



# The People's Knowledge, Attitudes, and Practices towards Solid Waste Management in Nigeria?

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## Abstract

This paper focuses on the people's knowledge, attitudes, and practices towards solid waste management in Nigeria. It evaluated the common solid waste management practices in the country and explored the strategies in place to promote sustainable waste management program. Using mixed method, the paper further evaluated the effectiveness of waste management implementation policies and the factors responsible for poor solid waste management. It was found that there is lack of environmental consideration in the attitudes and practices of managing waste in Nigeria. The paper concludes that the government needs to put in place strategies that will ensure public enlightenment programmes and campaign in order to make the public aware of the danger of poor waste management to human health and social developmental activities. For these purposes, the following recommendations were made, firstly, the government should promulgate new laws to enforce environmental management compliance. Additionally, government should continue to enforce the existing laws on environmental practices. It is believed that when environmental pedagogy is embedded into the curriculum, will develop the consciousness for reduce, reuse and recycle.

## Introduction

The paper will evaluate the common solid waste management practices in Nigeria with an examination of the strategies in place to promote sustainable waste management program and underpin the factors responsible for poor solid waste management. The paper will further examine the challenges facing solid waste management in the country and look into past administrations method of tackling solid waste and evaluate reasons behind private sector been the main driving force behind solid waste management in Nigeria and to further underpin the factors responsible for indiscriminate dumping of solid waste including lack of financial management and supply as well as lack of local government infrastructure and low waste management technology. Several ways to effectively manage solid waste will be recommended. The qualitative analysis will be done by considering the questions that will be raised and analysis of the responses [1-5].

## Preamble

This section focuses on the presentation of results, interpretation and discussion of the finding. The responses from the participants

were subjected to statistical analysis using appropriate statistical techniques and tools as delineated in the research methodology.

## Descriptive statistics of Demographic Distribution of the participants

The result on the descriptive statistics reveals that a total of 54 participants were sampled for the study. The Table reveals that 19 of the participants are males, while 22 are females. This implies that there are more female than male participants in the study. The Table reveals that 19 participants are married, 27 are Single, 8 are Divorced. In respect to frequency distribution according to occupation, the table reveals that 19 participants are Civil Servant, 17 are Self-employed, 14 are student and 4 are others. In addition, the Table shows that 6 participants are Federal ministry of environment, 12 are in the Focus Group, 6 are Industrial expert, 6 are from Local government personnel, 6 are Market traders, 6 are members of the public, 6 are State Ministry of Environment personnel, 6 are State waste management agencies employee. Finally, in respect to frequency distribution according to location,

the table shows that 10 participants are from Lagos, 11 are from Kano, 2 are from Abuja, 12 participants are from Enugu, 7 are from Rivers, 12 are from Bauchi state. (Figures 1- 5) shows the

pie chart of the frequency distribution of the demography. It shows the graphical representation of the information on the descriptive statistics (Table 1).

