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Managing waste in an urban centre: The role of scavengers

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Abstract

This paper examines the role of scavengers in solving the problem of solid waste management in our urban areas. Field survey and observation method were used to generate data for the work. 500 questionnaires were retrieved from 25 neighbourhoods while 50 sets of questionnaires were administered to scavengers in order to collect information on their bio-data. The collected data were analysed using simple descriptive statistical methods such as percentages, frequencies of occurrences and bar graph. It was discovered that scavengers are involved in wastes management in the metropolis, but the number is relatively low. The result also shows that a sizeable number of the scavengers are young males of 15 to 30 years of age who have taken scavenging job due to the growing state of hopelessness and unemployment. The government should therefore create an enabling environment for recycling industries to operate and lift the band on exportation of scrap metals. The government should also embark on waste-to-wealth programme to attract more income to the scavengers.

Keywords: Scavengers; Warri Metropolis; Managing Waste; Urban Centre

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1. Introduction

All around us people are increasingly concerned about the quality of their environment. In fact, in Nigeria, the issue of greatest environmental concern today is clearly the management of solid wastes. In city after city in Nigeria, hills and mountains of uncleared wastes are often seen (Abumere, 2000).

It is perhaps possible to think of two reasons to account for this phenomenon. First, is the very rapid rate of population growth in many Nigerian cities, which not only affect waste volumes but also made solid waste management strategies incapable of keeping pace with the rate of solid waste generation. The second is poor waste management, which is evident everywhere in this country. The problem of waste management is further aggravated by the mismatch between the volume of waste generated and the dwindling resources to manage waste. Given this mismatch, imaginative initiatives are called for to rid the cities of wastes.

If wastes are not cleared from our cities effectively, they will not only cause environmental and health hazards but also, in fact constitutes a drag on our drive for over-all economic development.

Generally, the management of urban solid waste is an effective measure to solve the problem of environmental, sanitation in urban areas (Onibokun and Faniran 1995, Segynola 1998).

A close examination of literature on urban wastes, reveals three major facts. First, it shows that the rate of urban waste generation by far out-strips the rate of evacuation; hence heaps of undisposed wastes accumulate to disfigure our urban landscape. Second, the composition of our urban solid waste is changing due to changes in income, taste and household size of urban residents. Thirdly, a new set ó1 agents of solid waste management has emerged in the pool of disposal agents, among which is the scavengers, which is the main focus of this research.

Adeniyi, (1996) defined scavenging as a phenomenon, which involves the selective picking of reusable, recyclable or saleable materials from wastes. This phenomenon is common in several cities of the developing and the developed countries such as Manila, Nairobi, Egypt, China, Brazil and Colombia. Scavenging has not been widely accepted as a respectable occupation. Hence, it is asserted that the practitioners are being forced into the business by hunger and poverty or unavoidable circumstances. The situation report in Nigeria has just begun with the study of Ibadan (Adeniyi, 1996). It is therefore proposed in this research that the situation in Warri metropolis, should be given critical examination, not only for comparison but also, to increase the frontier of knowledge and to provide solution to the problem of urban sanitation.

The issue of solid waste management is a serious global environmental problem, especially facing many developing urban cities. A total of 1.3 billion metric tonnes of solid waste were generated in the world in Agbola and Jinadu, (2006). Thousands of tones of solid waste are generated daily in Africa, most of it ends up in open dumps and wetlands, contaminating surface and ground water and posing major health hazard (EGSSAA, 2009).

In recent times, there has been extra ordinary increase in the amount of waste generated daily in most urban centres in Nigeria. This is adduced to the phenomenal increase or growth rate in population. In addition to the above factors, most urban centres in Nigeria lack the infrastructural facilities for effective waste management. This has resulted to the uncontrolled dumping of refuse by individuals and most urban

households. And the common method of waste management at the disposal of household are the burn and burying of solid waste which is perhaps a very crude and outmoded. However, in some urban centres government has provided few modern infrastructures but these are not properly managed to meet the needs of individuals and the household at large. In some other urban centres where there seems to be effective waste management system in place, it is bedevilled by lack of the authorities concerned with waste management to collect refuse from household on regular basis. This has resulted to heaps and mounds of decomposing refuse found along major highways, market places and other sites.

