International Journal of Advances in Engineering and Management (IJAEM)
Volume 8, Issue 5 May. 2026, pp: 285-294 www.ijaem.net ISSN: 2395-5252

Assessment of Environmental Impact of Scavengers Activities in Uyo Metropolis

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Date of Submission: 02-05-2026 Date of Acceptance: 11-05-2026

ABSTRACT
The study was conducted on assessment of environmental impact of scavengers activities in UyoMetropolis. It aimed at identifying the socio-economic characteristics of scavengers in UyoMetropolis, examining types of wastes evacuated by scavengers in the study area, examining factors that encourage scavenging in the area, identifying the roles of scavengers on solid waste management in the area as well as identifying the challenges faced by scavengers in the study area. Respondents were drawn from ten dumpsites for the study. A total of one hundred and twenty (120) respondents were selected for the study using stratified random sampling technique. All the respondents were given a questionnaire form and all the questionnaire forms were retrieved back for analysis. Data collated were analyzed using descriptive statistics. Results showed that majority (68 %) of the scavengers were male. The highest occurring age class was 31 – 40 years with 36.67 %, marital status of the respondents showed that majority of them are married (43.33 %) followed by singles with 34.67 % while the least was divorced with 5.33 %. Household size of the people showed that 1 – 2 people were the majority with 54.67 % followed by 3 – 5 people with 30.67 % while 6 people and above had the least (14.67 %). Educational information of the respondents showed that the highest occurring level of education was secondary school with 74.67 %, followed by primary school with 15.33 % while the least was tertiary education with 2 %. Duration in scavenging business showed that majority of them have been in the scavenging business for 3 – 5 years (42 %) followed by 1 – 2 years with 31.33 % while the least was less than a year (14 %). Income per day from scavenging business varies from below N1000 to above N5000. Type of waste evacuated by scavengers in Uyo metropolis include plastic bottles (43.33 %) followed by those who picked all kinds of items with 21.33 % to those who picked metal scraps with 17.33 % while those who picked paper only had the least. Majority of the scavengers (59.33 %) says they are into the business because there is no job. This was followed by 30.67 % who said they were into the business to supplement their salary. The least (10 %) were those who said they are into the business because it is lucrative. Majority of the respondents (79.33 %) admitted that scavenging contributes to solving the problem of solid waste management in the study area while the remaining 20.67 % declined. Challenges faced by solid waste scavengers in the study area include health hazard, accident, how to transport the items and market the items. It was inferred from the study that scavenging contribute to environmental waste management. It was recommended among others that government should support the scavengers since they play significant roles in the waste management process.

Keywords: Scavengers, Dumpsite, Solid Waste, Waste Management, Scraps

I. Introduction

Solid Waste consists of everyday items that are used and then thrown away such as, product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, paint, and batteries. Wastes come from homes, schools, hospitals and businesses (Agunwamba, 2003). Man, in an attempt to satisfy his daily needs, engages in the production of goods and services. In the process waste is generated (Agwu, 2012). Virtually all aspects of man's productive activities involve the generation of waste (Aliu, Oluwagbemiga and Adeolu, 2014). The way these wastes are handled, collected, storedand disposed can pose risk to the environment and to public health. Solid waste generation is experiencing a rapid increase all over the world as a result of continuous economic growth, urbanization and industrialization.Solid waste management remains a major phenomenon and is one of the most intractable problems facing developing nations such as Africa, Asia and Latin America. Inappropriate solid waste management has major negative consequences for soil and water quality,

International Journal of Advances in Engineering and Management (IJAEM)
Volume 8, Issue 5 May. 2026, pp: 285-294 www.ijaem.net ISSN: 2395-5252

the ecosystem as well as human health (Usoh, 2022). Solid waste management is a major concern in many urban centres in Nigeria. Nigeria generates more than 32 million tons of solid waste annually, out of which 20 – 30% is collected (Bleck and Wettberg, 2017). According to Usoh(2023), the starting point in waste management is to gain understanding of the waste types being generated in order to design effective waste management scheme.

