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Litter Management in Selected Transport Interchanges in Ibadan North Local Government

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The data were collected using multi-stage sampling. The first stage was the purposive selection of the four transport interchange. The second stage was the stratification of the transport interchange into different operators such as traders and public transport operators. The third stage involves the selection of 20% of 177 retail shop outlets and425 umbrella stands. A total of 120 trader sand 80 public transport operators were purposively selected for questionnaire administration. Information elicited from interchange operators were on socio-economic attributes, quantity and composition of litter, litter storage, collection, transportation and disposal and management strategies of litter generated.

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Abstract- This study examined the socio-economic characteristics of the operators in selected transport interchange in Ibadan; determined the quality and composition of litter generated; examined little storage, collection, transportation and disposal practices of litter generated: and identified and examined factors influencing litter management in the study area. These were with a view to providing information for policy response to litter management practices.

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The mean ages for the traders and public transport operators were 35and38years respectively. The study established that traders (49.2%) and public transport operators (38.8%) had secondary certificate. The mean income of the traders and the public transport operators were #55,000 and #32,000 monthly respectively. The traders (54.1%) employed between 1 to 3 persons in their retail outlet, while public transport operators (58.5%) stay in the transport interchange for minimum of 10minutes. It was also established that traders (82%)and public transport operators (91.3%) littered the environment. The proportion of litter generated by the operators within the transport interchange are black nylon (86.9%), metal scrap (24.6%). Traders (60%) litter by flinging throwing litter, while public transport operators (47.5%) litter by leaving rubbish behind. The predominant storage facilities used by the traders were sack (63.9%), dust bins (41.8%) and basket (32%). The litters collected were disposed through a government disposal system, which the litter were gathered and incinerated in a place. Traders litter of the following reasons; because they feel paid workers will clean up the litter (65.6%), they feel the material they drop is not litter (54.9%) and there are no bins around (51.6%). Education of people was selected as a management strategy by the traders (77%), while provisions of more litter bins along the road were selected by public transport operators (95%).

It is concluded that litter management in transport interchanges is generally at a poor state in Ibadan North local Government, having considered the attitude and act of the traders and public transport operators present in them.

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I. Introduction

Litter is generally defined as misplaced solid waste. Litter is waste, but not all waste is litter. Litter can be as small as a sweet wrapping or as large as a bag of rubbish or it can mean lots ot items scattered about (litter and law). Likewise "litter" as a verb can as well be regarded as an environmental anti-social behavior (Andrew 2006) and disorder of materials at places that are not needed without the intention of clearing it.

Littering is defined as individuals' intentional or unintentional act of throwing of waste on bare ground in general daily practice (Ojedokun and Balogun, 2013) Littering is untidy and hazardous to the health of humans and animal (Ojedokun 2013). Littering activity can be done at any undesignated place of human activities. Places that are often littered include streets, parks, open space, public ground, public buildings, beaches, public transport vehicles, attraction centres and transport interchanges.

A transport interchanges convergence and a transition point where people are gathered within it. According to Piotr and Piotr (2012), a transport interchange is commonly understood to be the place where transfers between different public transport lines or modes occur. In addition, it may be a place where passengers join or leave the public transport system on foot, by bicycle, motorcycle, or car (Auckland Transport, 2013), thereby certain facilities such as toilets, car parks and sit out, information board exist within it. In this regard, it is a common place (public place) where a lot of different activities take place and which is accessible by different people.

Several human activities take place in a transport interchange. The different activities in a transport interchange include commercial, social and administrative. Diazl, Urella and Ribalaygua (2012) documented that transport interchanges accommodate several commercial activities carried out within them and surroundings. Corresponding to the extent commercial activities that take splace in a transport interchange, is the extent that waste will be generated as "waste is an unavoidable by product of human activities" (Ramachar, Rafi, Umaamahesh and Guptha 2012).

Ibadan is a large city which has several transport interchanges in different sizes which include Ojo, Iwo road, Dugbe, Sango interchange. Researches

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on litter management at transport interchanges are not popular as how generated waste in these interchanges is not documented. It is on this note that this research work will be embarked upon. This study would examine how the litter generated in transport interchanges stored, transported and disposed in Ibadan city in order to provide sustainable information on litter management practices.

II. Justification of the Paper

The significance of prevention of litter should not be undervalued. Litterbugs, (2009) assert that, litter can have impact on the quality of life and crime rate in public places. The social economic and environmental cost of litter should not be ignored, as it contains dangerous materials such as sharp objects like metal scrap, glass remnant, and broken bottles etc. litter create unsafe places that detract the enjoyment of people. A public place like transport interchange should be free from litter because of the various users present.

