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THE CAUSES AND ECONOMIC IMPACT OF FREQUENT VEHICLE BREAKDOWNS IN NIGERIA (A CASE STUDY OF IMO STATE)

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Abstract: This study investigates the causes and economic consequences of frequent vehicle breakdowns in Nigeria, employing a mixed-methods approach. Data was collected through observations, questionnaires, and interviews with drivers, vehicle owners, and fleet managers, alongside secondary data from the University Teaching Hospital Owerri to assess the economic impact of breakdowns due to accidents. The analysis utilized a Binary Logistic Regression Model and Chi-square tests, facilitated by SPSS software. Results indicated statistical significance ($p < 0.05$) in rejecting null hypotheses, demonstrating associations between independent variables and frequent breakdowns. The Binary Logistic Regression model improved classification accuracy from 77.1% to 95.6% with the inclusion of independent variables, all of which were statistically significant. The likelihood of frequent breakdowns increased substantially with a one-unit change in independent variables. Notably, inexperienced and reckless drivers contributed the most, with a 1782% increase in odds, followed by poor vehicle maintenance (1163%), overaged vehicles (1024%), bad roads (889%), and untrained auto technicians (739%). These findings underscore the influence of these factors on vehicle breakdown frequency. Additionally, the study highlighted the significant economic impact of vehicle breakdowns, particularly road traffic accidents. Medical data revealed that out of 1967 accident victims, 94.26% sustained injuries, 2.90% underwent amputation, and 2.84% were fatal, with additional financial and temporal costs incurred by motorists. The study underscores the urgency of implementing strategic policies to address issues such as inexperienced and reckless drivers. These findings provide valuable insights for researchers and scholars working on topics related to frequent vehicle breakdowns, offering a foundation for evidence-based interventions in Nigeria's transportation sector.

Keywords: Frequent vehicle breakdowns, bad roads, poor maintenance culture, overaged vehicles, reckless drivers, untrained technicians, and economic impacts

INTRODUCTION

The progress and development of every Nation including Nigeria hinged on infrastructural development, like the construction of good roads which is a booster to the transportation system. A good transportation system is one of the indices of national development considering its social and economic values. The most popular transportation system in Nigeria is the road transport system, and commonly used among road transportation systems is a motor vehicle. Owning a vehicle is a necessity, many people would have declined to own one due to one or two problems associated with a vehicle breakdown. Some own vehicles for business purposes while others own vehicles for private use. For whatever reasons you own your vehicle, sometimes they are subjected to vehicle breakdown, which might lead to frequent Vehicle breakdowns if adequate care is not taken.

A vehicle breakdown is defined as when a car suffers a severe electrical or mechanical fault that stops it from working safely, assuming you can get it to move at all[**7**], and at times, breakdown will give you no choice but to leave your car stranded in the middle of the road[**3**]. In this study vehicle breakdown is described as a fault that develops in a vehicle due to certain circumstances that may impede the vehicle from doing its normal duty smoothly and safely. All these collaborations are to establish the fact that sometimes vehicle breakdown is unavoidable. This study is considering a situation where you have frequent breakdowns for the same problem or one problem today, tomorrow another, etc. for the same vehicle, though in Nigeria, about 60,000 motor vehicles are imported annually of which more than 85% are used vehicles[**1**] These vehicles are driven and controlled by drivers without supervision. In this unsupervised state you are very much relying on the attitude and behavior of the driver to be intrinsically motivated to conduct the journey safely[**8**] 'These vehicles are driven on Nigerian roads. What is the state of Nigerian roads? In case of vehicle breakdown, these vehicles are serviced by auto technicians, what is their level of technical skill? Some of these vehicles are overaged above the government age limit of vehicles to be imported into the country. In 2022, the Nigeria Customs Service had pegged the age limit of vehicles coming into the country from 15 years down to 12 years, hence the least duty value payable on any vehicle imported was the year 2013 duty[6]. Good vehicle maintenance culture is paramount to the performance and reliability of a vehicle, how committed are our drivers to practicing good vehicle maintenance culture? However, this study centers on evaluating the causes and economic impact of frequent vehicle breakdowns and possible solutions considering bad roads, untrained and unskilled auto technicians, inexperienced and reckless drivers, overage vehicles, and poor vehicle maintenance culture.

