

Solid Wastes Management and Business Patronage in Nigeria: A Study of Selected Organisations in Anambra State

Dr Arinze, Emeka Stephen

Department of Business Administration

Chukwuemeka Odumegwu Ojukwu University Igbariam, Anambra State, Nigeria

Abstract: *The study examined solid wastes management and business patronage in Nigeria: a study of selected Organisations in Anambra state. However, three research hypotheses are formulated in this study. The study adopted survey research design. Data were generated from primary and secondary sources. The method for data collection were questionnaire which was administered randomly among the staff of the selected firm. The population of the study is 800, The sample size of the study is two hundred and sixty-seven (267) employees, while two hundred and fifty-five (255) were retrieved. The hypotheses were tested using chi-square method at 0.05% level of significance. The findings of the study revealed that, Non-recycling of by-products has significant relationship with indiscriminate dumping of solid wastes; there is significant relationship between people's awareness of laws on wastes disposal and the manner in which they dispose their solid wastes: dirty environment correlates very sharply with patronage of business. Thus, dirty environment results to slow pace of business patronage. The study recommended that Government should embark on the strict implementation of the Decree 42 and 58 of 1988, as amended. Governments should constitute task forces that will apprehend and prosecute those who dump refuse at undesignated places. Heavy tax should be placed on organizations that produce commodities with solid wastes such as producers of sachet water, packaged foods/drinks etc.*

Keywords: *Non-recycling, recycling, solid wastes, wastes disposal, Heavy tax, indiscriminate dumping*

1.1 Background of the Study

Prof. Pita Ejiofor's postulation on Corporate Social Responsibility of Business necessitated this research. Also, Ehlers' Theory (2004) on Production Management prompted this work. According to Ehlers, refuse attracts insects and rodents with the possibility of the occurrence of odour and street litter which will negatively affect the organization. During the pre-colonial era, Nigerians lived in slums and shanties. They managed the wastes that came out from their products very well. Similarly, during the colonial days, people were not allowed to dump refuse uncontrollably. Public health officers controlled the disposal system and environmental cleanliness; various organizations adhered strictly to lay down solid wastes management laws. Cleanliness was inculcated in everyone right from the Kindergarten school age; students dared not go to school in dirty linens nor drop refuse anywhere, anyhow.

However, after the independence of Nigeria in 1960, cleanliness and discipline were thrown to the dogs. This situation escalated during the thirty-month civil war. After the war, most urban

cities, especially within the confines of the erstwhile Biafra, were filled with dirt. Everywhere was unkempt. The health officials, who had the responsibility of controlling the menace, relaxed their responsibilities. Law enforcement agents could not equally enforce legal provisions on firms that disposed solid wastes. Hence, solid wastes scattered everywhere.

In recent years, though, there has been remarkable growth of interest in environmental issues. Associated with this growth of interest, has been the introduction of new legislation, emanating from national and international bodies, such as the European Commission, that seeks to influence the relationship between development and the environment. In spite of all the laws, it has been observed every day, that the average Nigerian is responsible for one kilogram of wastes in the form of paper, plastic, cartons and other packaging: tins, bottles, disposable nappies, kitchen wastes and other objects.

Moreso, unguided and indiscriminate dumping of solid wastes and other environmental pollutions in the urban cities, like Awka and Onitsha as well as clashes between the people and the environmental protection agencies are common features of the Nigerian environment. There are equally rampant inter-community and community-investor/developer clashes. All these cause enormous disruption of normal living, endanger human lives; result in millions of naira losses in goods, services and man-hours annually. Moreover, development in such circumstances is self-defeating and retroactive, and may not lead to enhancement of man in his natural environment. A case in mind is the impasse between Nachi Community and the then Anambra State Vegetable Oil Product (AVOP), due to the company's improper management of its wastes, which caused a lot of damage to the host community. This resulted to a serious rampage by the community, leading to the closure of the company. It also led to losses, amounting to billions of naira.

Most importantly, in an effort to control indiscriminate dumping of solid wastes and in an attempt to manage them, the Federal Government, under the Buhari/Idiagbon regime, instituted monthly nation-wide sanitation exercise. There was restriction of movement every last Saturday of the month to enable the people clean their environment. Happily, successive regimes adopted this programme till date. However, this has not handled the problem satisfactorily.

Various local and state governments, including Anambra, promulgated various laws and established environmental protection agencies such as the Anambra State Environmental Protection Agency (ANSEPA) and Anambra State Wastes Management Agency (ASWEMA). These agencies formulated various programmes and policies to check negligence of sold wastes management, but all to no avail.

