

**STRATEGIES FOR EFFECTIVE SOLID WASTE MANAGEMENT IN NIGERIA.
(A CASE STUDY OF IKPOBA OKHA LOCAL GOVERNMENT AREA,EDO STATE)**

BY

UWANOHMEN DEBORAH OSEZELE

SSC2105880

**DEPARTMENT OF PUBLIC ADMINISTRATION
FACULTY OF SOCIAL SCIENCES
UNIVERSITY OF BENIN,BENIN CITY**

DECEMBER, 2025.

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**A PROJECT SUBMITTED TO THE DEPARTMENT OF PUBLIC ADMINISTRATION,
FACULTY OF SOCIAL SCIENCES, UNIVERSITY OF BENIN, BENIN CITY, IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF
SCIENCE (B.Sc) DEGREE IN PUBLIC ADMINISTRATION.***

DECEMBER, 2025.

CERTIFICATION

This is to certify that this thesis was carried out by **UWANOHMEN DEBORAH OSEZELE** with matriculation number **SSC2105880** in the Department of Public Administration, Faculty of Social Sciences, University of Benin, Benin City.

DR.IGIESERI OGHOGHO
PROJECT SUPERVISOR

DATE

PROF. A.I MUSTAPHA
HEAD OF DEPARTMENT

DATE

EXTERNAL EXAMINER

DATE

DEDICATION

I dedicate this thesis to my parents Mr. and Mrs. Iria, they are the trailblazer and pathfinder. above all, i dedicate this work to God Almighty for his presence never departed from me.

ACKNOWLEDGEMENT

My sincere gratitude goes to Almighty God for his grace and strength to complete this programme.

I want to acknowledge my supervisor Dr. Igieseri Oghogho who despite her tight schedule ensured a thorough supervision of this work and the entire lecturers in the Department of Public Administration, University of Benin for their tutelage.

My appreciation also goes to the Head of department of Public Administration Prof. A.I Mustapha for his support and encouragement during this programme.

I also appreciate my course adviser Mr Jonathan Osifo for his counseling during my programme. To my coursemates: you are all dear to my heart, God bless you all.

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ABSTRACT

This research work looks at the various strategies for effective solid waste management in Ikpoba Okha Local Government, Benin City, Edo State. The objectives of this study are to access the knowledge, attitude and behaviour of people towards refuse disposal, to ascertain the role of finance and equipment in the maintenance of refuse disposal programme, to identify the major factors responsible for the present inadequate refuse disposal in Ikpoba Okha and to determine the significance of community participation in domestic and commercial solid waste management in Benin City. To achieve the objectives of the study, data from primary and secondary sources were collected. From primary source, one hundred (100) questionnaires were administered by the researcher of which ninety (90) were retrieved successfully and used for data presentation and analysis. While the secondary source consists of textbooks, journals, manuals and other publications. Simple percentage was used for data presentation and analysis. Inferential statistical tools—chi-square analysis—was employed in testing the following hypotheses: If there is or no significant relationship between people’s knowledge, attitude and behaviour as influence of effective waste disposal; gender responses; and if there is or no significant relationship between finance, equipment as it affect proper disposal of waste and the settlement type of respondents. From the hypotheses tested, we find out that lack of finance is a factor responsible for inadequate waste disposal in Ikpoba Okha Local Government Area. It was also discovered that lack of equipment or tools such as tippers and pail loaders are major problem facing effective waste management in the local government as well as people’s knowledge, attitude and behaviour towards environmental sanitation. Conclusively, it was discovered that lack of finance, equipment, management’s policies, ineffective enlightenment, lack of community participation, attitude and behaviour are problems facing solid waste management in Ikpoba Okha. It was therefore recommended that proper transmission and implementation of waste management policies, adequate funding, community participation as well as assisting the Local Government with tools or equipment by the state government will in no little measure improve the waste management strategies in Ikpoba Okha Local Government Area, Benin City.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Solid waste, is an inevitable product of the society, population growth, increased commercial activities, and the industrialization of major cities in the world, has contributed to an increase in the volume of waste generated. These in turn pose health dangers to the populace, making waste management one of the most important environmental issues today.

This is especially significant for cities in the developing world, where populations and economies are rapidly expanding, but the infrastructure to handle and manage the resulting problem is either grossly inadequate or totally unavailable (UNEP, 2005).

This research study is centered on the waste management strategies employed by Ikpoba Okha Local Government Area in Benin City, its waste characterization processes, and the design of waste disposal facilities that are used to handle these wastes.

An Integrated Solid Waste Management (ISWM) system combines waste streams, waste collection, treatment, and disposal methods with the objective of achieving environmental benefits, economic optimization, and societal acceptability (White et al., 2002).

In Nigeria, about 25 million metric tonnes of solid waste are generated yearly (Ogwueleka, 2009). Sada (1984) observed that in 1980, an average of 100 metric tonnes of solid waste were generated daily in Benin City. This figure has recently increased to about 350 metric tonnes daily, while the maximum rate of evacuation achievable is only about 250 metric tonnes per day.

Solid waste management therefore concerns the interplay among waste generation, storage, collection, and final disposal (Omuta, 1988). Solid waste management is a major challenge in urban areas throughout Nigeria. Without an effective and efficient solid

waste management programme, waste generated from various human activities—both industrial and domestic—can result in serious health hazards and negative environmental impacts.

Understanding the nature of waste generated, the availability of resources, and the environmental conditions of a particular society is essential for developing an appropriate waste management system.

Numerous issues underlying waste generation, collection, disposal, and management in urban areas of developing economies have been widely documented (Achi et al., 2012; Afun and Okewole, 2002; Agunwamba, 2008; Al-Ansari, 2012; Facci et al., 2011; Goel, 2008; Massoud and El-Fadel, 2002; Momoh and Oladebeye, 2010; Morrissey and Browne, 2004; Ogwueleka, 2003; Rathi, 2006). Improper urban solid waste disposal has been identified as a major contributor to urban decay in Nigeria (Asomugha, 1979).

In scope, solid waste management includes all administrative, financial, legal, planning, and engineering functions involved in solving solid waste problems. Solutions often involve interdisciplinary fields such as public administration, political science, urban and regional planning, geography, economics, public health, sociology, demography, communications, conservation, engineering, and material science.

In Benin City today, the unsightly appearance and nauseating stench emanating from persistent refuse dumps are alarming. This recurring situation indicates that the waste problem in Benin City has overwhelmed the capacity of the agencies responsible. Poor waste management and indiscriminate dumping of refuse provide breeding grounds for disease carriers such as cholera, typhoid fever, dysentery, and malaria.

1.2 HISTORICAL BACKGROUND OF IKPOBA OKHA LOCAL GOVERNMENT AREA OF EDO STATE.

Ikpoba Okha is one of the eighteen (18) Local Government Areas in Edo State, Nigeria. The administrative headquarters is located in the town of Idogbo. The Local Government Area serves as a major transit hub for travelers entering and leaving the Niger Delta region.

Ikpoba Okha Local Government Area covers an area of approximately 862 square kilometres and had a population of about 371,106 according to the 2006 national census (Wikipedia). The area comprises several prominent towns, including Aduwawa, Ugbekun, Egor, Ekewan, Ebomisi, and others. The Local Government Area is predominantly inhabited by people of the Bini ethnic group.

1.3 STATEMENT OF PROBLEM

The unsanitary disposal of refuse through indiscriminate littering within Ikpoba Okha Local Government Area, Benin City, Edo State, constitutes a serious problem. Generally, the attitude of people towards waste disposal in unhygienic conditions can lead to severe health and environmental challenges.

Food waste, when improperly disposed of, becomes unsightly, insanitary, and emits offensive odours. Such conditions can lead to the outbreak of diseases and epidemics if waste is not properly managed.

Infections and diseases associated with solid and liquid waste, when left under unsanitary conditions without proper disposal management, can result in serious health complications, infections, and even epidemics. Open dump sites and uncontrolled garbage serve as breeding grounds for insects, pests, and snakes, posing threats to homes and children who play around such areas.