According to Egun 2009 opined that the way and manner refuse are dumped indiscriminately along roadsides can result in the blockage of drains. This situation is very common in most drains in Warri as an urban centre especially areas around Igbudu market, Iyara, Udu road, Agbassa, Okere and other major streets in the metropolis. Due to the blockade of these drains and channels along the streets mentioned above has resulted in the area experiencing flood during the rainy season.

One of the most pertinent questions to ask has to do with the extent to which scavenging reflects the present economic hardship, which faces many urban dwellers in and Warri in particular. Secondly, the assertion that scavengers do not regard themselves as agents of solid waste management requires further investigation, using empirical evidence from Warri metropolis. Thirdly, it will be pertinent to establish whether scavenging is an occupation or not. The research is designed to achieve the following objectives: -

- To examine the types of solid waste generated in Warri metropolis.
- To identify the urban dwellers that are involved in scavenging.
- To examine the factors that led the people to scavenging business.
- To assess the role of scavenging in solving the problem of solid waste management in our urban areas.

To examine the perception of the scavengers as regards their importance in the management of environmental sanitation in our cities.

2. Study area

This section discusses the location, size, soil, climate and vegetation, population and socio-economic activities in Warri metropolis.

Warri is lies between latitude 5°3 1 1N and 5°35'N, and longitude 5°29'E and 5°4'E. Warri metropolis is located within the Niger Delta region of Nigeria and bounded on the North by Okpe and Sapele Local Government Areas, to the South by Warri South West and Atlantic Ocean, the East by Ughelli South hand on the West by Warri North Local Government Area as shown in Fig 1. The area expansion of Warri during the past two decades has been remarkable. From a small river settlement, Warri has grown to cover the surrounding villages of Effurun, Ekpan, Enerhen, Edjeba, Ogunu, Jakpa, Ovwian Aladja, Udu Road etc. with the results that Warri is now over 100 sqr. km (Oriero, 1999 and Efe, 2002). This area expansion has led to increase in temperature and precipitation in the area (Efe 2002a).

Geologically, Warri is underlain within the Agbada, Akata and Benin formation. The area is made up mainly of sedimentary rock type, with layers that is silty at the top but coarse and pebbly at a depth of 17m (Okoye et al., 1987). The terrain is flat and about 4m above sea level and located at the shores of Warri River, Enerhen River and Ovwian River. The soil type found in the study area is purely hydromorphic in nature, which consist of a mixture of coarse alluvial and colluvial deposits (Okoye, et al., 1987 and Efe 2002a). Thus the soil are poorly drained and accumulated with water because it is near the Atlantic coast having a high water table close to the surface. the Warri River, Ovwian River, Enerhen River and two creeks that lead to River Forcados and Escravos which drain the area too. The closeness to water body such as the Atlantic ocean, encourage the equatorial climate which in turn determines the increase in rainfall leading to increase underground water and infiltration of water into the soil, leading to flooding.

The area exhibit equatorial type of climate with a mean annual rainfall of about 3000mm and a mean temperature of 28^0C and display a double rainfall maxima in the months of July and September Iloeje (1981). The dominant air masses are the tropical continental (cT) which prevails in the dry season between the months of November to January with a brief spell of harmattan in the months of December to January. The rest part of the months is usually under the influence of the tropical maritime (mT) air mass. The maritime airmass is humid and moist in character and comes with a lot of rainfall. There is no part of Warri metropolis with natural vegetation cover except those found in sacred grooves and shrines which is an exclusive preserved area. All that is left is a secondary regrowth vegetation due to anthropogenic disturbance.

