Metropolitan Journal Of Science & Technology

ISSN: 1813-4211

Vol. 5 Issue 1, January - 2026, Pages: 449-456

The effect of stakeholder engagement in implementation on electronic waste management in Rubaga Division, Uganda

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Abstract

The study investigated the effect of stakeholder engagement in implementation on electronic waste management (EWM) among households, business owners, and local officials in Rubaga Division, Uganda. A mixed-methods case study design was employed, utilizing structured questionnaires and interviews to collect quantitative and qualitative data from a sample of 97 respondents selected through purposive and simple random sampling from an accessible population of 200. The data were analyzed to determine the correlation between stakeholder engagement in implementation measured through community mobilization, realization of action plans, and dissemination of information and EWM effectiveness. The results revealed a very strong, statistically significant positive correlation between the two variables, with a correlation coefficient (r) of 0.890 and a significance value ($p = 0.000$). This indicated that as active stakeholder involvement in the implementation of EWM activities increased, management outcomes improved substantially. The null hypothesis was therefore rejected, confirming that the observed relationship was not due to chance. The study concluded that stakeholder engagement in implementation is a critical and powerful determinant of effective EWM, accounting for a significant proportion of variability in waste management performance. It was recommended that Rubaga Division implement targeted policies focused on active community mobilization, clear role allocation in waste handling, and continuous information dissemination to enhance participation, improve service delivery, and ultimately achieve a cleaner urban environment.

Keywords: Stakeholder Engagement, Implementation, Electronic Waste Management, Community Mobilization, Rubaga Division, Uganda, Correlation, Service Delivery.

Background of the study

Effective waste management systems globally are characterized not only by sound planning but, crucially, by successful implementation that actively involves the communities they serve. The United Nations Human Settlements Programme (UN-Habitat) emphasizes that community participation in the implementation of solid waste management is a cornerstone of sustainability in cities of the developing world (UN-Habitat, 2010). A primary obstacle to achieving this is the implementation gap, where well-crafted plans fail to translate into action due to limited stakeholder buy-in, inadequate mobilization, and poor execution frameworks (Bernstein, 2018). The theoretical perspective of the Waste Management Theory advocates for an integrated approach that links waste streams to collection, treatment, and disposal methods, aiming for environmental benefit, economic optimization, and social acceptability (Prongraiz et al., 2020). This social acceptability hinges directly on the involvement of stakeholders during the implementation phase. Studies from East Africa, such as those in Dar es Salaam and Nairobi, demonstrate that when informal collectors, community groups, and private partners are actively engaged in collection, sorting, and recycling activities, both

Received: 18.01.2026 Accepted: 22.01.2026 Published on: 30.01.2026

Metropolitan Journal Of Science & Technology
ISSN: 1813-4211
Vol. 5 Issue 1, January - 2026, Pages: 449-456

coverage and efficiency of waste management improve significantly (12.pdf, n.d.). Consequently, the global discourse on urban environmental management has increasingly focused on understanding the mechanisms such as community mobilization, participatory monitoring, and inclusive service delivery models that can bridge the gap between policy and practice on the ground (Visvanathan & Jankler, 2013).

In Uganda, the implementation of decentralized services like waste management is a core mandate of local governments under the Local Government Act (1997). However, the transition from planning to implementation is often where systems break down. Municipalities, including divisions like Rubaga, frequently shoulder the burden of service delivery with limited capacity, leading to a reliance on top-down implementation that excludes community energy and resources (Ezeudu & Bristow, 2025). For electronic waste, this problem is pronounced. While policies may outline roles for producers or informal sector integration, the on-ground reality sees households and businesses managing e-waste ad hoc often through unsafe disposal because structured, participatory implementation systems are absent. Research in other Ugandan municipalities, such as Mbarara and Arua, has identified that community involvement in actual waste handling activities (separation, storage, transport to points) is low, leading to poor collection rates and environmental pollution (Mushabe, 2017; Karoo, 2018). This implementation deficit is exacerbated by a lack of awareness, training, and tangible incentives for communities to change their disposal behaviors. Therefore, within the Ugandan urban context, moving from a municipality-centric implementation model to a multi-stakeholder one is not merely an option but a necessity for achieving scalable and sustainable e-waste management (Sserunkuma, 2022).