Inappropriate disposal of solid waste has also led to environmental hazards and pollution, especially through waste incineration (burning) without adequate consideration of

sanitation and health risks. Such disposal methods, instead of providing solutions, often worsen the problem. Improper waste disposal not only creates unhygienic conditions but also destroys the aesthetic value of both natural and man-made environments.

According to Owoeye and Okojie (2013), poor public attitudes and limited understanding of solid waste management have contributed significantly to indiscriminate waste disposal in Benin City. It is common knowledge that streets, offices, markets, motor parks, abattoirs, industries, and residential areas are increasingly affected by improper waste disposal practices.

residential areas are hardly provided with facilities such as plastic waste bins used for solid waste collection and disposal which lead to the populace (men, women and children) disposing their wastes indiscriminately into public drains, along the streets, nearby bushes and rivers leading to blocked drains, polluted water and filthy environment.

The strategies for the collection, transport, treatment and disposal of solid wastes, particularly from Benin City (Urban centres) have become a relatively difficult problem to solve for those responsible for their management. (The Nigerian Guardian, 2017).

This problem which has manifested in the form of piles of indiscriminate disposed heaps of uncovered waste and illegal dumpsites along major roads and street corners in Benin City is compounded by the rapid urbanization and population growth as well as industrialization and general economic growth.

Population growth and urbanization of Benin City have greatly intensified the interaction between the people and the environment and the indications were the adverse effects on man's health which has increased sharply, unless more effective counter measures are taken in the bid to protect and preserve the environment it will endangered the health of the people.

The main causes of solid waste crises in Benin City are insufficient available data. Lack of knowledge of solid waste management, funding and the resident's attitude (Ibhadode and Anyata, 2009). This is why Odun (1975) asserted that in order to effectively and efficiently handle waste management operations, everyone should be made to understand that basic ecological principles must be applied if man was to achieve and maintain a symbolic relationship with nature.

1.4 OBJECTIVES OF THE STUDY

1. To access the knowledge, attitude and behaviour of the people towards refuse disposal in Ikpoba-Okha Local Government Area of Edo State.
2. To ascertain the role of finance and equipment in the maintenance of refuse disposal programme in Ikpoba-Okha Local Government Area of Edo State.
3. To identify the major factors responsible for the present indiscriminate refuse disposal in Ikpoba-Okha Local Government Area of Edo State.
4. To determine the significance of community participation and domestic commercial solid waste management in Ikpoba-Okha Local Government Area of Edo State.

1.5 RESEARCH QUESTIONS

1. what are the knowledge, attitude and behavior of the people towards refuse disposal in Ikpoba-Okha Local Government Area of Edo State?
2. what is the role of finance, equipment in the maintenance of refuse disposal program in Ikpoba-Okha Local Government Area, Edo State?
3. What are the factors responsible for the present inadequate refuse disposal in Ikpoba-Okha Local Government Area of Edo State.
4. What is the significance of community participation and domestic commercial solid waste management in Ikpoba-Okha Local Government Area of Edo State.

1.6 RESEARCH HYPOTHESES

- Ho: There is no significant relationship between people's knowledge, attitude and behaviour as influence of effective waste disposal and gender response.
- H₁: There is significant relationship between people's knowledge, attitude and behaviour as influence of effective waste disposal and gender response.
- H₀ There is no significant relationship between finance, equipment as it affects proper disposal and settlement type of respondents.
- H₁ There is significant relationship between finance, equipment as it affects proper disposal and settlement type of respondents.
- H₀ There is no significant relationship between the factors responsible and inadequate refuse disposal in Ikpoba-Okha Local Government Area of Edo State
- H₁ There is significant relationship between the factors responsible and inadequate refuse disposal in Ikpoba-Okha Local Government Area of Edo State.
- H₀ There is no significant relationship between community participation and domestic commercial solid waste management in Ikpoba-Okha Local Government Area of Edo State.
- H₁ There is significant relationship between community participation and domestic commercial solid waste management in Ikpoba-Okha Local Government Area of Edo State.

1.7 SIGNIFICANCE OF THE STUDY

The purpose of this study is to reveal the negative impacts of the problems of waste disposal in Ikpoba Okha Local Government Area in Benin City, Edo State and re-suggest solution by making recommendations that will help control the situation if adhered to. This research study will be important to the government in tackling waste problem in the study area, as well as bringing ultimate benefit to improve the morals of citizens for effective participation in environmental policies and programmes. This is because when the morale of people are improved, it is expected that their participation in environmental activities will improved tremendously, thereby reflecting in their overall sentimental consciousness.

Finally, the alarming rate at which waste occupy the streets and surroundings of Ikpoba Okha Local Government Area in large quantities due to indiscriminate method of waste disposal will be a thing of the past if adhered to the recommendations.

1.8 SCOPE OF THE STUDY

The scope of study focuses on the problems of unsanitary disposal of refuse in Ikpoba Okha Local Government Area, Benin City, (from 2018 to 2019).

1.9 DEFINITION OF TERMS

Refuse Disposal: It is the transfer of refuse to its final disposal site in such a manner that it will not create any health problem to the public.

Solid Waste Management Programme: It is the initiative of public enlightenment campaigns to educate the residents of Edo environs on the need to desist from all acts that contribute to poor refuse disposal and also to educate them properly on the consequences of unsanitary refuse/waste disposal to health.

Finance set aside to Manage Solid Waste: Finance in this study means if the people can either afford the payment of sanitation fees or not concerning the disposal of solid waste/refuse. Government also should fund the sanitation unit always.

People's Behaviour towards Waste Disposal: The behaviour towards refuse disposal in this study means dumping refuses in market places, streets, gutters, uncompleted buildings, river without having contact with the waste managers to dispose them.

Public Attitude towards Waste Disposal: The attitude towards refuse disposal in this study means it determines whether they were happy or not happy about how their refuse/waste are disposed.

Knowledge of Waste Management: Knowledge of appropriate disposal system has to do with the process where wastes were accumulated in residential areas for environmental sanitation refuse disposal trucks to collect these waste. Also these solid wastes should be accumulated in a spot where the environmental sanitation manger's trucks can easily dispose it.

CHAPTER 2

LITERATURE REVIEW

2.1 Conceptual Review

Research shows that more attention has been given to the studies of waste and its associated effects in Nigeria. Most of the work carried out centered mainly on classification of urban solid waste. Eku Emei and Archie Kano, 2000 Environmental Impact and Consequences of Solid Waste Generation, Nye Nnewa, 1991, and Recycling of Minced Waste Plastic Products, Chukwu, 2007. Little attention has been given to the effective strategies for the management of urban solid waste in Nigeria's cities.

2.2 Definition of Waste

According to Halabi, 1998, waste may be defined as any solid, liquid, or gaseous substance that remains an incident by products of the processing of substance and for which no use can be found by the system that produced it.

Ekbo, 2009, opined that waste as substance or object discarded as worthless or unwanted, defective, and of no further value to the user, so it is good to be disposed of.

Linton and Omoto, 2001, stated that waste may also be seen as already used, discarded, and unwanted materials by the producer. It can take the form of refuse, garbage, and sludge.

According to Ayaka, 2002, solid waste is also seen as useless, unwanted, unused, or discarded materials resulting from normal community activities, i.e., human and animal activities.

2.3 SOLID WASTE MANAGEMENT

Enearta (2007) defines solid waste management as a systematic generation, collection, separation, processing, treatment recovery and disposal of solid waste. Aribisola (2004) defined solid waste management as the discipline associated with controlling the generation, storage, collection, transfer and transportation, processing and disposal of solid waste in a manner that is in accordance with the best principles of health economics, conversation and other environmental considerations that is also responsive to public attitudes. Rosebaum, (1974) argued that solid waste is an unofficial measure of prosperity since wealthy nations produce more wastes than poor ones but Omuta, (1988) argues that what causes waste problem is not volume produced but the level of effectiveness of solid waste management. This explains why, although Americans have been quoted to be the most prolific producers of solid waste on earth yet they have not produced the filthiest cities on earth.