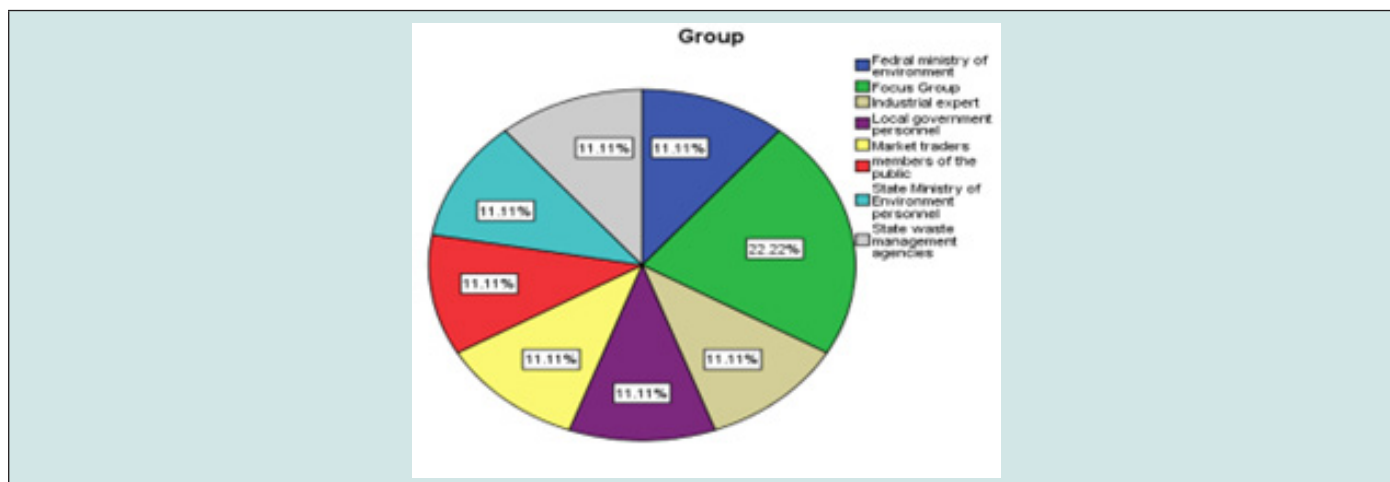


Figure 1: Pie Chart of frequency distribution according to group. (Source: Survey, 2022).

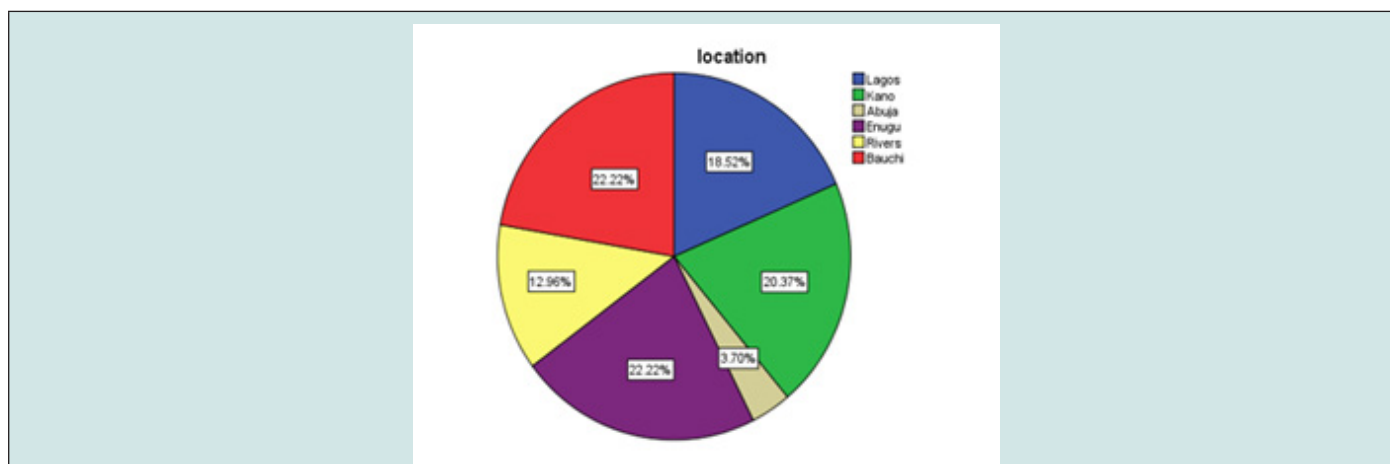


Figure 2: Pie Chart of frequency distribution according to Location (Source: Survey, 2022).

