

IMPACT OF INSURGENCY ON INCOME OF SCAVENGERS OF SOLID WASTE IN MAIDUGURI, BORNO STATE –NIGERIA

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ABSTRACT

The study assessed the impact of insurgency on income of scavengers of solid waste in Maiduguri, Borno State. The population of the study comprised the residents within Maiduguri, Borno state Nigeria out of which 385 persons were sampled, purposively. Three hundred and eighty-five (385) copies of questionnaire were administered and all were retrieved, making 100% return rate. The study employed inferential statistics (Logistic regression) and descriptive statistics (frequency and percentage) for data analysis. Results were presented in tables and discussed according to the research objectives. The findings reveal a significant decrease in the income of the scavengers after insurgency in the study area; thus, insurgency has negative impact on the income of scavenger of solid waste in Maiduguri. The study recommends that Federal Government should intensify the fight against Boko Haram insurgency. This will restore normalcy and help many businesses recover in Borno state.

Key words: Income Generation, Employment, Solid Waste, Regression, Conflict

JEL Classification: D33 E24 Q53 C24 D01 D74

1 INTRODUCTION

The term insurgency conjures often wild disparate interpretation; suffering at the hands of both experts and pundits. Commonly accepted meanings remain elusive, with predictable conceptual confusion (Moore, 2007). According to Moore (2007), the term insurgency continues to be used interchangeably, and inexactly, with warfare such as irregular warfare, unconventional warfare, revolution and even terrorism. He further posits that the interchangeability of terms is understandable, given the diverse nature and adaptability of those who wage insurgency and the overlapping traits of these types of conflict (Moore, 2007).

On the other hand, waste is defined as material obtained as a result of human activities of which some can be reuse or recover as a resource and recycled into material production processed. It may be any substance or object which the holder intends to discard or is required to be discarded. However, solid wastes are those non-liquid and nongaseous products of human activities, regarded as being useless. It could take the forms of refuse, garbage and sludge (Leton & Omotosho, 2004).

The management of solid waste has posed a serious challenge to the development of many developing nations across the globe. Factors responsible for the growth in waste generation in many modern cities are traced to increasing population that is complemented by rapid urbanization and industrialization and the other factor is tied to citizen's socio-economic status and the type of predominant commercial activities (David, Oladipo, Anthony, Isaac & Kolawole 2014). Environmental degradation is the high use of scarce non-renewable resources, damage or destruction of key renewable resources such as soil and the generation of waste that are not easily assimilated or broken down by natural process such as sachet water waste (Ayisi & Kumi, 2016). Recycling is a key component of modern waste reduction and is the third component of the "Reduce, Reuse, and Recycle" waste hierarchy. It promotes environmental sustainability by removing raw material input and redirecting waste output in the economic system. Recyclable materials include many kinds of glass, paper, cardboard, metal, plastic, tires, textiles, batteries, and electronics. The composting and other reuse of biodegradable waste such as food and garden waste is also a form of recycling. Materials for recycling are either delivered to a household recycling center or picked up from curbside bins, then sorted, cleaned, and reprocessed into new materials for manufacturing new products (Villalba, Segarra, Fernández, Chimenos, & Espiell, 2002). Recycling has resulted in economic growth, income growth, net job increase, long term investment, energy savings, waste reduction lower production cost for many industries and an extension of the life of landfills. According to the California environmental protection Agency (2015), waste diversion of any type, including recycling tends to create twice the economic activity per ton of conventional waste disposal. Recycling also reduces pollution and conserves natural resources which lead to cleaner air and water, and it increases open space and reduces greenhouse gases.

Cities in Nigeria, being among the fast growing cities in the world (Onibokun & Kumuyi, 1996), are faced with the problem of solid waste generation. The implication is serious when a country is growing rapidly and the wastes are not efficiently managed. Waste generation scenario in Nigeria has been of great concern both globally and locally. Of the different categories of wastes being generated, solid wastes had posed a hydra-headed problem beyond the scope of various solid waste management systems in Nigeria (Geoffrey, 2005).