Improper management of solid wastes reached its echelon with the latest introduction of sachet water, popularly called "Pure Water". At every nook and cranny, especially in Onitsha and Awka urban cities of Anambra State, one would see empty sachets of pure water of various brands, some even without address and registration number, littered every where.

The deplorable situation causes health hazard as well as money and man-hour losses. This is the focus of this study.

Management of both the domestic and factory solid wastes is a major problem in Nigeria, especially in the urban centres of Anambra State, with particular emphasis on Awka and Onitsha. In most homes, they do not have waste bins whereas some factories do not have planned means of disposing their wastes. In some homes, where there are dustbins, there are no corresponding refuse dumps for discharging such wastes. Hence, one notices that whenever it rains, children, women and even factory workers are spotted discharging their wastes in the drainage, thereby blocking the drainage channels. At times, where there are refuse dumps in the neighbourhood, there is no constant evacuation, thereby causing filth everywhere.

Similarly, some factories that produce disposal products such as water and canned foods do not make adequate plans or arrangements for proper management of such disposables. Hence, the ruminant litter all over the streets. Some others pollute the whole environment during the processing of their products without any utter of regard for the health of the inhabitants or their host communities. This utter neglect causes a lot of health hazard, pollution, community-investor conflict, desertification of the environment and then losses.

Also, the activities of some petty traders, especially street hawkers, are alarming. These include sachet water, corn, onions, yam, banana and orange sellers. Some of them pill off the back of their products and at the end of business, litter same on the streets. Most of them, while taking the garbage to the refuse dumps, the garbage fall by the way side and they live them there, thereby constituting menace, eye sore and unfriendly environment. These do not constitute hygienic and healthy business environment. Solid waste is supposed to be managed, but the question remains, “how far do managers manage solid wastes?”

1.2 Statement of Hypotheses

For the purpose of this study, three hypotheses will be tested in line with objectives of the study.:

Hypothesis One

H₀ : Non-recycling of by-products has no significant relationship with patronage of businesses

Hypothesis Two

H₀: There is no significant relationship between people’s awareness of laws on wastes disposal and the manner in which they dispose their wastes.

Hypothesis Three

H₀: Dirty environment does not correlate very sharply with patronage of business.

LITERATURE REVIEW

2. Theoretical Framework and Empirical review

2.1. The Theory of Waste Hierarchy

According to South Australia Zero Waste Strategy, (2010), the waste management hierarchy is an internationally-accepted guide for prioritizing waste management practices with the objective of achieving optimal benefits from products prior to being discarded as well as reducing the detrimental environmental impacts. The hierarchy sets out the preferred order of waste management practices, from most to least preferred (The aim of the waste hierarchy is to extract the maximum practical benefits from products and to generate the minimum amount of waste which can be disposed to landfill sites.

Williams, 2005; Vancouver Waste Management Strategy, 2008; Demirbas, 2011, advance that the waste management hierarchy comprises five waste management categories and these are prevention (reduction), re-use, recycling, waste treatment, energy recovery and disposal.

USEPA, 2002; DEA, 2007; Matete and Trois, 2008; South Australia Zero Waste Strategy, 2010, describes the elements of the waste hierarchy as follows:

1. **Waste Prevention:** It seeks to prevent waste from being generated. The prevention strategies of waste include using less packaging, designing the product to last longer and reusing the products and material. Waste prevention helps reduce handling, treatment and disposal costs. It further reduces the generation of methane (Carbon-oxide and Biogas).
2. **Recycling and Composting,** the following explanation applies: Recycling is a process that involves collecting, reprocessing and recovering certain waste material (glass, paper, metal, plastic) to make new material or products. Recycling and composting generate environmental and economic benefits (employment, income, a supply of valuable raw materials to industry, the production of oil enhancing compost, a reduction in greenhouse gas emission, a number of landfills and combustion facilities).
3. **Disposal (Land, filling and combustion):** USEPA, 2002; DEA, 2007; Matete and Trois, 2007; South Australia Zero Waste Strategy 2010, suggest that these disposal activities are used to manage waste that cannot be prevented or recycled. Properly designed landfills with available technology can be used to generate energy by recovering methane. Combustion facilities produce steam and water as by-products that can be used to generate energy as well.

Figure 2.2 Waste Hierarchy pyramid



Figure 2.2 Waste Management Hierarchy.

Source: Australia zero waste strategy (2020).

According to South Australia Zero Waste Strategy, 2020 and USEPA, 2020, the structure of the waste hierarchy has evolved and taken many shapes over the years since its conception, to address the diversity of waste challenges in respective countries.