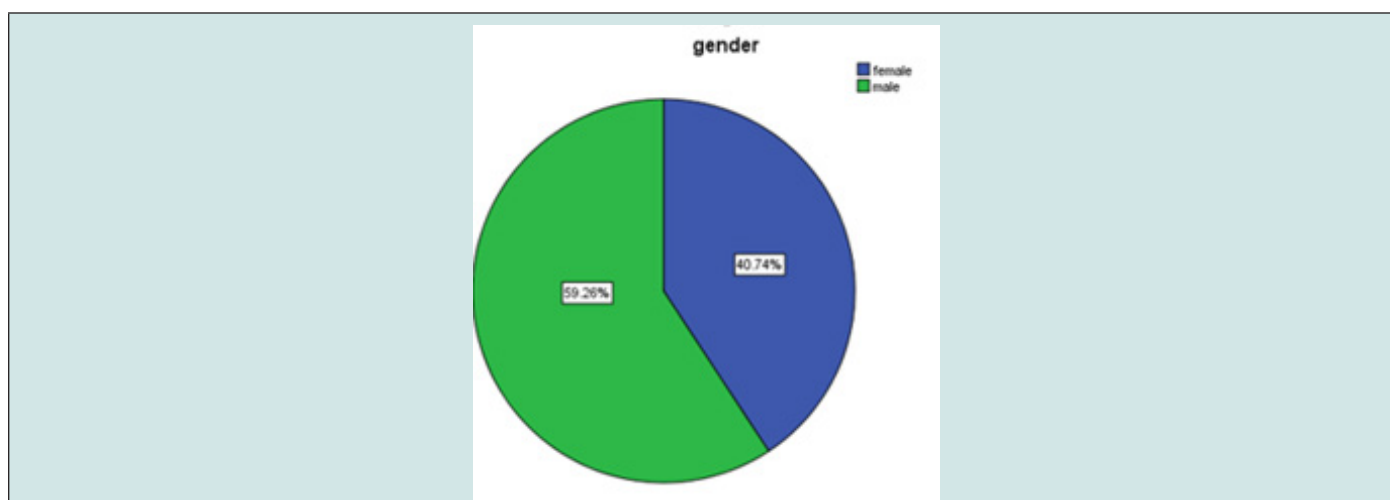


Figure 3: Pie Chart of frequency distribution according to Gender (Source: Survey, 2022).

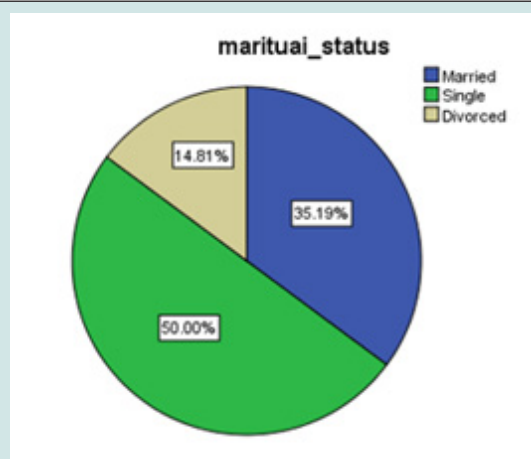


Figure 4: Pie Chart of frequency distribution according to Marital status (Source: Survey, 2022).

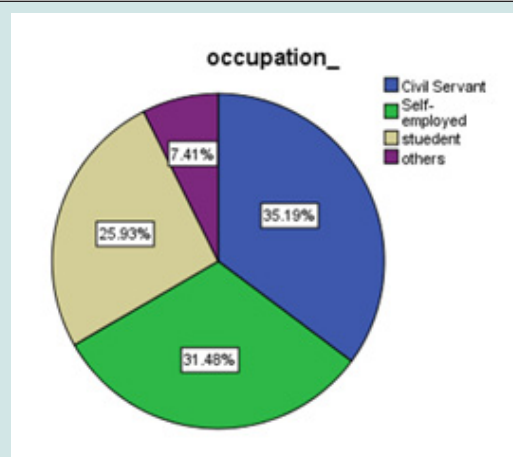


Figure 5: Pie Chart of frequency distribution according to Occupation (Source: Survey, 2022).

Table 1: Frequency Table Source: Survey, 2022.

Participant Demography	Frequency	Percentage
<b>Gender</b>	<b>F</b>	<b>(%)</b>
Male	19	35.2
Female	22	40.7
<b>Total</b>	<b>54</b>	<b>100.0</b>
<b>Marital status</b>	<b>F</b>	<b>(%)</b>
Married	19	35.2
Single	27	50.0
Divorced	8	14.8
<b>Total</b>	<b>54</b>	<b>100.0</b>
<b>Occupation</b>	<b>F</b>	<b>(%)</b>
Civil Servant	19	35.2
Self-employed	17	31.5
student	14	25.9
others	4	7.4
<b>Total</b>	<b>54</b>	<b>100.0</b>

Group	F	(%)
Federal ministry of environment	6	11.1
Focus Group	12	22.2
Industrial expert	6	11.1
Local government personnel	6	11.1
Market traders	6	11.1
members of the public	6	11.1
State Ministry of Environment personnel	6	11.1
State waste management agencies	6	11.1
<b>Total</b>	<b>54</b>	<b>100.0</b>
Location	F	(%)
Lagos	10	18.5
Kano	11	20.4
Abuja	2	3.7
Enugu	12	22.2
Rivers	7	13.0
Bauchi	12	22.2
<b>Total</b>	<b>54</b>	<b>100.0</b>