Rubaga Division faces acute implementation challenges in its e-waste management cycle. Despite having waste collection schedules and a public health department, large portions of generated e-waste remain uncollected or improperly handled (Christopher & Felex, 2022). Observations indicate that implementation is characterized by irregular collection services, overflowing skips in central business areas, and a near-complete lack of specialized e-waste handling at the household or business level (Rubaga Division Council Records, 2023). The division's implementation strategy appears to rely heavily on its own limited fleet of trucks and staff, with minimal active mobilization or partnership with the community it serves (Desire & Nancy, 2025). For instance, there are few, if any, community-led clean-up campaigns specifically targeting e-waste, no structured programs to engage youth or women's groups in collection or awareness drives, and limited channels for residents to report service failures or suggest improvements. This creates a passive citizenry that views waste management solely as a government responsibility, leading to littering and illegal dumping when services are perceived as inadequate. The issue of stakeholder engagement in implementation is particularly poignant here (Rebecca & Isaac, 2023). While a plan may exist to collect waste, its success depends entirely on whether households store it properly, whether businesses subscribe to services, and whether community watchdogs help monitor disposal points. Preliminary evidence suggests these implementations linkages are weak. While national studies discuss implementation challenges, there is a critical lack

Received: 18.01.2026 **Accepted: 22.01.2026** **Published on: 30.01.2026**

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of empirical data specifically quantifying how the level of stakeholder engagement during the implementation phase directly affects the effectiveness of e-waste management in a high-density division like Rubaga.

Problem Statement

Electronic waste management in Rubaga Division remains largely ineffective, with significant quantities of e-waste being mismanaged despite the existence of service plans. A key contributor to this failure is the weak engagement of stakeholders during the implementation phase of EWM programs. Households, business owners, informal collectors, and local leaders often have limited active roles in the execution of waste collection, segregation, and safe disposal activities (UCC, 2022). There is inadequate community mobilization by local authorities, a lack of structured programs to involve groups like youth and women in EWM tasks, and poor dissemination of information regarding proper disposal practices and collection schedules (Mercy et al., 2023). Consequently, implementation relies heavily on the division's overstretched capacity, leading to irregular collections, indiscriminate dumping, and low public cooperation. Previous small-scale interventions have failed to become sustainable due to this absence of a participatory implementation framework (KCCA, 2022). The lack of active stakeholder involvement in turning plans into action undermines the efficiency, coverage, and environmental outcomes of EWM services. Therefore, there is a pressing need to examine the specific effect of stakeholder engagement in implementation on the effectiveness of electronic waste management in Rubaga Division, to inform strategies that foster collaborative execution and improve service delivery.

Main Objective

To examine the effect of stakeholder engagement in implementation on electronic waste management in Rubaga Division, Uganda.

Methodology

The study adopted a mixed-methods case study design to investigate the effect of stakeholder engagement in implementation on electronic waste management in Rubaga Division. This design was appropriate for capturing the complex, real-world dynamics of how community involvement in daily waste management activities influences overall system performance. It allowed for the triangulation of quantitative survey data with qualitative insights from interviews, providing a holistic understanding of the implementation context (Sekaran, 2013). Through this design, the study gathered data on specific implementation roles and activities from a diverse range of stakeholders directly involved in or affected by EWM operations. The research was conducted within the boundaries of Rubaga Division, Kampala.

The accessible population included district officials, KCCA officers, division officials, village chairpersons, hotel owners, households, and shopkeepers (N=200). Using Krejcie & Morgan (1970), a sample of 127 was targeted, with 97 questionnaires successfully completed and analyzed (76.4% response rate). Purposive sampling selected key officials, while simple random sampling selected households and shopkeepers. Data on implementation engagement

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(community mobilization, action plan realization, information dissemination) and EWM effectiveness were collected via structured questionnaires and interviews, and analyzed using correlation and regression techniques in SPSS.