It has been documented in the literature that insurgency of *Boko Haram* type has seriously affected economic activities of the people of Borno State and the North-East generally, particularly the small-scale businesses (Shehu, 2014; WFP, 2017; 2019). However, the effects of insurgency on the employment and income generation of the waste dealers, waste recycling industry and the scavengers have not been investigated. It is against this backdrop that this research seeks to critically assess the impact of insurgency on income generation of solid waste scavengers in Maiduguri.

The paper is organised in five sections including the Introduction. Section two reviews literature and section three presents the methodology adopted to achieve the objectives of the paper. Section four contains the presentation and analysis of the empirical findings and the final section concludes the paper.

2 REVIEW OF RELATED LITERATURE

2.1 Conceptual Issues

Insurgency is a struggle to control a contested political space, between a state or a group of states or occupying powers, and one or more popularly based non-state challengers Kilcullen (2006). The author further draws a line between classical and contemporary insurgencies indicating that

the latter seek to replace the existing order, while the former sometimes strive for the expulsion of foreign invaders from their territory or seek to fill an existing power vacuum.

The understanding of Nigerians on insurgency is multidimensional and there are different reactions of Nigerians to the real identity and motive of Boko Haram sect. Most Muslims liken it to Maitatsine sect which was established in 1945 to bring turmoil to Islam as it was confirmed that Maitatsine was not a Muslim until his death. A reasonable number of Christians see it as an attempt to Islamize Nigerians while some are indifferent (Shehu, 2014).

According to Agomuo (2011) what started around 2006 in the far flung North East geopolitical zone of the country as a regional disturbance, became a national embarrassment of international magnitude. The emergence of the deadly group whose activities assumed a worrisome dimension in 2009 led to a reign of terror in the affected parts of the country for five years. Since then, people in these areas have not known peace. The emergence of the fundamentalist Islamic sect, has led to the flight for safety and security of most Nigerians residing in the north east, especially Christians (Nwakaudu, 2012).

Its leader, Mohammed Yusuf, began as a preacher and leader in the youth wing of *Shababul Islam* of a *Salafi* group. His literal interpretation of the Quran led him to advocate that aspects of western education he considered as contradictory of religious knowledge (such as theory of evolution, the big bang theory of the universe development and elements of chemistry and geography) should be forbidden in Hausa (Crisis Group Africa Report (CGAR), 2014). While critical of the government, Yusuf was involved in official efforts to introduce and implement Sharia in several northern states in the 2000s. The failure to fully achieve this partially explains Muslim youths' anger over government deception and insincerity and the call for an authentic Islamist revolution (CGAR, 2014).

2.1.1 Concept of Solid Waste

Waste are substances or objects which are disposed or are intended to be disposed or are required to be disposed of by the provisions of national laws (Basel Convention UNEP, 2004). Tchobanoglous, et al. (1993) describes solid waste as the waste produced by human activities that are in a solid or semisolid form and are thrown away as useless products. Beranek (1992) submitted that solid wastes are a broad group of wastes produced as a result of various activities such as agricultural activities, landscaping activities and other processes including domestic and commercial processes. He argued that solid wastes are distinctly different from waste water and gaseous waste emissions. His view is that; solid wastes are any wastes that people would normally consider fit for land disposal.

Basu (2010) added that, solid waste includes municipal waste, some biomedical waste, electronic waste and some hazardous waste. Basu stated that solid waste could be putrescible and non-putrescible. Similarly, Kaseva and Gupta (1996) noted that solid wastes are waste materials from municipal, industrial and agricultural activities. Tchobanoglous, et al. (1993) concluded that unlike other wastes, solid wastes do not disappear easily. They argued that, where they are thrown today is where they will still be found in future.

An American Chemistry Society (2007) defines recycling as a process in which new items are made from products that have been used before. They further said that recycling is to collect unwanted materials and process them to make new materials. Earth facts from the Jamaican Enrolment Trust (2008), highlighted that recycling means taking waste materials and reprocessing them into a usable product or resources.

