RESILIENCE AND LIVABLE CITIES IN A WARMING WORLD

A FESTSCHRIFT IN HONOUR OF

TPL. DR. JOSHUA ADEWUMI ADEBISI FNITP, RTP



EDITED BY

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Editors:
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CHAPTER 15

ASSESSMENT OF PRIVATE SECTOR PARTICIPATION IN SOLID WASTE MANAGEMENT IN OJOKORO COMMUNITY, LAGOS STATE

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Abstract
This research work assesses the private sector participation in solid waste management in Ojokoro, Lagos State. Lagos state is the most populous state in Nigeria, with a population recorded at 13.4 million in the year 2000 ad, yet it is plagued by severe solid waste problems, with huge amounts of waste seen day in and day out on median roads, canals, water drains, and other illegal places. The Lagos state government managed its solid waste until 1997, when it formally accepted private sector participation (PSP). However, with the involvement of the PSP, the problem posed by improper management of waste has led to a situation in which most neighbourhoods and streets are littered with waste and the environment is tainted. Residents are at risk of health issues as refuse takes over the area. Both qualitative and quantitative approaches were employed. Data was collected from 86 respondents in Ojokoro by using questionnaires and in-depth interviews with government institutions and private agencies. Study results and findings were qualitative data and were presented using descriptive statistics such as frequency distribution and percentage. Findings established that lack of sanitation enforcement, financial challenges, defective policy, shortage in machinery and equipment, and inaccessibility to places of collection and disposal are challenges of the PSP. Recommendations are made towards enforcement, inclusive and participatory policy formulation, as well as financial grants for the effective operations of the PSP.

Keywords: Waste, waste generation, waste management, Private Sector Participation and Public-Private Partnership

1.0 Introduction

Waste is unwanted by-products of human activity, they manifest in different ways, solid, liquid or gaseous, depending on their sources. The increasing global population and consequent demand for food and other essentials have brought about increased waste generated daily by each household and this translates to huge quantities of waste generated each year, globally, capable of causing serious impacts on health and problems to the surrounding environment if not properly managed (Salisu, Fasina, Akanmu & Sanni, 2022). Poorly managed wastes are unsightly, cause pollution and are a source of attraction for rodents and other carriers of disease-causing pathogens. Hence, the need for proper management of waste cannot be overemphasised. Waste management encompasses, amongst other things, collection, transport, treatment and disposal of waste, which is guided by laws that control, determine the process and procedure of waste management and also stipulate the methods, personnel and institutions involved. The activities and procedures are targeted towards reducing the

adverse effect on health and the environment, and strategies and methods are designed to be compatible with the types and volumes of wastes generated. Urban waste collection, according to Faccio et al (2011), is a municipal service that involves large expenditures and difficult operational problems because it is expensive to operate in terms of investment in infrastructure and operational costs. Governments and the private sector, either independently or in partnership, invest large sums into developing policies and strategies aimed at dealing with the problems of waste management.

The PPP is a policy employed for resolving critical planning problems where benefits and risks are shared by the government (public) and private sectors. It is a drastic response to the policy of government-controlled enterprises that are often faced by undue bureaucracy, reckless impunity, abject corruption and crass inefficiency. Recent trends show the private sector, driven by stringent environmental standards, can play a significant role in improving environmental hygiene through sustainable solid waste management practices. Private sector participation (PSP) involves the collection and movement of refuse from the doorstep to landfill sites and treatment facilities. In the waste management sector, the PPP seeks to improve the process of collecting and disposing of waste, especially in rapidly urbanising regions, by strengthening the operational base of waste management institutions, reducing cost and improving service quality (Massoud et al., 2013; Morrissey and Browne, 2014; Wilson and Scheinberg, 2010).

In Nigeria, the PPP is a collaborative effort between the government and the private sector (PSP) in the delivery of waste management services. Waste management activities such as picking, collection, sorting, transportation and disposal are outsourced to the private sector, while the state government authorities or board are generally responsible for overseeing the activities and operations of the private sector. In Lagos state, the scheme commenced with the appointment of 20 PSP programme managers, while the Lagos State Waste Management Authority (LAWMA) assumes a supervisory role. Waste management in Lagos did not become a noticeable problem until the late 1960s when the oil-boom era set in, bringing along with it mass importation of manufactured and industrialised products and a conspicuous change in the pattern of consumption and standards of living of urbanised Nigerians, especially in Lagos state (Adegbola 2014). It also witnessed the mass influx of people from different parts of Nigeria and West Africa to Lagos. This, in turn, increased geometrically the daily tonnage of waste generated in the state. Over the years, different Governments have come out with their own waste management plans as part of the planning process.