The Gauteng Provincial Integrated Waste Management Policy, (2006) and EEA, (2013) elaborated that the main objective of this theory is the same throughout the world which is sustainable waste management through prevention and re-use. This tool has been used internationally in addressing waste management issues and has been incorporated in waste management strategies, policies and legislation such as the South African National Environmental Management Act (No.107 of 1998); South African Waste Strategy (2012); United Kingdom Waste Regulations (2011); South Australia Zero Waste Strategy (2010); and the EU Waste Policy (1999)

2.2 Empirical Review

Obiora Ezeudu and Tochukwu. Ezeudu (2019), submitted from their finding that The National Environmental Standards and Regulations Enforcement Agency NESREA is responsible for the general environmental standard regulation of the entire Nigeria industrial waste sector but also suggest that the workforce should be enhanced to effectively implement, regulate and enforce government policies for a safer environment in Nigeria.

According to Miranda Amachree (Mrs.) (2013), The National Environmental Standards and Regulations Enforcement Agency (NESREA) is responsible for the registration of sterilizing and recycling companies in Nigeria, they also regulate the activities of these companies in Nigeria to ensure a healthier and a cleaner Nigeria.

However, the role of the private sector in waste management cannot be over-emphasized; to this end it is necessary for government to give out registration licence to private companies that specialize in sterilization of non-biodegradable waste such as plastics and beverage bottles for re-use by soft drinks manufacturing companies. With this strategy in place in the state, it will help to reduce cost of production of plastics for soft drinks manufacturing companies and reduce the number of non-biodegradable waste in circulation.

Savindi Caldera, Tim Ryley and Nikita Zatyko (2020), they opted that review of related literature shows that there is already available market for such material as glass and metal waste which has been established, but there are increasing marketplace opportunity for other recycled materials.

Mohamed Osmani and Paola Villoria-Sa'ez (2019), state that construction waste management research is piecemeal and focuses on developing a wide range of tools and technologies to help managing construction waste that has already been produce on-site for re-use by construction companies.

However, waste management strategy suggested in this study shows that scrap from post-construction waste can be collected and transported to a steel mill for processing into rod for further construction work. The General Steel Mill (GSM), Asaba is a typical example of re-cycling plant for post-construction waste and with more of these plants in place, it reduces waste and increases the revenue base of the state.

METHODOLOGY

3.1 DESIGN AND METHOD

This work delved into the management of solid wastes in Awka and Onitsha urban centres of Anambra State. It used survey method, simply percentage and Chi-square as its statistical research design. It identified the decision and policy of individuals and organizations in relation to the generation and management of solid wastes.

Precisely, business organizations and individuals were examined in Awka and Onitsha urban centres of Anambra State.

Some homes and business shops were visited while five different types of companies specializing in different trades were selected for study. The companies are:

- (i) Plastic/robber/cellophane
- (ii) Brewery
- (iii) Automobile
- (iv) Hotels
- (v) Household/others

The companies were selected because of the type of raw materials they use and the by-products they release, either during their production process or at the end of their manufacturing process.

3.2 SOURCES OF DATA COLLECTION

The study used primary and secondary sources of data collection. It collected data from the questionnaires distributed, personal observations and interviews as well as from Library and materials from the Chambers of Commerce, Industries, Mines and Agriculture and the internet.

PERSONAL OBSERVATION

The Awka and Onitsha urban centres of Anambra State were visited and people were observed discharging their wastes. Various companies were equally visited as well as some refuse disposal sites in the areas to ascertain how solid wastes were handled by these individuals and organizations. Effort was made to cover as many refuse dumps as possible to see how they were used and to observe the system adopted in collection and disposal of refuse. To ascertain the regularity of collection and removal of refuse, some dumps were visited very often.

QUESTIONNAIRES

Questionnaires were developed and used to measure several variables of interest on the population.

According to Nzelibe and Ilogu (1996), questionnaire suggests a collection of questions. This is true because at times the work was interested in determining the extent to which respondents hold a particular attitude or perspective. Questionnaire provides the interviewer with format and structure.

INTERVIEWS

Interviews were used to complement the questionnaire in order to obtain certain information that may possibly be glossed over by the use of questionnaire. In other words, the interview played a supportive role. Some functionaries in the following organization were interviewed.

They are:

- (i) Anambra State Environmental Protection Agency (ANSEPA)
- (ii) Federal Environmental Protection Agency (FEPA)
- (iii) Anambra State Ministries of Health; Housing, Environment; Agriculture and Industry.
- (iv) Onitsha and Awka Chambers of Commerce, Industry, Mines and Agriculture, and
- (v) Some companies and individuals operating in Awka and Onitsha urban cities.