Scavenging is a ubiquitous occurrence throughout the developing world and as a result of this, wastes and scavenging have generated considerable research interests (Aboagye-Larbi*et al*., 2014). The International Labour Organization (2004) defines Scavenging as manual sorting and picking of recyclables/reusable materials from mixed waste at legal and illegal landfills, dumpsites, street bins and piles, transfer points as well as waste collection trucks. A scavenger is a person who salvages reusable or recyclables to sell or for personal consumption (Owusu-Sekyere, 2014). In this role, scavengers are mediators in the relationship between societies and their environment. Scavenging from waste reduces waste reaching the landfill site and also provide jobs for the urban poor.It is an economic activity that provides income for over 15 million people worldwide (Medina 2010). Kashyap and Visvanathan (2014) noted that up to 2% of the population in African, Asian and Latin American cities lives on scavenging income. Scavengers are important players with a very positive and important role in waste management sector of developing countries (Yahaya, 2018). In Nigeria, scavenging is a source of income and employment generation for the youth. It is also a source of raw material to the construction industry, bottling plants and plastic manufacturers (Asiborand Edjere, 2017).

Scavengers, carry large plastic sack and use bare hands or sometimes iron hook to rummage materials through the waste dumpsites to recover or salvage valuable discarded materials such as scrap metals, plastics, bottles, paper, electronic and electrical equipment, household furniture, textile material, wood, construction and demolition wastes and sometimes food. These reusable or recyclables materials are then sold to wholesale buyers. Despite their vital role in solid waste management, scavengers are generally socially marginalized, they live and work without basic economic and social security, under conditions which are extremely hazardous to health and detrimental to family, social and educational development (Oyelola*et al.,* 2018). Scavengers are exposed to a number of health hazards and suffer injuries as they rummage materials through the waste dumpsites. Scavenging from the waste stream is an important economic activity that provides income for over 15 million people worldwide, most of whom are in cities in developing countries, and it has a financial impact of several billions of US dollars every year (Medina, 2010). According to him, scavenging is an example of sustainable development, emphasizing that scavenging activity enhances environmental protection by increasing the amount of waste collected, reused and recycled, resulting in high indicators for energy saving, pollution prevention and pollution reduction, as well as extending the useful life of landfills. He further said that scavenging is relevant to economic growth, as it reduces the cost of raw materials for local enterprises. Many researchers have worked on various aspects of solid wastes and these include waste magnitude, waste characteristics, disposal problems, factors affecting waste generation and waste management but a few studies have been made on scavenging for poverty alleviation and quality of work life of waste scavengers in Akwa Ibom State. It was on this background that this study was conducted to assess the environmental impact of scavengers' activities in Uyo Metropolis of Akwa Ibom State.

II. Methodology

2.1 The Study Area

Uyo is the State capital of Akwa Ibom State and it lies between latitude $4^0$30" and $5^0$30"N and longitudes $7^0$30" and $8^0$30"E (AISMLS, 2020). Solid waste collection and disposal in Uyo is reportedly based on established three (3) zones, namely: Zone "A" representing the high-income zone, Zone "B" representing the medium class and Zone "C"–the low-income zone (Okey, 2013). The 3 zones are further split into six zones for ease of refuse evacuation. Notably, the rate of solid waste generation in Zone "A" is usually low and the zone has solid waste mix characteristically composed of inorganic foodstuff, wastes from processed and packaged foods and services. The solid waste generation in the medium zone "B" has a composition of organic and inorganic foodstuffs consumption and such waste generation is relatively

higher than solid waste being generated in Zone "A". In Zone "C", the residents appear to reside on the fringes of the city of Uyo (Okey, 2013). The people in Zone "C" predominantly consume organic foods and nearly almost do not plan or regulate the amount or quantity of their foods preparation and consumption. From observation, this traditional practice often times than not usually lead to increased domestic waste generation by households in Uyo.

2.2 Research Design

The descriptive survey design was used in this study. This design was adopted for this study because it seeks to identify the environmental impact of waste scavenging activities in Uyo Metropolis of Akwa Ibom State. Oyelola*et al.* (2018) pointed out that survey is the best technique for obtaining the necessary data from people through the use of questionnaire. According to Owusu-Sekyere (2014), the survey design is the design suitable for collection of data based on the opinion of people.