The problem posed by improper management of waste in the Ojokoro community has led to a situation in which most neighbourhoods and streets are littered with waste, and the environment is tainted. The community is grappling with the problems caused by indiscriminate heaps of solid waste in the environment. This is despite the government's efforts to outsource solid waste management to the private sector. Residents are liable to various health issues as refuse takes over the area. Heaps of refuse have become a common sight along major roads, streets, neighbourhoods, local markets and bus stops within the community, which are likely to cause an avoidable epidemic outbreak if urgent steps towards ameliorating the situation are not taken.

Therefore, this study aims to assess the private sector participation in solid waste management in Ojokoro, with a view to suggesting improvement mechanisms to improve upon their performance and their mode of operation within the state. In order for this to be accomplished or achieved, these objectives were considered. To determine if there is/are private sector participants in solid waste management in Lagos, to identify the existing private sector participants in solid waste management, to examine the guidelines and functions for the private sector participation, to assess the effectiveness of the PSP, to identify the challenges encountered by the PSP in solid waste management and to proffer recommendations towards an effective solid waste disposal method

2.0 Literature Review

In the 1970s, the Local Government Councils were vested with the constitutional responsibility of waste management in the state (Alo, 2015). The solid waste management was monitored by the local councils, who put in place the chiefs and the "dreaded Sanitary Inspectors" known in the local parlance as "*wolewole*" to ensure the proper waste management within the state (Alo, 2015). There was a designated point where people would dump their waste. People were expected to take their refuse to these points, which sometimes were aided by cart pushers for a fee. However, the waste management situation was still chaotic and embarrassing to Lagos residents. It was then obvious that the local government couldn't handle waste management within the state. This delegated responsibility changed from time to time and had to be taken over by the State Government as it was obvious that the Local Government Councils lacked institutional and financial capabilities to tackle the amount and volume of waste (Alo 2015).

To address this problem in 1977 the Lagos State Refuse Disposal Board (LSRDB) was established for managing waste and later transformed in to Lagos State Waste Disposal Board (LWDB) in 1980 and later renamed in 1991 as Lagos State Waste Management Authority (LAWMA) which was an authority with the task of managing all domestic, commercial, institutional and industrial solid waste as well as clearing of primary and tertiary drains in the State. Edict no.55 made the agency responsible for the collection, transportation and disposal of municipal solid waste as well as clearing of primary and tertiary drains in the State. According to Ibrahim (2014), despite the establishment of LAWMA, municipal solid waste management in Lagos state was intractable.

The most recent programme is the outsourcing of waste collection to the private sector, which was christened the private sector participation (PSP) scheme. The private sector was allowed into waste management within the state because of the chaotic and embarrassing state in which waste was despite the establishment of the state governing body in charge of waste (LAWMA). Private Sector Participation is an innovative programme in refuse collection and clearing, whereby stakeholder participation was introduced in accordance with the solid waste municipal management policy. The scheme commenced with the appointment of 20 (PSP) programme managers. Commercial refuse depots and illegal dumpsites were closed, and further dumping of refuse at such sites was prohibited. Adegbola (2018), Even with the formal involvement

of the Private Sector (PSP) in its Solid Waste Management, huge amounts of Solid Waste are abnormally dumped day in day out on roads, canals, water drains, streets, open space and other illegal locations.

Statutorily, in Lagos, municipal solid waste collection is the sole responsibility of the municipal governmen - Lagos State Waste Management Authority established in 1991. The pep operators were first involved in 1997 to provide waste collection services to the people (Idowu et al, 2011; Lassisi, 2017). The PPP approach to waste management in Lagos is popularly called PSP) Private Sector Participation in waste management. The programme started as a pilot study in Kosofe and Shomolu Local Government areas before other local governments throughout the state became involved. The Lagos PPPs are financed through government budgetary allocation (public finance), private initiatives, multilateral agencies, stock exchange market bonds, and bank loans. Both government and private investors contribute materials and human resources to conduct efficient waste services in Lagos. The Lawma coordinates the process and operations of private investors or firms in the state (LAWMA 2013). The PSP collects municipal solid waste in all parts of Lagos megacity, transports the waste and disposes of it at designated dumpsites (LAWMA 2013). For effective coordination of PSP activities, each of the licensed PSP operators was mandated to collect refuse either from residential areas, markets or motor parks and transport this to the government-approved sites by paying the prescribed fee. All scavengers are expected to limit their sorting and mini-recycling activities to the prescribed landfill sites. Every PSP operator was mandated to include waste carts in its fleet of equipment to cover the areas designated for them for operation.