Statement of the problem

When the breakdown of a vehicle becomes frequent, it causes nightmares. The ability to detect the causes and impact of frequent vehicle breakdowns will obviously help to determine a way out of it. The transport business is very lucrative, but the problems of frequent vehicle breakdowns make some people see it as a dreaded disease that should not be associated with it. From interactions with the populace, there are many stories surrounding vehicle breakdowns. The man who put his vehicles into the transportation business, received a series of complaints every day from the drivers, either the vehicle did not reach its destination due to brake issue or they had several hours delays on the road because they have an engine problem and cannot come back the same day, what are the remote cause of theses breakdown issues? 11 persons were burnt beyond recognition on Lagos Ibadan Expressway in a ghastly motor accident involving three vehicles, and the cause was attributed to overspeeding as reported[10]. Overspeeding is the immediate cause of the accident, what is the remote cause? Considering the fact that when

the remote cause of a breakdown issue is left unchecked, the breakdown becomes frequent, this papers centers on evaluating the major causes and economic impacts of frequent vehicle breakdowns in Nigeria.

The Objectives of the Study

a---To evaluate the effect of roads on frequent breakdown of vehicles

b---To study how the activities of drivers affect frequent vehicle breakdown

c---To study how Auto technicians contribute to frequent breakdowns of vehicles

d--- To ascertain if the age of vehicles affects their frequent breakdown and subsequent reduction in performance.

e---To evaluate how maintenance culture affects the frequent breakdown of vehicles.

f---To find out if frequent vehicle breakdowns including road traffic accidents have economic impacts on motorists

Statement of Hypotheses

1---H_O: Bad roads with potholes, cracked surfaces, etc., do not contribute to frequent vehicle breakdowns.

H_A: Bad roads with potholes, cracked surfaces, etc., contribute to frequent vehicle breakdowns.

2—H_O: Inexperienced and reckless drivers do not cause frequent vehicle breakdowns

H_A: Inexperienced and reckless drivers cause frequent vehicle breakdowns.

3---Ho: Untrained and ill-equipped auto technicians do not contribute to frequent vehicle breakdown

H_A: Untrained and ill-equipped auto technicians contribute to frequent vehicle breakdowns

4---Ho: Poor vehicle maintenance culture does not affect frequent vehicle breakdowns.

H_A: Poor vehicle maintenance culture affects the frequent breakdown of vehicles

5---H_O: The Vehicle's overage does not contribute to the frequent breakdown and subsequent reduction in vehicle performance.

H_A: The vehicle's overage contributes to the frequent breakdown and subsequent reduction in vehicle performance.

6---Ho: Frequent vehicle breakdowns including road traffic accidents, do not have any economic impact on motorists.

H_A: Frequent vehicle breakdowns including road traffic accidents have economic impacts on motorists

Scope of the Study

This study is on the causes and economic impacts of frequent vehicle breakdowns in Nigeria (A case study of Imo State). The research will cover the effects of bad roads, untrained and unskilled automobile technicians, vehicle management with reference to poor maintenance culture, untrained and inexperienced drivers, and the effect of aged vehicles on frequent vehicle breakdowns. The study covers the three senatorial zones of Imo State represented by three local government areas comprising Owerri Municipal, Orlu LGA, and Okigwe LGA. Drivers, vehicle owners, and vehicle fleet managers were engaged in these areas for the study.