2.1.2 Income Generation

Income-generating activities refers to activities focused on creating opportunities for communities to productively use locally-available resources in order to develop less state-dependent and more

self-reliant households and communities that are able to take care of themselves. Thus, income-generating activities focus on productively using locally-available resources as a means of benefitting the entire community (Richard, 2012).

According to Niekerk (2009), income-generating activities are all activities focused on creating opportunities for communities to productively use locally-available resources in order to develop less state-dependent and more self-reliant households and communities that are able to take care of themselves. Income-generating activities also focus on productively using locally-available resources to the benefit of the entire community. In addition, income-generating activities provide additional benefits that reduce poverty; improve the wellbeing of communities; and promote empowerment, self-reliance and community development (Mehra, 1997).

2.2 EMPIRICAL REVIEW

Inuwa and Muhammad (2019) asserts that, the insurgency has been far reaching and has caused a lot of damages to small businesses. Thus, by reducing the profits as well as level of productivity and sales turnover of small business and employee turnover. The paper access the impact of insurgency on the productivity and level of working capital of small business in Maiduguri. The findings revealed that the insurgency has caused a lot of damages and loss of lives which affects small businesses. These cause a lot of economic loss to both small business operators as well as reduction in sales volumes

Also, Maiduguri, the capital of Borno state in Nigeria has been deserted by both indigenes and foreigners, as the people there have been jobless. The movement of these people is under restriction due to the curfew imposed by the government or the Boko Haram activities. This violent set of people have bombed bridges, communication gadgets and other social amenities which are necessary for habitation linking Nigeria with neighbouring countries in the north eastern part of Nigeria. Some bridges linking villages where major famers dwell in Yobe State have been blown up. Fish farmers in Yobe State are unable to transport their products to the South. Instead of forty trucks per week, only a maximum of seven trucks of fish products can be transported to South thereby causing increase in prices. The fear of the notorious group has stopped farmers from going to farm even when the climatic condition is very favourable and could have led to a bountiful harvest. The attacks on villagers, burning down homes and indiscriminating shooting have forced survivors to relocate to the South especially in Borno State (Sahara Reporters, 2015).

Gangaya, and Mshelia, (2021) examine the socio-economic and demographic characteristics of waste scavengers, practitioners of a common form of solid waste resource recovery practices in Mubi metropolis. The results revealed that majority of the scavengers within Mubi metropolis are males. The female counterparts do not partake much in these types of trade. The reason could not be farfetched from the unwholesome nature of the business and its demands. Generally, the educational status of respondents' shows that majority of practitioners pass through formal education or may not have attended any school system. This attest to the fact that they may not be knowledgeable with regard to the rudiment of resource recycling or reuse. Further result revealed that practitioners were overwhelmingly pushed into scavenging business by poverty or unemployment..

Ogah, Adana, Magaji, & Ayuba, (2017). assessed the income generation by scavengers in Abuja Municipal area council was aimed at assessing the level of livelihood sustained by scavenging in the area. The results revealed that 33 percent of the respondents earned between N4,000 and N14, 000 monthly, 17 percent earned between N15, 000 and N25, 000 monthly, 8 percent earned between N26, 000 and N36, 000 monthly, 3 percent of them earned N37, 000 and above monthly, while 39 percent of the respondents could not recall how much they earned monthly. Therefore, the study concludes that the reluctance of Abuja Environmental Protection Board and the

government of Abuja Municipal Area Council to fashion out concrete ways of integrating and assisting the scavengers to carry out their roles effectively and efficiently are antithetical to sound waste management in AMAC

Asibor, and Edjere, (2017) analyzed the informal activities carried out by scavenger/waste handlers around open waste dumpsites in the Warri Metropolis. Onsite assessments were made to the dumpsites and data generated were analyzed using descriptive statistics, percentages and graphs. The study revealed that though co-operatives exist in each of the dumpsites, they are not formally registered with the local government authorities. Scrapped metals, plastics, polyethylene, and cans were the main types of waste recovered. Recovered items are sold onsite or moved to nearby popular markets where there exist big retailers, while scrapped irons are recycled at the Delta Steel Company. Some of the smaller plastic bottles are sold in the popular local markets for individuals and private people like peanut seller, juice and bottle water distributors and local/native medicine dealers called “agbo”. It was observed that although less than five percent of dumped wastes were recovered, each of the waste dumpsite has in its employment more than fifteen households working all year round. Results showed that scavengers have an important role in the informal solid waste management especially in term of waste reduction, minimization and material recovery.