Government unresponsiveness to littering has made littering a severe environmental problem that defaces and degrades our environment. The presence of litter in a region affects the social, economic and physical sphere in a deleterious manner. Prior to this, it is best handled with an effective litter management strategy with the backing of strict government policy. Hence, this project would be carried out to provide necessary information on litter management in transport interchange in order to elicit response from government. This thereby would help to prevent further degradation of the environment.

III. Conceptual Consideration

Orthodoxy littering is when someone drops garbage in places that are not designated for the garbage disposal. Example is dropping a wrapper of biscuit on the ground by the side of the road after eating the biscuit inside the wrapper or similar acts. Littering also occurs in a moving vehicle either by littering the vehicle or throwing garbage out of the window by passengers and drivers or both (drive-by- littering). Coined out of Gellar at al (1982) littering is an act of dropping, throwing, flinging materials consciously and unconsciously at places that are not designated for such materials. "Littering can occur in many locations, it can vary in amount, types and rates, and places that are prone tom persistent high level of littering are described as hotsports". (Queensland litter and illegal Dumping Action Plan, 2013). According to Waste Reduction and Recycling (2013), dangerous littering is the depositing of waste at a place that causes, or is likely to cause harm to a person, property or the environment. Littering is sometimes done consciously/intentionally and unconsciously/unintentionally while the volume of litter thrown or deposited from an individual is usually small in size and shape. Unintentional littering describes a situation where one is not trying to litter but such action results in litter. Some examples o f this form of littering are: throwing garbage into an over flowing garbage can and it falls on to the ground or the wind blows it off the top of the pile, when a materials falls off someone's pocket at the point of inserting it into his or her pocket. Under certain conditions is littering acceptable in the society. It is represented in the Table below:

Axis of acceptability	Axis of excusability
ACCEPTABLE	EXCUSABLE
If the area is already dirty or run-down If the litter will be cleaned up by others If there aren't sufficient bins	When everyone else is doing it When drunk When you can't be seen
In the country where it is more noticeable In my own backyard If the area is tidy and presentable UNACCEPTABLE	In front of the children In (receptacle) public TABOO

Axis for acceptability/excusability for littering.
Source: adopted from ENCAMS, (2016)

Littering has been found to take placeat transition point i.e. where people move from one place to the other. Transport interchange cannot be left out in this regard. The high rate of littering is as a result of a feeling of sense of non-ownership of the property as the land does not seem to belong to anybody. Nevertheless, litter originates through the activity of people. Ojedokun and Balogun (2016) submitted that littering problem is an inherent fact of modern living that exists in one way or another in many countries. In Nigeria, urban litter is one of the visible and persistent environmental issues facing the Oyo State Government.

Items are discarded either activity or passively (Sibley and Liu, 2003) in places such as parks, roads, paths, camping grounds, cafes, stores or other public buildings. Items such as cigarettes, bottles and other glass or plastic containers, napkins bags, tissues, take away food packages, snack wrappers, are frequently dropped in these locations, seriously damaging the environment. Some of those items are non-degradable, resulting in negative consequences for the environment and natural areas. Apart from the costs of employing someone to remove the litter, there are additional environmental costs to take into account (B. Torgler, A. Garcia-Valinas and A. Macintyre 2014).

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IV. Sampling Procedure, Sample Frame and Sample size

Multi stage sampling techniques was used for the collection of data from traders and operators in transport interchanges in Ibadan North local Government Area. There were four major transport interchanges identified in Ibadan North Local Government. These were Agbowo, Sango, Mokola and Agodi. The first stage was the selection of the transport interchanges purposely. The details about each transport interchanges are represented in Table 1.

The second stage was the stratification of the transport interchange into two different operators. The third stage was the stratification of traders present in the transport interchange into two, Umbrella and shop retail outlet, which were selected through systematic random sampling. As for the public transport operators, convenient sampling was carried out on them. With 20 questioning per transport interchange. Details of traders in each transport interchange are represented in Tables 1 and 2. Afterwards 20% of the traders present at the interchange were administered with questionnaire. However locked up shops were excluded from the sample frame. Refer to Table 3 to see the percentage of trading outlets that will be surveyed. The table revealed the proportion of trading platforms in the transport interchanges and their percentages.

Table 1: Details of Transport Interchanges Present in Ibadan North Local Government.

The commercial activities were classified thus: interchanges that has make-shift retail shops (70% built with wood) = A, interchange that has permanent structure for retail activities = B.

The arrangement was classified thus: interchange where vehicle is parked on the road side = A, interchange where vehicle is parked at a designated place off the road = B.

The size would be classified based on the number of vehicle transport available there: mini bus = A, tricycle = B, taxi = C, motorcycle = D, big us = E.

The transport interchanges vary from one another greatly in terms of their available commercial activities, arrangement, and size (variety of vehicle transport available). However, the options were selected based on their availability at the transport interchanges.

