

**Stakeholder Engagement In Implementation And Electronic Waste Management In Uganda. A Case Of
Nansana Municipal Council**

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Abstract

The inability of municipalities to handle the increasing amount of waste generated is a growing problem in most developing countries. The study examined how Stakeholder Engagement affected electronic waste management in Urban Councils, the case of Nansana Municipal Council. A theoretical framework was developed employing the Institutional Theory and the Waste Management Theory, which were used as a basis to compare theoretical and actual practices when analyzing waste management practices in municipalities. The report shows that despite some hurdles, some municipalities have addressed the waste management problem using Stakeholder Engagement in their localities. Both qualitative and quantitative approaches have been used to obtain data that was analyzed to obtain key findings based on specific objectives that included: positive correlation results for implementation (.890**) on electronic Waste Management. Findings indicated that there was moderate Stakeholder Engagement at the planning level and poor Stakeholder Engagement at the implementation Monitoring and Evaluation levels to contribute to effective electronic waste management in Nansana municipal council. There has been a big communication gap between the community, elected leaders/councilors, and Nansana municipal council hence the community's interests, views, activities, and challenges in EWM were not being addressed. The study recommends that the communication gap be addressed and that all stakeholders should be encouraged to participate at all levels of managing waste for purposes of contributing towards an efficient electronic waste management system.

Keywords Waste management, stakeholder, implementation.

Introduction

The Waste Management Theory (Prongracz et al., 2004) is a unified body of knowledge about waste and its management. It is founded on the expectation that waste management is to prevent waste from causing harm to human health and the environment and promote resource use optimization. The theory advocates activities that include: avoidance of waste creation Prevention, reduction of waste, recycling and resource recovery, storage, transportation, and disposal using appropriate technologies. In this study, the Theory of Waste Management explains or underpins effective Electronic Waste Management. It concerns the prevention of waste creation on streets

and in public places which requires the community to work in partnership for a sustainable environment. The Institutional Theory represents the independent variable with its three pillars of the Regulative, Normative, and Cultural cognitive to explain the dimensions used in the study which are; the involvement of the community in planning, Implementation, and Monitoring and Evaluation as it is done in a project cycle.

The study discussed the role of Stakeholder Engagement as the independent variable comprising planning, implementation monitoring, and evaluation and its relationship with electronic waste management

Received: 09.01.2024

Accepted: 18.01.2024

Published on: 31.01.2024

as the dependent variable. It examines aspects of Electronic Waste Management which include; Electronic waste collection, EW transportation, EW

disposal, waste reduction, reuse, recycling, recovery, and institutional challenges that come as a result of Stakeholder Engagement.

Problem statement

Inadequate Stakeholder Participation in Implementation, the limited involvement of stakeholders, including government bodies, businesses, NGOs, and the local community, in the implementation phase of e-waste management programs hampers the effectiveness of these initiatives. The absence of a collaborative and coordinated effort undermines the potential impact of strategies in place and Weak Regulatory Compliance, a lack of strict adherence to existing regulations and standards for e-waste management within the municipal council contributes to ineffective implementation. The absence of robust enforcement mechanisms allows for improper disposal practices, perpetuating environmental degradation.

General objective

To examine the effect of Stakeholder Engagement in Implementation on how Electronic Waste Management programs have been affected in Nansana Municipal Council.

Specific Objective

1. Assessing the activeness involved in the implementation phase of electronic waste management initiatives in Nansana Municipal Council:

1. Evaluating the key challenges faced by stakeholders in Nansana Municipal Council during the implementation of electronic waste management initiatives.

2. Understanding Stakeholder Perspectives on Implementation Challenges and Opportunities:

3. Proposing Recommendations for the willingness of the existing regulatory framework for electronic waste management in Nansana Municipal Council to be adhered to during the implementation phase.

Research Questions

1. To what extent are stakeholders actively involved in the implementation phase of electronic waste management initiatives in Nansana Municipal Council?

2. What are the key challenges faced by stakeholders in Nansana Municipal Council during the implementation of electronic waste management initiatives?

3. How well is the existing regulatory framework for electronic waste management in Nansana Municipal Council being adhered to during the implementation phase?

Methodology

This research employs a mixed-methods approach to comprehensively investigate stakeholder engagement in the implementation phase of electronic waste (e-waste) management initiatives in Nansana Municipal Council, Uganda. The chosen methodology integrates both quantitative and qualitative methods to provide a holistic understanding of the complexities surrounding stakeholder involvement. A sequential explanatory design was adopted, beginning with quantitative data collection and analysis followed by qualitative data collection to provide a deeper exploration of the

Received: 09.01.2024

Accepted: 18.01.2024

Published on: 31.01.2024

findings. Quantitative Phase: Stratified random sampling was used to select participants from different stakeholder groups, including government bodies, businesses, NGOs, and the local community within Nansana Municipal Council. The sample size was determined based on statistical considerations for adequate representation.