During the interview, the opinion of these personnel and professionals were sought on how they managed solid wastes; the best method of managing solid wastes as well as the regularity of collection and disposal of solid wastes from dumps.

3.3 POPULATION SIZE

The population list used in the study was developed from the following sources:

- (1) Onitsha and Awka Chambers of Commerce, Industry, Mines and Agriculture (Membership List 2001)
- (2) Trade Unions
- (3) Direct calls to organizations

The above sources revealed that there were about 800 organizations that could be classified under the five trades.

Hence, the population size of 800 organizations, irrespective of size, was targeted for the study.

The organizations were distributed as follows:

DISTRIBUTIONS

Organization	Frequency
Plastic/robber/cellophane	95
Brewery	3
Automobile	208
Hotels	184
Household/others	310
TOTAL	800

Source: sample data(2012)

3.4 DETERMINATION OF SAMPLE SIZE

Having specified the population that is targeted, the determination of the sample size is as follows:

The method employed is the “Yamane’s Model” (Yamane, 1967). The model is stated thus:

$$n = \frac{N}{1 + N (e)^2}$$

Where:

n = Sample size

N = Population

1 = Constant

e = Margin of error normally assumed by the study

In this case, the margin of error was allocated 5%

Hence, statistically, the formula becomes:

$$n = \frac{N}{1 + N (e)^2}$$

$$\begin{aligned} &= \frac{800}{1 + 800 (0.05)^2} \\ &= \frac{800}{1 + 800 (0.0025)} \\ &= \frac{800}{1+2} = \frac{800}{3} \\ &= 267 \\ N &= \underline{267} \end{aligned}$$

This implies that a sample of two hundred and sixty-seven was selected for study out of the entire population of eight hundred.

3:5 SAMPLING DISTRIBUTION/SAMPLE SIZE DETERMINATION

Bowley's proportional allocation model was employed (Sidney, 1994). It states:-

$$n = \frac{N_s h}{N}$$

Where;

- n = total sample size
- N = population size
- N_s = number of items in each stratum
- h = number of units allocated to each stratum

The distribution of the sample from the population therefore went thus:

Plastic Companies

$$n = \frac{N_{sh}}{N}$$
$$= \frac{267 \times 95}{800} = \frac{25365}{800} = 31.7$$

This sample is approximated to 32

Automobile Companies

$$n = \frac{N_{sh}}{N} = \frac{267 \times 208}{800} = \frac{55536}{800} = 69$$

Hotels

$$n = \frac{N_{sh}}{N}$$
$$= \frac{267 \times 184}{800} = \frac{49128}{800} = 61$$

Sample Allocation = 61

Households/Others

$$n = \frac{N_{sh}}{N}$$
$$= \frac{267 \times 310}{800} = \frac{82770}{800} = 104$$

$$\text{Sample Allocation} = 104$$

Brewery Compnay

$$n = \frac{Nsh}{N}$$
$$= \frac{267 \times 3}{800} = \frac{801}{800} = 1.001$$

The Sample is approximate to 1

PERCENTAGE

Plastic/robber/cellophane

$$\frac{32}{267} \times \frac{100}{1} = 12\%$$

Brewery

$$\frac{1}{267} \times \frac{100}{1} = 0.4\%$$

Automobile

$$\frac{69}{267} \times \frac{100}{1} = 25.8\%$$

Hotels

$$\frac{61}{267} \times \frac{100}{1} = 22.8\%$$

Households/others

$$\frac{104}{267} \times 100 = 39\%$$

The entire allocations were summarized as follows:

DATA ALLOCATIONS

COMPANIES	FREQUENCY OF POPULATION	SAMPLE FREQUENCY	PERCENTAGE
Plastic/robber	95	32	12
Brewery	3	1	0.4
Automobile	208	69	25.8
Hotels	184	61	22.8
Households/others	310	104	39
TOTAL	800	267	100

Source: sample data

3.6 QUESTIONNAIRE DISTRIBUTION

The work realized that respondents do not always return many questionnaires distributed during a study. Therefore, in order to reduce the effect of this situation on the validity of the result, additional thirty-three questionnaires were added to the two hundred and sixty-seven sample size, thereby bringing the total to three hundred. This covered the probability of respondents not returning the questionnaire given to them.

4.0 DATA PRESENTATION AND ANALYSIS

INTRODUCTION

This chapter comprises the analysis and presentation of primary data collected in the course of the research.

The study examined the management of solid wastes in Awka and Onitsha urban cities of Anambra State. The generation and control of solid wastes were examined and analysed.

Copies of the questionnaire were distributed to organizations specializing in different trades and other forms of businesses as well as homes.