Results

Table 1: Descriptive Statistics on Stakeholder Engagement in Implementation and Electronic Waste Management in Rubaga Division.

Implementation Indicators	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	STD
Local leaders mobilize the community to participate in EWM.	12.5%	15.6%	15.6%	56.3%	0.0%	2.84	1.11
Youth, widows, women are involved in EWM programs.	12.5%	37.5%	31.3%	15.6%	3.1%	3.41	1.01
Stakeholders are involved in the collection of Electronic Waste.	12.5%	25.0%	31.3%	31.3%	0.0%	3.19	1.03
Communities in Rubaga Division participate actively in EWM.	0.0%	46.9%	28.1%	25.0%	0.0%	3.28	0.92
Local authorities always mobilize their residents on EWM issues.	6.3%	68.8%	18.8%	6.3%	0.0%	3.06	0.88

Source: Primary Data, 2025

On the critical indicator of whether local leaders mobilize the community, a majority (56.3%) disagreed, while only 28.1% agreed. This was the lowest mean score (2.84), indicating clear failure in proactive mobilization.

> *A village chairperson admitted, "Our role is mainly to relay messages from the division. We don't have the resources or specific mandate to organize people for waste management activities ourselves." (Official, RD005: 19/10/2025) In contrast, on the involvement of specific groups like youth and women, 50% agreed,*

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though 31.3% were neutral. This suggests some incidental or project-based involvement but not systematic integration.

A respondent noted, "You see some young people collecting metal from dumpsites, but it's for their own survival, not part of an organized program by the division." (Household, RD006: 19/10/2025). Regarding stakeholder involvement in collection, 37.5% agreed, but an equal proportion (31.3%) disagreed, with another 31.3% neutral. This reflects a fragmented picture where some actors (like private collectors in CBD) are involved, while many residents are not. On whether communities participate actively, 46.9% agreed, but 25% disagreed.

A business owner clarified, "We participate by paying for private collection or taking trash to the skip. But 'active' participation? No, we are not trained or organized. We just react to the service or lack of it." (Business Owner, RD007: 20/10/2025) Interestingly, 75.1% agreed that local authorities mobilize residents on EWM issues, but this seems to conflict with the first indicator. This may refer to general awareness messages rather than active mobilization for specific tasks.

Table 2: Correlation between Stakeholder Engagement in Implementation and Electronic Waste Management.

Variables	Pearson Correlation	Sig. (2-tailed)	N
Implementation & EWM	0.890**	0.000	96

Source: Primary Data, 2025

The correlation coefficient (r) was 0.890, indicating an exceptionally strong positive relationship between stakeholder engagement in implementation and the effectiveness of electronic waste management. This suggested that as hands-on community involvement in activities like waste storage, separation, transport to collection points, and monitoring improved, the overall performance of the EWM system improved dramatically. The significance value (Sig.) was 0.000, leading to the rejection of the null hypothesis. This confirmed that the powerful relationship was statistically significant and not a chance occurrence. The correlation of 0.890 was even stronger than that for planning, indicating that actions on the ground the actual *doing* of waste management by a broad set of actors is perhaps the most critical factor for success. This relationship accounted for a very high proportion (about 79% based on R Square) of the variability in EWM outcomes.

Findings of the study

It was established that stakeholder engagement in implementation has a very strong influence on electronic waste management in Rubaga Division. The findings indicated that direct community mobilization by local leaders was particularly weak, creating a significant vacuum in organizing collective action at the grassroots level. This aligns with the observations of Moningka (2020), who argued that without active mobilization, communities remain passive recipients of services, undermining the sustainability of any waste management program. Staff and resident interviews

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corroborated this, with many noting that mobilization, if it occurred, was top-down and informational rather than collaborative and action-oriented. Nonetheless, the overwhelming statistical relationship confirmed that in instances and areas where stakeholders were actively involved in execution, EWM outcomes were markedly superior.