### Cross Tabulation

The study computed a cross tabulation of the participant demography. This shows the different group that was sampled and the demography in terms of the location, gender, marital status and occupation. Table 2 shows cross tabulation of the participant group and their location. The result of the cross tabulation shows that out of the 6 participant who work in the federal ministry of environment, 2 are located in Lagos and 4 are located in Kano. In the focus group category, a participate is located in Lagos, one is located in kano

while 10 are located in Enugu. Moreover, 6 of the industrial experts surveyed in the study are located in Kano. In the local government personnel group 4 of the participant are from Lagos, Enugu, rivers, and Bauchi while 2 are from Abuja. In the market trader's category, they are all from Bauchi. The participants designated as members of the public are from Rivers. Participant from the state ministry of environment personnel are 6 and are located on Lagos. Out of the 6 participants from the state waste management agencies one is located in Enugu and 5 are located in Bauchi.

**Table 2:** Cross tabulation of the group and the location of participant Source: Survey, 2022.

Lagos		Location					Total	
		Kano	Abuja	Enugu	Rivers	Bauchi		
Group	Federal ministry of environment	2	4	0	0	0	0	6
	Focus Group	1	1	0	10	0	0	12
	Industrial expert	0	6	0	0	0	0	6
	Local government personnel	1	0	2	1	1	1	6
	Market traders	0	0	0	0	0	6	6
	members of the public	0	0	0	0	6	0	6
	State Ministry of Environment personnel	6	0	0	0	0	0	6
	State waste management agencies	0	0	0	1	0	5	6
Total		10	11	2	12	7	12	54

Table 3 shows the cross tabulation of the participant group and their gender. The result of the cross tabulation shows that out of the 6 participant who work in the federal ministry of environment, there are three female and males. In the focus group category, 8 of the participants are female and 4 are male. Moreover, 6 of the industrial expert surveys in the study are male. In the local government personnel group, there are 3 females and 3 males.

In the market trader's category, they are all from Bauchi. The participants designated as members of the public are from Rivers. Participant from the state ministry of environment personnel are 6 and are located in Lagos. Out of the 6 participants from the state waste management agencies one is located in Enugu and 5 are located in Bauchi.

**Table 3:** Cross tabulation of the group and the location of participant Source: Survey, 2022.

Female		Gender		Total
		Male		
Group	Federal ministry of environment	3	3	6
	Focus Group	8	4	12
	Industrial expert	0	6	6
	Local government personnel	3	3	6
	Market traders	2	4	6
	members of the public	4	2	6
	State Ministry of Environment personnel	0	6	6
	State waste management agencies	2	4	6
Total		22	32	54

Table 4 shows the cross tabulation of the participant group and their marital status. The result of the cross tabulation shows that out of the 6 participants who work in the federal ministry of environment, 2 are married, 3 are single and 1 is divorced. In the focus group category, 3 of the participants are married, 7 are single and 2 are divorced. Moreover, out of the 6 industrial expert surveys in the study 5 are single and 1 is divorce. In the local government personnel group, there are 3 married and 3 singles.

In the market traders' group, there is 1 married, 4 single and 1 divorced participant. The participants designated as members of the public consist of one married participant, 3 singles and 2 divorced participants. The 6 Participants from the state ministry of environment personnel are married. Out of the 6 participants from the state waste management agencies 3 are married, 2 are single and 1 is divorced.

**Table 4:** Cross tabulation of the group and the Gender of the participants. Source: survey, 2022.

Married		Maritalal_Status			Total
		Single	Divorced		
Group	Federal ministry of environment	2	3	1	6
	Focus Group	3	7	2	12
	Industrial expert	0	5	1	6
	Local government personnel	3	3	0	6
	Market traders	1	4	1	6
	members of the public	1	3	2	6
	State Ministry of Environment personnel	6	0	0	6
	State waste management agencies	3	2	1	6
Total		19	27	8	54

## Research Questions 1

To address the research objectives as well as simultaneously provide answers to the research questions, the participants responses to the interview at the different categories was subjected to qualitative analysis. These categories include:

- Federal Ministry of Environment Senior Junior Staffs
- Focus Group
- Industrial Experts
- Local Government personnel
- Market traders
- Members of the public
- State Ministry of Environment personnel