There has been a tremendous growth in the population of the area over the years from a rural settlement to an urban centre (Oriero, 1999). The population of Warri metropolis has been growing tremendously been one of the fastest growing urban centres in Nigeria, with a population of 19,526 in 1933, 55,256 in 1963, 280,000 in 1980, 500,000 in 1991 to 536,023 in 2006 (Annual Abstract of statistics, 2008) and estimated at 730,000 in 2009 (Sada, 2009). Most of the population is concentrated in core areas of Warri-Sapele road, Agbassa, Okere, Okumagba, Igbudu, lyara, Jakpa and Airport road, PTI road, Udu Road and Ekpan.

Warri is an administrative headquarters with health, commercial and educational centres. The socio-economic activities in Warri are classified into, primary activities which include agricultural activities such as crop cultivation and livestock farming. The people of Warri cultivate crops such as corn, cassava, okra, plantain etc. for consumption that is they are mainly subsistence farmers. The inhabitant are engaged in informal activities such as carpentry, tailoring, carving etc. There are also oil companies such as Shell, Nigeria National Petroleum Corporation (NNPC), Chevron and construction industries like; Julius Berger, Niger Cat and host of others as well as commercial organization ranging from banks like Zenith, Ecobank, United Bank for Africa, Keystone etc medical centres, educational centres, hotels, religious organization. The major mode of public transportation is the tricycle, popularly known as keke NAPEP.