The volume of wastes that is visible along almost all the roads, streets, houses and market Places in Ikpoba Okha Local Government Area is an indication that the adopted strategies to cope with the inevitable by-products of development are ineffective.

Oluwande (1983) stated that the dangers posed by man to his environment and the doomsday predictions of man's deleterious activities were succinctly presented. It was generally agreed that the state of health of a person was a direct function of the states of his environment. Consequently every effort at improving the healthful conditions of the citizens must directly impact on efforts at maintaining a clean environment.

The 1992 United Nations Conference at Stockholm defines pollution as "the discharge of toxic substance and the release of heat in such quantities or concentrations as to exceed the capacity of the environment to render them harmless". The United Nations Conference (1992).

2.4 HISTORY OF SOLID WASTE MANAGEMENT IN NIGERIA

The waste management effort in Nigeria dated back to the pre-colonial era when several efforts were made. This includes the formation of the Lagos Executive Developing Board in 1928. Nwanlileji, (2003) ascertained that the history of solid waste management in Nigerian cities and rural areas are closely tied to the history of Local Government.

Four evolutionary periods were identified by him, and they are: The Pre-Colonial Periods when the traditional administrative machinery with Emirs, Obas, Chiefs or community (or compound) heads, having full control. Women groups swept public places in rotation, household refuse and other refuse were deposited at surrounding bushes where they decomposed or were burnt off.

The Colonial Period saw the introduction of number of ordinances for strengthening city administration. The most relevant, being the Public Health Act by the then Colonial Government in Nigeria which laid the foundation for improved health management. They went to houses and their surroundings to check if they were clean and applied necessary sanctions on erring residents Nwanlileji (2003).

The Pre and Post Independence period is known as the transition to independence and the immediate post independence period. Its landmark was the introduction of the Local Government ordinances of 1950-1954 which were subsequently amended in 1955, 1957, 1958, 1967 and 1973.

The ordinances introduced a three-tier system of administration consisting of Country Councils, Urban and Rural District Council and Local Council. Municipal councils were introduced in big cities while urban councils for small town. These councils were assigned specific function including maintenance of other forms of sanitary and personal services that concerns waste management Nwanlileji (2003). To assess the level of

awareness and attitudes towards the waste management and practices adopted by the community during this era, the awareness on sewage and solid waste management was totally lacking and waste produced were dumped at the streets, lanes and in backyards. No regular services were provided by the Local Government Environmental Sanitation. When waste heaps becomes unmanageable and unbearable, the residents will contract the informal leader to get the waste removed and cleared Nwanlileji (2003). As from 1947-1972, awareness was created among the residents on health hygiene and waste management issues. The attitude towards waste management improved and residents in the community were now using standard bins, rubber or plastic bins in the collection of household solid waste. The lanes, streets, backyards were much cleaner. This awareness was created among inhabitants of the community. (Journal of Governmental Science and Health, Part A. 2004).

This period equally introduced assessment of the basic calculation of number of houses, lane sweepers estimated finances and participation from community. In other words, the affordability of the community was calculated. Meetings were held within the community to decide the amount of contribution to be paid by each household. Regular collection fee per household was fixed at monthly basis while repair and maintenance of equipment and tools were initially provided by the Government (Local Government).

The Former President of the Senate in the opening address to the First Nigeria Seminar on Environmental Awareness for the National Policy Makers held from 10th to 11th November, 1982, stated that “one is not likely to find in this audience one person who can honestly claim ignorance of the deplorable state of our living spaces all across the country. From then till this present time we all know the truth about the sad state of our environment which has become a recurring issue in the public media as a constant subject of legislative debate”. (Journal of Environmental Science, 2011). Kalu (2000) said the basic social and economic needs are taken for granted, the need to maintain a healthy environment at home, work place and the neighborhoods have acquired a new urgency measures and control mechanism.

The major cause of various environmental problems is man. According to Lucas and Gilles (1984) man's external environment contains elements which are essential for life and for the maintenance of good health.

According to Kent State University online, in both ways positive or negative, human civilization and technology have affected our earth, altering our planet forever. How Humans Affect the Environment (Kent State University 2019). If the activities of man are properly checked and regulated to protect and preserve the environment, especially its land, water and air then waste can be minimized. There is advocacy that there should be proper education or enlightenment for people in various human endeavours on the danger of improper management of waste, as well as the advantages of waste management.

These activities of man can be checked in the following ways:

1. Checking the hazardous and hostile elements in the environment during environmental sanitation exercises.
2. Increasing the level of enlightenment on how best to dispose waste and maintaining environmental hygiene which is aimed at improving the standard of basic environmental conditions affecting the well-being of people.

These can be checked in the following ways:

- i. Clean and safe air
- ii. Clean and safe water supply
- iii. Efficient and safe animal, human and industrial waste disposal
- iv. Protection of food from chemical and toxicological contaminants
- v. Adequate housing in clean and safe surroundings

The 1976 Local Government Reforms

This is the last phase of local government reforms in regards to environmental sanitation which operates till date., The Local Government decree, 1976 established a unified and common Local Government system in the country. Also the Local Government Council was empowered to exercise substantial control on matters relating to environmental sanitation including solid waste management. The 1976 Local Government decree was later included in the 1979 Constitution of the Federal Republic of Nigeria. This 1976 reform has since been in operation and it has conferred the statutory responsibility of waste collection and disposal on local government authority. (V.O. Aghayere, 1997)

As regards to the concurrent legislative list, the Federal and State Governments enjoy powers to make provision for scientific and technological research in environmental matters.

However, the State Government throughout the country play prominent roles in the running of the local government councils, as part of its constitutional responsibilities, which the duty of waste collection and disposal is included. This ultimately results conflict in waste management matters between the state and local government authorities.

In 1988, Federal Environmental Protection Agency (FEPA) was established by the Federal Government. This was as a result of the widely publicized “Koko Toxic Waste Dump” that provided impetus which sparked the Nation’s focus on the environment and environmental protection as a National policy. The important outcome of the efforts and activities following the “Koko Toxic Waste Dump” was the adoption of a national policy on the environment and the enactment by the then Federal Military Government of two basic environmental protection statues, the harmful waste special criminal provision, Decree No. 42 section 24 of 1988 and the Federal Environmental Protection Agency (FEPA). FEPA was charged with responsibility of encouraging the State and Local

bodies to formulate and enforce policies and standards to guide the management of our physical environment at both National, State and Local levels; solid waste management being one of the focal points. Ogbodo and Gozie. (2009) FEPA came up with a legislation known as the Environmental Impact Assessment Decree (EIAD) Decree No 86 of 1993. This Decree made it mandatory for any major physical development project likely to have adverse effects on the environment to conduct Environmental Impact Assessment (EIA) and report (EIR) as a condition for approval of such project. Looking at the financial need towards the EIA the federal government in 1980 allocated 1% of the resources going into the federal account for “continuing ecological problems”. In 1993 the percentage was increased to 2%. (African Journal Online, (2009). As international awareness in the protection of the environment grew, the then military administration headed by Muhammadu Buhari in 1984 to 1985 introduced a programme known as “War Against Indiscipline (W.A.I). The programme particularly emphasized on domestic waste management and the need for beautiful surroundings. Emphasis was laid on the fact that residents of every area must clear their surroundings and dispose their refuse/waste appropriately. This programme culminated into the environmental sanitation edict enacted by each state.

Though this edict authorized certain bodies or persons to perform the functions of ensuring proper disposal of waste, refuse and sewage yet there were a lot of challenges combating this programme. The evil associated with this laudable cleanup programme was that the waste or refuse cleaned from the surroundings were dumped inappropriately in the same surrounding like uncompleted buildings, moats and gutters and more often than not, the relevant authorities failed to collect and dispose of these wastes. Nigeria Tribune (2017).