2.1 Conceptual Review

2.2.1 Concept of Sustainability in Waste Management

The term sustainability refers to the usage, preservation and conservation of resources for the present with regards for the future generations and their usage. Since the Rio conference of 1992, the working definition of sustainability is the need to meet the present needs without compromising the ability of future generations to meet their needs and of integrating environmental development. The objective of sustainable management of waste is to collect, transport, treat and finally dispose of waste in a hygienic, aesthetically and acceptable manner at the lowest possible cost. Sustainable waste management, therefore, refers to the collection, transfer, recycling, resource recovery and disposal of waste in a sustainable environment. (Cointreau-levine, 2014).

The concept of sustainable development has, in the past, most often broken down into three constituent parts: environmental sustainability, economic sustainability and socio-political sustainability (Akanmu & Salisu, 2024). The idea of sustainability has its roots in systems theory. Systems are a set of interacting and adaptive structures and process which together produce functional outputs and outcomes. They are characterised by their capacity to maintain their functional outputs and outcomes within desirable parameters while adjusting and adapting to variations in inputs. The feedback mechanism adjusts system processes and structures in response to input variations to maintain outputs and outcomes. Change is an inherent feature of a system. While systems are able to adapt to change in inputs, they remain relatively sustainable. Where

they cannot adjust, discontinuity occurs until a new equilibrium is reached, and disintegration occurs.

Solid waste management is an important environmental health service and is an integral part of urban services. Research on urban solid waste management in developing countries has been developed from two main concerns: public sector reform (including privatisation) and sustainable development in the urban context. The former is closely related to the resurgence of the market and the reduction in state control. The latter focuses on private sector involvement in service provision; it raises issues of public interest and acceptability. These ideas give rise to the demand for an effective management system. An effective waste management system is veritably a way to ensure economic development. In Nigeria, one state that has really championed the cause of environmental sanitation through effective waste management is Lagos State. This betterment was achieved through a public-private partnership of LAWMA and PSP operators. LAWMA engages, coordinates and evaluates the activities of the private sector participants in the municipal solid waste collection.

2.2.2 Public - Private Partnership (PPP) Concept

A partnership is an arrangement where known partners agree to cooperate to advance their mutual interests. The partners in a partnership may be individuals, businesses, interest-based organisations, schools, government or combinations. There are three types of partnership, which include general partnership, limited partnership and joint venture. A general partnership is one in which each partner shares equally in the workload, liability and profits generated and paid out to the partners. All partners are actively involved in the business's operation. Limited partnerships allow outside investors to buy into a business but maintain limited liability and involvement, based on their contributions. This is a more complex form of partnership, which also has more flexibility in terms of ownership and decision-making. Joint ventures are short-term projects or alliances that bring together multiple partners for a project. If the venture performs well, it can be continued as a general partnership; it can be shuttered. The main requisites of an ideal partnership include mutual understanding, common approach, sufficient capital, partnership deed and written agreement, and duration.

Massoud & El-Fadel (2012) defined PPPs "as the transfer and control of a good or a service currently provided by the public sector, either in whole or in part, to the private sector". Researchers noted that PPP is difficult to define because the term 'PPPs' is a broad term and includes many forms of partnerships. Most of the definitions reveal PPP as a cooperative scheme between the public and private sectors (Akintoye, Beck &Hardcastle, 2013). Jon Pierre (1997, p.31) has noted that "partnership obviously involves two or more actors, at least one of which is public". PPP is a motivated governance arrangement and always falls into the intense changes the role is currently experiencing (Klijn & Teasman, 2013). In general, PPP is normally known as long-term cooperative institutional arrangements between public and private sectors to achieve various purposes (Hodge and Greve 2000). It is important to share resources when public or private sectors face problems or shortages in their resources. NPM theory says agencies can share their resources when they need (Miller & Dunn, no date). Even in PPP, there are two most important aspects: PPP is cooperation between organisations,

and the second aspect is sharing risks (Hodge and Greve 2000). Risk sharing is viewed as an important incentive for both the public and private sectors, since it is assumed that risk-sharing could benefit both actors

2.3 Theoretical Review

2.3.1 Actor-Oriented Theory

Normally, there are many actors involved in a specific problem, and these actors interact with each other. This interaction has become a social construction system. The actor-oriented theory tries to identify the conflict based on power, goals and information of the actor. The term 'actors' not only identifies the class, gender, ethnicity, age group and status of the people, but it also includes active participants who have different powers and various resources. At the heart of an actor-oriented sociology of development is the classification of social action as entailing both social meaning and social practice (Long 2001). Moreover, the actor-oriented approach states that social life is a heterogeneous process. An actor-oriented approach, therefore, states that one set of circumstances might be responded to in many ways because of the diversity of actions undertaken at the local level (Long & Long, 1992).