2: REVIEW OF RELATED LITERATURE

Conceptual Review

If you have a problem and you decide to give adequate attention to that problem, it is likely that the problem will be over, but when you have a problem, and ignored giving the problem the required attention, but rather decides to live with the situation, the tendency is that the problem may escalate possibly beyond your control. Some of the vehicle breakdown issues are, brake system fault, flat batteries, radiator problems, suspension issues etc. These breakdown issues don't just happen, they have remote cause, and until the remote cause is eliminated, the problems will continue. This study evaluates the effect of Nigerian roads, drivers, vehicle maintenance culture,

automobile technicians, and age of vehicles, so as to identify the remote causes of frequent breakdown issues considering the facts that when the remote cause of a breakdown issue is left unchecked, the breakdown becomes frequent. A conceptual model was developed as shown in figure 2.1 below to evaluate what happens when a breakdown issue is left unchecked.

WHEN A BREAKDOWN ISSUE IS LEFT UNCHECKED

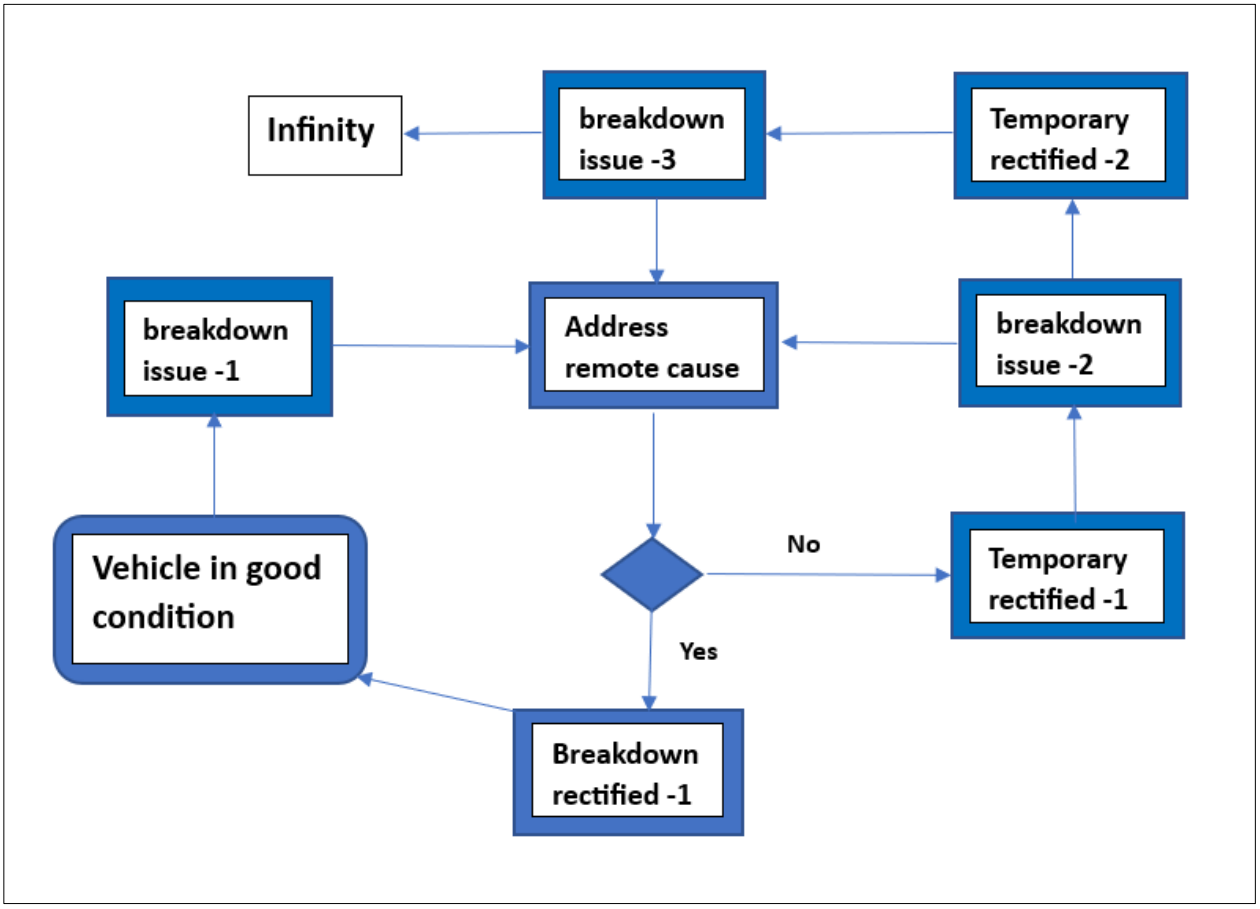

Figure 2.1 Conceptual Framework – When remote cause of breakdown issues is left unchecked

Figure 2.1 is fundamental to this thesis because it anchors on the principle that when the remote cause of a vehicle breakdown issue is left unchecked, the breakdown becomes frequent. The figure shows that from the beginning, the vehicle was in good condition, for one reason or the other, there is a sign of breakdown issue-1. At this point, the remote cause of the breakdown issue-1 is supposed to be identified and resolved. If the remote cause is addressed, the problem will be rectified as shown in breakdown rectified-1, and the vehicle will be back in good condition and back to service. If the remote cause is not addressed, the breakdown issue may be rectified temporarily as shown in temporary rectified -1. After some time, the vehicle breakdown issue will resurface as shown in breakdown issue-2, this time, maybe with a higher magnitude of the problem. At this point again the remote cause of the problem is expected to be addressed, if it is not addressed, the issue will be temporarily rectified and after some time, the problem will resurface as shown in the breakdown issue-3, again for the third time, the remote cause of the vehicle breakdown issue supposed to be addressed. If it is not addressed the breakdown will be frequent and tends to infinity where the consequences will be better imagined. The great questions that are surrounding the concept are, what is the remote causes of the breakdown issues, which is the subject matter of this study.