Until now, in spite of the existence of the Federal Environmental Protection Agency (F.E.P.A), State Environmental Protection Agencies and Local Government Waste Disposal Authorities as well as Private Waste Managers, there is no visible change in the collection, disposal, and management of domestic waste. Igbinomwanhia (2014).

2.5 TYPES OF WASTES AND SOURCES

The sources and quantities of solid waste depend on various factors such as economy, culture, heritage, industrialization and season. Wastes are complex in nature depending on the sources of generation and environmental status of the waste.

Waste may be classified according to its origin or sources, physical form and according to physiochemical properties. A.J. Gana (2014).

Sources of solid wastes in Ikpoba Okha Local Government Area can be classified as follows:

Residential: These are food wastes, paper cardboards, plastics, glass, tins, cans, aluminium, other metals, ashes, street leaves, special wastes (including bulky items like condemned electronics, batteries, oil, and tires).

Commercial: These wastes are paper, cardboard, plastics, wood, food wastes, glass, metal wastes, ashes, special wastes and hazardous wastes.

Institutional: these waste paper, cardboard, plastics, wood, food wastes, glass, metal wastes, ashes, special wastes and hazardous wastes.

However, there are certain industrial domestic chemicals and even nuclear wastes that are termed hazardous because of the substantial threat they pose to human, plant or animal life, and which therefore cannot be handled or disposed without special precautions. The administrative procedure to effectively dispose these kinds of wastes has to be properly handled with care because they generally exhibit the characteristics of being ignitable, corrosive, reactive and toxic (Davis et al 1998).

Akhbii (2008) further asserts that the effects of solid wastes if not properly handled may be on the environment, underground water and on human health. Udo (2003) buttress this when observed that decomposing wastes emits carbondioxide and methane gas which

enhances global warming. Also, incinerator system of waste management causes a lot of damages to the environment through air pollution. Some industries (cement and fertilizer industries) discharge some dangerous chemicals as wastes which also damage the environment.

2.6 ESTABLISHMENT OF SANITATION AUTHORITY

The campaign for sanitation has been launched severally, leading to emergence of various agencies such as Federal Environmental and Protection Agency, Ministry of Water and Environmental Sanitation, Solid Waste Management Authority, and Local Community and Development. Many private sectors are also involved in waste collection and processing in urban areas. (Tropical Journal of Medical Research 2016).

However, Kar, (2005) asserted that for a long time, planning of sanitation service provision consisted of what came to be known as a “Top-Down” approach where the needs of communities were determined by well-meaning officials or political representatives at the central. To Eawag, (2005) this resulted in a poor maintenance of the services provided. According to Minkler (2005) community participation was born out of the need of placing community members at the centre of the planning process with regards to environmental sanitation. In Edo State, the Ministry of Environment and Public Utilities (MEPU) is the regulatory body with the responsibility of managing the environment on behalf of the state under the direct supervision of MEPU is the Edo State Waste Management Board (ESWMB) saddled with the responsibility of supervising collection, transport, processing, recycling or disposal and monitoring of waste materials. Igbiomwanhia (2010). However, Igbinomwanhia was quick to observe that the agency has been ineffective in carrying out these responsibilities hence propounded that there are some salient policy problems bedevilling the waste management factor that when addressed have the capacity to resolve the waste management problems and improve on the wellbeing of the residents.

According to Fagboun (2002) cited in Igbinomwanhia (2014) however asserted that the provision in the 1999 constitution made several environmental policies at the state and local government level and the formulation and implementation of incoherent policies in the waste management sector has made solid waste management to be commonly seen in Nigeria as simply “pick up the waste and go dump it in the dumpsite” whether it is approved dumpsite or illegal dumpsite. He further revealed that many of such policies do not conform to modern waste management practice. For example the policies at the state level provide the dumpsite option as the end point for solid waste in Edo State and no proper provision for the disposal of sewage and excreta.

Igbinomwanhia (2014) further argued that policies formulated at the National and State levels most times are not transmitted or relayed to the households by the Local Governments where most of the waste management activities are carried out. This could in part, be attributed to lack of adequate check and balance between the local government and the state authorities. He further observed that inspite of several environmental policies provided by the constitution at the State and Local Government level, the effective implementation of these policies are constraint by poor funding. Waste management is given very low priority in the budget due to limited finances. As a result very limited funds are provided to the waste management sector by the governments, and the level of service required for protection for public health and the environment are not attained. The user service charges collected by the disposal agents is too little to make any meaningful impact on waste management system.

However, user’s ability to pay for the services is also limited by their income, and their willingness to pay for the services which are irregular and ineffective is not high either. More so the end point of the solid waste does not provide financial reward to waste

disposal agent hence the only source of finance to the disposal agent is the user service charges.

2.7 THE MODERN TRENDS IN SOLID WASTE MANAGEMENT

In the past, solid waste management placed more emphasis on disposal rather than recovery, re-use, recycling and reduction. This has aided the use of methods of waste treatment that are more primitive than those practiced earlier such as uncontrolled burning, burying, and dumping in rivers and oceans. At the moment, considerable attention is directed towards advanced incineration and compaction techniques, with disposal still the primary aim. Waste disposals are even discouraging, reclamation and pollution control regulations are causing a move away from incineration (which provides the opportunity for energy recovery) towards land filling. Public hygiene regulations prevent access to salvage sanitary landfills without providing alternative reclamation opportunities (Oyinlola, 2004).

The exponential growth of the solid waste problems in our affluent disposal oriented society now evolves modern trends of integrated solid waste management which makes it obvious that recovery, re-use, recycling and reduction (the 4R's) of task management should be our goal and it is necessary therefore for scientists and technologists to examine all aspects of fabrication and processing techniques to facilitate the application of these trends in waste management (Oyinlola, 2004). The multiplying effects of sustainable solid waste management cannot be over emphasized as the benefits are indeed many.

Solid waste disposal can be viewed not only as a natural problem but as an opportunity for recovery and utilization of potential valuable materials (Oyinlola, 2004). This opportunity can best be exploited by developing economically viable resource recovery prospects.

Through biotechnological process of recycling the organic fraction of waste generated from agriculture and domestic activities, recovered methane gas can be substituted 100%

for the cooking gas and bi-products of stabilized waste suitable for manure. The process wet stabilization system of combined effect of hydrolysis acetogenesis and methanogenesis all in an enclosed chamber of a single state batch system at a temperature and a range of 01-21 days in a tropical region or a complete stabilization and gas production (Aribisala, 2004).

Existing and emerging technology combined of resource recovery as part of municipal solid waste management is term used in describing the extraction and utilization of materials and values from solid waste stream. The materials recovered such as metals and minerals can be recycled in the manufacturing of new products. In broad terms resource from municipal solid waste components is converted to energy fuel and other valuable products. A careful examination of the possibility for recovery values from and/or utilizing the post consumer waste reveal three broad categories of resource recovery: Material Recovery (MR), Energy Recovery (ER) and Land Reclamation (LR). About 70% of the components that comprises solid waste are organic which matter must be converted to a form that can be used more easily. The recovery of heat by burning the organic materials in solid waste is the option that is spoken of most frequently. (Oyinlola, 2004).

The primary objective of any effective waste management system is disposal while avoiding or minimizing damage to the environment. This objective can be met by reclaiming useful materials or converting the waste components to new or useful materials. It was on this note, Cole, Cooper and Gnanapragasalm (2016) asserted that reuse is the action or practice of using an item, whether for its original purpose or to fulfil a different function, it save time, money, energy and resources. In broader economic terms, it can make quality products available to people and organisation with limited means, while generating jobs and business activity that contribute to the economy. Recycling is the process of turning garbage into gold (waste to wealth). Even though we may not soon be able to re-use and recycle all our wastes, it seems proper to consider this. technique and begin now to plan as the increasing cost of raw materials, energy,

transportation and land will in future make it financially feasible to re-use and recycle more resources (Aribisala, 2004). Based on previous surveys, many materials are usually recovered from waste streams using appropriate technologies. Space limitations preclude a detailed examination here of appropriate technology for efficient waste re-use and recycling of items recoverable from our solid waste stream as cited in 2.5

Recyclable Products from Recovery

- ❖ Used papers, magazines can be recycled to reproduce toilet paper and packaging materials (tetra packs).
- ❖ Plastics can be recycled to reproduce water containers, plates and pipes.
- ❖ Aluminium can be recycled to reproduce cooking pots, kettles, spoons and ladles.
- ❖ Scrap iron can equally be used to reproduce foundry products.
- ❖ Vegetable oil, when recycled, can give funnel, container and lamps.
- ❖ Bottles, glass and ceramics when recycled can give glass cups, ash trays, bottles and ceramic tiles.
- ❖ Rubber when equally recycled gives shoes, sandals, swings and boots bumpers.
- ❖ Bones when equally recycled give bone ornaments and animal feeds.