A sample size of two hundred and sixty-seven was selected from a population of eight hundred business organizations and homes. The study drew up a questionnaire and administered to the sample in the areas studied. Two hundred and sixty respondents or eighty-seven percent of the respondents returned their questionnaires. Out of the number, there were unaccepted errors and were disqualified from the responses. Therefore, two hundred and fifty-five were used. The analysed data are presented with the aid of tables and percentages. The chi-square test method is used to test the hypotheses.

5.2 TESTING OF HYPOTHESES

4:12:1 Hypothesis One

Regarding the organizations studied, the following hypotheses were postulated.

- H₀:** Non-recycling of by-products has no significant relationship with indiscriminate dumping of solid wastes.
- H₁:** Non-recycling of by-products has significant relationship with indiscriminate dumping of solid wastes.

Tables 8 and 10 are used to test the above hypotheses

Table 12 below shows a 5 x 2 contingency table cross-classifying 255 respondents by “Re-use of by-products and quantity of solid wastes emitted per day.

Table 12 (b): Wastes Dumping Site

Estimated Quantity of Wastes per day	Re-use of the By-products		<i>Marginal frequency</i>
	<i>Yes</i> n₁	<i>No</i> n₂	
1 – 9kg	42	75	117
10 – 19kg	15	23	38
20 – 29kg	20	24	44
30 – 39k	14	16	30
40 and above	12	14	26
Total	103	152	255

Source: Survey Data (2012)

Recycling of by-products and quantity of wastes emitted per day

Level of Significance = 0.05

Degree of freedom, d. f = (r-1) (c-1)

Where r = number of rows

c = number of columns

Therefore, d. f = (5-1) (2-1) = 4

Statistically, at a level of significance of 0.05, the critical value of chi-square (χ^2) is 9.488.

The calculated value of chi-square (χ^2) is given by

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Where O = Observed data

E = Expected value

The value of E is calculated thus:

$$E = \frac{N \sum n}{\sum N}$$

Where N = Marginal Frequency

n = Sum of n_1 or n_2

Therefore:

O	E	O	E
42	47.26	75	54.60
15	15.35	23	17.73
20	17.77	24	20.53
14	12.12	16	14.00
12	10.50	14	12.13

$$\begin{aligned} X^2 &= \frac{(42 - 47.26)^2}{47.26} + \frac{(15 - 15.35)^2}{15.35} + \frac{(20 - 17.77)^2}{17.77} + \frac{(14 - 12.12)^2}{12.12} \\ &+ \frac{(12 - 10.50)^2}{10.50} + \frac{(75 - 54.60)^2}{54.60} + \frac{(23 - 17.73)^2}{17.73} + \frac{(24 - 20.53)^2}{20.53} \\ &+ \frac{(16 - 14.00)^2}{14.00} + \frac{(14 - 12.13)^2}{12.13} \\ &= 0.21 + 7.6 + 1.56 + 0.59 + 0.29 + 0.29 \\ &= 10.53 \end{aligned}$$

The critical value is 9.488. Comparing, we find out that 10.53 is greater than 9.488

i.e $10.53 > 9.488$

DECISION:

Since the critical value (9.488) is less than the calculated value (10.53), we reject the null hypothesis and conclude that Non-recycling of by-products has significant relationship with indiscriminate dumping of solid wastes.

HYPOTHESIS TWO

Another hypothesis is postulated thus:

H₀ (Null):

There is no significant relationship between people's awareness of laws on wastes disposal and the manner in which they dispose their wastes.

H₁ (Alternate):

There is significant relationship between people's awareness of laws on wastes disposal and the manner in which they dispose their solid wastes.

The null hypothesis is thus tested:

Tables 13(b) and 6(a) are used to test the hypothesis. This leads to the production of another table, table 4:14:2

Table 4:14:2 shows a 3 x 2 contingency table, cross-classifying 151 respondents by “solid wastes disposal outlets and “knowledge of laws regulating solid wastes management”.

Disposal Outlets	Knowledge of Laws on Wastes		<i>Marginal Frequency</i>
	<i>Yes</i> n₁	<i>NO</i> n₂	
Dumping Sites	12	37	49
Recycling	9	42	51
Anywhere	62	93	155
Total	83	172	255

Solid wastes disposal outlets and knowledge of laws regulating wastes management.