FREQUENT VEHICLE BREAKDOWN AS A GLOBAL ISSUE

Frequent vehicle breakdowns have been a nightmare to drivers, vehicle owners, vehicle fleet managers, and even innocent commuters across the globe, especially in developing countries like Nigeria where 84% of the 60,000 vehicles imported every year are used vehicles, and 75% of the imported vehicle parts are fake[**1**]. Causes of frequent vehicle breakdowns differ from one country to another, depending on the prevailing circumstances, though some causes of frequent vehicles may be peculiar to the majority of the affected countries. A study on Analysis of Vehicles Breakdown Frequency A Case Study of New South Wales Australiaα[**4**], indicates that increases in population density, the number of registered vehicles, the number of public holidays, average temperature, the percentage of heavy vehicles, and the percentage of white collared jobs in an area increase the number of vehicle breakdowns. A study on "An investigation into the cause and effects of vehicle breakdown and road accidents in Bolgatanga municipality"[**2**], in Ghana, whose aim and objective are to determine the causes of frequent vehicle breakdown, assess the level of competence of vehicle mechanics, and how to reduced frequent vehicle breakdown. The result on the causes emerged that improper care of vehicles was the major cause of vehicular breakdown and accidents as many drivers do not check their vehicles daily before use, have no respect for road safety regulations, high alcohol intake of drivers, over speeding and driving while making or receiving calls, and overloading of passengers/goods were some of the discussed causes. Another study is on "Effects of Driving Style and Vehicle Maintenance on Vehicle Roadworthiness"[**5**] in Croatia. The study believes that Vehicles that are non-roadworthy pose a hazard for all road users and can be one of the main causes of traffic accidents. The result of the study revealed that. The paper argues that vehicles owned by legal entities were generally in a worse condition than the vehicles owned by natural persons, due to the increased vehicle exploitation, and also due to a more aggressive driving style. Frequent vehicle breakdown is really a global issue and can be solved by individual countries from their perception of the causes of frequent breakdown of vehicles

3: METHODOLOGY

The study has auto technicians, Nigerian roads, drivers, maintenance culture, and vehicle old age as independent variables, while frequent vehicle breakdown is the dependent variable.