- State waste management agencies

The qualitative analysis was done by considering the questions raised in the survey. The items in the questionnaire are linked to the research objectives, consequently by analysing them provided answers to the research questions. To provide answer to the research question namely, "what are people's knowledge, attitudes and practices towards solid waste management in Nigeria?", the study formulated interview questions which were specifically developed to provide specific answers to the research questions. The interview questions were subjected to content validity and vetted by expert in the field. The validated questions were piloted test, and the internal consistency test reveals the instrument was internally consistent. The question one of the interviews for this category namely "Federal Ministry of Environment Senior Junior

Staffs” distinctively provides a perspective on addressing the research question. The participant in the group were asked, “what is the attitude of Nigerians to solid waste management and healthy environmental practices?”. In responding to the question, 6 out of 6 sampled participants noted that there is a general negative attitude towards solid waste management and healthy environmental practices amongst Nigerians. One of the participants noted that “residents in most parts of Nigeria have a very negative attitude towards waste management and disposal. They start dumping their solid waste in open dumps. This is because many areas lack adequate waste collection services, and thus, residents’ resort to alternative methods that are often unsafe and unhealthy.” Another participant noted that “improper solid waste dumps are spreading a variety of diseases. Infectious infections, land and water contamination, drain obstructions, and biodiversity loss are all possible consequences of an ineffective municipal solid waste management system. The people’s attitude to waste disposal and management is negatively correlated. The people have a negative attitude towards waste management and disposal in Nigeria [6-9].

**Question: “What are the common solid waste management practices in the country?”.**

The participants were asked “What are the common solid waste management practices in the country?”. The general response indicated, there is little or no common practice regarding solid waste in the country. Out of the 6 participants, 2 indicated that indicated Waste avoidance, recycling, improvement of waste quality, reuse of products, waste minimization strategies, energy recovery and sorting of waste, 4 participants noted that there is no common solid waste management practice in Nigeria. This is reflected in the open drainage, poorly constructed sewers, indiscriminate disposal of waste, dumpsite, inadequate toilet facilities. One of the participants asserted that “The common solid waste management practices are poor in this country because open drainages and sewers poorly constructed were available and totally absent in most households.

**Question: What are the strategies in place to promote sustainable waste management program?**

In addition, the participants were asked; “What are the strategies in place to promote sustainable waste management program?” (i.e. question 3). The general response indicated that there are no adequate strategies that is been put in in place to promote sustainable waste management program. One of the participants said “Different approaches and interventions have been developed in the past for tackling municipal waste concerns with little or no progress. Managing municipal waste efficiently requires intensification and application of knowledge management tools that guarantee a sustainable environment and socio-economic growth.” Another participant in the same category noted that “Several approaches and initiatives have been attempted in the past, with little or no progress to address municipal garbage challenges. Intensification and the deployment of knowledge management technologies to achieve sustainable environmental and socio-economic growth is required for efficient municipal

garbage management”. The common response from participant indicates that there is little or no strategies that has been put in place to promote sustainable waste management program. [10-14].

**Question: What are the factors responsible for poor solid waste management?**

The participant was also asked to provide response to the question 4 in the interview namely” What are the factors responsible for poor solid waste management?”. The participants were unanimous in their response. They noted that the factor responsible for poor solid waste management includes lack of financial management and logistics, insufficient municipal infrastructures, imbalanced planning decisions, lack of aesthetics, industrial and commercial growth, perceptions and sociocultural habits. One of the participants stated that “The major causes of improper management of solid waste are related to the lack of financial management and logistics Deficient municipal infrastructures, Low waste management technology, Inadequate and untimely release of government fund, loopholes in waste management strategies, poor public attitude towards waste management, Poor education and ignorance among citizen and poor enforcement of sanitation by Laws.

**Question: What are the challenges facing solid waste management in the country?**

The participants were also asked to provide response to the question “What are the challenges facing solid waste management in the country?” The general response indicated that the major challenges included: improper collection system, inadequate waste collection equipment and vehicles, indiscriminate dumping of waste, lack of continuity and implementation of government policies unwillingness to pay by waste generators , cart pushers/ illegal waste management operators menace, high cost of equipment maintenance, instability in policy formulation on waste management, limited resources and information to make reliable information, inadequate waste collection equipment and vehicles, ineffective collection system, indiscriminate waste disposal, and a lack of continuity in the implementation of government policies.