Table 1: Classification and number of retail outlets in transport interchanges in the Study Area

Transport interchange	Commercial activities	Arrangement	Size (transport variety)
Agbowo	A,B	A	A,C,D
Agodi	A,B	A	A,B,C,D,E
Mokola	A,B	A	C,D,E
Sango	A,B	A,B	A,C,D,E

Source: Author's, 2017

Table 2: Classification and number of retail outlets in transport interchangesin the Study Area

S/N	Location	No of shops	No of locked-up shops	No of opened shops	No.of Umbrella stands
1	Agodi-Gate Interchange	57	3	54	334
2.	MokolaInterchnage	17	0	17	54
3.	Sango Interchange	107	11	96	22
4	U.I Interchange	10	0	10	15
	Total	191	14	177	425

Source: Author's, 2017

Table 3: Percentage of retail outlets to be surveyed

S/N	Location	No of open shops	20% of the open shops	No of Umbrella stands	20% of the umbrella stands
1	Agodi-Gate interchange	54	11	334	69
2	Mokola interchange	17	3	54	11
3	Sango interchange	96	19	22	4
4	U.I interchange	10	2	15	3
	Total	177	35	425	87

Source: Author's, 2017

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V. Data Analysis and Discussion

Table 4: Monthly Income of Public Transport Operators

Amount	Frequency	Percentage
#35,000 and below	53	66.3%
#36,000 - #45,000	18	22.5%
#46,000 and above	9	11.3%
Total	80	100

Source: Author's Field Survey 2017

Presented in Table above is the monthly income of traders in the study area. Findings revealed that majority (66.3%) of the public transport operators made #35,000 and below. While 22.5% of the traders made #36,000 to #45,000and just 11.3% of the public transport operators made #46,000 and above per month.

While on the average #32,000 was made per month as shown in table above. This indicates that most of the vehicle operators earn #45,000 below.

VI. Average Duration of Stay of Public Transport Operators in the Interchange

The duration of minutes spent by public transport operators in the study area is presented in Table below. The minutes were categorized into four groups of 10 minutes and below, 11 to 20, 21 to 30 and 31 minutes and above. Majority (42.5%) of the operators spend 10 minutes and lesser in the interchange. Others that spend 10 to 20 minutes. 21 to 30 minutes and 31 minutes above in the study area are 37.5%, 16.3% and 3.7% repectively. On the average the public transport operators spend 20 minutes in the study area. The average time spent in the study area by the operators is 15 minutes. Furthermore than half of the respondents spends 20 minutes and below in the interchange. This indicates that they spend quite some time in the interchange before leaving for their destination, and several of them engage in activities that might lead to dropping litter in the interchange.

Table 5: Public Transport Operator's Average Duration of Stay in the Interchange

Average Duration in Minutes	Frequency	Percentage
10 minutes and below	34	42.5%
11 to 20	30	37.5%
21 to 30	13	16.3%
31 minutes and above	3	3.7%
Total	80	100

Source: Author's Field Survey 2017

a) Quantity and Composition of Litter in Ibadan North Local Government Transport Interchange

The section will examine the amount and the various types of litter material present in transport interchanges in Ibadan North Local Government. Unless stated otherwise, all tables used in this section are generated from the author's survey.

Table 6: Respondents Littering Act

Do you litter?	Have you ever Litter?
(Traders) Response Frequency Percentage	Frequency Percentage
Yes 12 22.1%	100 82%

(Public Transport Frequency percentage	Frequency percentage
Operator) Response	
Yes 37 29.6%	73 91.3%

Source: Author's Field Survey 2017

b) Respondent's littering Act

The littering act of traders and public transport operators are depicted in table above. As at the time the questionnaire is administered on traders 22.1% said they still littered in the environment while 82% of the traders said they have littered before in one way or the other in the environment in the study area. Also 29.6% of the public transport operator's sand they still littered in the environment while 91.3% of public transport operators said they have littered in one way or the other in the environment. Findings show that as at the time the questionnaire was administered 59.8% of the traders that have littered in the past no more litter as well as 45% of the public transport operators. The difference in the percentage of respondents that have littered before and people that still litters indicates that majority that have littered in the past have grown to be conscious of it by not littering or the respondents don't feel comfortable to say the truth.