2.3 Type of data

The following types of data were used in the research; the discrete and continuous data. Discrete data are data which are described by the discrete variable, and discrete variable is any variable which assumes only a specific value, that is data measured with nominal or ordinal scales. Continuous data are those that can be described by continuous variable, and continuous variable is any variable which can assume any value between two given values in a continuum. That is, data measured with interval or ratio scales. In this research, the researcher used both discrete and continuous data, which were;

Discrete data:

i. Data on population of the study area.
ii. Data on socioeconomic characteristics of the respondents.
iii. socio-economic characteristics of scavengers in Uyo metropolis.
iv. types of solid waste generated in Uyo metropolis
v. types of wastes evacuated by scavengers in Uyo metropolis
vi. factors that led the people to scavenging business
vii. role of scavenging in solving the problem of solid waste management in the study area.
viii. challenges faced in the waste scavenging processes

2.3 Sources of Data

The research used both primary and secondary data sources.The primary data collected with the use of questionnaire to administer to waste scavengers in the study area. The secondary sources of data include; written and oral sources like textbooks, published and unpublished documents, journals and internet.

2.4 Population of study

The target population for this study consisted of solid waste scavengers in Uyo metropolis (irrespective of age and gender. Every field scavenger stands equal chance of being selected for the study.

2.5 Sample and Sampling Technique

A multi- stage random sampling technique was used in selecting the appropriate sample for the study. In the first stage, Uyo Metropolis was divided into five sub areas based on the five major roads from the centre of the city namely Oron, Abak, Aka, Barracks and Ikot Ekpene roads. In the second stage, two (2) dumpsites were randomly selected in each of the five sub areas giving a total of ten (10) dumpsites for the study. The survey questionnaires were distributed to the respondents at various dumpsites. The purpose of the study was explained to the scavengers and the questionnaires were giving to those who were willing to participate in the study. A total of ten (10) respondents were sample at each dumpsite giving a total of one hundred respondents for the study. The last stage was selection of twenty (20) workers at the permanent waste dumpsite for the study giving a total of one hundred and twenty (120) respondents for the study. Administration of the questionnaire was done within one-month period so as to cover the study area.

2.6 Instrumentation for data collection

Data were collected after written permission was approved by the municipal waste manager. Before data collection, the researcher briefed the participants to explain the purpose of the study and to request for permission to conduct the study. Thereafter, willing participants were given the opportunity to choose a convenient time and dates for the interviews. Respondents were interviewed using a structured questionnaire prepared by the researcher. The questionnaire involved two parts; the first part contained information on the demographic characteristics of the respondents including gender, age, types of housing, religion and educational level. Part two contained information on types of waste picked and challenges faced. The majority of the questions in the questionnaire were

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Volume 8, Issue 5 May. 2026, pp: 285-294 www.ijaem.net ISSN: 2395-5252

closed-ended while a few was open-ended. The close-ended questions would be asked with the view to permitting vivid comparison of responses while the open-ended question aimed at allowing participants to supply information which was not captured by the response categories.

2.7 Validity of the instrument

The test-retest technique was used to estimate the reliability of the questionnaire. Ten respondents each were selected from each other dumpsite outside the study area and given questionnaires to fill and another set of questionnaires was given to them to fill after two weeks. This is to ensure that their responses show an appreciable degree of consistency. For this study, both face-to-face and content validity of the instrument were ensured for accuracy. The reliability test of the data was carried out using Cronbach's Alpha aided by statistical packages for social science (SPSS) version 25.

2.8 Techniques of data analysis

Both descriptive and inferential statistics were used for data analysis. Analyses in this study were done using simple descriptive statistics. Prior to the multivariate analysis, data were given general descriptive statistical treatments using mean, standard variation, and percentages of frequency distribution.

III. Results and Discussion

3.1 Demographic characteristics of the respondents in the study area

Table 1 shows socio economic characteristics of the respondents. Gender distributions of the respondents showed that majority (68 %) of them were male. Result revealed that the highest occurring age class is 31 – 40years with 36.67 %, followed by 21- 30 years with 19.33 % while 61 years and above had the least (5.33 %). The age distribution of the respondents showed that the respondents were matured enough to take decision and judgment on waste scavenging business in the study area. However, those below 18 years (children) are also involved in waste scavenging business in the area. Marital status of the respondents showed that majority of them are married (43.33 %) followed by singles with 34.67 % while the least was divorced with 5.33 %. Household size of the people showed that majority of them are 1 – 2 people in the household (54.67 %) followed by 3 – 5 people with 30.67 % while 6 people and above had the least (14.67 %).

