

**Contribution of Small Businesses to Solid Waste Management in Moshi Municipality**  
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**Abstract**

The objective of this study was to examine the contribution of small business firms on solid waste management in the Municipality of Moshi, specifically in central market, Mbuyuni market and Kiborloni market. The businesses targeted in this study were fruit, food, and vegetable vendors.

The study had the following specific objectives:

- To describe the socio-economic characteristics of small businesses,
- To identify the roles of small businesses in managing solid waste,
- To determine the regulations available for solid waste management, and
- To determine the factors that hinder small businesses from implementing solid waste management.

In this study, a cross-sectional research design was applied on the basis that the design was observational in nature and data could be collected from different groups of respondents in a specific period. The reason for using cross sectional research design in this study was that the research work had both qualitative and quantitative analytical nature. This design assisted in the collection of data since the researcher had to collect both qualitative and quantitative data.

The study was conducted in Moshi Municipal markets in Kilimanjaro region. The Municipality covers about fifty nine (59) square kilometres and is the smallest municipality in Tanzania by area. At the time of this study, the Municipality was divided into two administrative divisions, namely: Moshi East and Moshi West. The divisions were further subdivided into 21 smaller administrative units called Wards. The wards were Bondeni, Kaloleni, Karanga, Kiborloni, Kilimanjaro, Kiusa, Korongoni, Longuo, Majengo, Mawenzi, Mji Mpya, Msaranga, Njoro, Pasua, Rau, Miembeni, Soweto, Shirimatunda, Ng'ambo, Bomambuzi and Mfumuni. The wards were further sub-divided into 60 hamlets

There were three potential markets within the municipality which were Kiborloni, Mbuyuni and Moshi central market. These markets constituted a large number of food, fruits and vegetable vendors and they were strategic areas for business, besides business being a common practice. The Municipality was chosen because of the problem of entrepreneurs and small business holders being the centre of environmental pollution, especially in these markets.

In this study, a convenience sampling technique was used. In this technique, representatives were selected due to their accessibility in each of the markets. This was used to obtain data from the small businesses. The researcher collected data from whoever was met in the market selling food, fruits and vegetables. However, purposive sampling was used to collect data from people with specific positions such as members of the market management team and trade authority of Moshi Municipality.

The sampling units for this research were Mbuyuni market, central market and Kiborloni market. The reason for the selection of these markets was because in Moshi municipality, these were the places to find most of the fruit, vegetable and food vendors. This segment of small businesses produced a high amount of waste due to the activities performed. Also, the markets are far enough from one another to bring about different information as applied to each market.

Due to the limited availability of financial and time resources, the sample size of this study consisted of one hundred and forty five business owners. Fifty (50) respondents were taken from Mbuyuni market, fifty (50) respondents from Central market and forty five (45) from Kiborloni market. This was done as an attempt to create homogeneous groups in each market for comparison.

Qualitative data were collected from small business owners, through interviews and the use of structured questionnaires. The structured questionnaires employed were made up of both open-ended and close-ended questions. Close-ended questions were used to shed light to the opinion of the respondents on the concepts under scrutiny while open-ended questions were used in the creation of detailed information on the opinions provided by the respondents. These were employed to describe the socio-economic characteristics of small business owners, the roles of small businesses in managing the solid waste, regulations available for solid waste management and the factors that hinder small businesses from implementing solid waste management.

Quantitative data were collected from published materials such as journals, reports, books and research materials that were made available to the researcher. Also, quotations were made from the interviewed respondents to qualify the quantitative data obtained; hence obtaining information

through documents such as journals, municipal environment reports, United Nations environment projects and quoting key informants.

Both qualitative and quantitative data were collected from primary and secondary sources. The quantitative data were analysed through coding and classification of the collected data. In this study, 'SPSS version 20' was used to carefully analyse inferential statistics and multiple responses for the descriptive statistics. The results of the analysis were presented through tables, graphs, figures, percentage and diagrams for data interpretation.