**Question: How did the past administration tackle solid waste?**

The participants were asked to state how the past administration tackle solid waste. They noted that there wea collection of rubbish from homes at regular intervals, using vehicles (selection lift, compactor), bicycles, and rickshaws. Other participant noted that there was neighbourhood dumpsite method, use of vehicles (pick lift, compactor), bicycles, and rickshaws to collect refuse from house to house at regular intervals to disposal sites. Hhouseholds generated small volumes of garbage and a backyard pit or personal waste site was the most common past practice of waste disposal. It is Important to note that the responses were location specific in the sense that participant are from the different state in Nigeria and had different state government with different approach to solid waste management approach. Generally, the responses seem to suggest



that past administration had a solid waste management plan while also giving room for individual waste management practice.

**Question: Why make private sector the main driving force behind solid waste management in Nigeria?**

The participants were asked why the private sector was made the main driving force behind solid waste management in Nigeria. The general response was that they provide efficient solid waste management (SWM) services as well as create efficiency and lower cost in rendering services. A participant in the survey noted that "the collaboration of the public and commercial sectors is to provide effective solid waste management (SWM) services. While the public sector is responsible for providing SWM services, it has been unable to fulfil the need for effective service delivery, particularly in developing nations. The private sector's engagement has been sought in order to improve efficiency and minimise costs associated with providing these services. Partnerships between the local government and private operators in SWM have been studied based on the extent to which the collaboration has enhanced SWM services, with a focus on major Nigerian cities. The success of every public/private partnership hinge to the extent that all stakeholders fulfil their functions.

**Questions: What are the municipal waste challenges in your city?**

To assess the municipal challenges in the area study, the participants was asked to identify the challenges in their locality. They noted that solid waste management is inefficient and unsustainable due to the crude and unscientific approached that are employed. They indicated that rising population was also a challenge to the municipal waste management in their locality. One of the participants indicated that "The solid waste management system in Enugu State, Nigeria is inefficient and unsustainable largely due to the crude and unscientific methods employed.

**Question: What are the factors responsible for indiscriminate dumping of solid waste?**

Participant noted that the factors responsible for indiscriminate dumping of solid waste include lack of financial management and supply, Lack of local government infrastructure, low waste management technology, Insufficient and untimely release of government funds, Lack of waste management strategy. The factors also include deficiencies in waste management strategies, Attitudes of poor people towards waste management, Modernization, high standard of living, increase in population, technological innovation, Excessive urbanization over the years. They also indicated uncoordinated planning of residential and commercial areas. Lack of planning often shows itself in the form of inadequate provision of social services. It turns to indiscriminate dumping of solid waste.

**Question: In what ways has the campaign on solid waste management influenced the behavior of Nigerians towards solid waste management?**

The participant in the focus group seem to suggest that the campaign on solid waste management has positively influenced

the behavior of Nigerians towards solid waste management. This is indicated in their responses stating that the Solid Waste Management Campaign influenced the attitude of Nigerians towards solid waste management. The people dispose of waste in the proper way. They use sanitary landfills, burning method, disposal by plowing the fields and Feeding disposal through hugs. They noted that the campaign has affected them positively so that they are consuming information on how to dispose of their waste. Apply burning method, how to compost, how to dump in drain channels. How to dispose of waste in rivers and streams.

**Question: Is there a need to engage the services of private waste firms in your location and other franchise?**

In respect to these items the participant noted that, there is a need to engage the services of the private waste firms in our location and other franchise because the government has failed to handle the government municipal sector. They noted that is important to engage the service of the private waste firms due to poor performance of municipal infrastructures, invalid collection system, indiscriminate dumping of waste, and lack of enforcement of sanitation by Laws.

**Question: What strategies can the government put in place to make waste management attractive for private sectors to invest in waste collection, recycling and reusing?**

The participant noted that government should establish clear liability rules to ensure that polluters pay for site contamination. Prepare registers of potentially contaminated sites and their severity. Focus public and private resources on priority sites, based on environmental and health objectives.

**Question: How effective are waste management implementation policies in the market?**

Regarding the degree of effectiveness of the waste management implementation policies. The response from the participant indicates that there is a poor implementation of polices. They noted that management tries to implement policies, but it is not reflected because there seem to be a poor response in the behaviour of people towards waste management.