Qualitative Phase: Purposive sampling was employed to select key informants representing diverse perspectives, including policymakers, industry leaders, environmental experts, and community representatives. Quantitative Phase: Surveys was distributed electronically and in person to gather quantitative data on stakeholder engagement during the implementation of e-waste management initiatives. The survey included closed-ended questions with Likert scales, capturing quantitative insights into awareness, participation, and challenges.

Qualitative Phase: In-depth interviews and focus group discussions was conducted with selected key informants to obtain qualitative insights. Open-ended questions were used to encourage detailed responses and explore the nuanced aspects of stakeholder engagement. Quantitative Phase: Statistical software such as SPSS was employed to analyze survey data. Descriptive statistics was utilized to summarize key findings, and inferential statistics, such as correlation analysis, was conducted to identify patterns and associations. Qualitative Phase: Thematic analysis was applied to qualitative data, allowing for the identification of recurring themes, patterns, and unique insights. The analysis was conducted iteratively to ensure a rigorous exploration of qualitative findings. Triangulation was used to enhance the validity and reliability of the study by comparing and contrasting findings from both quantitative and qualitative phases. This methodological triangulation aims to provide a more comprehensive understanding of stakeholder engagement in the implementation of e-waste management initiatives.

RESULTS

Table 1: Correlation results for Implementation and Electronic Waste Management

	Implementation	Electronic Waste Management
Implementation		
Pearson Correlation	1	.890**
Sig. (2-tailed)		.000
N	90	90
Electronic Waste Management		
Pearson Correlation	.890**	1
Sig. (2-tailed)	.000	
N	90	96

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

Source: primary data

Ho: There is no relationship between implementation and Electronic Waste Management

The correlation coefficient (0.890) shows a strong positive relationship between implementation and Electronic Waste Management. This is statistically significant at a 95% confidence interval since the P-value (0.00) is less than 0.05

Received: 09.01.2024

Accepted: 18.01.2024

Published on: 31.01.2024

and therefore we reject the null hypothesis and conclude that there is a significant relationship between implementation and Electronic Waste Management. It implies that when there is a collaboration between NMC and the community at the implementation stage, the more electronic waste is managed effectively in terms of generation, storage, collection, transportation, and disposal the fewer expenses in terms of trips of waste generated, timely collection, thus leading to healthy living environment/livable town.

Linear Regression Results for Implementation and Electronic Waste Management

A linear regression technique was used by the researcher to determine the variation of implementation on EWM in NMC and the results obtained are reflected in the table below.

Table 2: Regression results for Involvement in Implementation and Electronic Waste Management

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.890	.791	.789	.23710

Predictors: (Constant), Involvement in Implementation

79.1% of the variations in Electronic Waste Management were explained by Involvement in implementation leaving other factors constant. However, the R-squared value (0.791) is greater than the adjusted R-squared value (0.789) because it considers degrees of freedom. The percentage of 24% was attributed to other factors. This implies that implementation involving Stakeholder Engagement had a positive effect on electronic waste management.

Hypothesis 2: Stakeholder Engagement in the implementation of electronic waste management programs significantly affects the management of electronic waste. Results obtained reveal a significant effect that Stakeholder Engagement in Implementation had on Electronic Waste Management, hence the null was rejected and the alternate accepted.

Discussion

It can be noted that improvement in community mobilization, through situation analysis, designing achievable community action plans, and exchanging and provision of awareness information among stakeholders all ingredients of implementation were positively related ($R=.843^{**}$) to electronic waste management. Similarly, the fast and timely dissemination of information and implementation of strategic plans by the concerned stakeholders; if Stakeholder Engagement is taken as a priority in implementing EW activities (collection, transportation, and disposal) it results in an improved healthy living environment in NMC.

The findings of this study indicate that Stakeholder Engagement in the handling of Electronic Waste Management drastically reduces compared to the planning stage. There is an absence of community mobilization by the political representatives/councilors. There is no continuous flow of information guiding the community on what is expected of them as far as poor waste management can contribute to the environment. That is why there is indiscriminate disposal

of waste in the municipality.

Results obtained earlier reveal that much as respondents agreed that there was the realization that community action plans can hardly be achieved, however, there were a few pockets that disagreed with the statement because the community neither NMC had not identified people / formed committees that could help in guiding the locals or people on how waste could be handled at the household level hence a personnel gaps to the management of Electronic Waste in NMC.

In addition to the above, it can be said that NMC had not formulated any bylaws to compel the community to behave in a desired way that leads to effective Electronic Waste Management. There seemed to exist post-colonial thinking where municipalities solely take responsibility for the delivery of services, like the removal of waste to the disposal level without paying any user fees.

Reflected by the earlier findings, it can be argued that many of the respondents agreed that stakeholders like schools' women, and the youth have not been integrated into the management of waste. Awareness campaigns to disseminate information about the benefits of waste handling in the appropriate way are also insufficient and lacking as indicated by Moningka (2020). However, a few people participate in various ways in the management of electronic waste especially at the household level. The activities that they carry out include cleaning areas around their premises, storing waste in a proper way like in containers or bins, and taking waste to the collection sites. However, there are few gazette collection sites, in the community and no designated time for the community to take their waste. Everyone disposes of waste at different times but mostly it is done by children and housemaids late in the evening and at night. This category of people just dump waste indiscriminately at times even when the skips are empty, they pour it outside the skips which results in scattered waste around the collection sites.