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VII. Relationship of Traders Socio=Economic Characteristics and their Littering Behaviour

Socio-economic variables		Do you litter Frequency	Yes	Have you ever littered Frequency	Yes
Gender	Male	16	26.7%	51	85%
	Female	11	17.7%	49	79%
Education Status	No formal	0	0%	4	66.7%
	Primary	20	10.5%	16	84.2%
	Secondary	13	21.7%	50	83.3%
	Tertiary	8	27.6%	22	75.9%
	Vocational	4	50%	8	100%
Age	25 and below	12	60%	17	85%
	26 to 45	13	15.7%	67	80.7%
	46 and above	2	10.5%	16	84.2%

Source: Author's Field Survey 2017

Table above presents the relationship of trader's socio-economic characteristics and their littering behavior. Male gender littered more than the female at the time the questionnaire was administered, as 26.7% of males said they litter and 17.7%of females. But when asked if they have ever littered, the male slightly exceed the female, as 85% of males said they have littered before while 79% of females said they have littered before. Findings revealed that 0% of people with no formal education do litter while 10.5% of trader with primary school certificate litters, 21.7% of traders with secondary school certificate litters, 27.6% of people with tertiary degree litters, and 50% of people that did vocational studies litters. While majority (84.2%) of the traders that have primary school education said they have once littered, as well as 83.3% of traders with secondary education, 66.7% of traders with no formal education, 75.9% of traders with tertiary education and 100% with vocational education said they have once littered in one way or the other. Also majority (60%) of traders in age bracket 25 years and below litters as at the time questionnaire was administered. Those within the age brackets 26 to 45 years and 46 years and above that litters are 15.7% and 10.5% respectively. While majority (85%) of the traders within age bracket 25 years and below said they have once littered in one way or the other. Those within the age brackets 26 to 45 years and 46 years and above that have littered are 80.7% and 84.2% respectively.

The difference between the variables whether "you have ever littered" and "do you litter" shows that higher number of male and female traders used to litter in the past than the recent time. It showed that more number of traders with no formal education, primary, secondary, tertiary and vocational education used to litter in the past than recent time. More traders within the age brackets of 25years and below, 26 to 46 years and above used to litter in the past than the recent time.

Traders Littering Types

Littering type	Frequency	Percentage
Fling/Throw litter	84	69%
Leave Rubbish Behind	72	59%
	28	23%
Drop Rubbish at Resting Place	56	46%
Drop Rubbish while doing other things	28	23%
Drop Rubbish at Eating Spot		

Source: Author's Field Survey 2017

The respondents were further asked how they littered in Table above. Majority (69%) of the traders said they littered by flinging or throwing litter into the environment.

Several others of 59%, 23% said they leave rubbish behind, drop rubbish while doing other things, drop rubbish at resting place and drop rubbish at eating spot respectively.

VIII. Relationship of Socio-Economic Characteristics of Public Transport Operators and their Littering Behaviour

Socio-economic variables		Have you ever littered Frequency	Yes
Gender	Male	72	91.1%
	Female	1	100%
Education status	No formal	8	100%
	Primary	24	92.3%
	Secondary	28	90.3%
	Tertiary	13	86.7%
Age	25 and below	5	100%

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26 to 45		55	91.7%
46 and above		13	86.7%
Average time	10 minutes and below	34	94.4%
Spent in	11 to 20 minutes	35	87.5%
Interchange	21 to 30 minutes	3	100%
31 minutes and above		1	100%

Source: Author's Field Survey 2017

Operators with secondary school certificate litters, 86.7% of people with tertiary degree litters. Also majority (100% of traders in age bracket 25 years and below litters as at the time the questionnaire was administered. Those within the age brackets 26 to 45 years and 46 years and above that litters are 91.7% and 86.7% respectively. All (100%) the operators that use 21 to 30 minutes and above 30 minutes within the interchange littered. Those that spend 10 minutes and below and 11 to 20 minutes are 94.4% and 87.5% respectively.

IX. Management Strategy against Littering for Public Transport Operators

Management Strategy	Frequency	Percentage
Provision of more bins	76	95%
Educative People on the Environment	65	81%
Provision of strict sanction	60	75%
Provision of strict law enforcement	70	88%
Proper reminder and caution for people	59	73%

Source: Author's Field Survey 2017

X. Recommendations

The concerned part of the government on environmentally related matters should indulge in researches like this and several others on litter before making a new policy concerning the cleanliness of the environment.

Environmental related matters on litter should be treated with utmost priority by every government regime, in order to achieve the desired goal of an environmentally clean state.

Environmental related hazards are of great concern to people as it affects the whole populace in an appalling manner it is therefore pertinent to create an integrated model that would combine the right litter strategies towards the right target in order to reduce as level among people.

The litter management strategies should henceforth be made part of the prescriptive and regulatory standards for development in Nigeria for new development and existing development.

The state government should educate the public on the subject matter that is, waste generation, waste disposal and waste management; this can be achieved through publication on social media.

XI. Conclusion

The littering attitude of the operators assessed in selected transport interchanges showed that the level of littering can be rated very bad, because of their indulgences in improper measure put in place against littering by the government. The ineffective measure can be traced to the improper survey, assessment of the generation, transportation, storage and disposal of litter.

Despite the people's littering behavior majority of them still want to operate in a clean environment better than where they are. Oyo state government should take note of the people's needs for littering reduction as provided in this research in order to facilitate the vision of keeping Oyo state very clean.

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