The actor-oriented analysis emphasises that generally the actors are controlled by the `bounded rationality'. So, their information set is not perfect when they make their decisions. However, they can take normal decisions, but these decisions can be based on insufficient information, and therefore it may lead to sub-optimal solutions. Several actors are involved in SWM. The different actors who are involved in urban SWM practices can be grouped into two major groups, which include: the public sector and Private actors.

2.3.2 Public Sector

Public sector refers to 'public-owned enterprises and/or institutions. In SWM, the public sector actors include Local Municipal Governments (LMG) or Local Government (LG) or urban authorities or city cooperation (Ahmed & Ali, 2014). Public sectors in SWM get their responsibility from laws and regulations or from policies related to environmental protection or health (Schübeler 1996). The urban authorities get their powers and obligations from the central government authority (Klundert & Lardinois, no date). Public actors are controlled by laws enacted by central government authorities. Furthermore, in SWM, the public sector does much of its work manually, e.g. street sweeping and loading. So, generally, a substantial number of people are employed in the public sector.

2.3.3 Private Actors

The formal private sector includes registered enterprises carrying out SWM services, e.g., collection, transport, disposal and recycling. The `formal private sector' can be defined as "Private sector corporations, institutions, firms and individuals, operating registered and/or Incorporated businesses with official business licenses, an organised labour force governed by labour laws, some degree of capital investment, and generally modern technology" (Furedy,1990; Klundert & Lardinois, no date, p.3). These enterprises may be large or small. His category includes unregistered,

unregulated activities undertaken by individuals, families, groups or small-scale business waste pickers, itinerant buyers, traders in waste materials and non-registered small-scale enterprises. Informal waste collectors are not regulated or controlled by government agencies (Ahmed and Ali, 2014). "Informal sector entrepreneurs or enterprises do not pay taxes, have no trading license and are not included in social welfare or government insurance schemes" (Haan, Coad, &Lardinois, 1998; Wilson et al., 2016).

In the context of municipal solid waste management (MSWM), the informal recycling sector refers to those involved in picking up the recyclable and reusable materials from mixed waste or from communal bins. Generally, these people are called scavengers and waste pickers. These activities characterise the informal sector as this is labour-intensive, low technology, low-paid, unrecorded and unregulated work, normally carried out by individuals or family groups (Wilson et al., 2016). Due to poverty, unemployment or unemployment under employment, many informal sectors are active in the waste management process in developing countries (Klundert & Lardinois, no date). Generally, informal waste workers face economic problems, health hazards, difficulties in accessing social services and social security (Schübeler 1996).

2.3.4 Solid Waste Management Process

This may be described as the collection, storage, treatment and disposal of waste in such a manner that the environment would be pleasing to humans, animals and even plant life. The waste management process revolves around four stages in a sequential order, and effective waste management would be discussed from this perspective, namely: waste collection, waste transportation, waste disposal and waste recycling. Waste collection should be operated in an integrated way, which means the hierarchy of waste management should be designed in a sustainable manner to enable the compatibility of all components. For example, the truck used for the collection of waste should fit the type of container used to store the waste. Also, when recycling is done, care should be taken to avoid contaminating the material being recycled. If waste is to be deposited in a landfill, the collection truck should be compactable for transporting the waste to the landfill.

The current state of waste disposal, treatment and recycling in low-wage countries is ineffective. The definition of recycling has been limited to the process of converting material gotten from waste to be reused, but it is much broader than that. Recycling is any process of returning waste material to the economy. Recycling encompasses all the components of waste management; for example, composting can be regarded as a form of recycling when a market is readily available for the products. Incineration is also considered a form of recycling as well as disposal (open dumping and landfilling). The most important part of recycling is to ensure there is minimal impact on the environment. Waste treatment is one of the stages of waste management that ensures the least impact on the environment. Types of waste treatment include, among others, incineration and landfilling. Incineration is the combustion of organic substances, while landfilling is a site for the disposal of waste material. Both of these will be discussed later.