2.3 THEORETICAL FRAMEWORK

Conflict theory

Conflict theory seeks to scientifically explain the general contours of conflict in society: how conflict starts and varies, and the effects it brings. The central concerns of conflict theory are the unequal distribution of scarce resources and power. What these resources are might be different for each theorist, but conflict theorists usually work with Webber’s three systems of stratification: class, status, and power (Allan, 2010).

Closer (1956) moved beyond Marx and Weber to consider the ways in which conflict can fluctuate. One of the more important ways that conflict can vary is by its level of violence. If people perceive conflict as a means to achieving clearly expressed rational goals, then conflict will tend to be less violent. A simple exchange is a good example. However, conflict can be violent when it has emotional involvement and transcendent goals (Closer, 1956).

Karl Marx, Weber and Lewis Closer had good perceptions on conflicts, but this work was guided by Ralf Dahrendorf’s view on conflict. The development of conflict theory gained new vigor with the publication of Dahrehdorf’s work titled “Class and Class Conflict in Industrial Society” in 1959. Although initially influenced by the thought of Karl Marx, Dahrendorf departed from Marx’s focus on the conflict between the social classes and looked instead to the conflict between interest groups. Thus for Dahrendorf, social inequalities have their basis not only in economics but also in bureaucratic and political power.

3 METHODOLOGY

3.1 Sources of Data

The study used primary source of data which consist of questionnaires.

3.2 Population

The population of the study comprised the residents within Maiduguri, Borno State Nigeria. Maiduguri has two (2) local governments with a population of over one million, and seventy fifty-two thousand, five hundred people (1,052,500). The population of the study is assessed from the projection given by National Population commission with the collaboration with National Bureau of Statistics.

3.3 Sample Size

Since the exact number of waste pickers is not known, the study does not have a sample frame. Since there is an absence of sample frame, the study will use the standard deviation technique to estimate the sample size of the study.

The sample size determination formula is given as = $\frac{(Z_{\alpha/2} \times StdDev)(1 + StdDev)}{(Confidence Interval)^2}$
 (Margin of error)² 95% confidence interval, 0.5 standard deviation and margin error of 0.05 was used. i.e. $\frac{(1.96)^2 \times 0.5 \times (1-0.5)}{(0.05)^2} = \frac{3.8416 \times 0.25}{0.0025} = 385.16 = 385$ questionnaires.

3.4 Method of Data Collection

Primary data was sourced through the use of structured questionnaire. The researches distributed the questionnaire to the scavengers directly. And all the questionnaires distributed were retrieved.

3.5 Method of Data Analysis

The study employed inferential statistics (Logit regression) and descriptive statistics (frequency and percentage) for data analysis.

Dependent variable: Income to be measured before and after insurgency and Employment to be measure in hours and days.

$$\ln \left[\frac{P_i}{1-P_i} \right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \varepsilon$$

Y= Income generation (before and after insurgency)

The independent variables were:

X₁ = Hours spent in work per day Before Insurgency (HSWPDBI)

X₂ = Hours spent in work per day After Insurgency (HSWPDAI)

X₃ = Level of Income per day Before Insurgency (LIPDBI)

X₄ = Level of Income per day After Insurgency (LIPDBAI)

X₅ = Kilograms of plastic waste gather per day Before Insurgency (KPWPDBI)

X₆ = Kilograms of plastic waste gather per day After Insurgency (KPWPDAI)