In the development of any sustainable solid waste management plan, three broad strategies for dealing with waste are of paramount importance:

1. Source reduction involving making laws, regulations or other devices for reducing the amount of waste generated.
2. Source separation involving the separation of waste at the household or commercial source level into categories that can be recovered without further separation. Separation of newspapers for the purpose of recovering fibres is an obvious example.

(Akhibi, 2008)

3. Source reduction effectively enforced by broad-based regulation or taxes designed to prohibit or discourage use of disposal material; regulation or taxes designed to increase

product lives so that fewer products are consumed and thrown away; and regulation specifically aimed at one particular type of item such as non-returnable and non-decomposable beverage containers. Although these source reduction practices are promising, it will be difficult to implement administratively at the state and local government level and could have serious and unpredictable economic consequences for the local government (Akhihi, 2008).

2.8 PRICING SYSTEM IN SOLID WASTE MANAGEMENT

In solid waste management, various methods of pricing techniques are in use for solid waste collection, transportation and disposal. In some cases, the fees collected from consumers adequately or partially cater for the solid waste management services they provide. Consequently, how the consumer and waste generators are billed is very important for efficient administration of solid waste. (Wikipedia)

For the purpose of this work, two major pricing systems—namely the fixed rate and the unit pricing system—are discussed.

According to Agunwamba, the Fixed Rate System in most developing countries including Nigeria and some developed countries is a system where pricing of solid waste is based on fixed rates or tax-based fees. In this method, fixed amounts are usually deducted from the salaries of some public servants as sanitation rate while others pay a fixed amount based on the type of residential area and business premises.

The major advantage of this method is that it is easy to implement at minimum cost by the solid waste management agency. The disadvantage is that it is not equitable and also there is no motivation for minimization of waste generation (Agunwamba, 1998). The Unit Pricing System is based on the amount of solid waste generated. The difficulty in handling this method is that the generator is billed similar to the billing of electricity and water services. It also has many advantages and disadvantages.

Advantages

1. It is a more equitable programme for all the waste generators. Each consumer pays exactly for what he generates.
2. It promotes awareness of the cost of solid waste management and educates him on his contribution to solid waste management.
3. It reduces the flow of solid waste as consumers are encouraged through financial incentives to reduce their waste output.
4. It encourages waste reduction and recycling. Consumers may change their habits and purchase products that generate less waste.

Disadvantages

1. In multi-tenant buildings, it is difficult to make each family pay for wastes generated since they may not have a common solid waste storage.
2. Coordination of recycling, collection, processing and marketing costs with variable costs is difficult.
3. Consumers may react negatively by discontinuing participation or becoming involved in illegal dumping.
4. The introduction of unit pricing is often opposed by consumers who believe that it is a form of hidden tax or property tax increase, so unit tax systems are often preceded by public education.
5. There is a tendency for consumers to illegally dispose wastes on roadsides or through burning in order to reduce their bills. These behaviours pose serious environmental health problems (Agunwamba, 1998).

2.9 PREVIOUS WORKS DONE OUTSIDE NIGERIA

In the United States, efforts have been made towards viewing solid waste management as an inter-connected system of component operations and functions. This effort led to the formulation of structures and development of models for decision making.

A comprehensive study by the AC systems for Cleveland included an evaluation of Cleveland's solid waste organizational structure, data requirements and operational procedures. A continuous data collection system was installed to document the changes in solid waste volume over time.

Truitt, Liebman and Jursce (1969) constructed a model of waste collection using data from Baltimore, calculating truck trips as a function of household density, collection frequency and distance to disposal site.

Mohapatra et al. (2018) revealed that paper mill waste, though hazardous due to heavy metals, becomes suitable for vermicomposting after structural and nitrogen amendments.

2.10 PREVIOUS WORKS DONE IN NIGERIA

Several studies have examined solid waste in Nigerian cities (Agunwamba, 1998; Agwu, 2012; Igbinomwanhia & Ohwoevoriole, 2012; Kayode & Omole, 2011; Ofuani, 2011; Ogwueleka, 2009).

Igbinomwanhia (2011), in his book on integrated waste management in Lagos and Benin, reported serious deviation from a conventional waste chain, noting the absence of sustainable waste disposal facilities. The Urban Development Bank of Nigeria (UDBN, 1997) studied waste storage, collection and disposal systems but did not design integrated facilities.

Ogwueleka (2009) studied municipal waste characteristics and emphasized the lack of integrated disposal systems. Agunwamba (1998) documented waste management problems in Nigeria but did not elaborate on disposal systems. Akhibi (2008) studied waste management in Egor LGA but did not fully elaborate disposal issues. Recent Efforts of Government to Make Ikpoba Okha Clean. On May 9, 2017, the Edo State Government launched “Operation Clean Up Benin City” to remove refuse, wastes and vehicles obstructing markets and streets (Vanguard, 2018). The government also pledged more waste bins and public enlightenment programmes. (Nigerian Tribune, 2017)

The News Agency of Nigeria (NAN) also reported that heaps of refuse made Ogbeobi, Aduwawa and environs impassable.

CHAPTER THREE

METHODOLOGY

3.1 THEORETICAL FRAMEWORK

This chapter shows details of the research methods, the setting at which the research was conducted, sample techniques and research instrument.

For the purpose of this study, research design (non-experimental), personal observation and face-to-face interview methods were used to obtain data. The researcher was interested in knowing the reason for the inadequate collection and disposal of refuse which has led to the poor level of sanitation in Ikpoba-Okha Local Government Area of Edo State.

The study adopts the Theory of Planned Behavior (TPB), which offers methods for changing people's habits, especially recycling behaviour. Proposed by Icek Ajzen (1985), TPB explains that people are more likely to act when they believe they can successfully perform the behavior. Waste management systems aim to reduce adverse environmental effects, but complexities in current systems make optimization difficult. Low levels of household recycling worsen the situation in Ikpoba Okha LGA.

Diong (2012) and Chu-Chiu (2003) applied TPB in modeling waste management systems, while Andrea Scalco (2017) used structural equation models for cognitive behavior analysis. TPB helps explain recycling behavior among households in Ikpoba Okha LGA. In applying the TPB, this study examines the relationships between attitude, social pressure, and perceived behavioral control as determinants of recycling intentions and behavior.

3.2 POPULATION OF THE STUDY

The study population is the total number the researcher wishes to study. It is also called the universe. Therefore, the population of this study is the estimated 371,106 residents of Ikpoba Okha Local Government Area, Benin City (World Population Review, 2019).

3.3 STUDY AREA

Ikpoba Okha Local Government Area was divided into zones for environmental sanitation purposes. Three out of the zones were used. There were various sectors from which refuse was collected and disposed of. Such sectors include markets, offices and residential areas. The study covered refuse collection and disposal from these areas. The areas include Aduwawa Market and surrounding streets, Oregbeni and environs, and Oka Market and surroundings, all in Benin City. Those selected for study were the public of Ikpoba Okha Local Government Area which comprises men, women and children.

3.4 SAMPLE TECHNIQUE

Stratified sampling method was used. The town was stratified into zones for the purpose of refuse collection and disposal. Three out of the zones were randomly selected. The zones are Aduwawa Market and environs, Oregbeni Market and environs, and Oka Market and environs.