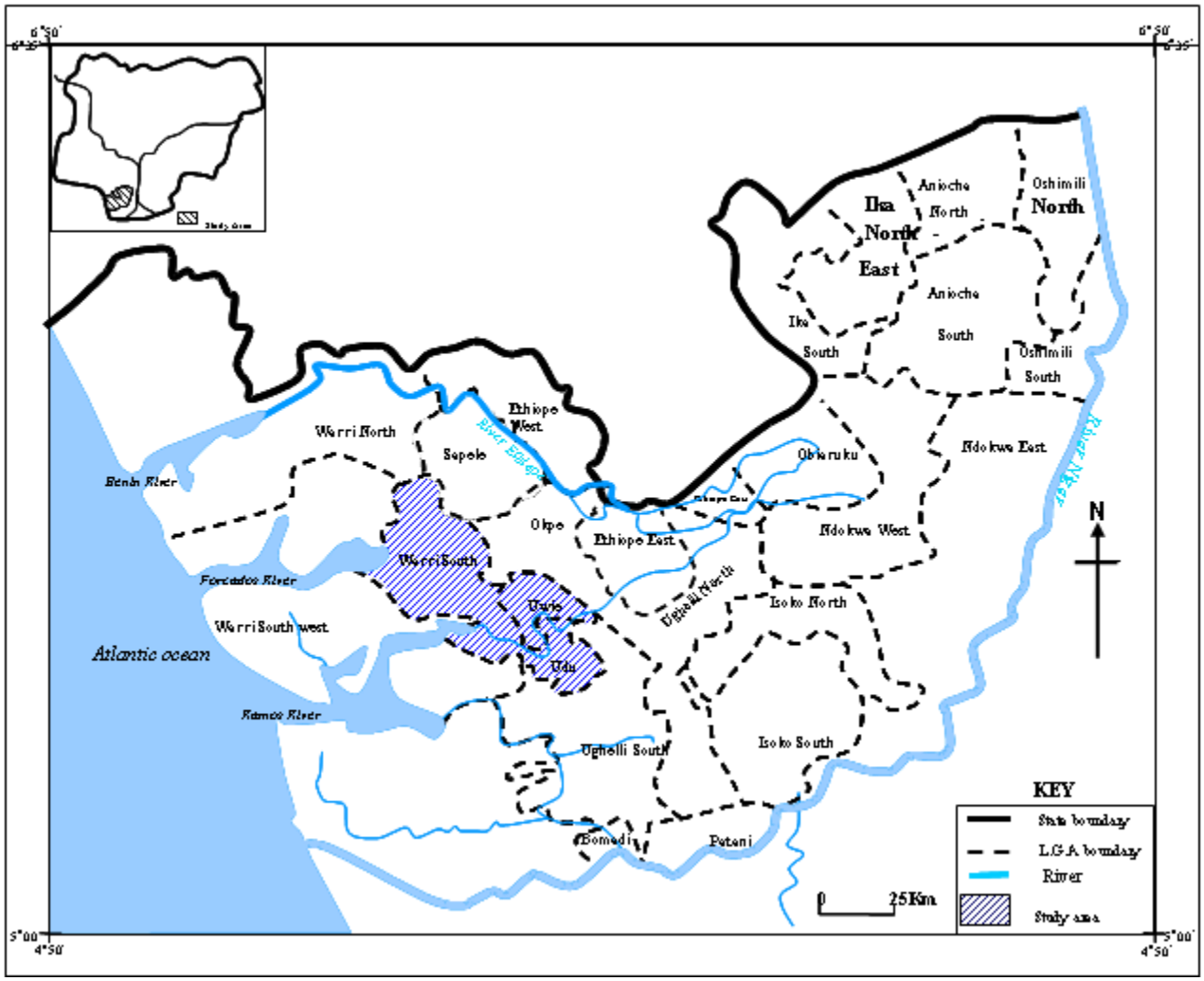

Figure 1. delta state showing study area (Source*:* Ministry of Lands, Survey & Urban Development, Asaba, 2004)

3. Research method

Like most urban centers in Nigeria, the problem of solid waste management is a major urban environmental problem (Oriero 1999, Mabogunje 1991). From the various human activities that take place within the city, has led to the generation of solid waste. Primary data were collected from residential, the traditional market areas and the industrial areas. Attempt were also made to collect data on regularity of waste collection, available equipment, agents of waste collection, mode and frequency of collection and the socio-economic status of residents and the types of wastes that are being collected.

For the purpose of data collection and analysis in this study, Warri metropolis was divided into 25 neighbourhoods (see Table I). The rationale for using many zones/neighbourhoods is to ensure adequate spread. Although, the population structure in the various neighbourhoods is heterogeneous; the sanitary facilities provided in each neighbourhood are fairly uniform (see Fig 2). Questionnaire survey, oral interview

and personal observation were the instruments used for data collection. On the whole 500 questionnaires were administered in the 25 neighbourhoods, through stratified random/systematic techniques. First, the city was stratified into 25 neighbourhoods. Secondly, out of the neighbourhoods a number of streets were randomly selected. Thirdly, from these streets, the systematic technique was used to select at interval of five households to administer a questionnaire. Fourthly, where there are many households in a house, the random sampling technique was further used to select one household for interview.

Fifty-structured questionnaire were given to scavengers to fill. The questionnaire was designed to collect information on bio-data of scavengers, the types of wastes collected, their income, occupation, education, family size and the location of the scavenger. Additional information was collected from the local government, the environmental tax force and chief planning officer. Simple descriptive statistics utilizing averages and percentage were used for analysis of data.

Table 1. Allocation of Questionnaires into Neighbourhoods (Source: Field survey June 2017)

s/n	Neighbourhoods	No. of responses
1	Agbassa	18
2	Agaga layout	14
3	Alders town	21
4	Ajamogha	15
5	Effurun west	16
6	Effurun east	18
7	Essi layout	27
8	Bendel housing estate	23
9	Enerhen udu-aladja road	23
10	Enerhen – leventis	17
11	Igbudu market house quarter	23
12	Igbudu layout	23
13	Market road	19
14	Midwest college area	26
15	Obahor/N. William	22
16	Odion/cemetery	23
17	Ogunu	18
18	Okere	18
19	Okumagba	33
20	Welfare/odibo road	14
21	NPA	19
22	SS quarters	17
23	Dorm-Donmigo Edjeba	20
24	Ogborikoko	20
25	Pessu	23
	Total	500

