva, F., & Habimana, T. (2020). Participatory approaches in infrastructure development: *East African Journal of Development Studies*, 2(3), 120–135.
- Onyekachi, A. (2019). Youth participation and road project sustainability in Nigeria. *African Journal of Sustainable Development*, 9(1), 49–65.
- Organisation for Economic Co-operation and Development (OECD). (2015). *Stakeholder engagement for inclusive water governance*. OECD Publishing.
- Otieno, J., & Musyoka, R. (2021). The role of community engagement in rural electrification projects in Kenya. *International Journal of Energy Policy and Management*, 6(2), 37–46.
- Quick, K. S., & Feldman, M. S. (2011). Distinguishing participation and inclusion. *Journal of Planning Education and Research*, 31(3), 272–290.
- Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson Education Limited.
- Schweikert, A., Chinowsky, P., & Espinet, X. (2018). The role of stakeholder engagement in infrastructure resilience. *International Journal of Disaster Risk Reduction*, 27, 339–347.
- Sekaran, U., & Bougie, R. (2020). *Research methods for business: A skill-building approach* (8th ed.). Wiley.
- Tumusiime, J., & Mbabazi, D. (2019). E-governance tools in Uganda's infrastructure projects. *African Journal of Information Systems*, 11(3), 215–231.
- UN Women. (2016). *Gender equality and inclusive infrastructure*. UN Women Policy Brief.
- Wanjohi, G., Karimi, J., & Kibe, J. (2020). Community participation and the success of slum upgrading programs in Kenya. *Urban Studies Research*, 2020, 1–10.
- World Bank. (2019). *Kenya economic update: Unbundling slum economy*. World Bank Group.
- Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper & Row.