3.5 SAMPLE SIZE

The sample size of this study consists of one hundred (100) randomly selected respondents from the inhabitants of the three (3) zones enumerated above. Forty (40) respondents from Oregbeni Markets and its environs, thirty (30) respondents from Aduwawa Central and its environs, while another thirty (30) respondents from Oka and its environs, making a total of one hundred (100) respondents. These zones were

carefully and randomly selected to cover the entire Ikpoba Okha Local Government Area, Benin City.

3.6 RESEARCH INSTRUMENT

For the purpose of this research, the questionnaire method was adopted and structured to elicit vital information concerning unsanitary disposal of waste. Therefore, the close-ended and open-ended questionnaire was adopted. The close-ended questions indicate the extent to which the respondent agrees or disagrees with a given statement on a Yes, No, and No Idea scale. The open-ended questions allow respondents to include more information and understanding of the subject to capture the intensity of their feelings for a given item.

The questionnaire was divided into two sections: A and B. Section A sought to find out the personal information of the respondents. Section B dwells on staff and inhabitants of Ikpoba Okha Local Government Area pertaining to the disposal of waste in Benin City.

3.7 DATA COLLECTION METHOD

The methods of data collection used for this research were primary and secondary data sources.

Primary Data: This refers to information directly collected from the field in their original state. The researcher adopted the questionnaire method, which involves printed questions. These questions were prepared to enable the researcher gain responses concerning certain information. The questionnaire was set with the aim of gaining unbiased answers which will be used in testing the correctness of the problem at hand and help in proffering solutions.

Secondary Source: This includes existing records which contain information about waste management. This secondary written source includes published books, pamphlets, articles and bulletins on waste management.

3.8 METHODS OF DATA PRESENTATION AND ANALYSIS

For easy identification of collected data, the researcher presented the opinions of the respondents in tabular form. This tabulation provided a concrete picture and enabled comparison of cases. It also reveals at a glance the differences in opinion in a more comprehensive manner and the percentage of each opinion.

In analysing the data and testing the stated hypotheses, simple percentage and inferential analysis (chi-square) were used. The interpretations of the presented data were also given. All analyses were based on the results derived from the research questionnaire. For the purpose of this study, “waste management” was treated as the dependent variable while the following were manipulated as independent variables:

1. People’s knowledge, attitude and behaviour
2. Finance and equipment

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSIONS

4.1 DATA PRESENTATION

This chapter presents the results and discussion of findings in line with the research question and hypotheses. It is discussed under the sectors of analysis of demographic characteristics of the respondents, answering of research question and discussion of findings and testing the hypotheses.

The major instrument used in the collection of various data was questionnaire and they were administered at random to selected inhabitants of Ikpoba Okha local Government Area, Benin City. One hundred (100) copies of the questionnaire were administered and ninety (90) of them were retrieved which represent 90%. Analysis of data and relevant information collected for this research grouped as follows:

4.2 DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Table 4.1 Gender of Respondents

Gender	Frequency	Percentage (%)
Male	45	50.0
Female	45	50.0
Total	90	100

Table 4.1: Reveals the gender distribution of the respondents. The respondents were evenly represented with 45 male (50%) and 45 female (50%). This implies that both genders were equally represented in the study.

Table 4.2 Age Range of Respondents

Age Range	Frequency	Percentage(%)
6 – 10 yr	2	2.2
11 – 17 yr	14	15.6
18 – 30 yr	22	24.4
31 – 45yr	39	43.3
46yr & above	13	14.4
Total	90	100.0

Table 4.2 shows the Age Range distribution of the respondents. As shown in the table, majority of the respondents are within the age range 31-45yr (43.3%), this is followed by the 18-30yr (24.4%), 11-17yr (15.6%), 46yr and above (14.4%) while 6-10yr(2.2%) was the least age range. This implies that the majority of the respondents were those within the age range of 31-45 years old.

Table 4.3 Occupation of the Respondents

Occupation	Frequency	Percentage(%)
Business	20	22.2
Student	22	24.4
Civil Servant	42	46.7
None	6	6.7
Total	90	100.0

Table 4.3 reveals the occupation distribution of the respondents. Majority of the respondents in this study were civil servant (42) and represented 46.7% of the total respondents, this is followed by student (22) 24.4%, then business (20) 22.2% while those without any occupation-none (6) 6.7% were the least. This implies that majority of the respondents were civil servants. The implication is that majority of the respondents are of matured mind whose right sound decision is certain.

Table 4.4 Academic Qualification

Academic Qualification	Frequency	Percentage(%)
First Degree and above	46	51.1
O.N.D	13	14.4
S.S.C.E	19	21.1
Pry.Sch.Leaving Cert.	5	5.6
No Formal Education	7	7.8
Total	90	100.0

Table 4.4 shows the Academic Qualification distribution of the respondents. As shown in the table, majority of the respondents 46 (51.1%) are First Degree and above holders. This is followed by 19 (21.1%) belonging to S.S.C.E holders, O.N.D holders is next with 13 (14.4%), followed by No Formal Education with 7 (7.8) while primary leaving school certificate holder is at least with 5 (95.6%). This implies that the majority of the respondents holds a First Degree.

Table 4.5: Marital Status

Marital Status	Frequency	Percentage(%)
Single	37	41.1
Married	51	56.1
Divorced	1	1.1
Widowed	1	1.1
Total	90	100.0

Table 4.5 Reveals the Marital Status distribution of the respondents. Majority of the respondents in this study were Married (51) and represented 56.7% of the total respondents, this is followed by single (37) 41.1%, while Divorced And Widowed with

(1) each represented 1.1% and 1.1%. this implies that majority of the respondents were Married.

Table 4.6: Respondents views on who dispose waste at home

Respondents View	Number of Respondents	Percentage (%)
Children	18	20
House help	5	6
Self (Adults)	67	74
Total	90	100

Source: field survey 2025

This table shows that 18 (20%) of the respondents believed that those who dispose waste in various home are children, 5 (6) were of the view that house help are responsible for disposal of solid waste at home while 67 (74%) believed that adult dispose waste themselves. Therefore, based on the majority of respondents, one can categorically states that adults are responsible for waste disposal.

Table 4.7: method of waste disposal in Ikpoba Okah

Respondents View	Number of Respondent	Percentage (%)
Yes	40	44
No	41	46
Don't know	9	10
Total	90	100

Source: field survey 2025

This table indicates that 40 (44%) respondents agreed that the method of waste disposal in Ikpoba Okha is effective, 41 (46%) disagreed to the notion that current method of waste disposal in Ikpoba Okha is effective. While 9(10%)of the respondents have no opinion as

regarding the effectiveness of current method of waste disposal in Ikpoba Okha. Therefore, due to some disparity between the yes and no respondents, one can say that the current method of waste disposal in Ikpoba Okha, through effective, still need more room for improvement as shown in the table above and more efforts needs to be put in place in other to get it. right

Table 4.8: Respondents rating of environmental sanitation in Ikopa Okha (Oregbeni Aduwawa and Oka and environs)

Respondents View	Number of Respondent	Percentage
Excellent	1	1
Very Good	32	36
Good	19	22
Fair	22	24
Poor	14	16
Very poor	2	2
Total	90	100

Source: field survey 2025

The table shows that 1(1%) of the respondents believed that the environmental sanitation in aduwawa and environs, oregbeni and environs, oka and environs all in Ikpoba Okha was excellent, 32(36%) believed that it was very good, 19(21%) believed that it was very good 22(24%) of the respondents believed it was fair and 14(16%) believed it was poor while 2(2%) of the respondents believed that environmental sanitation in ikpoba okha is very poor. Therefore based on the majority of the respondents which stated that the environmental sanitation in ikpoba okha (market and environs) were very good, one can categorically state that there is improvement in the environmental sanitation in ikpoba okha local government area.



Fig 4.7 Blocked drainage due to disposal of refuse in the drain along Aduwawa.

The above picture shows refuse dumped inside drain in Aduwawa, Benin City as it affect free flow of flood whenever it- rains.

