
Managing Waste Disposal System through Household Identification and Billing System (HIBS)

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ABSTRACT: *This paper explores the methodology of managing waste disposal system in Abeokuta metropolis. It investigated if the current waste disposal system can guarantee sustainable healthy environment. The study examined waste disposal practices of 400 household in the Abeokuta Central Business District in line with the existing government approved waste management system using a self-developed questionnaire and a simple frequency distribution and bar charts to analyze data. It found that majority of the households explore their own ways of disposing waste without minding the effect on their health and the environment. The study therefore recommends a better and more effective way of managing waste in the metropolis through household identification and billing system (HIBS).*

KEYWORDS: Waste disposal system, HIBS, Sustainable healthy environment

INTRODUCTION

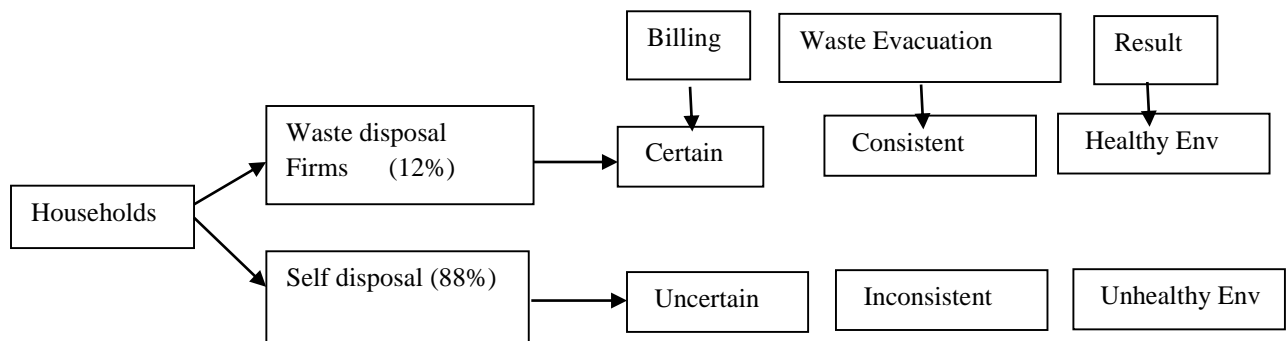
Developed nations in the world are mindful of the effect of global warming on the environment and human lives and as such advocating, through campaigns and global summits, communicating the importance of healthy environment to every household. Developing nations are not left behind in the advocacy as they are more hit by the effect of global warming (Harry, 2018). Studies have also shown that Developing nations contribute more to the effect of global warming in the areas of deforestation, general waste disposal system, etc (Balogun, 2017; Eugene, 2016; Suma, 2017). Waste disposal and management system is becoming a shadow of itself in Abeokuta Central Business District despite the existing infrastructural figure and beautification architecture of the area. Waste Management practices include collection of generated wastes, waste separation or segregation, storage, transfer and transport, transformation, treatment and disposal (Achi, *et al* 2012). The CBD is a figure of urbanization in Abeokuta and its environs. However, most part of the strategic places is often defaced by indiscriminate disposal of refuse by the residents.

There are licensed private waste disposal firms as well government owned waste management agency. In spite of the existing arrangement, households are given the freewill as to whether or not their wastes should be collected by waste mangers. Only households who want their waste to be collected by these firms are billed as agreed between the parties involved. This system has been

found to be obsolete in most urban centre hence the need for a more effective method that promotes healthy environment and reduces the impact of global warming.

This system is very popular in the western world and has greatly contributed to clearer environment apart from the socio-cultural, health and economic benefits it has helped achieved (Osallala, 2016). This system helps to manage many areas of human and government existence. It helps government through house numbering and management identifies and registers existing households with the aim of knowing how they can be assisted and also contributes to economic development.

Figure 1: Current Waste Management Model

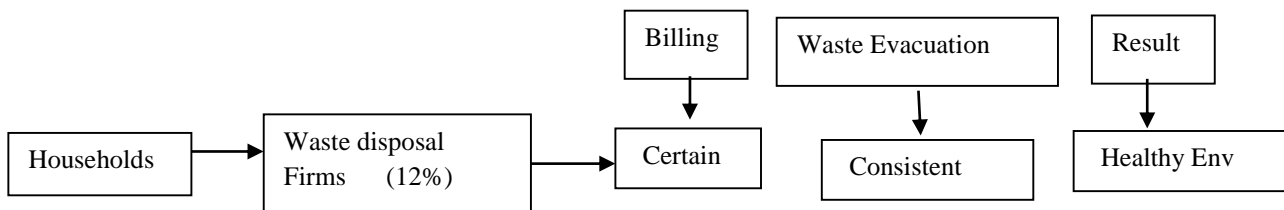


Source: Survey, 2022

Scope

The study is limited to households in Abeokuta Central Business District. It excludes corporate business entities such as banks, registered fast food centres, office complexes, etc. It is also limited solid waste with the exclusion of liquid waste. Lastly, it explores current waste management model against Household Identification and Billing System.