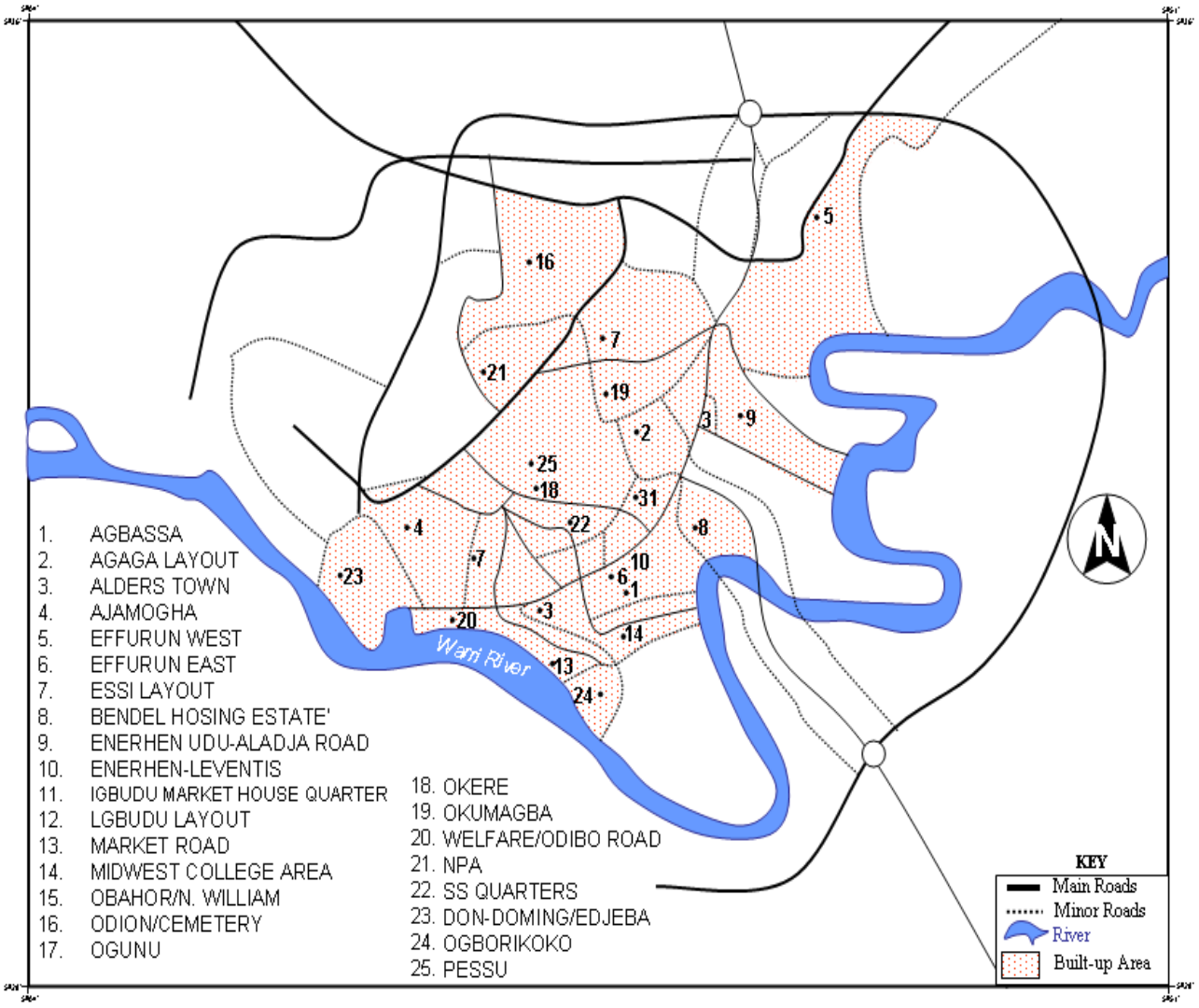

Figure 2. Warri Map showing Neighbourhoods where Questionnaires were administered (Source*: Modified from Efe and Mogborukor, 2010)*

4. Discussion of results

In Nigeria, the urban solid waste crisis has grown to a very large dimension since the past two decades. Efforts being made to solve the problem of solid waste management in our urban centres have been adequately documented by such scholars as Abumere (1983), Omuta (1988), Mabogunje (1991), Oriero (1999), and Adeniyi (1996). Yet hills of urban wastes are littered all around our urban areas.