Source: Survey data (2012)

Test

Degree of freedom (df) = (r – 1) (c – 1)

Where r - number of rows

c - number of columns

.. df = (3-1) (2-1) = 2

Chosen significance level = 0.05

The critical value of chi-square (X^2) at 0.05 significance level = 5.991

The calculated value of X^2 is given by

$$X^2 = \sum \frac{(O - E)^2}{E}$$

Where O = Observed data

E = Expected value

The value of E is calculated thus:

$$E = \frac{N \sum n}{\sum N}$$

Where N = Marginal Frequency

n = Sum of n_1 or n_2

Therefore:

O	E	O	E
12	15.95	37	33.05
9	16.60	42	34.40
62	50.45	92	104.55

$$\begin{aligned}
 X^2 &= \frac{(12-15.95)^2}{15.95} + \frac{(9-16.66)^2}{16.66} + \frac{(62-50.45)^2}{50.45} + \frac{(37-33.05)^2}{33.05} \\
 &+ \frac{(42-34.40)^2}{34.40} + \frac{(92-104.55)^2}{104.55} \\
 &= 0.98 + 3.5 + 2.6 + 0.47 + 1.68 + 1.50 \\
 &= 10.73
 \end{aligned}$$

Critical value = 5.991

Comparing, we found out that

$$5,991 < 10.73$$

DECISION

Since, the critical value is less than the calculated value, that is,

$$5.991 < 10.73$$

We reject the null hypothesis and conclude that there is significant relationship between people’s awareness of laws on wastes disposal and the manner in which they dispose their solid wastes.

Hypothesis Three

The following hypotheses are presented

H₀ (Null):

Dirty environment does not correlate very sharply with patronage of business

H₁ (Alternate):

Dirty environment correlates very sharply with patronage of business

Tables 4:8a and 4:8b were used to test the above hypotheses. This leads to table 4:14:3

Table 4:14:3 shows a 3 x 2 contingency table, cross-classifying 151 respondents by “dirty environment and patronage of business”

Affect of dirty environment	Patronage of business		<i>Marginal Frequency</i>
	<i>Yes</i>	<i>NO</i>	
	n₁	n₂	
TRUE	30	173	203
FALSE	17	26	43
INDIFFERENT	4	5	9
Total	51	204	255

Dirty environment and patronages of business.

Source: Survey data (2012)

Level of significance = 0.05

Degree of freedom (df) = (r – 1) (c – 1)

Where r- number of rows

c - number of columns

.. df = (3-1) (2-1) = 2

The critical value of chi-square (X^2) at 0.05 significance level = 5.991

The calculated value of X^2 is given by

$$X^2 = \sum \frac{(O - E)^2}{E}$$

Where O = Observed data
 E = Expected value

The value of E is calculated thus:

$$E = \frac{N \sum n}{\sum N}$$

Where N = Marginal Frequency
 n = Sum of n_1 or n_2

Therefore:

O	E	O	E
30	40.6	173	162.4
17	8.6	26	34.4
4	1.8	5	7.2

$$X^2 = \frac{(30-40.6)^2}{40.6} + \frac{(17-8.6)^2}{8.6} + \frac{(4-1.8)^2}{1.8} + \frac{(173-162.4)^2}{49.18}$$

$$+ \frac{(26-34.4)^2}{34.4} + \frac{(5-7.2)^2}{7.2}$$

$$= 2.77 + 8.2 + 2.67 + 2.28 + 2.05 + 0.67$$

$$= 15.97$$

DECISION

Since the calculated chi-square (χ^2) value, 15.97 is greater than the critical value, 5.991; we reject the null hypothesis and conclude that dirty environment correlates very sharply with patronage of business. Thus, dirty environment results to slow pace of business patronage.

FINDINGS

The study shows that wastes may be in the form of solid, liquid and gaseous states. The result also shows that more wastes, with less tendency to decay, are being generated such a cellophane, sachet bags etc.

This work confirms that many people are waiting on the government to clear the mountainous refuse on the streets. This may, however, not be unconnected with the fact that government collected huge sums of money as levy for waste disposal from organizations and individuals. As a result, there is indiscriminate dumping of solid wastes; in the belief that government would cart them away.

On the awareness of the side effects of these solid wastes to the environment and invariably, the health of people, the study discovered that some organizations and individuals do not know such side effects. Those who know could not help matters either, as they join others in the nefarious act of dumping refuse indiscriminately.

Similarly, in spite of the fact that most people are aware of the consequences of dumping refuse indiscriminately and the existence of the law on management of solid wastes, the trend continued unabated.

In the same vain, the work discovered that improper management of solid wastes affects negatively, the patronage of business in the study area.

However, the bottom line of it all is that government has been shirking in its responsibility of enforcing laws and order in the society, especially as it concerns wastes management.

The study discovered that government agencies such as ANSEPA, now ASWAMA and the local government authorities were busy collecting sanitation levies without embarking on evacuation or prosecution of those who dump refuse indiscriminately.

Dumping sites were rarely identified. Hence, people dump refuse at the slightest opening nearest to them. More so, decrees 42 of 1988 and regulations S.I.5 and S.I.9, which established Federal Environment Protection Agency (FEPA) and the Environment Impact Assessment (EIA) of 1992, specified that organization should possess the "Industrial Wastes Disposal Permit".

This study has discovered that nearly three-quarter of respondents studied were not aware of the waste disposal permit as specified by the decree, hence, most of the respondents do not possess the said permit.

This situation suggests that some of these respondents may only be claiming ignorance regarding the awareness of the existence of waste legislation or that they were not rightly ignorant as a result of the seeming apathy of the government on the strict and immediate implementation of the content of the decrees.

In a nutshell, government has little or no regulations on the increasing rate of environmental degradation as a result of increasing mountainous refuse sites in every nook and cranny. These mountainous refuse dumps, the work discovered, are negatively affecting the level of business patronage.

Additionally, since most of the respondents did not have any knowledge of laws regulating solid waste management and since they did not include waste management in their budget, it simply points out that there is no safe waste management in the study area. Based on this premise, it is safe to conclude that solid wastes are generated and disposed in any way people find convenient to them. And as stated earlier, this implies that government has not seriously embarked on the implementation and enforcement of the existing wastes legislations. It also shows that business social responsibility is being neglected. Government has not equally provided enough dumping sites for refuse disposal. The problem then is not in making laws, but in implementing, enforcing and executing such laws.

5. SUMMARY AND RECOMMENDATION

5.1 Conclusion

At present, workshops, seminars and campaigns are going on around the world regarding the need for organizations, governments and individuals to reduce the problem of degradation of the ecosystem and environmental pollution. The state of the environment has been well documented through the efforts of different individuals, researchers and Non-Governmental Organizations (NGOs).

With the increase in business activities and the craze for profit, human beings and their immediate environment are moving in opposite directions. Man has been receiving from the environment without giving back anything good to the environment in return.

In Nigeria especially, governments, individuals and organizations are yet to come to a higher recognition of the need to save the environment that provides their existence. This is increasingly being felt through the rate of indiscriminate dumping of refuse, resulting to air pollution, plague of diseases and invariably, low patronage of businesses.

This study has identified lack of education/awareness and the lukewariness of government as the characterizing factors resulting to lack of management of solid wastes in Awka and Onitsha urban cities. Managers should not manage only human resources but other materials, including wastes.

5.2 Recommendations

Based on the findings of the work, the study recommends as follows:

Refuse disposal sites should be constructed by the Government at strategic places.

Local government authorities and the Anambra State environmental Protection Agency (ANSEPA), now ASWAMA, should live up to their responsibilities by carting away wastes as and when due. House to house collection is highly recommended.

Government should embark on the strict implementation of the Decree 42 and 58 of 1988, as amended.

Governments should constitute task forces that will apprehend and prosecute those who dump refuse at undesignated places.

Heavy tax should be placed on organizations that produce commodities with solid wastes such as producers of sachet water, packaged foods/drinks etc.

Government should embark on national awareness campaign on the need for man to maintain a healthy environment.

The national monthly sanitation exercise should be re-introduced. A course on solid wastes management should be introduced into the academic curricula in primary, post primary and tertiary institutions in the country.

Organizations should be made to carry out research to enable them find out better ways of manufacturing, packaging and marketing products that will reduce the quality of wastes.

Manufacturers should be made to recycle their by-products.

Governments should compel all manufacturing organizations in the country to set aside one percent of their profit for solid wastes management.

Government should approve more refuse dumping sites close to homes and factories and should make people know where they are.

Public health officers, otherwise called sanitary inspectors, should be re-introduced to control the disposal system and environmental cleanliness.

It must be made mandatory that every home should own waste bins with cover while ANSEPA, now ASWAMA, staff should be on guard whenever it rains so that people will be stopped from discharging their wastes in the gutters during that period.

Petty traders and street hawkers, including corn, onions, yams, banana, orange, can drinks sellers etc should have workshops organized for them. The workshop will be to educate them on how to handle wastes from their products.

Managers should not be concerned with making profits alone without considering liabilities and responsibilities of the business, which include management of solid wastes. It is their social responsibility.

REFERENCES

Published Books

Anderson, C. L. et al (2018) *Community Health. Saint Louis: C. V. Mosby Company.*

Barkley, P. W. 2002) *Economic Growth and Environmental Decay: The Solution becomes the problem,* New York: Harcourt Brace, Jovanovich.

Ehlers, V. M. and Steel, E. W. (2015) *Municipal and Rural Sanitation.* New York: McGraw-Hill Book Company.

Elshout, A. T. and Duuren V.H. (2012) *Pollution Form Combustion Products.* Lexington: Massachusetts.

Escrit, L. B. et al (2018) *Public Health Environmental Engineering, Vol. 11,* Plymouth: Escrit, Macdonald and Evans.

- Ezejelue, Austin and Ogwo E. O. (2020) *Basic Principles in Managing Research Projects*. Onitsha: African-Fep Publishers Ltd.
- Glanson, John et. Al. (2019) *Introduction to Environmental Impact Assessment*. London: UCL Press Limited.
- Goldman, D. A. and Smith, W. F (2012) *Economics of Pollution*, London: Macmillan.
- Gorton, Carruth ed. (2013) *The Volume Library*, U.S.A: Southwestern Company.
- Hold Gate, W. A. (2019) *A Perspective of Environmental Pollution*, Cambridge: University Press.
- Johnson, Bernard (2014) *Colliers Encyclopedia*, New York: Macmillan Educational Limited.
- Koutsoyiannis, A. (2019) *Modern Microeconomics*, London: Macmillan Education Limited.
- Lampe, Ann ed. (2014) *Guinness Book of Knowledge*, U.S.A: Guinness Publishing Limited.
- Marshal, Ann ed. (2014) *Guinness Book of Knowledge*. USA: Guinness Publishing Ltd.
- Metcalf and Eddy (2019) *Wastewater Engineering, Treatment, Disposal, Re-use*. Singapore: McGraw-Hill Book Co.
- Nzelibe, G. O. N. and Ilogu, G. C. (2016) *Fundamentals of Research Method*. Enugu: Optimal Publishers.
- Onwuchekwa, C. L. (2016) *Business Policy and Strategic Management* Onitsha: University Publishing Company.
- Onwuchekwa, C. L. (2013) *Management Theory and Organizational Analysis: A contingency Theory Approach*. Enugu: Obio enterprises.
- Oyeka, Cyprian A. (2017) *An introduction to Applied Statistical Methods in Sciences*, Enugu: Noben Avocation Publishing Company.
- Schooler, Dean (2020) *The Politics of Environment and National Development: Basic Options and Political Responses to Environmental Problems*. Massachussets: Lexington Books.
- Usha, Munshi (2020) *An integrated Approach to Pollution Control*. London: Garland Publishing.
- Yamane, Y. (2014) *Statistics: An Introductory Analysis*. New York: Harper and Row.

JOURNAL/ARTICLES

- Ezeugwa, S. N. C. (2017) *Problems of Waste Management in Nigeria: Any Solution in Sight? (Seminar Paper)*. Enugu: October.
- Ized, Frank (2021) "Concrete Solution to Environmental Problem: Assessment of EFPA", Concord, January 5.
- Holmes, J. R. (2020) "Metropolitan Waste Management Decision in Developing Countries", *Journal of the Royal Society of Health*, February, pp. 25-32

- Nwosu, O. C. (2014) Community and Industrial Solid Wastes: Dimension of Participation for Effective Control in Industrializing State. Paper presented at the Imo State Conference on Sanitation for Public Health Superintendents, Owerri and November.
- Obukwelu, O. B. A. (2018) "Waste Management in Anambra State: A Case Study of Anambra Environmental Protection Agency. Project Work, IMT.
- Ojimelukwe, C. A. (2020) "Management of Environmental Impact Assessment Projects, "Journal of the Nigerian Institute of Quantity Surveyors Vol. 30 ISSN: 16-915 x, January/March.
- Okonkwo, E. (2014) Scarcity of Sanitary Inspectors on our Street; Prospect for Remedy. Paper Presented at Imo State Conference on Sanitation for Public Health Superintendents Owerri, November.
- Osuji, Chibuike (2018) "Solid Wastes and Environmental Pollution", Daily Times, July 20.
- Pickford, John (20188) Controlling Toxic Chemicals in the Environment, Journal of the Royal Society of Health, Chi Chester, February, PP. 10-12.
- Schooler Dean (2020) The Politics of Environment and National Development: Basic Options and Political Responses to environmental Problems, Massachusetts: Lexington Books.
- Usha, Munshi (2019) AN Integrated Approach to Pollution Control, London: Garland Publishing Inc.
- Walls, I. G. (2020) "The Balance between Waste Treatment and Waste Discharge in The U.S." Journal, Water Pollution Control (Federation) Vol. 46 No. 3, 1957.