3.0 Materials and Method

3.1 Study Area

Ijaiye Ojokoro is an area located in Lagos state. Lagos megacity is the metropolitan area of Lagos State, Nigeria. Lagos, where this study was carried out, consists of 20 local government areas (LGAs). Lagos is geographically positioned in south-western Nigeria on longitude2° 42′–4° 20′ E and latitude 6° 22′–6° 42′ N (Balogun et al., 1999). Lagos State is the smallest state in terms of land area in Nigeria and is bounded in the east and north by Ogun State, in the west by the Benin Republic and in the south by the Atlantic Ocean. Although with a land area of 3577 km2, Lagos has 22% of its land area like water and creeks (Figure 1). Lagos is a littoral city, which enjoys a humid tropical climate with high rainfall, high temperatures during summer and a short dry season (Akanmu & Salisu, 2025). Lagos is the most populous state in Nigeria, with over 10 million people in 2016 and used to be the seat of power and capital city of the country from the colonial days until 1991, when the seat of power and capital city shifted to Abuja.

It is the most industrialised region of Nigeria and perhaps the whole of the West African sub-region. Lagos megacity is a cosmopolitan, globalising city. This was obtained during the property enumeration project undertaken as part of the World Bank projects for improved waste management services in the city. It was stated that the state has the highest number of industries in Nigeria. It is estimated that the area generates over 50% of the total industrial/commercial waste in the country. Presently, the Waste Management Authority services only 1,159 industries/commercial premises, which constitute less than 10% of the actual number of industries/companies in Lagos. There are more than 229 markets in the metropolis, all of which are points of high waste generation.

Lagos is located below sea level. Most times, when it rains, most areas are not accessible as floods take over roads/streets and dump sites within the municipalities. The situation is even worse at the landfill sites, as they are not accessible during the rainy season because they become waterlogged. During such periods, the rate of refuse collection and disposal drops to about 10%-20% (LAWMA, 1995) of the normal rate, and the metropolis becomes littered. Since most manufactured goods and foods are packaged, the fact that Lagos has the largest volume of importation, manufacturing, and consumption leads to a high rate of waste generation in packages that are more than the rest of the country put together. This has significantly increased the tonnage of waste collected daily. These wastes are in plastics, paper, nylon, metals, etc., of canned food, bottled water, and domestic and industrial items.

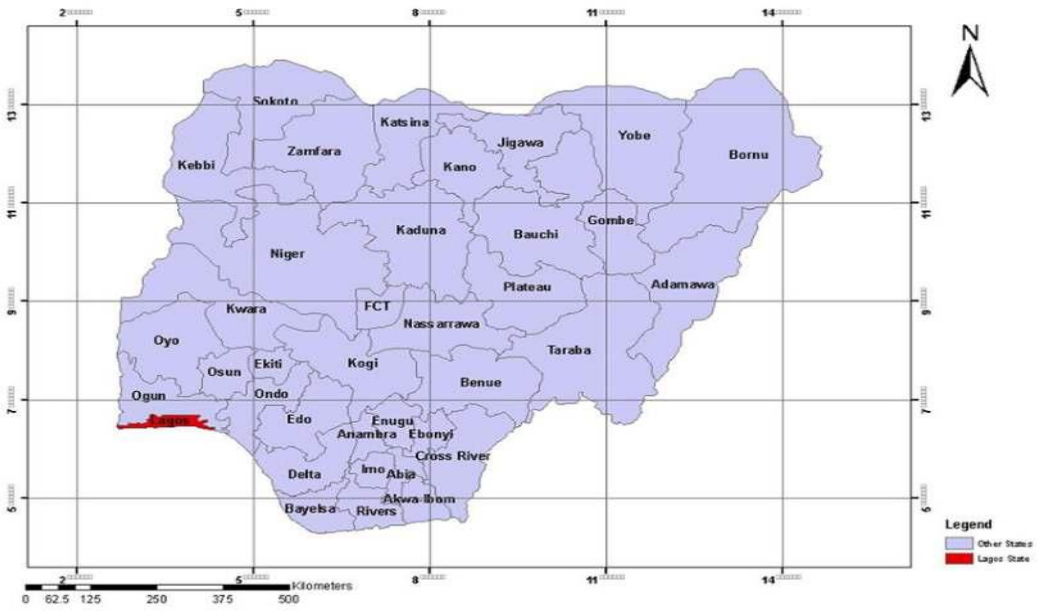


Figure 1: Map of Nigeria Showing Lagos State



Figure 2: Map of Lagos State Showing Ifako Ijaiye Local Government
Source: Ifako – Ijaiye Development Map 2023. SCALE 1: 200,000