In most of the available literature on waste management in our cities, there is virtually little or scarce information about the use of scavengers for waste management. It is only the work of Adeniyi (1996) that has brought to the fore front the role of scavengers in waste management. Even then, the work was only focused

on Ibadan metropolis. Therefore there is need to look at the role if scavengers in the context of some other cities in Nigeria, in order to ensure effective comparison and generalization as regards the part played by scavengers in waste management.

Scavenging is a serious business in Mexico, Brazil, Colombia and Egypt to mention a few. In Cairo (Egypt) the traditional scavengers have grown so large that they now constitute themselves into private companies that are contractually in charge of collection, transportation and recycling of waste (Adeniyi, 1996). It is in the light of the above situation that the case of Warri is necessary. After a thorough examination of the study of Warri, the following observations are here made.

4.1. Nature of materials scavenged

During the course of the research, it was discovered that after the municipal and private dump trucks have tipped their loads, in different cells on the dumpsite, the scavengers sort through the refuse manually, collecting such items as scrap metals, glass bottles, plastics, paper and clothing. Besides, these are other special collection centres for different kinds of shells and bones. The collection centre for bones and hoofs are at the various abattoirs while that of shell depends on the people who by them for sale.

Table 2. Types of Material Scavenged (Source: Fieldwork, June 2017)

Materials scouted	Frequency	Percentage
Ashes/sweepings/clothing	5	10
Paper/leaves	9	18
Vegetables	3	6
Plastics and glass	16	32
Scrap metals/carcass	13	26
Others	4	8
Total	50	100

Table 2 shows a total of fifty scavengers who responded to the type of materials scouted for with ashes/sweeping and clothing having a frequency of 5 persons representing 10% of respondents. Paper and leaves are scavenged by 9 persons which make up 18% of respondents. Vegetable is scavenged by 3 persons or 6% of respondents. Plastics and glass is scavenged by 16 persons or 32%. 13 persons or 26% of respondents scavenged for scrap metals and carcass and others specified are those who scavenged shoes, electrical/electronic parts, refrigerator and wood parts, etc, represent 4 persons or 8% of respondents.

Table 3. Age and Sex Composition of scavengers (Source: Field work, June, 2017)

Age Group	Male	Female	Total	Percentage
Below 15years	3	2	5	10
16-20years	15	7	22	44
21-25years	10	Nil	10	20
26-50years	4	3	7	14
Above 30years	4	2	6	12
Total	36	14	50	100

Table 3 indicates the age and sex characteristics of scavengers. It reveals that majority of the respondents are within the age of 16 30years old. These constitutes 78% of respondents, the implication is that, majority of those involve in scavenging activities with the age bracket of 16-30 years.

Table 4. Average Monthly Income Generated from Scavenging (Source: Field work, June 2017)

Average income	No of responses	Percentage
Less than N1,000	18	36
N1,000 – N2,000	26	52
N2,000 – N4,000	5	10
N4,000 – N6,000	1	2
Above N6,000	0	0
Total	50	100

One of the socio-economic characteristics of respondents covered in this study is their income generation level. Table 4, reveals that majority of the respondents earns between N1000 to N2000 monthly and account for 52%. While less than N1000 accounts for 36%. Others of above N2000, N6000 account for 12%.

Table 5. Educational Attainment of Scavenging (Source: Field work, June 2017)

Educational level	Frequency	Percentage
Primary school	11	22
Secondary school	31	62
Post-secondary	5	10
No formal education	3	6
Total	50	100

From the table above, majority of the scavengers are literate up to primary and secondary- school Level constituting 84%, Few of them have post secondary education, which make up 10% of respondents.

Table 6. Reason for the choice of Business (Source: Field work, June 2017)

Reason	No of responses	Percentage
To generate additional income	6	12
To assist spouse	4	8
To assist parents	15	30
To raise capital	20	40
To get employed	5	10
Total	50	100

Table 6 reveals that 20 persons representing 40% take to this business in order to generate income to help themselves, while 15 respondents which represent 30% do this business in order to assist their parents. 6 respondents representing 12% got into the business to generate additional income, while 5% respondents or 10% in to enable employment. 4 persons or 8% do this job to assist spouse.