Table 4.9: Respondents view on the maintenance of environmental sanitation as the responsibility of all

Respondents View	Number of Respondent	Percentage (%)
Yes	85	95
No	3	3
No idea	2	2
Total	90	100

Source:Field survey 2025

Table 4.9 shows 85(95%) of the respondents were of the view that maintenance of the environment was the responsibility of all person. 3(3%) did notb agree that maintenance of the environment was the responsibility of everybody. While 2(2%) of the respondents have no idea if maintenance of the environment was the responsibility of all persons.

Therefore, going by what majority of the respondent believed in, it can conclusively be said that maintenance of the environment was the responsibility of all persons in ikpoba Okha.

This section presents the analysis of the four research question raised for this study.

Research question One: Do people’s knowledge,attitude and behaviour influence effective waste disposal?

Table 4.10 can any person’s behavior influence the way he/she disposes waste?

Respondent View	frequency	Valid percentage
Yes	51	56.7
No	25	27.8
Don’t know	14	15.6
Total	90	100.0

Table 4.10: shows the responses for the question”Can any person’s behavior influence the way he/she disposes waste?” As show in the table, majority of the respondents 51(56.7%) responded “yes” to the question. This is followed by 25%(27.8) belonging to the “No” response while the “Don’t know” response accounts for 14(15.6%) is the least. This implies that the majority of the respondents believe that a person’s behavior influences the way he/she disposes waste.

In analysis the above table,question thirteen(13) of the questionnaire was used.

Research Question Two: Does fiancé and equipments affect proper disposal of wastes?

Table 4.11: Can lack of finance affect the way waste is being disposed?

Respondent View	frequency	Valid percentage
Yes	62	68.9
No	24	26.7
Don't know	4	4.4
Total	90	100.0

Table 4.11: shows the responses for the question “Can lack of finance affect the way waste is being disposed/” As shown in the table, majority of the respondents 62(68.9%) responded “yes” to the question. This is followed by 24(26.7%) belonging to “No” response while the “Don't know” response accounts for 4(4.4%) is the least. This implies that the majority of the respondents believe that lack of finance affect the way waste is disposed.

In analyzing the above table,question fourteen(14) of the questionnaire was used.

Research Question Three: What could be the major factor responsible for inadequate refuse disposal in Benin City?

Table 4.12 lack of tools are major problems facing the refuse disposal unit of Ikpoba Okha

Local Government

Respondent View	Frequency	Valid Percentage
Yes	69	76.7
No	3	3.3
No idea	18	20.0
Total	90	100.0

Table 4.12 shows the responses for the statement;”Lack of tools is major problem facing the refuse disposal unit of Ikpoba Okha Local Government?” As shown in the table, majority of the respondents 69(76.7%) responded “yes” to the question. This is followed by 18(20.0%) belonging to the ‘No idea’ response while the “No” response accounts for 3(3.3%) is the least. This implies that the majority of the respondents believe that lack of tools is the major factor responsible for inadequate refuse disposal in Benin City.

In analyzing the above table,question seventeen(17) of the questionnaire was used.

Research Question Four: Can community participation in waste disposal help to improve on the efficiency of disposal?

Table 4.13 Community participation in waste disposal improve waste management

Respondent View	Frequency	Valid Percentage
Yes	75	83.8
No	6	6.7
No idea	9	10.0
Total	90	100.0

Table 4.13: shows the responses for the statement; Cam community participation in waste disposal improve waste management?” As shown in the table, majority of respondents 75(83.3%) responded “yes” to the question. This is followed by 9(10.0%) belonging to the “No idea” response while the “No” response accounts for 6(6.7%) is the least. This implies that the majorityof the respondents believe that community participation in waste disposal help to improve on the efficiency of disposal.

In analsing the above table, question nineteen(19) of the questionnaire was used.

4.3 TESTING OF HYPOTHESES.

Decision Rule

If P-value(calculated) is less than threshold value 0.05 we reject the null hypothesis and accept the alternative hypothesis but if the the P-value(calculated) is greater than the threshold value 0.05 we fail to reject Ho(null hypothesis).

Hypothesis One:

H₀ There is no significant relationship between people’s knowledge, attitude & behavior as influence of effective waste disposal and gender responses.

H₁ There is significant relationship between people’s knowledge attitude & behavior as influence of effective waste disposal and gender responses.

In analyzing the above hypothesis, question thirteen (13) of the questionnaire was used.

Variables measured for the hypothesis are:

People’s knowledge, attitude and behavior (independent variable) waste management (dependent variables).

Table 4.10a

			Yes	No	Don't know	Total
Gender	Male	Count	24	12	9	45
		% of total	26.7%	13.3%	10.0%	50.0%
	Female	Count	27	13	5	45
		% of total	30.0%	14.4%	5.6%	50.0%
Total		Count	51	25	14	90
		% of total	56.7%	27.8%	15.6%	100.0%

Table 4.10b Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.359	2	.507
Likelihood Ratio	1.376	2	.503
N of Valid Cases	90		

The chi square result from table 4.01b: $x = 1.359$, $df = 2$, $p = 0.507$ shows that there is no statistically significant relationship between people's knowledge, attitude & behavior as influence of effective waste disposal, and gender because the p-value is larger than the threshold value of 0.05. This therefore implies that the null hypothesis (H₀) will not be rejected, hence we conclude that there is no statistically significant relationship between people's knowledge, attitude & behavior as influence OF effective waste disposal and their gender. In other words being a male or female do not affect people's knowledge, attitude & behavior as regarding effective waste disposal.

Hypothesis Two:

H₀ There is no significant relationship between finance, equipment as it affects proper disposal of wastes and the settlement type of respondents.

H₁ There is significant relationship between finance, equipment as it affects proper disposal of wastes and the settlement type of respondents.

In analyzing the above hypothesis, question fourteen (14) of the questionnaire was used.

Variables measured for the hypothesis:

Finance/equipment (independent variable) waste management (dependent variable).

Table 4.11a settlement type finance, equipment as it affects proper disposal of wastes

		Yes	No	Don't know		
Settlement type	Urban	Count	38	0	0	38
		% of total	42.2%	0.0%	0.0%	42.2%
	Semi urban	Count	12	16	0	28
		% of total	13.3%	17.8%	0.0%	31.1%
	Rural	Count	12	8	4	24
		% of total	13.3%	8.9%	4.4%	26.7%
Total		Count	62	24	4	90
		% of total	68.9%	26.7%	4.4%	100.0%

Table 4.11b Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	40.622	4	.000
Likelihood Ratio	47.774	4	.000
N of Valid Cases	90		

The chi square results from table 4.11b : $X^2 = 40.622$, $df = 2$, $p = 0.000$ shows that there is a statistically significant relationship between finance, equipment as it affects proper disposal of wastes and the settlement type of respondents because the p-value is smaller than the threshold value of 0.05. this therefore implies that the null hypothesis (H_{01}) will be rejected, hence we conclude that there is a statistically significant relationship between finance, equipment as it affects proper disposal of wastes and the settlement type of

respondents. In other words the settlement type does influences finance and equipment as it affect proper disposal of wastes.

4.4 DISCUSSION OF FINDINGS

The findings of this study revealed that lack of finance is a major factor responsible for inadequate waste disposal in Ikpoba Okha Local Government, which calls for adequate financing by appropriate government institutions towards environmental sanitation in Ikpoba Okha.

African Journal Online (2009) declared that considering the financial needs for environmental protection, the federal government in 1980 allocated 1% of federal resources for ecological problems; in 1993 the percentage was increased to 2%. Igbinomwanhia (2014) agreed with this assertion when he stated that the effective implementation of these policies is constrained by poor funding, while waste management receives very low priority in the budget. As a result, limited funds are provided to the waste management sector, and the level of services required for protecting public health is not attained.

Secondly, the people in Ikpoba Okha are of the opinion that the current waste disposal method is ineffective. Therefore, efforts should be made for proper waste management in Ikpoba Okha. Fagbohun (2002) asserted that the 1999 Constitution made several environmental policies, but many do not conform to modern waste management practices. He further stated that most state-level policies provide only dumpsites as the endpoint for solid waste in Edo State, with no provision for sewage and excreta disposal.