It was further established that while there was some involvement of groups like youth and women, and while communities undertook basic disposal actions, this engagement was largely informal, reactive, and unstructured. The involvement was not a product of a deliberate division strategy to co-produce EWM services. This finding resonates with the concept of the "informal sector" in waste management, which, while active, operates outside formal regulatory and support systems, limiting its efficiency and safety (Amankwaa et al., 2017). The strong correlation suggests that if this latent community capacity were intentionally harnessed, organized, and supported through formal partnerships, the gains in EWM effectiveness could be substantial. A community member's suggestion highlighted this potential: "If the division could provide us with labeled bins for different wastes and a clear collection schedule, we would gladly separate our trash. But they don't ask us, and they don't provide the means." (Household, RD008: 21/10/2025)

It was also established that a key missing element in the implementation phase was the structured allocation of roles and responsibilities alongside clear communication. The discrepancy between perceptions of "mobilization" (high agreement) and actual "mobilization for participation" (low agreement) points to a failure in translating general awareness into specific, assigned tasks. These observations align with implementation science, which emphasizes that for complex public services, clarifying who does what, when, and *how* is essential for execution fidelity (Schubeler, 1996). The exceptionally strong correlation ultimately underscores that EWM is fundamentally a distributed task requiring the coordinated action of hundreds of thousands of residents and businesses; the division's role must shift from sole implementer to facilitator of a multi-stakeholder implementation network.

Conclusions

It was concluded that stakeholder engagement in the implementation phase has a very strong and significant positive effect on the effectiveness of electronic waste management in Rubaga Division. The findings indicated that active, hands-on involvement of communities, businesses, and groups in the actual tasks of waste handling is a more powerful determinant of success than even participatory planning. However, such engagement is currently low, particularly in terms of proactive mobilization and structured role allocation. Interviews reinforced this, with participants expressing willingness to participate more but citing a lack of organization, direction, and support from local authorities.

It was further concluded that the current implementation model is overly reliant on the division's direct service delivery capacity, which is insufficient for the scale of the challenge. The latent willingness and existing informal practices of stakeholders are not effectively harnessed into a coherent implementation system. This represents a significant missed opportunity for improving coverage, efficiency, and sustainability.

It was also concluded that the transition from awareness to action is poorly managed. While there may be general communication about waste, it does not translate into clear instructions, provided tools, or assigned responsibilities that would enable stakeholders to become active co-implementers. Therefore, the study concludes that transforming

Received: 18.01.2026 Accepted: 22.01.2026 Published on: 30.01.2026

the implementation paradigm from a municipal monopoly to a shared, multi-actor responsibility is the most critical step toward achieving effective electronic waste management in Rubaga Division.

Recommendations

To dramatically improve electronic waste management in Rubaga Division, the administration must fundamentally reorient its implementation approach towards active co-production. The Division should launch targeted community mobilization campaigns, partnering with village and parish councils to form and support Environmental Health Committees or EWM Action Groups. These groups should be tasked with localized awareness, monitoring of collection points, and organizing community clean-up days specifically for e-waste.

The Division must move beyond being the sole collector. It should develop and communicate clear, simple protocols for household and business e-waste management (e.g., "separate, store, schedule") and provide the necessary tools, such as promoting the use of separate containers for e-waste. Furthermore, it should actively create partnerships, formally integrating willing youth groups, women's associations, and existing informal collectors into the implementation system through recognized roles, basic training, and, where possible, incentive mechanisms.

A transparent and responsive communication system for implementation is essential. The Division should publicly share and stick to a zoned waste collection timetable. It should also establish accessible channels (e.g., hotlines, suggestion boxes at parish offices) for residents to report full skips, request special e-waste pickups, or provide feedback on service quality, closing the loop between service delivery and user experience.

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ISSN: 1813-4211

Vol. 5 Issue 1, January - 2026, Pages: 449-456

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METROPOLITAN JOURNAL OF SOCIAL AND EDUCATIONAL RESEARCH Public Sector Monitoring And Evaluation On Promoting Good Governance I. 7(3), 227–239. https://www.researchgate.net/publication/376617164

Received: 18.01.2026 **Accepted: 22.01.2026** **Published on: 30.01.2026**