3.2 Methodology

This section describes the approaches and methods of the study. It highlights the types of data and instruments of data collection and analysis towards achieving the stated goal and objective. It further identifies the study population and selected sample for data collection. Waste management involves a lot of systems that range from collection, transportation, disposal, and recycling of waste. It can also involve maintenance of dump sites and landfills. Primary data and secondary data were used for this study, which were sourced from questionnaires, interviews and personal observation. An interview was conducted with the supervisory agency (LAWMA) responsible for PSP employment and management, and the PSP, respectively. This was focused on providing information on areas of infrastructure, personnel, operations, facilities and policies. The interview was conducted with key informants of the organisations in order to get first-hand and wide knowledge of the situation on the ground. A list of PSPs involved in waste management was gotten from Lagos Waste Management Authority (LAWMA), which is the supervisory agency, in order to allow for proper planning for an interview session with the private sector involved in waste management.

An interview was conducted with the private sector participants involved in solid waste management. Questions were asked or designed to assess the duties, effectiveness, and challenges of the private sector participant. Questionnaires were administered to the stakeholders (residents) of the study area to determine the services of the PSP operation and services in waste management. Personal Observation was made based on the current situation of things on the ground in the study area. Secondary data on solid waste management, private sector participation in waste management was reviewed, and this includes previous research work such as journals and published thesis works, unpublished thesis works, and websites that provided information about the supervisory agency operation, and objectives. Existing knowledge of waste management and its application methods was reviewed. A reconnaissance survey was carried out on the study area in order to attain familiarity with the area. Results from reconnaissance established that the community has a total of 41 streets, which make up the community.

Meanwhile, systematic sampling was used to select 20 streets out of the total 41 streets in the Ojokoro community, using every 2nd street as the interval. The total number of buildings on the selected street is 607. The number of the sampled buildings was calculated using a formula developed by Yamane (1967), using a 0.10 margin of error. The output was 86 out of the 607 buildings, as presented in Table 1. The systematic random sampling technique was used to select buildings where questionnaires were administered in each street.

$n = N/ (1+N(e)^2)$ where:

n signifies the sample size

N signifies the population under study.

E signifies the margin of error (it could be 0.10, 0.05 or 0.01).

In addition, building was selected at random as the first or starting point, and then every 7th building in the street was sampled, therefore making 7 the sampling interval. This made the selection easier and allowed the spread of buildings selected for

measurement to be more even across the entire streets to be sampled. Below is a tabular representation, showing the names of streets, the number of buildings and sampled buildings within the street

Table 1: Sample Frame and Sample Size

Street names	Number of houses	Sampled house (7^{th})
Adeogun street	28	4
Abioku street	34	5
Oluyide street	28	4
Diya street	30	4
Ojulape street	36	5
Aremu street	31	4
Veroacha	33	5
Cele street	33	5
Adeniyi street	29	4
Showemimo street	28	4
Oyero street	29	4
Ewere street	31	4
Lamidi street	30	4
Shittu street	33	5
Bella street	29	4
Fasipe street	27	4
Asuku street	22	3
Clem Road	39	6
Ifelodun street	28	4
Eleshin street	29	4
Total	607	86

4.0 Results and Discussion

4.1 Waste Collection Operations in the Study Area

This section examines the effectiveness of the PSP in terms of frequency of collection, time of collection of solid waste, period, machinery, and consistency. Table 1 shows that PSP, who are the agency in charge of waste disposal in the study area, do come to collect waste every week, with 92% affirming that fact based on the above analysis. Also, results show that the time of collection varies; however, collection in the morning time happens to be more constant, with a percentage of 70.9, afternoon and evening time occur with percentages of 19.7 and 9.3, respectively. It is also deduced that the consistency in rate of collection is said to be negative, i.e. not consistent. This is derived from the percentage of negative responses of 56.9% and a positive response of 43%, thereby assuming a non-consistent collection of waste. Table 2 depicts the promptness to customer complaints at a low with 56.9%. However, a percentage of 43%

are of the opinion that there has been a positive response to customer complaints. In addition, result from Table 2 shows that billings for services rendered are not appropriate, with a percentage of 64.16. However, about 35.83% think that there are appropriate services for bills.