Table 1: Socio-economic characteristics of the respondents

Item	Frequency	Percentage
Sex		
Male	102	68.00
Female	48	32.00
	150	**100**
Age (years)		
10 - 20yrs	21	14.00
21 - 30yrs	29	19.33
31 - 40 yrs	55	36.67
41 - 50yrs	23	15.33
51 -60yrs	14	9.33
61 and Above	8	5.33
	150	**100**
Marital status		
Single	52	34.67
Married	65	43.33
Divorced	8	5.33
Windowed	25	16.67
	150	**100**
Household size		

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1-2 people	82	54.67
3 - 5 People	46	30.67
6 and Above	22	14.67
	150	**100**
Education Level		
No Formal Education	12	8.00
Primary School	23	15.33
Secondary School	112	74.67
Tertiary Institution	3	2.00
	150	**100**
Duration in scavenging		
Less than 1 year	21	14.00
1- 2yrs	47	31.33
3-4yrs	63	42.00
5 yrs and above	19	12.67
	150	**100**

Educational information of the respondents showed that there were people in the area who do not have any formal education. The highest occurring level of education was Secondary school that had 74.67 %, followed by primary school with 15.33 % while the least was tertiary education with 2 %. Duration in scavenging business showed that majority of them have been in that business for 3 – 4 years (42 %) followed by 1 – 2 years with 31.33 % while the least was 5 years and above (12.67 %). The result showed that this people have been in the scavenging business for years and therefore is experienced about the business. Hence, they have the experience to give reliable information about waste scavenging in the study area. Few cases of those who are less than a year is an indication that people are added into the business on daily basis. Income per day from scavenging business varies from below N1000 to above N5000. Majority of the respondents (76.67 %) earned below N1000 per day followed by N1000 - N2000 a day while the least proportion was those who earned N5000 and above with 4 %. The result suggests that waste scavenging business may not be so lucrative enough to take care of the daily financial need of the people.

Demographic characteristics of scavengers in Uyo metropolis agrees with those reported by several authors, Achapan (2012) observed that solid waste scavengers abound in multiple numbers. He showed that youths within the age of 28 largely involve themselves in the activity from where they generate between 300.03 and 600 US monthly in Thailand. In Africa, evidence of waste scavenging abounds in Nairobi, Egypt, Cameroun and Nigeria. In Cameroun, Sakurai *et al.* (2004) observed that solid waste scavengers consist predominantly of males that pick up metals, irons and other reusable materials that they sell and put some to use on personal basis and consume them locally. Nigeria has witnessed a massive surge in the aspect of solid waste recycling among states as reported in extant literature. In Northern Nigeria, Magaji and Daykes (2011) showed that solid waste scavengers are largely involved in gathering metals and useful materials for sell to recycling companies. Kwasghsende and Atser (2015) revealed that scavengers are mostly between 20 and 45 years. Scavengers of wastes consist of both males and females that are mostly unemployed. They proved that scavengers even travel several miles to gather the materials. They showed that wastes that are selectively gathered by youths are usually sold out to companies that are involved in reusing and recycling the waste materials. From the foregoing, it is obvious that solid waste recycling is not only beneficial to the scavengers but also play a role in the waste management sector. For instance, when waste is recycled, heaps of solid wastes become reduced therefore reducing the financial costs that is needed for disposing wastes.

4.2 Types of waste evacuated by scavengers in the study area

Table 2 shows type of waste evacuated by scavengers in Uyo metropolis. Majority of the

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respondents (43.33 %) picked plastic bottles followed by those who picked all kinds of items with 21.33 % to those who picked metal scraps with 17.33 % while those who picked paper only had the least. The finding revealed that plastic bottle was the highly valued type of wastes picked by waste scavengers in Uyo metropolis. They also trade on metal though metal is not always in large quantity compare to plastic bottles. This agrees with finding of Achapan (2012) and Alade (2018) who repo rted in their different studies that waste materials usually searched for by scavengers include iron, copper, metals, cans, wires and plastics. Globally, scavenging has become a prevalent occupation among youths and the middle aged.