The qualitative data were analysed in two levels - descriptive and interpretative levels. Descriptive level, also known as 'manifest level', was used when the researcher gave an account of what was said by the respondent, documented or observed with nothing assumed. An interpretative level, also known as 'latent level', was used when the researcher provided what was meant by the respondents, inferred or implied.

With regard to gender of small business owners, the study found out that out of the respondents who were approached, 22.1 percent were male and 77.9 percent were female. This revealed to the researcher that most of the people who were involved in small businesses in the markets were females than males.

The study also wanted to establish the link, if any, between the level of education and the amount of waste produced' According to the findings, there was no complete and symbiotic relationship between education, production and management of solid waste. For instance, comparing those who had no formal education and those who obtained Form Six level, the respondents with form six level of education produced two buckets of waste (three quarters) more than those with no formal education.

Further, at the three markets under study, fruit vendors amounted to 27.6 percent, food vendors 13.8 percent, while 37.2 percent were vegetable vendors, and vendors of fruits, food and vegetables together were 21.4 percent.

This study also found out that, regarding the production of waste, vegetable vendors produced a larger amount of waste more than fruit and food vendors. This implies that the nature of the business the owners ran, in one way or another, influenced the amount of waste produced.

The study showed that most of the waste produced by these small businesses could be used for other purposes such as feeding of domestic animals and making of secondary products such as ornaments. This led different respondents to argue that the waste they produced could not be at most considered as

waste since they sold it to different people for other uses. Hence, the amount of waste produced by the small businesses was manageable. This was because the businesses were small quantity generators of waste.

On factors limiting small businesses from implementing solid waste management, the respondents cited the following: lack of recycling plan (11.5%), lack of infrastructure (18.2%), low education (19.8%), low income (16.3%), and disunity among small business owners (11.5%).

Still, the study found out that it was possible for the small businesses to manage the environment. This could be done through solid waste management clubs which could be formed by the leaders directing them as a strategic action against solid waste. These clubs would assist them in acquiring collective power to have the small businesses manage the environment. They could create grounds to which the authorities would give them a chance to rekindle their actions on environment management.

In general, the study had established that small business owners involved themselves in controlling and managing waste production on a daily basis by putting waste in plastic bags, owning a dustbin, paying for cleanliness, making sure the environment was clean at all times, talking to the leaders through meetings, creating a behaviour of cleanliness and staying away from waste water systems.

From the study, however, it could be concluded that small businesses owners in Moshi municipality were not completely aware of the need to manage solid waste in their working areas. They were not well informed on the regulations that guide them in solid waste management and they actually participated passively in managing waste which they produced only because the leaders pushed them to do so.

The findings also indicated that the existing policies, regulations and infrastructures were somehow weak in providing a comprehensive guidance on overall solid waste management issues such as cleanliness and waste disposal. This was because there were observed significant factors which hindered effective participation of the small business owners in managing solid waste in their business areas.

Given the foregoing findings, the study recommended the following:

- The Government and other relevant stakeholders should provide education on solid waste management for small businesses owners and leaders in order to create understanding on solid waste management and the benefits expected.
- There should be an improvement of infrastructures that have failed the small businesses in the implementation of the solid waste management. These infrastructures are such as better waste disposal facilities and business cubicles in the markets plus drainage systems.

- The Government, policy makers and • relevant stakeholders should draw up and implement a solid waste recycling plan implementable to small businesses.
- Also, the small business community should form a union which will assist in management of solid waste in the grassroots' level. This could be made possible by small businesses, through their leaders, to create a committee responsible for solid waste. This committee will also ensure that all the small businesses implement solid waste management.
- Incentives must be provided to businesses that do a good job in terms of the proper collection and disposal of solid waste.
- The leaders must support community-based efforts taken by different organizations and individuals towards solid waste management.