Table 2: How many times do they collect waste

Time	**Frequency**	**Percentage**
Monthly	7	8
Weekly	79	92
Daily	0	0
Period of collection		
Period	Frequency	Percentage
Morning	61	70.9
Afternoon	17	19.7
Evening	8	9.3
Consistency of collection		
Perception	Frequency	percentage
Yes	37	43
No	49	56.9
Promptness to customer complaints		
Perception	Frequency	Percentage
Yes	37	43
No	49	56.9
Appropriate services for bills		
No	33	38.3
Yes	53	61.6

Source: Field Survey 2025

4.2 Waste Logistics Services

In addition, it is observed from the results of the analysis in Table 3 that the pickup of waste by the PSP is not regular, with a 55.8% affirming that fact. While 44.18% believe that the services provided are regular. Also, vehicles used by the PSP in the course of operation in solid waste collection in the study area can be said to be in good condition, as there has been little record of breakdown in the course of their operation. 63.95% affirms to the constant functioning of the vehicles used by the PSP and 36.04% say there have been breakdowns of vehicles for solid waste collection. Lastly, it is observed from Table 3 that the cost of waste disposal charges is on the high side for the residents as 61% find the cost of waste disposal high for them, and 40% find the cost of waste disposal to be affordable.

In addition, majority of the residents believe and would prefer the private sector to be the best institution to handle solid waste collection, due to improvements expressed by the residents from the PSP operations. 54.65% suggests the private sector participant continue handling the waste services, while 36.04% prefer the services and operation be returned to the government. Some attributed this to free or subsidised payments by the government. 9.30% suggests that communal cooperation would be the best institution to handle waste operations for better results. Lastly, results in Table 3

shows the willingness of people to pay for solid waste services in which the majority of the respondents are not willing to pay, with a 54.6% and 45.3% of the respondents willing to pay for solid waste services. Plates 1 and Plate 2 shows the real waste management and logistics situation in the study area.

Table 3: Waste Logistics Services

Regularity pickup of solid waste		
Perception	**Frequency**	**Percentage**
Yes	38	44.18
No	48	55.8
Constant Breakdown of the vehicle		
Breakdown	**Frequency**	**Percentage**
Yes	31	36.04
No	55	63.95
Cost of waste disposal charges		
Perception	**Frequency**	**Percentage**
High	52	61
Moderate	34	40
Best institution to handle waste		
Institution	**Frequency**	**Percentage**
Municipal	31	36.04
Private corporation	47	54.65
Communal corporation	8	9.30
Willingness to Pay for Waste Service		
Willingness	**Frequency**	**Percentage**
Yes	39	45.3
No	47	54.6
Total	86	100

4.3 Satisfaction with Waste Service Quality

From Table 4, results show that the residents of the study area would prefer more service delivery by the solid waste provider. This is seen with a 54.6% of the respondents who express dissatisfaction with services. However, 45.3% are satisfied with the service delivery of the solid waste provider. Also, respondents assessed that services rendered by the PSP can be said to be good, as the majority (over 63%) rate the reliability of service as good, while 37% rate the reliability of the PSP's service as fair.

In addition, it is observed that the PSP operators have good sanitary conditions, as indicated by the data in Table 4 above in which 44.2% rate the PSP operators to have good sanitary conditions, 41.9% rate them to have fair sanitary conditions in operations, and 8.1% find it to be very good. However, 5.8% rate them as having poor sanitary conditions. Meanwhile, there has been an improvement as a result of the introduction of PSP. This is ascertained with a 54.65% confirming the improvement by the PSP. However, 45.34% denoted or assumed that there has been little or no improvement despite the introduction of the PSP into the solid waste collection.

Table 4: Waste Service Quality

Satisfaction with waste Service Delivery		
Satisfaction	**Frequency**	**Percentage**
Yes	39	45.3
No	47	54.6
Total	86	100
Quality of Service Delivery		
Variable	**Frequency**	**Percentage**
Very good	17	19.7
Good	37	43
Fair	32	37
Poor	0	0
Very poor	0	0
Sanitary Condition		
Variable	**Frequency**	**Percentage**
Very good	7	8.1
Good	38	44.2
Fair	36	41.9
Poor	5	5.8
Very poor	0	0
Improvement in the Environment Through PSP		
Perception	**Frequency**	**Percentage**
Yes	47	54.65
No	39	45.34
Total	86	100



Plate 1: Indiscriminate dumping of waste and site where refuse is being burned in the study area.