Table 2: Type of solid waste collected

Item	Frequency	Percentage
Metal	26	17.33
Plastic bottles	65	43.33
Paper	12	8.00
Rubber	15	10.00
All kinds	32	21.33
Total	**150**	**100**

4.3 Factors that led the people to scavenging business

Figure 1 shows factors that led them into scavenging business. These were lack of job, to supplement salary and the business is lucrative. Majority of the scavengers (59.33 %) says they are into the business because there is no job. This was followed by 30.67 % who said they were into the business to supplement their salary. This means that they work somewhere but still go into the scavenging business to supplement their income. The least (10 %) were those who said they are into the business because it is lucrative. The low response of those who admitted that the business is lucrative may be an indication that the business is not lucrative for everyone but there are factors that drive them into it. Generally, whether lucrative of not, scavenging business has come to stay as a serious business and people are getting into it on daily basis. This is because it has provided them with income which has helped them to gather for their need. This aligns with finding of Asibor and Edjere (2017) who noted that a scavenger may also be seen as a person whose activity is to salvage solid wastes for the sole purpose of reusing and recycling waste materials in order to sell or put such materials to personal use. In most cases, scavengers are concerned in recycling solid wastes. Globally, scavenging has become a prevalent occupation among youths and the middle aged. This means that the sole purpose why people go into scavenging business is for economic benefit and this may agree with some of the respondents that scavenging is lucrative. This is also supported by Medina (2010) who reported that scavenging is common occurrence in the third world countries, because of high unemployment, widespread poverty and lack of a safety net for the poor.

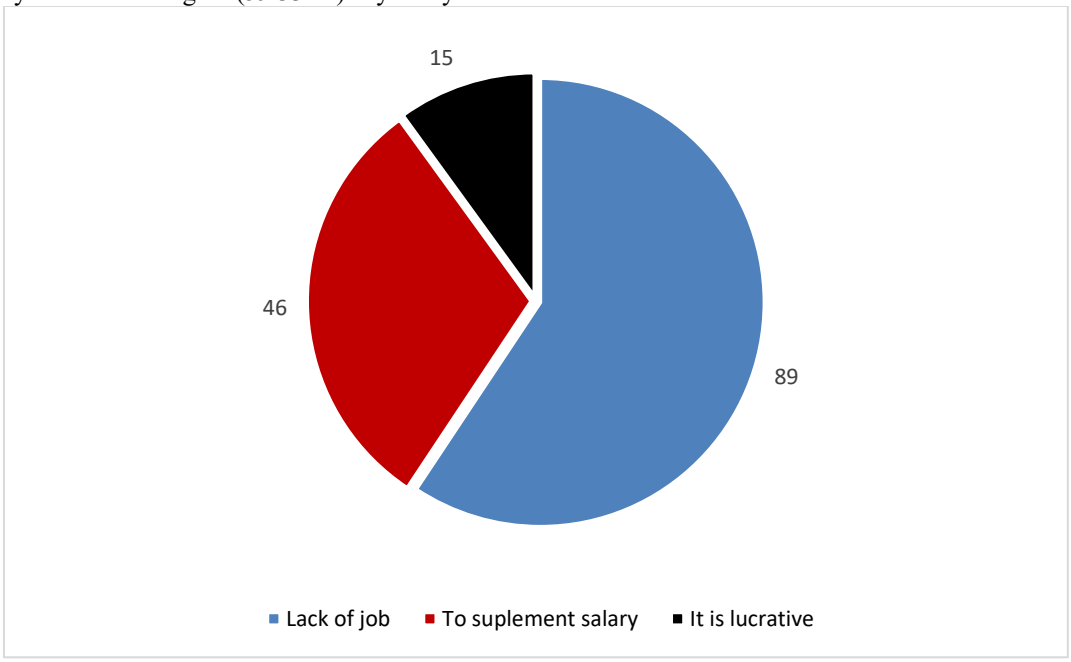

Figure 1: Factors that led the people to scavenging business

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4.3.1 Sources of their waste items

Figure 2 shows where they obtained their items. Majority of them (72 %) get their items from garbage dump followed by those who get their items from household wastes (22.7 %) while few of them (5.3 %) purchased their items from people (who may be part of the scavenging team). Scavengers usually move from one dumpsite to another to pick waste items for their business. This confirms opinion of Kwasghsende and Atser (2015) who noted that scavengers even travel several miles to gather the materials.