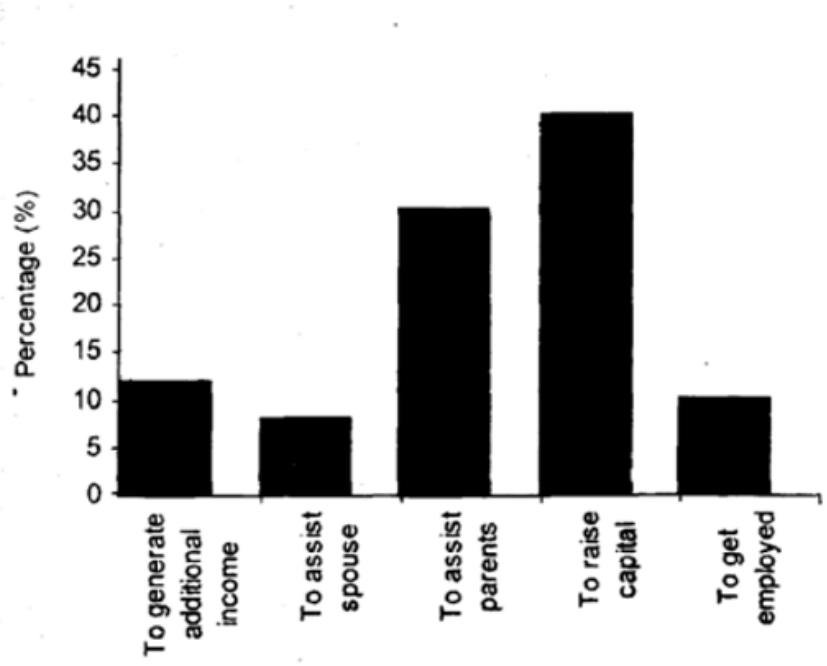

Figure 3. Simple Bar graph showing the reason for choice of business

4.2. Scavengers and their role in waste management

Scavengers/scavenging are an integral part waste management system. They are not hindered by municipalities/waste authorities and are usually self-employed, earning income by collecting waste that can be resold, whether from household, the streets transfer stating or dump sites. See tables (2, 4 and 6).

According to Gray Donald (2001), without the role of scavengers, solid waste management problems would be far more acute in the developing countries. He stated therefore, that the activities of scavengers should not be ignored when making decisions on solid waste management.

Apart from managing waste, scavenging provides a means of livelihood for the army of unemployed. Apart from this, DiGregorio (1994) points out that for every item picked off the street by waste picker means less city money spent on wages for collectors, less money spent on transportation costs of the dump sites, less money spent on maintaining the dump and searching for a new dump as old ones are rapidly filling up.

5. Recommendations and conclusion

The role of scavengers in resource recovery and waste management in our urban areas is gradually becoming very important. The result of the study shows that a sizeable number of the scavengers are young and are between 16-30 years of age which make up about 78%. Majority of the respondents also have little education. It was also discovered that these young people take up scavenging due to unemployment and the need to generate income for survival.

There seems to be a story indication that the general deteriorating economic situation in Nigeria with respect to underemployment and unemployment are the reasons why these young ones have taken to searching as a coping mechanism. However, this is not to say that the scavengers are not playing some significant role in waste management. Every day, in most cities and in Warri in particular, several unquantifiable metric tons of scrap metals, plastics materials of all kinds are sorted by the these workers, sold and carried by trailers to various mills for recycling. This waste materials if otherwise have been left in their various positions, would have defaced the cities due to their undegradable nature.

The government at the local and state level and all agencies responsible for waste management should recognize and integrate scavengers into their waste management policies, through the formation of an association and the income status of these informal workers should be enhanced by way of loans and aids to enable them perform better.

Finally, the government, and non-governmental organizations should create an enabling environment for recycling industries to operate by making such policies that will support them. The government should also open up the economy for more foreign exchange, by lifting the ban on the exportation of scrap metals. The federal and state government should embark on waste-to-wealth programme to attract more income to the scavengers.

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