**Question: What are your suggestions on ways to effectively manage solid waste in the markets?**

Participant in the survey put forward their suggestion as to the ways of effectively managing solid waste in the market areas. They noted that some of the ways to effectively manage solid waste include:

- A. Compost food scraps and other organic wastes.
- B. Reuse materials whenever possible.
- C. Recycle materials and organize for government and industry to develop community recycling programs.
- D. Collect, transport, and store wastes safely.
- E. Reduce, Reuse and Recycle are the most common methods to reduce landfill waste.

### 3.14. Question: In what ways can you support solid waste management in your locality?

The participant also indicated ways of supporting solid waste management in their locality. They noted that it is good to measure waste. A participant noted "It is easier to manage and track your improvement on something that is measured." Other ways identified by participants to support solid waste management is the application of "reduce". They noted that to reduce the amount of waste going to landfills, individuals should consider the following:

- A. Stop buying stuff that are not actually needed.
- B. Avoid food wrapped in plastic.
- C. Bring your own bag.
- D. Shop local.
- E. Buy things in bulk.
- F. Avoid single-use items/foods.
- G. Get your own reusable bottle.
- H. Reusable bags and containers
- I. Reuse water bottles, coffee mugs, and plates too!
- J. Skip on individually wrapped items, specifically food in snack packs or single-serving containers.
- K. Start composting in the kitchen and yard.
- L. Pay your bills online!
- M. Go paperless in the kitchen too!
- N. Recycle more!
- O. Reduce. To reduce the amount of waste going to landfills, consider.
- P. Recycle. Find out what options are available locally for business recycling.
- Q. Collection services.
- R. Let people know where to dispose of garbage.
- S. By landfill.
- T. By making compost
- U. Avoid throwing rubbish in an unwanted place.

The participants further expressed their perception and experience with respect to waste management in their locality. Most of the participant noted that they experience issues with delayed collection of waste in your location. In other words, they are of the view that, although they have municipal solid waste management (MSW) agency in charge of waste collection in their location, waste collection in their locality is rather delay beyond what is usually expected. While some participant thinks that the amount being charged by the waste Franchisee is quite affordable. A large number note that the amount being charged by the waste Franchisee is beyond your means. They seem to suggest that there should be a revision in the price. Participants also noted that there are laws and punishment for waste offender, but there

are no penalties [15-17]. The participants assertions with respect to the factors engenders waste was supported by the work of asserted that waste generation is affected by size of the family, the level of education and monthly revenue. This submission is also in alignment with [18,19] they submitted that literature proposes that technical factors affecting the waste management system are pertaining to the lack of technical skills amongst personnel within municipalities and government authorities, insufficient infrastructure, poor roads and out of date vehicles, inadequate technologies and reliable information and data. In addition, the lack of evaluation of actual impacts as well as environmental control systems contributes to the factors that influences solid waste management in developing countries. The participant position on the participation of the private sector was supported by the assertions from and submitted that the involvement of the private segment is a factor which could develop the efficiency of the system. It is usually regarded that waste management is the solitary task and liability of local authorities, and that the public is not assumed to participate the operational efficiency of solid waste management relies on the active contribution of both the municipal agency and the citizens. Hence, socio-cultural aspects stated by some researchers include people participating in decision making, community awareness and societal apathy for participating in solutions suggested that the involvement of the population in active environmental organizations is essential to have better systems. Municipal authorities have been unsuccessful to manage solid waste because of fiscal factors. seem to suggest that solid waste management is duty for all persons living in a locality, individual and private sector inclusive.

### Conclusion

The paper evaluated the common solid waste management practices in Nigeria, examined the strategies in place to promote sustainable waste management program and underpinned the factors responsible for poor solid waste management. The paper further examined the challenges facing solid waste management in the country and evaluated the past administration method to tackle solid waste and finds that the private sector is the main driving force behind solid waste management in Nigeria and further underpinned the factors responsible for indiscriminate dumping of solid waste include lack of financial management and supply, Lack of local government infrastructure, low waste management technology. Several ways to effectively manage solid waste were indicated to include, compost food scraps and other organic wastes, reuse materials whenever possible, recycle materials and suggested the government and industry organised to develop community recycling programs through effective waste collection and effective safe waste transportation and store wastes safely and recommended the reduce, reuse and recycle as the most common effective methods to reduce landfill waste.

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