4 RESULTS AND DISCUSSIONS OS FINDINGS

4.1 This section contained the data analysis, results and discussion of the findings.

Table 1. Income of the Scavengers During and After the Insurgency in Maiduguri

S/ N	Item	During Insurgency		After Insurgency	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1.	Level of Income Per Day				
	Less than ₦2000	350	90.9	0	0.0
	₦2001 – ₦5000	35	9.1	0	0.0
	₦5001 – ₦6000	0	0.0	285	74.0
	₦6001 and above	0	0.0	100	26.0
2.	Level of Income Per Month				
	Less than ₦50,000	385	100.0	0	0
	₦51000 – ₦60,000	0	0.0	100	100
	₦61,000 – ₦70,000	0	0.0	200	200
	₦71,000 and above	0	0.0	85	85
3.	Cost of plastic waste per kilogram				
	₦40, per kilogram	250	0	0	0
	₦50, per kilogram	135	100	0	100
	₦60, per kilogram	0	200	185	200
	₦150, per kilogram	0	85	200	85
4.	Daily gain from waste scavenging				

₦500-1000	250	29.3	0	0
₦1001 - ₦2000	135	35.1	0	100
₦2001 - ₦3,000	0	0.0	185	200
₦2001 - ₦3,000	0	0.0	200	85
₦3001 and above	0	0.0	0	0.0
Total	385	100.0	385	100.0

Sources: Field Survey, 2023

Table 1 shows the income of scavengers before and after the insurgency in Maiduguri. It can be inferred that there was significance decrease in the income of the scavengers during insurgency in Maiduguri. The decrease in the business activities may be as a result of the restriction of movement of trucks for the distribution of goods and the delay caused by military checking points and roadblocks in the study area.

Impact of Insurgency on Income of Scavenger of Solid Waste in Maiduguri

Table 2: Summary of Logit Regression Analysis on the Impact of Insurgency on Income of Scavenger of Solid Waste in Maiduguri

Variable	Coefficient	Standard Error	Z	P-value	Exp(B)
HSWPDBI	2.034	0.949	2.143*	0.032	0.131
HSWPDAI	-0.642	0.319	-2.013*	0.035	1.719
LIPDBI	0.749	0.321	2.333*	0.020	2.115
LIPDAI	-1.119	0.455	-2.459*	0.014	3.062
KPWPDBI	1.971	0.322	6.121**	0.000	7.178
KPWPDAI	-1.119	0.455	-2.459*	0.014	3.062
Constant	3.420	4.823	0.709	0.478	30.572
Pseudo R ²	0.731				

Note: ** significant at 1% level, * significant at 5% level

Hours spent in work per day Before Insurgency (HSWPDBI): Hours spent in work per day before insurgency (HSWPDBI) has a positive coefficient that was significantly related to income generation at 1% level. The positive coefficient value is as a result of the fact that there was no curfew and restriction of movement in Maiduguri before insurgency and scavengers spent more time in scavenging solid waste. A unit increase in time scavengers spent in scavenging per day before insurgency has the likelihood of increasing his income generation from solid waste by odd of 0.131.

Hours spent in work per day After Insurgency (HSWPDAI): Hours spent in work per day after insurgency has a negative coefficient that was significantly related to income generation at 1% level. This negative coefficient value is as a result of the fact that there was curfew and restriction of movement in Maiduguri during and after insurgency and scavengers spent less time in scavenging solid waste. A unit increase in time spent in scavenging solid waste per day after insurgency has the likelihood of decreasing scavengers' income generation from solid waste by odd of 1.719.

Level of Income per day Before Insurgency (LIPDBI): Level of Income per day Before Insurgency (LIPDBI) was significant at 1% level and positively related to income generation. The positive coefficient indicates that scavengers that are educated do better than uneducated. A unit

increase in scavengers' level of income has a likelihood of increasing income generation from solid waste by odd of 2.115 in Maiduguri.

Level of Income per day After Insurgency (LIPDAI): Level of Income per day after insurgency has a negative coefficient that was insignificantly related to income generation. This means that insurgency negatively affected the productivity of scavengers. A unit decrease in scavengers' level of income has a likelihood of decreasing income generation by odd of 3.062 in Maiduguri.