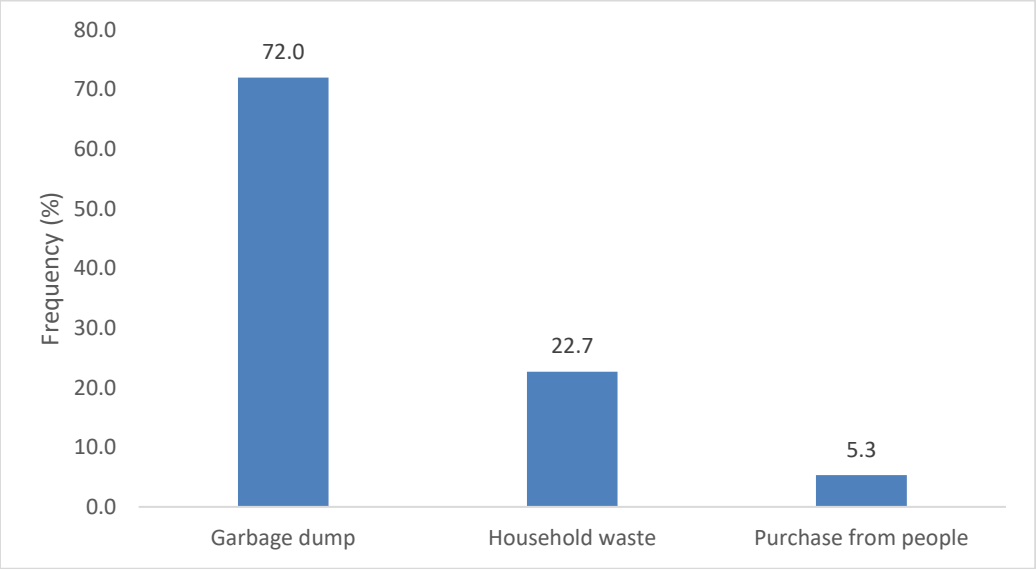

Figure 2: Sources of the waste items

4.3.2 Waste item that generates more income

Table 3 shows waste items that generate much income according to opinion of the respondents. Majority of the respondents (50.67 %) said metal scrap is what generate much income followed by plastic bottles with 30.67 % while rubber was the least with 8 %. Though some scavengers do not pick everything, metal like iron happen to be what most of them are looking for compared to plastic bottles. This agrees with Asibor and Edjere (2017) that waste materials usually searched for include iron, copper, metals, cans, wires and plastics.

Table 3: Waste items that yield much money

Item	Frequency	Percentage
Metal scrap	76	50.67
Plastic bottles	46	30.67
Paper	16	10.67
Rubber	12	8.0
Total	**150**	**100**

4.4 The role of scavenging in waste management in the study area

Figure 3 shows opinion of the respondents on the contribution of scavengers in solving solid waste management problems in the study area. Majority of the respondents (79.33 %) admitted that scavenging contributes to solving the problem of solid waste management in the study area while the remaining 20.67 % declined. From the opinion of the majority, it could be inferred that scavengers contribute significantly in solving the problem of solid waste management in the study area. This agrees with findings of so many researchers about the environmental benefit of waste scavenging. This agrees with Medina (2010) who stated that scavenging from the waste stream is an important economic activity that provides income for over 15 million people worldwide, most of whom are in

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cities in developing countries, and it has a financial impact of several billions of US dollars every year. He added that scavenging is an example of sustainable development, emphasizing that scavenging activity enhances environmental protection by increasing the amount of waste collected, reused and recycled, resulting in high indicators for energy saving, pollution prevention and pollution reduction, as well as extending the useful life of landfills. He further said that scavenging is relevant to economic growth, as it reduces the cost of raw materials for local enterprises. It also affirmed the view of Adewole (2009) that scavengers are normally part of the socio-economic structure; their displacement from a disposal site can have many direct and indirect consequences. According to Ackeman (2005), scavenging provides a spontaneous labour incentive solution, becoming an alternative means of achieving an integral solid waste management system. They also opined that waste segregation offers an advantageous step for solid waste management programme but is detrimental to the informal sectors due to reduced volume of waste that reached the dumpsite.