This research adopted quantitative and qualitative approach and a descriptive design method. Data was collected from University Teaching Hospital Owerri for road traffic accident victims to evaluate the economic impact of frequent vehicle breakdown including road traffic accidents. A primary method of data collection which involved the use of self-administered structured questionnaires and personal interviews was also carried out. The respondents were also interviewed alongside the questionnaire provided. The population covers 5335 drivers, vehicle owners, and vehicle fleet managers. The questionnaires were distributed in three zones namely Owerri, Orlu and Okigwe zone. A sample size of 264 was obtained using Taro Yamane's (1967) model, and a probabilistic (Purposive Sampling) technique was used in the sample distribution. A total number of 264 questionnaires were distributed with 88 questionnaires distributed in each of the Senatorial zones (With the same 7 questions each), 76 were filled and returned in Owerri Zone, 67 in Orlu zone, and 62 in Okigwe zone. The results of the questionnaires were brought together and the data was presented in a tabular form for easy correlation. The reliability and validity of the data were confirmed using the Cronbach Alpha Test, and Bivariate correlation table. The data was analyzed using Binary Logistic Regression Model and the Chi-Square test of independence was carried out to test the hypotheses to ascertain if the independent variables have an association with the dependent variable. SPSS software package was used in the analysis. Frequency count and percentage were used to evaluate the medical data.

4: DATA PRESENTATION AND ANALYSIS

4.1 Medical Data

Table 4.1: Road Traffic Accidents Report – UTH Owerri Statistical Data

MEDICAL RECORDS ON ROAD TRAFFIC ACCIDENT VICTIMS 2017 - 2021: UTH OWERRI STATISTICAL DATA-1

YEAR	PEOPLE IMPACTED	INJURED	AMPUTATED	DEATH
2017	419	399	13	7
2018	241	235	2	4
2019	410	375	20	15
2020	496	460	22	14
2021	401	385	0	16
Total	1967	1854	57	56

Table 4.2: Road Traffic Accidents Report – UTH Owerri Statistical Data Analysis

MEDICAL RECORDS ON ROAD TRAFFIC ACCIDENT VICTIMS 2017 - 2021: UTH OWERRI STATISTICAL DATA

YEAR	PEOPLE IMPACTED	INJURED	AMPUTATED	DEATH	INJURED	AMPUTATED	DEATH
2017	419	399	13	7	95.20%	3.10%	1.70%
2018	241	235	2	4	97.51%	0.83%	1.66%
2019	410	375	20	15	91.46%	4.88%	3.66%
2020	496	460	22	14	92.74%	4.44%	2.82%
2021	401	385	0	16	96.01%	0.00%	3.99%
Total	1967	1854	57	56	94.26%	2.90%	2.84%