Figure 2: Household Identification and Billing System/Model



Source: Adapted from Medina, M. (1993). Recovery of Recyclables in Mexico City. Urban Issues. New Haven: Urban Resources Institute: 17-18.

Proposition of the Household Identification and Billing System/Model

- i. HIBS is based on the premise that every household will certainly creates waste and must pay to get them disposed.
- ii. Every household must be identified to get them pay to the government
- iii. Government licenses and register waste disposal firms
- iv. Government monitors and remunerates waste management firms having certified that services have been rendered.

METHODOLOGY

Area of Study

Abeokuta, town, capital of Ogun state, southwestern Nigeria. It is situated on the east bank of the Ogun River, around a group of rocky outcroppings that rise above the surrounding wooded savanna. Abeokuta lies in fertile country of wooded savanna, the surface of which is broken by masses of grey granite. It spreads over an extensive area, being surrounded by mud walls 18 miles in extent. Palm oil, lumber, natural rubber, yams, rice, cassava, maize, cotton, other fruits, and shea butter are the chief articles of trade. It is a key export location for cocoa, palm products, fruit, and kola nuts. Both rice and cotton were introduced by the missionaries in the 1850s and have become integral parts of the economy, along with the dye indigo.

Abeokuta lies below the Olumo Rock, home to several caves and shrines. The town depends on the Oyan River Dam for its water supply, which is not always dependable. The dam is situated in the Abeokuta North local government area of Ogun State in the West of Nigeria, about 20 km northwest of the state capital Abeokuta. The dam crosses the Oyan River, a tributary of the Ogun River.

Abeokuta is the headquarters of the federal Ogun-Oshun River Basin Authority, which is responsible for development of land and water resources for Lagos, Ogun, and Oyo states. Included in this are irrigation, food-processing, and electrification. Local industries include but not limited to fruit canning plants, plastics, breweries, sawmills, and an aluminum products factory. South of town are the Aro granite quarries.

Structure of Abeokuta Central Business District

Abeokuta is a semi-urban centre and a fast growing centre of attraction for industrialization and economic activities.

Population

The study considers household waste disposal system with the exclusion of corporate entities within Abeokuta Central Business District. Abeokuta CBD has 9,122 household (2006 population census). It is divided into 3 areas for the purpose of the research. They are: Segun Osoba way, Lalubu Road and Ibara/Omida

Sampling

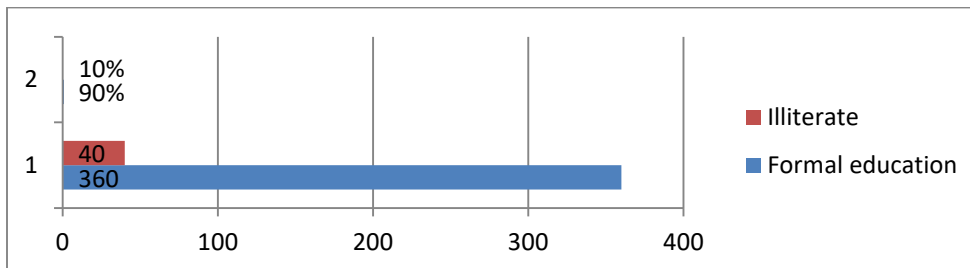
Sampling of households was carried out in the mapped areas: Segun Osoba way, Lalubu Road and Ibara/Omida. A quota of 400 households was considered and households within the selected areas were conveniently selected.