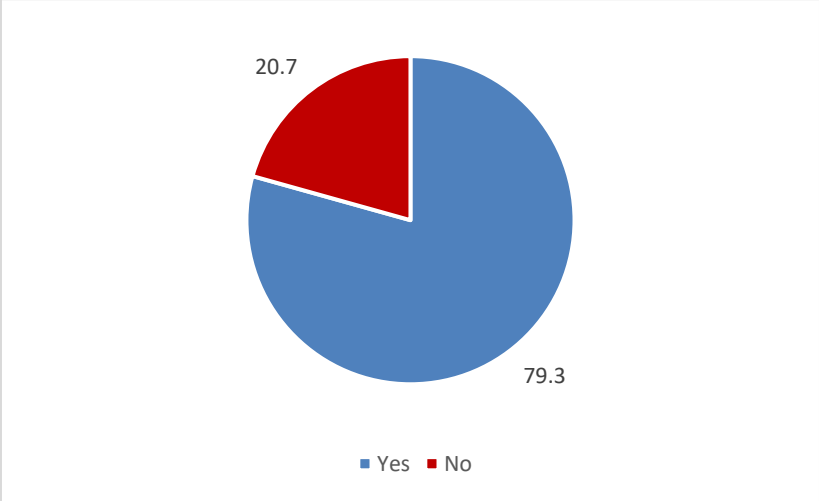

Figure 3: Contribution of scavengers to waste management in the area

4.4.1 Ways scavengers solve solid wastes problems

Table 4 shows ways which scavengers contribute in solving solid waste problems. These include reduce wastes (89.33 %), support environmental protection (42.67 %), support poverty alleviation (88.67 %), wealth creation (58.67 %) and recycling (15.33 %). From the multiple response, the highest occurring contribution of scavengers is reduction of volume of waste, followed by poverty alleviation to wealth creation and environmental protection. This confirms the preceding section on the contribution of scavengers to solving waste problem.

Table 4:Ways scavengers solve solid wastes problems

Item	Frequency	Percentage
Reduce waste	134	89.33
Support Environmental protection	64	42.67
Poverty alleviation	133	88.67
Wealth creation	88	58.67
Recycling	23	15.33

This agrees with Aboagye-Larbi *et al.* (2014) who observed that despite the potential health hazards that are associated with waste scavenging, scavenging for wastes has been increasing among the youths. Basically, the reason for increasing scavenging is identified to include

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poverty, unemployment and availability of waste dumpsites. They added that the scavenging exercise provide income for waste pickers which they earn their livelihoods with. It also agrees with the findings of Achapan (2012) who stated that, scavenging serves as a means of employment for the youths that are involved while giving them the opportunity to contribute to environmental management. The result is also in agreement with Igwe*et al.* (2018) who noted that scavenging is a very instrumental solid waste management option that can be helpful in the reduction of wastes at dumpsites and further expand the life span of landfills. They specifically observed that waste scavengers recover reusable and recyclables materials such as plastics, papers, scraps metals, aluminum, metals and copper. Most scavengers offer the products they pick up for sell thereby providing them with the means of earning livelihoods and reducing unemployment.

4.5 Challenges faced by scavengers in the study area

Table 5 shows list of challenges faced by solid waste scavengers in the study area. They include health hazard, accident, how to transport the items and market the items. From their responses, the highest occurring constraint is health hazard (55.33 %) followed by how to transport the items with 21.33 % to accident with 14 % while no market for the items was the least with 9.33 %. The result upholds the opinion of several researchers that benefits of scavenging are threatened by several factors including lack of 'job security'; that is, their lack of secure rights to access the waste stream, and health risks. For instance, the German Doctors' Health Care Development Center an NGO, operating a clinic inside the Payatas dumpsite, reported that in August 2002 alone they had 339 cases of tuberculosis which majority were those involved in scavenging. They explained that this implies a rate of morbidity more than eight times higher than the national average. Toxic and hazardous wastes (THWs) are a particularly important health issue for the waste-pickers.

Table 5: Challenges faced in waste scavenging business

Item	Frequency	Percentage
Health hazard	83	55.33
Accident	21	14.00
How to transport the items	32	21.33
No market for the items	14	9.33
	150	**100**

IV. Conclusion

Scavengers of wastes in Uyo metropolis consist of both males and females that are mostly unemployed. They are mostly between 20 and 40 years who travel several miles to gather the materials. They are mostly married with majority of them being secondary school leavers. Most of them have been into the business for 3 – 5 years and their daily income from scavenging is less than N5000. Types of wastes collected by the scavengers in the area include metal scrap, plastic bottle, paper and rubber. Major causes of scavenging in the area is lack of job (unemployment) and poverty though some of them see it as a lucrative business. It can also be inferred from the study that scavenging contribute to environmental management. Specifically, they contribute by reducing the volume of waste, support environmental protection, support poverty alleviation, enhance wealth creation and promote waste recycling. Major constraint to scavenging business in Uyo Metropolis include health hazard, accident, how to transport the items and market the items. It was inferred from the study that scavenging contribute to environmental waste management. It was therefore recommended among others that government should support the scavengers since they play significant roles in the waste management process.

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