Plate 2: One of the Vehicles Used in Operation
Source: Field Survey, 2025

4.4 Challenges of PSP

Solid waste collection, transportation, and disposal are primarily handled by private-sector participants involved in solid waste management. As regards the collection of waste, this is done weekly, mainly in the morning, with 90% and 56.66% of respondents attesting to the frequency and period of collection, respectively. It is also observed from the analysis that the PSPs are not consistent in collecting solid waste from residents, with 55.16% of the respondents attesting to such a fact. As regards satisfaction with the service, the respondents claim to be unsatisfied with the service and feel that more can be offered. Results from an interview with Sanitisers Ventures (the waste management provider), some challenges were said to be experienced by the agency, which include: Non-payment of fee - some residents seem to refuse to pay their dues stated on the bills as service charge. They give excuses of the head of the house not being around, or the money not being equal to the service rendered. Also, some residents refuse to pay and would rather deposit their waste on the streets and highways to be picked up by agents working on the directives of LAWMA to have the highways kept clean. Refusal of payment, therefore, hinders the service delivery of the PSP.

Trucks and machinery damage or failure is also another problem or challenge faced by the PSP operator. This can be linked to poor maintenance of machinery. Machinery of high usage and function is quite hard or expensive to maintain. Maintenance of trucks is the responsibility of the PSP, and no form of funds for the maintenance of trucks or equipment are being given by the supervisory agency. However, in cases of breakdown of trucks, a request has been made to the supervisory agency (LAWMA) to supply or make provision of trucks to be used for the collection of waste from the target area. Due to the non-payment of fees by residents, funds are not easily raised by the PSP operator. Also stated were cases of inaccessibility to dumpsites. The designated dumpsite sometimes is inaccessible for the PSP; this could be as a result of rainfall, thereby making the roads bad and causing effects such as floods or blocked paths. Dumpsites are to be made available and ready for disposal of collected waste; however, complaints are being made about the unavailability or inaccessibility of the dumpsite. In other words, problems and challenges identified in the study area include non-payment of fees by residents, high cost of maintenance of machinery,

which leads to breakdowns of trucks, inaccessibility to the dumpsite, which prevents the operators from emptying the solid waste collected, thereby hindering further collection of solid waste from residents and some bad roads, which hinder the collection of waste from the residents. These problems have affected the performance of the PSP in service delivery.

5.0 Conclusion and Recommendation

Due to the rapid rate of population growth, which has led to the corresponding increase in waste generation in our urban centres without adequate waste disposal practices, resulting in a degraded urban environment and outbreaks of diseases, there is a need to adequately manage and monitor the activities of the PSP operations in solid waste management delivery. Effective waste management requires the collective commitment of the populace, government at all levels, their regulating agencies and the private sector, since everybody generates solid waste. Maintaining a clean environment requires the support of all the citizens. However, the government should support the private sector, financially by providing soft loans and interest free loan to acquire necessary equipment for effective waste management and waste reclamation, reduction, re-use, recovery, and recycling, which ultimately ensures resource recovery. Furthermore, in order to achieve effectiveness in the operation of solid waste management by the PSP operators, waste sorting at the source of generation and recycling should be encouraged by the state government. Over-billing of the tenements by the billing company should be discouraged. Hence, public participation in the drafting of the solid waste policy is essential for acceptance by the populace.

Also, it is recommended that the authorities take charge in the area of enforcement, by attaching a penalty fee to any individual or arrest of anyone who is found wanting in the area of haphazard dumping of waste within the study, while more robust fare collection strategies should be devise by the operators. Hence, the operators should work hand-in-hand with the community heads (chief landlord, chief tenant) to ensure this collection process is functional and effective. In addition, waste recycling process should serve as a means of gainful employment among the youths of the study area, once the waste is sorted according to its various types, i.e. plastics, garbage, glass, etc. The process of recycling can then take place. Consequently, there should be provision of a recycling bin at strategic points within the study. This is to be provided by either the government, community heads or private partnership, and also an enlightenment campaign should be done within and outside the study area to help the residents imbibe the culture of recycling and make it more effective and functional.

Meanwhile, sole PSP operations per local government area should be abolished, and free enterprise should be encouraged, which allows competition and increases efficiency in operations, while robust public participation in the drafting of the solid waste policy is essential for acceptance by the populace. The cart pushers and scavengers need to be integrated into the solid waste management program of Lagos state. This could be done by licensing the duo and attaching them to the PSP company servicing the areas. This will reduce the distance to be covered by the operators and also give attention to places not assessed by the mega operator. Also, there should be a

transfer loading station which is to be located close by to the residents where cart pushers will dump their waste.

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