Data Analysis

Table 1: Distribution of Household by literacy level

Literacy level	Frequency	Percentage
Formal education	360	90%
Illiterate	40	10%
Total	400	100

Source: Survey, 2022

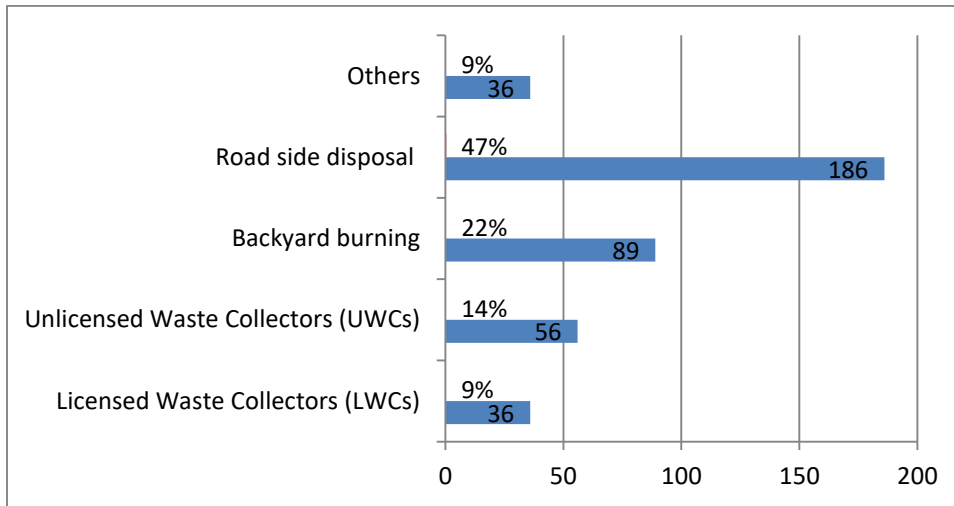


From table 1, only 10% of the survey households do not have formal education while the larger proportion of 90% have formal education ranging from elementary to tertiary education.

Table 2: Method of household waste disposal

Method	Frequency	Percentage
Licensed Waste Collectors (LWCs)	36	9%
Unlicensed Waste Collectors (UWCs)	56	14%
Backyard burning	89	22%
Road side disposal	186	47%
Others	36	9%
Total	400	100

Source: Survey, 2022



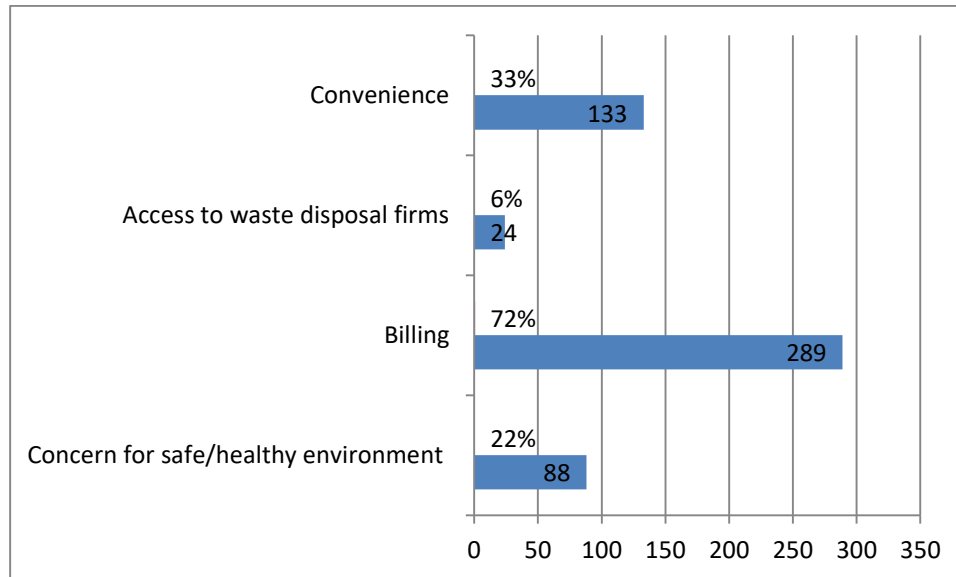
From table 2, only 9% of the selected household disposes waste using government licensed waste collectors (LWCs) and by implication 91% uses other means of waste disposal such as unlicensed waste collectors (UWCs), backyard burning, road side disposal and best convenient method.

There is a strong indication that a cleaner environment is not achievable in Abeokuta since the percentage of those who dispose inappropriately is significantly higher than those who appropriately dispose theirs.