Kilograms of plastic waste gather per day Before Insurgency (KPWPDBI): Kilograms of plastic waste gather per day before insurgency has a positive coefficient that was insignificantly related to income generation. This means before the insurgency scavengers do gather more kilograms of plastic waste. A unit increase in kilograms of plastic waste scavengers gather per day has a likelihood of increasing income generation from solid waste by odd of 7.178 in Maiduguri.

Kilograms of plastic waste gather per day After Insurgency (KPWPDAI): Kilograms of plastic waste gather per day after insurgency has a negative coefficient that was insignificantly related to income generation. This means that as result of the insurgency movement was restricted and curfew was imposed after the insurgency. A unit decrease in kilograms of plastic waste scavengers gather per day has a likelihood of decreasing income generation from solid waste by odd of 3.062 in Maiduguri.

Table 1 also shows that hours spent in work per day Before Insurgency (HWPDBI), Hours spent in work per day After Insurgency (HWPDAI), Level of Income per day Before Insurgency (LIPDBI), Level of Income per day After Insurgency (LIPDBAI), Kilograms of plastic waste gather per day Before Insurgency (KPWPDBI) and Kilograms of plastic waste gather per day After Insurgency (KPWPDAI) were the determinants of solid waste scavengers' income in Maiduguri. This is because the probability values are less than the alpha value ($P < \alpha$). The pseudo $R^2 = 73\%$ indicates that the model is suitable for explaining the impact of insurgency on income of scavenger of solid waste in Maiduguri. All the independent variables included in the model were significant in explaining the impact of the independent variables on the dependent variable.

4.2 Summary of Findings

1. Insurgency has negative impact on income of scavenger of solid waste in Maiduguri
2. There was a significance decrease in the income of the scavengers after insurgency in Maiduguri.

4.3 Discussions

The first finding revealed insurgency has negative impact on income of scavenger of solid waste in Maiduguri. This finding supports the finding of Agomuo (2011) whose study revealed that in 2006 in the far flung North East geopolitical zone of the country as a regional disturbance, became a national embarrassment of international magnitude. The emergence of the deadly group whose activities assumed a worrisome dimension in 2009 led to a reign of terror in the affected parts of the country for five years. Since then, people in these areas have not known peace. The emergence of the fundamentalist Islamic sect, has led to the flight for safety and security of most Nigerians residing in the north east.

The second finding revealed a significance decrease in the income of the scavengers after insurgency in Maiduguri. This finding also agrees with the study of Agomuo (2011) whose study revealed that in 2006 in the far flung North East geopolitical zone of the country as a regional disturbance became a national embarrassment of international magnitude. The emergence of the deadly group whose activities assumed a worrisome dimension in 2009 led to a reign of terror in the affected parts of the country for five years. Since then, people in these areas have not known

peace. The emergence of the fundamentalist Islamic sect, has led to the flight for safety and security of most Nigerians residing in the north east.

5. CONCLUSION AND RECOMMENDATIONS

The study concluded that there was a significance decrease in the income of solid waste scavengers after insurgency in the study area. Insurgency has negative impact on income of scavenger of solid waste in Maiduguri. Hours spent in work per day Before Insurgency (HSWPDBI), Hours spent in work per day After Insurgency (HSWPDAI), Level of Income per day Before Insurgency (LIPDBI), Level of Income per day After Insurgency (LIPDBAI), Kilograms of plastic waste gather per day Before Insurgency (KPWPDBI) and Kilograms of plastic waste gather per day After Insurgency (KPWPDAI) were the determinants of solid waste scavengers' income in Maiduguri.

5.1 Recommendation

The study recommended that Nigeria Government should intensify the fight against Boko Haram insurgency. This will restore normalcy and help many businesses recovery in Borno State. The government and private individuals should improve the existing plastic wastes recycling industries and establish more plastic waste recycling industries, in order to create market for plastic waste scavengers and dealers to sale their plastic wastes.

Government and private individuals should encourage and empower youth to engage in the activities of plastic waste scavenging, recycling and reuses. The plastic wastes dealers and scavengers should form a very strong association in order to detect the bad element among them.

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