To elaborate further, NMC as reflected by the positive responses obtained during the study seemed to be responsible for ensuring the taking, removing, transporting, and disposing of waste to the landfill. Much as there are areas that are not serviced because of impassable roads in other places, waste remains uncollected due to unplanned collection schemes and the rate at which waste accumulates is beyond the municipality's capacity which results in scattered waste in the town. In addition to this, the three old trucks (1 Benz and 2 Tatas) are at times not functional. Luckily enough there is a functional tractor that helps in transportation. But they are not enough to carry out an effective job because they have to be shared with the other division of Gombe – Busukuma. All this contributes to the overflowing of waste in collection points and ungazetted areas. This kind of situation leads to unsanitary conditions where drainages get blocked and indiscriminate disposal of waste thus polluting the environment hence a pending problem.

For purposes of ensuring that the community in NMC is committed, a strategy of preventing and minimizing waste generation and the importance of sorting waste at the household level is required for an effective household waste management strategy.

Responses obtained revealed that NMC had put in place efforts geared towards establishing and developing composting initiatives, collection centers for recyclable waste, transfer stations, and collection of segregated waste

Received: 09.01.2024

Accepted: 18.01.2024

Published on: 31.01.2024

should be introduced. Otherwise, if the sorted waste is not collected the sense for the community to segregate it was lost. This also creates or solves unemployment for the youth and women. One of the registered success stories is that of the C-section, Duncan Village South Africa study as indicated by Mazinyo, (2019). This was a successful intervention where they introduced a strategy of preventing and minimizing waste generation and advocating for sorting mechanisms. This, however, reveals that the sites were located at far distances which necessitated a better road network hence still missing in the Municipal council a challenge.

Awareness campaigns can also help communities to contribute to the development of an EEWM system provided that they was familiar with both challenges facing their environment and the benefits from the drawn Action Plans. This kind of thinking is in line with that of the previous study by Antwi, (2020) carried out in Accra - Ghana, who warned that awareness, creation, and education measures may positively or negatively bring about attitudinal changes. Improved EWM can hardly be changed in the absence of comprehensive and viable EWM options. Therefore, coordination and improvement in waste collection services become essential. In the same way, the regular ways in which people generate, collect, and dispose of waste are influenced by those of their neighbors. So those who practice accordingly become watchdogs / good trainers to others.

Conclusion

This study established a relationship between Stakeholder Engagement in the event of implementing EWM programs in NMC. Lack of bylaws, poor enforcement, and commitment to doing the right thing lead people to act as they wish. This is related to the role of the normative pillar because, without laws and regulations, there is no direction of how things should be done. In the same vein, the Waste Management theory that advocates/assumes the community to work in Partnership for a sustainable environment is right but in this case, it has not worked to prevent waste on streets and in public places. Because the community is not involved in the management of waste the reason for this was that there was poor Stakeholder Engagement in the implementation of SW programmes.

Recommendations

First, the researcher recommends that NMC Management consider the introduction of more awareness campaigns to entice the community to contribute to the development of an EEWM system since they was familiar with both challenges facing their environment and benefits that arise out of the planned activities/ Action Plans.

Secondly, the Nansana Municipality Management through its Health department should hatch strategies to ensure the community is committed to preventing and minimizing waste generation as well as its sorting at the household level. This is intended to ensure proper Electronic Waste Management.

The researcher recommends that NMC Management in line with the Women and Youth offices within the Council consider engaging this category fully in the Management of Waste. This is intended for their inclusiveness in the planning and implementation of EWM programs. This is likely to close several gaps that might exist in the implementation phase hence reducing the Electronic Waste Management ineffectiveness.

Received: 09.01.2024

Accepted: 18.01.2024

Published on: 31.01.2024

The Nansana Municipality in partnership with the Local Community should establish and develop composting initiatives, collection centers for recyclable waste, and collection of segregated waste. This is intended to ensure that they are pulled together and identify the Market for their sale hence effectively managing waste

Nansana Municipal Council together with its Legal department should ensure that bylaws compelling the community to participate in environmentally related issues and penalties to offenders are well outlined and enforced appropriately with the consultation with the community. This is intended to ensure that waste is properly managed. Additionally, the researcher recommends that NMC Management together with its financial department should consider the introduction of User fees. This is intended to ensure a cut down on Vehicle maintenance and other EWM expenses as they seem to originate from waste mismanagement. This is intended to better good management of waste by the locals.

Lastly, the researcher recommends that for the impassable routes and areas, the private sector can be incorporated into the EWM system. Such that technology suiting the areas can be involved like using tricycles, and wheelbarrows to pick up waste in inaccessible areas.

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Accepted: 18.01.2024

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