***Table 3: Reasons behind their choice of disposal method**

Method	Frequency	Percentage
Concern for safe/healthy environment	88	22%
Billing	289	72%
Access to waste disposal firms	24	6%
Convenience	133	33%

Source: Survey, 2022



From the survey shown on table 3, 22% had concern for safe/healthy environment in the disposal of their waste, 72% had concern for the billing which suggested that they do not necessarily want to be billed for collecting their waste. 33% of the household uses the most convenient method at their disposal not minding the effect on the environment while only 6% claimed that their choice of disposal will strongly be dependent on whether or not they can access waste disposal outfit (either licensed or unlicensed)

**Respondents have an option of making more than a choice.*

FINDINGS

The following findings are drawn from the study

- i. Only few respondents (less than 30%) had concern for safe/healthy environment in the disposal of their waste.
- ii. Larger proportion of respondents (about 75% household) do not necessarily want to be billed for collecting their waste as they do not usually include it in their periodic budget. Therefore, they seek free waste disposal method.
- iii. Moderate percentage of household (about 35%) uses the most convenient method at their disposal not minding the effect on the environment
- iv. Relatively few household (less than 10%) have their choice of disposal strongly dependent on whether or not they can access waste disposal outfit (either licensed or unlicensed)

Recommendations

- i. Government should intensify efforts through aggressive campaign and public enlightenment using Public Private Partnership (PPP) in sensitizing the citizens on the effect of poor waste management system.

- ii. Compulsory billing system should be introduced by the government to checkmate unhealthy waste disposal system since those who do not pay waste bills dispose waste indiscriminately.
- iii. Enforcement and prosecution of those who dispose their waste indiscriminately should be done with utmost sincerity of purpose
- iv. Government should widen access to proper waste disposal by licensing more waste collection outfits and waste disposal points, minding that every household generates waste.

References

- Achi, H.A., Adeofun, C.O., Gbadebo, A.M., Ufoegbune, G.C., and Oyedepo, J.A.. (2012). An Assessment of Solid Waste Management Practices in Abeokuta, Southwest, Nigeria. *Journal of Biological and Chemical Research*. 29(2): 177-188
- Agunwamba, J.C., Ukpai, O.K. and Onyebuenyi, I.C. (1998). Solid waste management in
- Balogun, Y.K., (2017). Waste Management: Cities Learn to Recycle Development Forum. June – October 2021.
- Dauda, M. and Osita, O. O. (2003). Solid Waste Management and Re-use in Maiduguri, Nigeria. Towards the Millenium Development Goals. 29th WEDC International Conference, Abuja, Nigeria, pp 20-23.
- Eugene, A. (2016). Waste Generation in a Traditional African City in Nigeria: Environment and Urbanization, *SAGE Journals*, 10(3): 189- 199.
- Harry, B.B. (2018). Administration of Organic Fertilizer Industries for solid Wastes Management. *Journal of Applied Sciences Research*, 1(4): 184-193.
- Igoni, A. H., Ayotamuno, M. J., Ogaji, S. O. and Probert, S. D. (2007). Municipal Solid Waste in Port Harcourt, Nigeria. *Applied Energy*, Elsevier 84 (6): 664-670.
- Medina, M. (1993). Recovery of Recyclables in Mexico City. *Urban Issues*. New Haven: Urban Resources Institute: 17-18.
- Ministry for the Environment. (2007). *Environment New Zealand 2007*. Wellington: New Zealand, Ministry for the Environment. www.mfe.govt.nz.
- Ogwueleka, T.C. (2003). Analysis of urban solid waste in Nsukka, Nigeria. *Journal of Solid Waste Technology and Management*, 29 (4): 239-246.
- Ogwueleka, T.C. (2009). Municipal Solid Waste Characterization and Management in Nigeria. *Iran J. Environ. Health. Sci. Eng*, 6 (3): 173-180.
- Onitsha, Nigeria, *Waste Management Research*, 16 (1), 23-31.
- Osalala, M.L (2016). Application of system dynamics and fuzzy logic to forecasting of municipal solid waste. *Mathematics and computers in Simulation*, 21:133-148.
- Lasisi, K. S. (2007). *An Appraisal of Municipal Solid Waste Management in Lagos State*. Ibadan: Longman Press.
- Suma, L.O (2017). *Solid Waste Management. Involving micro- and small enterprises. Guidelines for municipal managers*, Waste Management and Training Centre, Accra. April 2017
- United Nations Economic and Social Council. (2009). *Africa Review Report on Waste Management in Economic Commission for Africa Committee on Food Security and Sustainable Development, Regional Implementation Meeting For CSD-186th, Session, 27-30 October 2009, Addis Ababa, Ethiopia*