Also, proper enlightenment should be carried out regularly by the environmental sanitation unit to re-orient people on the dangers of improper waste disposal. Igbinomwanhia (2014) opined that policies formulated at the national level often do not

reach households in the Local Government, where most waste management activities occur. This could be attributed to inadequate checks and balances between the local and state governments.

Thirdly, the people of Ikpoba Okha believe that environmental sanitation in the area (markets and environs) would greatly improve if the local government collaborated more with other agencies to acquire tools and equipment. Igbinomwanhia (2010) declared that the Edo State Waste Management Board (ESWMB) is responsible for supervising collection, transport, processing, recycling, disposal and monitoring of waste materials. However, he observed that the agency has been ineffective in performing these duties due to policy problems in the waste management sector. Addressing these issues would improve residents' wellbeing.

Effective environmental sanitation was agreed to be the responsibility of all persons in Ikpoba Okha Local Government, not just the government. According to Minkler (2015), community participation is crucial as it places community members at the centre of environmental sanitation planning. This corroborates Eawy (2005), who stated that lack of community participation results in poor maintenance of public services.

Lastly, lack of equipment is a major problem facing the environmental sanitation unit in Ikpoba Okha Local Government Area. Nwanlieji (2003) observed that most waste management practices in Nigeria still follow traditional administrative systems where women's groups maintain public places in rotation, and household refuse is deposited in surrounding bushes where it decomposes or is burnt.

Igbinomwanhia (2014) further asserted that incoherent policies in the waste management sector have led to a culture of indiscriminate dumping—"pick up the waste and dump it in the dumpsite," whether it is approved or illegal. Owoje and Okojie (2013) corroborated this by stating that streets, offices, markets, motor parks, abattoirs, industries and residential areas are hardly provided with facilities such as plastic waste

bins, causing people to dump waste into public drains, bushes, rivers, and surrounding areas, leading to blocked drains, polluted water and filthy environments.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY

In the preceding chapter, data collected for this study were analysed. This chapter presents the summary, conclusion, and recommendations.

The purpose of the study was to investigate Ikpoba Okha strategies for effective solid waste management in Benin City, using Ikpoba Okha Local Government Area as a case study. The study examined the problem of unsanitary waste disposal to proffer solutions.

The main objectives were to:

Assess people's knowledge, attitude, and behavior towards refuse disposal;

Ascertain the role of finance and equipment in maintaining refuse disposal programmes;

Identify factors responsible for inadequate refuse disposal; and determine the significance of community participation in domestic and commercial waste management.

Out of the 100 questionnaires distributed to traders, residents and staff of the environmental sanitation unit, 90 were retrieved and used for analysis.

5.2 CONCLUSION

Problems associated with solid waste management in Ikpoba Okha Local Government Area, Benin City, are largely due to lack of finance, ineffective management policies, and poor enlightenment of the populace. Lack of community participation and negative attitudes towards waste disposal contribute to the ineffective execution of environmental programmes. These problems must be addressed comprehensively because the success of government health measures depends on solving these issues.

Therefore, increasing financial allocation, equipment, public enlightenment and grassroots involvement in waste management in Ikpoba Okha Local Government Area is essential.

5.3 RECOMMENDATIONS

Based on the findings of this study, the following recommendations are proposed:

1. Proper transmission and implementation of waste management policies at household level This is crucial because most waste management activities occur in homes. Effective communication will promote efficient solid waste management.

2. Adequate funding

Government should provide more resources for the purchase of equipment and materials needed for effective waste collection and management.

3. More assistance from the state government

The Ministry of Works should support the local government by supplying tippers and pay loaders for the evacuation of solid waste.

4. Regular public enlightenment programmes

Mass media such as television, radio, and newspapers should be used to encourage community participation and positive attitude toward waste disposal.

5. Provision of equipment and waste bins

More tools, such as plastic waste bins, should be provided to the public for effective waste collection and evacuation to approved dumpsites.

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**UNIVERSITY OF BENIN,
BENIN CITY
FACULTY OF SOCIAL SCIENCES
DEPARTMENT OF PUBLIC ADMINISTRATION**

FIELD SURVEY

NOV..2025

TITLE: Strategies for Effective Solid Waste Management in Benin City: A Case Study of Ikpoba Okha Local Government Area.

This research is exclusively for academic purposes and information supplied will be treated confidentially.

Your participation will contribute to knowledge in the area of the research theme.

Thank you for your cooperation.

UWANOHMEN DEBORAH OSEZELE
Researcher

SECTION A: PERSONAL DATA

Instruction: Please tick the appropriate box beside your chosen option in each of the following questions or fill in the dotted line.

1. What is your occupation?

Civil Servant

Student

Business

None of the above

2. Sex:

Male

Female

3. Age:

6–10

11–17

18–30

31–45

46 and above

4. Educational Qualification:

Primary School Certificate

Secondary School Certificate

OND/Diploma

HND/B.Sc. Degree

None of the above

5. Marital Status:

Married

Single

Divorced

Widow/Widower

6. Religion:

Christianity

Islam

African Tradition

Others

7. Settlement Type:

Urban

Semi-urban

Rural

SECTION B

Solid waste means leftover materials arising from human, animal or plant activities that are normally discarded as useless.

1a. Have you ever heard about solid waste management?

Yes

No

1b. If yes, where did you hear it?

Radio

TV

Public meeting

School

Poster

Others

2. Have you ever been taught proper waste disposal?

Yes

No

3. What type(s) of solid waste comes from your household?

Paper and carton

Plastics/bottles

Food waste

Tins/cans

Fibre bags

Glass

Others

4. What type of container(s) do you collect waste with?

Carton

Waste basket

Old bucket

Plastic bag

None of the above

5. How often is the waste container emptied?

Once a day

Once in two days

Once in three days

Once a week

Others

6. Where do you usually put away collected waste?

Public bin

Roaming waste van

Near river, lake, valley or moat

Road or street side

Open space

Hole/pit in your compound

Others

7. If there are public/private bins, how often are they emptied?

Once a week

Twice a week

Thrice a week

Monthly

Don't know

Others

8a. Are there any public/private bins near your house?

Yes

No

Don't know

8b. If yes, how long does it take to get there?

5–10 mins

11–15 mins

16–20 mins

21–30 mins

9. Who is responsible for your refuse collection/disposal?

Personal basis

Local Government

Private agency

State Government

10. Who practically disposes waste in your house?

Children

House help

Yourself

11. Age of the person disposing waste:

6–10

11–17

18–30

31–45

46 and above

12. Does availability of equipment affect waste disposal?

Yes

No

Don't know

13. Can a person's behaviour influence how he/she disposes waste?

Yes

No

Don't know

14. Can lack of finance and equipment affect disposal methods?

Yes

No

Don't know

15. Do you think the current waste disposal method is effective?

Yes

No

Don't know

16. Is enough money spent on environmental matters yearly by government?

Yes

No

No idea

17. Are lack of tools a major problem facing Ikpoba Okha waste disposal unit?

Yes

No

No idea

18. Is effective environmental maintenance everyone's responsibility?

Yes

No

No idea

19. Can community participation improve waste management?

Yes

No

No idea

20. Is Ikpoba Okha Local Government Area free from refuse pollution?

Yes

No

No idea

21. Is health education necessary for Ikpoba Okha residents?

Yes

No

No idea

22. Are the environmental activities of Ikpoba Okha Local Government effective?

Yes

No

No idea

23. Are residents comfortable with the current disposal method?

Yes

No

No idea

24a. How would you rate refuse collection/disposal in Ikpoba Okha?

Excellent

Very good

Good

Fair

Poor

Very poor

24b. Give reasons for your response:

25. Describe the state of the public bin near your house:

26a. Does the Local Government Authority have adequate manpower for refuse disposal?

Yes NO No idea

26b. Give reasons for your response:
