

GENERATION OF WEALTH FROM WASTE MANAGEMENT PRACTICES AMONG RURAL DWELLERS IN AFIJIO LOCAL GOVERNMENT AREA OF OYO STATE

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ABSTRACT

The study investigated potentials of generating wealth from waste management practices among rural dwellers in Afijio local government area of Oyo state. A multi-stage sampling procedure was used to select 165 respondents. Identified waste types commonly generated by the respondents were food scraps (84%), plastic containers (62.3), nylon wraps (61.1%) and paper and cartons (60.5%). while waste management practices were burning (75.9%) and use of dunghills (55.6%). Some of the constraints faced by the respondents were lack of knowledge on the value of waste, lack of equipment for wealth generation activities, and time constraint. No significant relationship was observed between respondents sex ($\chi^2 = 0.419$, $p > 0.811$), marital status ($\chi^2 = 9.34$, $p > 0.053$) and extent of wealth generation from waste management. However there was significant relationship between respondents' age ($\chi^2 = 15.95$, $p < 0.043$), educational qualification ($\chi^2 = 28.25$, $p < 0.001$) and extent of wealth generation from waste management. Also, no significant relationship was established between the types of waste generated by respondents and their extent of wealth generation from waste management ($\chi^2 = 1.68$, $p > 0.795$). However, there was significant relationship between constraints faced by respondents in utilizing the wealth generation opportunities and their extent of wealth generation from waste management ($r = -0.281$, $p < 0.000$). The study concluded that most of the respondents disposed of their waste instead of converting them to wealth thereby underutilizing wealth generation opportunities for most of the waste types.

INTRODUCTION

Wastes are materials which are originally no longer needed by their owner at a given time and space, and are usually with no current or perceived market value. They virtually have no further use and are wont to be disposed of. Wastes may be generated during the extraction of raw materials, the processing of raw materials into intermediate and final products, the consumption of final products, and other human activities. In recent years, there has been a phenomenal increase in the volume of wastes generated daily in the Nigeria. This is due to a number of reasons including the increasing population growth rate, increasing urbanisation, industrialisation and economic growth (Olanrewaju and Illembade, 2009).

Daily activities can give rise to a large variety of wastes arising from different sources and waste generation increases with population expansion and economic development (UNEP, 2002). With such vast quantities of waste being produced, it is of vital importance that it is managed in such a way that it does not cause any harm to either human health or to the environment (ETCSP, 2009). Waste management is the collection,

transport, processing or disposal, managing and monitoring of waste materials. The term usually relates to materials produced by human activity, and the process is generally undertaken to reduce their effect on health, the environment or aesthetics (Senthil et al, 2012).

The economic importance of waste management on the quality of life cannot be over-emphasised. Wastes that are not well managed can affect the environment in terms of the contamination of the atmosphere, soil and water. Since some of the waste materials are water proof, they can be dangerous to the aeration system of the soil hence hindering agricultural productivity.

Improper waste management also increases Greenhouse Gas (GHG) emissions, which contribute to climate change (United Nations Environment Programme, 2010). It also might harbour pests and disease vector, pollute the environment and reduce the aesthetics of the environment (Renu and Indu 2007). Nigerian cities have been described as some of the dirtiest, the most unsanitary and the least aesthetically pleasing in the world (Adepoju and Salimonu, 2011). Ogundare (2012) observed that poor solid waste management remains a major environmental problem in Oyo state while Ibadan, the capital of Oyo state can arguably qualify as the dirtiest city in the continent of Africa. In fact, most local governments and urban agencies have, time and again, identified waste management as a major problem that has reached levels requiring drastic measures (Global Development Research centre, 2012).

Samuel (2012) reported that an underlying cause of this problem is inefficient waste management services while Adepoju and Salimonu (2011) in a similar study reported that 25 percent of generated waste in another city in Nigeria is collected. Meanwhile about 75 percent of solid waste collected is disposed in open dumpsites or burnt, a method which is rampant but improper as it is not aligned with the sanitary landfill standard. This is further compounded by the fact that some individuals are dirty; the evidence of which can be seen in the indiscriminate discharge of garbage into drains and the highways.

A cursory look reveals that scholarly analyses of waste management situation are more urban in perspective. This lopsidedness could play down the need to combat the increasing challenges of waste management in the rural areas.

Unlike their counterparts in the urban areas, rural dwellers have no access to waste collection service (Ogundare, 2012). In addition; there are no private waste collectors, formal or informal. At the same time, they have no legal solid waste disposal site. Rather, households in small towns or villages often have dump sites at the back of their houses where refuse is dumped and burnt occasionally (Samuel, 2012).

El-Messery, Ismail and Arafa (2009) stated that poor solid waste management system often result in different environmental impacts which consequently add a higher potential of direct and indirect public health risks. This could lead to an epidemic considering the

poor health infrastructural facilities in the rural areas and therefore calls for ingenuity in rural waste management practices.

Considering the population of rural inhabitants and the abundance of wastes generated on one hand and the fact that the wastes can be used to generate wealth instead of being harmful to the environment on the other hand through re-use in a process known as waste-to-wealth. The potential of turning a problem into a source of wealth is very high. Egun (2012) stated that the concept of waste-to-wealth literally means moving waste from a platform of exhausted utility to valuable and desirable level. This study therefore investigated the generation of wealth from waste management among rural dwellers in Afijio local government area of Oyo state.

METHODOLOGY

The study was carried out in Afijio local government area of Oyo state. The target population consisted of all the households in the local government. Multistage sampling procedure was used to select respondents for the study. Five out of the 10 wards that make up the LGA were randomly selected which consisted of 50 percent of the total sample size. Thirty five households were later selected from each ward to give a total of 175 households. A member of each household was interviewed for the study while a total of 165 responses were found to be useful for the research work and subsequently analysed.

Measurement of variables

Respondents were asked a series of demographic questions, questions about their waste management practices, types of waste generated, methods of waste disposal, information sources; constraints encountered in generating wealth from waste and level of use of waste to generate income.

Demographic Variables: Household members were asked to indicate their personal data which included age, sex, religion, marital status, educational status, house and types of crops grown, information sources, educational status and occupation

Type and frequency of waste generated: Respondents were asked to indicate the types of waste they generate from a given list and indicate the frequency of generation of such wastes as follows: every day, once a week, once or twice in two weeks or once or twice in a month, where everyday =1, once or twice a week = 2, once or twice in two weeks= 3 and once or twice a month =4.

Waste management practices and frequency of use: Respondents were asked to indicate the waste management practices they engage in and were asked to indicate how often they engage in them as follows; always, sometimes or rarely. Where always =1, sometimes=2 and rarely=3.

Constraints to utilisation of waste to wealth generation: Respondents were asked to indicate constraints faced in utilising the wealth generating activities from a given list of constraints and were asked to indicate the severity of such constraint as follows: very severe, severe and not severe. Where very severe =1, severe= 2 and not severe=3.

Dependent variable: The dependent variable for the study was the extent of use of wealth generation opportunities among the respondents. Respondents were asked to indicate wealth generating opportunities they utilise from the list of opportunities available for each category of waste. Where never = 0, occasionally=1 and always =2.

RESULTS AND DISCUSSION

Table 1 below shows that majority of the respondents (48.5%) fell into the age bracket 20-30 years, while 21.8% fell between 31-40 years and 20.0% within the age of 41-50 years. However, 6.1% were within 51-60years and 3.6% within 61-70 years. In all, a vast majority (96.4%) of the respondents were still in their productive ages of 20-60 years of age. This portends a great productive potential for the study area which can be utilised for the development of the economy if they could be actively engaged. Majority of the respondents (55.8%) were males while 44.2% were females. This is similar to the findings of Adekoya and Badiru (2013) that the rural areas are male dominated.

The respondents' distribution based on marital status reveals that majority of the respondents (52.1%) were married, while 38.8% were single and 9.1% widowed. Being married is generally linked to responsibility. As such, the drive for further income among the respondents is expected and thus the chances of utilisation of waste management to generate wealth are therefore high. Most of the respondents (66.1%) had tertiary education, 10.3% had completed secondary education, while 10.9% had primary education and 12.7% had no formal education. This result implied a high level education among the respondents.

The household distribution of the respondents shows that more than half of the respondents (50.3%) had household size of between 4-6 persons, while 14.5 % had household size of between 1-3 persons, 12.7% had household size of 7-9 members and 22.4% had household size of more than 9 members. This is similar to the findings of Adepoju and Salimonu (2011) which found that 70% of respondents in a similar study had a household size of 1-5 members. Many of the respondents (38.8%) were civil servants while a considerable number (27.7%) were farmers. The finding explains the high educational statuses of respondents in the study area.

Table 1: Distribution of respondents by their personal characteristics

Items	Category	Frequency	Percentage
Age	20-30 years	80	48.5
	31-40 years	36	21.8
	41-50 years	33	20.0
	51-60 years	10	6.1
	61-70 years	6	3.6
Sex	Male	92	55.8
	Female	73	44.2
Marital status	Single	64	38.8
	Married	86	52.1
	Widowed	15	9.1
Religion	Christianity	82	49.7
	Islam	77	46.7
	Traditional	6	3.6
Educational status	No formal	21	12.7
	Primary	18	10.9
	Secondary	17	10.3
	Tertiary	109	66.1
Household size	1-3	24	14.5
	4-6	83	50.3
	7-9	21	12.7
	>9	37	22.4
Occupation	Teacher	12	7.3
	Farmer	45	27.3
	Trader	12	7.3
	Corps member	20	12.1
	Civil servant	64	38.8
	Hairdresser	6	3.6
	Student	3	1.8
Security	3	1.8	

Table 2 shows that the most common type of waste the respondents generated was food scraps (84%), generated by many of the respondents (23.5%) on a daily basis. Plastic containers was also generated by a large proportion (62.3%) of the respondents and 24.7% generated this waste once or twice a week while other wastes generated by respondents were nylon wraps (61.1%) and 23.3% of the respondents generated it once or twice a week, paper and carton was generated by 60.5% of the respondents and generated once or twice a week by 26.3 percent, crop residues was generated by 53.7 % of the respondents and 23.5% generated it every day. Glass bottles and jars were generated 53.1% of the respondents and 25.3 % generated this waste once or twice in two months. However, majority (62.3%) of the respondents said they do not generate spoilt electronic, more than half of the respondents (51.9%) did not generate empty grain sacks and 51.2%

did not generate animal droppings. This finding is similar to that of Kumari and Grover (2007) who worked on a similar study in India. The variety of waste generated and frequency of generation suggest a high potential for wealth generation among the respondents.

Table 2: Distribution of respondents according to the types of waste they generate and the frequency of generation

Type of waste	Frequency					
	Yes	No	Everyday	Once or twice a week	Once or twice in two weeks	Once or twice in a month
Food scraps	136(84.0%)	26(16.0%)	38(23.5%)	36(22.2%)	37(22.8%)	36(22.2%)
Crop residue	87(53.7%)	75(46.3%)	13(8.0%)	38(23.5%)	27(16.7%)	32(19.8%)
Animal droppings	79(48.8%)	83(51.2%)	24(14.8%)	27(16.7%)	30(18.5%)	20(12.3%)
Paper and cartoon	98(60.5%)	64(39.5%)	21(13.0%)	43(26.5%)	39(24.1%)	18(11.1%)
Nylon wraps	99(61.1%)	63(38.9%)	34(21.0%)	41(25.3%)	30(18.5%)	21(13.0%)
Plastic containers	101(62.3%)	61(37.7%)	16(9.9%)	40(24.7%)	38(23.5%)	27(16.7%)
Glass, bottles and jars	86(53.1%)	76(46.9%)	20(12.3%)	26(16.0%)	41(25.3%)	29(17.9%)
Spoilt electronics	61(37.7%)	101(62.3%)	8(4.9%)	20(12.3%)	27(16.7%)	43(26.5%)
Empty grain sacks	78(48.1%)	84(51.9%)	9(5.6%)	35(21.6%)	21(13%)	29(17.9%)

Table 3 shows that burning was the most utilised waste management practice employed by majority (75.9%) of the respondents and 61.1 % of the respondents said they burnt their waste sometimes. A large proportion (55.6%) of the respondents disposed their wastes in dunghills, 40.7% of the respondents used the dunghills sometimes. About half of the respondents (49.4%) converted waste to animal feed and this was done sometimes by 38.9% of the respondents. Another 46.3% of the respondents converted waste to manure and this was done sometimes by 42.6% of the respondents. For re-use of waste materials, only 36.4% of the respondents used this option and 27.8% of them used it sometimes. Not up to one-third of the respondents (31.5%) disposed their wastes in landfills and 40.7% of them used that option sometimes. A small proportion of the respondents (29.6%) affirmed they convert their waste to compost and 41.4 % of them used the option sometimes. The findings suggest that a high rate of improper waste management practices among the respondents. However, utilisation of the wastes as manure, animal feed and through re-use is heart-warming and should be encouraged.

Table3: Distribution of respondents according to waste management practices they adopt

Waste management practice	Yes	No	always	Sometimes	Rarely
Burning	123(75.9%)	39(24.1%)	46(28.4%)	99(61.1%)	5(3.1%)
Use of landfills	51(31.5%)	111(68.5%)	35(21.6%)	66(40.7%)	7(4.3%)
Use of dung hills	90(55.6%)	72(44.4%)	44(27.2%)	66(40.7%)	16(9.9%)
Compositing	48(29.6%)	114(70.4%)	21(13%)	67(41.4%)	21(13%)
Use as manure	75(46.3%)	87(53.7%)	30(18.5%)	69(42.6%)	20(12.3%)
Animal feed	80(49.4%)	82(50.6%)	29(17.9%)	63(38.9%)	16(9.9%)
re-use	59(36.4%)	103(63.6%)	26(16%)	45(27.8%)	28(17.3%)

Majority (70.4%) affirmed that lack of equipment for wealth generation activities was the most prevalent constraint they faced. This means that though they were able to identify the prospect in these wastes, lack of equipment to transform them into wealth generating materials created a limit. A large percentage of the respondents (62.3%) said they were constrained by time. This may be due to the fact that they have so many commitments and so had little or no time for wealth generation opportunities from waste management. Also, lack of knowledge on the value of waste was reported by 61.1% as a constraint. For most of the constraint factors, large percentage of the respondents confirmed they experienced it severely. Majority of the respondents affirmed that lack of knowledge of wealth generation opportunities (30.9%), lack of knowledge on how to generate wealth from waste (33.3%) and lack of equipment (35.8%) were the most severely experienced constraints.

Table 4: Constraints faced by respondents in wealth generation from waste

Constraints	Yes	No	Very severe	Severe	Not severe
Lack of knowledge on the value of waste	99(61.1%)	63(38.9%)	41(25.3%)	74(45.7%)	9(5.6%)
Lack of skills on how to generate wealth from waste	95(58.6%)	67(41.4%)	40(24.7%)	63(38.9%)	13(8%)
Lack of knowledge of wealth generation opportunities	76(46.9%)	86(53.1%)	50(30.9%)	45(27.8%)	9(5.6%)
Lack of knowledge on how to generate wealth from waste	82(50.6%)	80(49.4%)	54(33.3%)	41(25.3%)	18(11.1%)
Lack of equipment for wealth generation activities	114(70.4%)	48(29.6%)	58(35.8%)	43(26.5%)	12(7.4%)
Time constraint	101(62.3%)	61(37.7%)	41(25.3%)	56(34.6%)	30(18.5%)

Most of the respondents never used composting (66.7%) and animal feed (64.2%) for wealth generating opportunities from waste. However, 38.9% affirmed that they make use of disposal option. Majority of the respondents never made use of the opportunities to convert crop residues into wealth. However, about one-third of the respondents (32.7%) affirmed they occasionally used composting and mulching of crop residues to generate wealth. More than half of the respondents never made use of the wealth generation options available for crop residues as 58.6%, 57.4% and 58.6% affirmed that they had not converted their waste to mulch, animal feed and sales to composters respectively. Majority of the respondents did not utilize the wealth generation opportunities from animal droppings as 61.7%, 54.3% and 46.3% of the respondents never converted it to compost, nor sold it to composters or use animal droppings as manure. However, 32.7% of the respondents affirmed that they occasionally sold it to composters and 29.6% occasionally used it as manure. In the case of papers and cartons, 34.6% of the respondent said they occasionally converted it to wrappings for other items, 32.1% affirmed they use it for storing other items occasionally and another 31.2% affirmed they occasionally sold them. On the other hand, most of the respondents said they never sold their waste (57.4%) or used them to wrap other items (56.2%). For nylon wraps, majority of the respondents do not make use of the opportunities available to convert it to wealth. 43.2% affirmed they use it for packaging other items occasionally, 43.2% affirmed they used them for carrying items occasionally, 35.8% affirmed they occasionally sell it, and 30.9% affirmed they occasionally dispose it. Highest percentage of the respondents (59.3%) affirmed they never sold it. Majority of the respondents (51.9%) had never sold plastic containers to generate wealth and 35.8% said they never used it to store other items. On the other hand, 40.1 % of the respondents occasionally used it for storing other items and 37.7 % occasionally sold it. For glass bottles and jars, more than half of the respondents (51.9%) used it to store other items and another 37.7% affirmed they sold it occasionally. However, 50% of the respondents said they never sold glass bottle and jars and 40% said they never used them to store other items. Majority of the respondents (52.5%) had never sold spoilt electronics, 40.1% sold it occasionally while 7.4% affirmed they always sold them. For empty grain sacks, majority of the respondents did not utilize the wealth generation opportunities available, (58.0%) and (56.2%) never used them to store other materials nor sold them respectively. However, 34.6% and 30.9% of the respondents affirmed they used them occasionally to store other items and sold them respectively.

Table 5: Extent of use of wealth generation opportunities from waste management

Type of waste	Opportunities	Actual use		
		Never	Occasionally	Always
Food scraps	Animal feed	104(64.2%)	46(28.4%)	12(7.4%)
	Compositing	108(66.7%)	34 (21%)	20(12.3%)
	Disposal	59(36.4%)	63(38.9%)	40(24.7%)
Crop residual	Animal feed	93(57.4%)	37(22.8%)	32(19.8%)
	Compositing	92(56.8%)	53(32.7%)	17(10.5%)
	Mulching	95(58.6%)	53(32.7%)	14(8.6%)
	Sales to composters	93(57.4%)	37(22.8%)	32(19.8%)
	Disposal	87(53.7%)	48(29.6%)	27(16.7%)
Animal droppings	Composting	100(61.7%)	38(23.5%)	24(14.8%)
	Use as manure	75(46.3%)	48(29.6%)	39(24.1%)
	Sales to composters	88(54.3%)	53(32.7%)	21(13%)
	Disposal	77(47.5%)	61(37.7%)	24(14.8%)
Papers and cartons	Wrapping other items	91 (56.2%)	56(34.6%)	15(9.3%)
	Storing other items	74(45.7%)	52(32.1%)	36(22.2%)
	Sales	93(57.4%)	52(32.1%)	17(10.5%)
	Disposal	64(39.5%)	63(38.9%)	35(21.6%)
Nylon wraps	Packaging other items	72(44.4%)	70(43.2%)	20(12.3%)
	Carrying items	66(40.7%)	70(43.2%)	26(16%)
	Sale	96(59.3%)	58(35.8%)	8 (4.9%)
	Disposal	76(46.9%)	50(30.9%)	36(22.2%)
Plastic containers	storing other items	58(35.8%)	65(40.1%)	39(24.1%)
	Sale	84(51.9%)	61(37.7%)	17(10.5%)
	Disposal	71(43.8%)	58(35.8%)	33(20.4%)
Glass bottles and jars	Storing other items	66(40.7%)	84(51.9%)	12(7.4%)
	Sale	81 (50%)	61(37.7%)	20(12.3%)
	Disposal	71(43.8%)	70(43.2%)	21(13%)
Spoilt electronics	Sale	85(52.5%)	65(40.1%)	12(7.4%)
	Disposal	82(50.6%)	56(34.6%)	24(14.8%)
Empty grain sacks	Storing other items	86(53.1%)	52(32.1%)	24(14.8%)
	Storing items	94(58%)	56(34.6%)	12(7.4%)
	Sale	91(56.2%)	50(30.9%)	21(13%)
	Disposal	100(61.7%)	50(30.9%)	12(7.4%)

Test of Relationships

There is no significant relationship between the personal characteristics of the respondents and extent of wealth generation from waste management among the rural dwellers. The result of the Chi-square analysis reveals that there was no significant relationship between respondents sex ($\chi^2 = 0.419$, $p > 0.811$), marital status ($\chi^2 = 9.34$, $p > 0.053$) and extent of wealth generation from waste management. However there was significant relationship between age ($\chi^2 = 15.95$, $p < 0.043$), religion ($\chi^2 = 13.73$, $p < 0.008$), house hold size ($\chi^2 = 21.26$, $p < 0.001$), occupation ($\chi^2 = 45.14$, $p < 0.001$) and educational qualification ($\chi^2 = 28.25$, $p < 0.001$). This implies that age, religion, educational qualification, household size, occupation and level of education affect extent of wealth

generation from waste. However, sex and marital status of the respondents do not affect the extent of wealth generation from waste. It also implies that irrespective of whether the respondents are male or female, married or single, capacity of generating wealth from waste is the same.

Table 6: Chi-square analysis showing the relationship between personal characteristic and extent of wealth generation from waste

Variable	χ^2	p-value	Decision
Age	15.952	.043	S
Sex	0.419	0.811	NS
Marital status	9.348	0.053	NS
Religion	13.729	0.008	S
Educational qualification	28.254	0.001	S
House hold size	21.267	0.001	S
Occupation	45.142	0.001	S

S= Significant at 0.05 level

NS= Not significant

II: There is no significant relationship between the types of waste generated by respondents and their extent of wealth generation from waste management.

The hypothesis was tested using Chi-Square analysis. The result shows that there was no significant relationship between the types of waste generated by respondents and their extent of wealth generation from waste management ($\chi^2=-1.68$, $p>0.795$), therefore the null hypothesis which states that there is no significant relationship between the types of waste generated by respondents and their extent of wealth generation from waste management was accepted. This implies that the types of waste generated do not correspond with waste management practices.

Table 7: Chi-Square analysis showing the association between the type of waste generated and extent of wealth generation from waste management

	Value	Df	p-value	Decision
Pearson Chi-Square	1.678	4	0.795	NS
N of Valid Cases	162			

NS=Not Significant at 0.05 level

III: There is no significant relationship between constraints faced by the respondents in utilizing the wealth generation opportunities and their extent of wealth generation from waste management

This hypothesis was tested using Pearson Product Moment Correlation and the result shows that there was significant relationship between constraints faced by respondents in

utilizing the wealth generation opportunities and their extent of wealth generation from waste management ($r=-0.281$, $p<0.000$). This implies that constraints faced by the respondents did not debar them from generating wealth from waste management.

Table 8: PPMC analysis showing the relationship between the constraints faced and extent of wealth generation from waste management

Variable	R	p-value	Decision
Constraints faced by the respondents and extent of wealth generation from waste management	-0.281	0.000	Significant

S= Significant at $p= 0.05$ level

CONCLUSION

It can be concluded that most of the generated wastes in the study area are disposed of instead of being converted to wealth. Lack of equipment and time are the major constraints faced by the respondents in generating wealth from waste. Most of the wealth generation opportunities were under-utilised for most of the waste types. Demographic characteristics such as age, religion, educational qualification, household size, occupation and level of education affect the extent of wealth generation from waste while types of waste generated do not determine the waste management practices adopted by the respondents. In the same vein, the constraints faced by the respondents did not reduce their ability to utilise the wealth generation opportunities.

It is therefore recommended that awareness should be created on the waste to wealth generation opportunities available while the government should make equipment and other necessary materials for waste to wealth generation available to the local dwellers. In addition, researchers should come up with techniques consistent to available knowledge, materials and equipment available in the rural community.

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