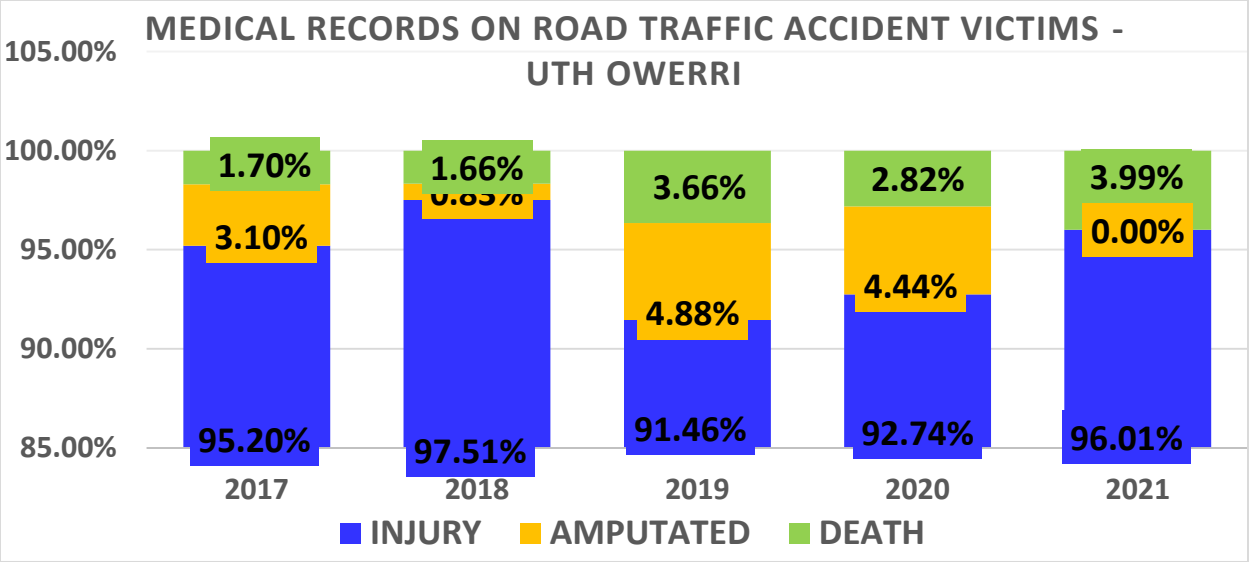

Fig.4.1 showing medical data analysis of injury, amputation and deaths

Figure 4.1 shows medical records from the University Teaching Hospital Owerri on road traffic accident victims indicating the percentage of injury, amputations, and deaths for each year. 2018 has the highest percentage of injuries with 97.51%, followed by 2021 with 96.01%. 2019 has the highest percentage of amputation with 4.88%, followed by 2020 with 4.44%. Finally, 2021 has the highest number of deaths with 3.99% followed by 2019 with 4.66%. These indicate the enormous socioeconomic impacts of frequent vehicle breakdowns including road traffic accidents.

4.2 Validity and Reliability Test for the Overall Data

Reliability Test

Table 4.3: Reliability Test

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.860	0.864	7

Data values of 7.0 and above are acceptable depending on the stake of the test, but data values above 8.0 are regarded as more reliable and acceptable. From Table 4.7 the Cronbach Alpha test conducted on overall data shows a value of 0.860 which indicates that the data is reliable and can be used for required analysis.

Validity Test.

The validity test is carried out using Bivariate Correlation Table.4.3 below

Table 4.4: Validity Test Table 4.4: Validity Test

Correlations

	OD1	OD2	OD3	OD4	OD5	OD6	OD7	Total

OD1	Pearson Correlation	1	.798**	.564**	.239**	.724**	.701**	.709**	.911**
	Sig. (2-tailed)		.000	.000	.001	.000	.000	.000	.000
	N	205	205	205	205	205	205	205	205
OD2	Pearson Correlation	.798**	1	.541**	.187**	.663**	.640**	.648**	.863**
	Sig. (2-tailed)	.000		.000	.007	.000	.000	.000	.000
	N	205	205	205	205	205	205	205	205
OD3	Pearson Correlation	.564**	.541**	1	.020	.384**	.363**	.375**	.592**
	Sig. (2-tailed)	.000	.000		.778	.000	.000	.000	.000
	N	205	205	205	205	205	205	205	205
OD4	Pearson Correlation	.239**	.187**	.020	1	.139*	.204**	.216**	.416**
	Sig. (2-tailed)	.001	.007	.778		.047	.003	.002	.000
	N	205	205	205	205	205	205	205	205
OD5	Pearson Correlation	.724**	.663**	.384**	.139*	1	.618**	.634**	.798**
	Sig. (2-tailed)	.000	.000	.000	.047		.000	.000	.000
	N	205	205	205	205	205	205	205	205
OD6.	Pearson Correlation	.701**	.640**	.363**	.204**	.618**	1	.605**	.800**
	Sig. (2-tailed)	.000	.000	.000	.003	.000		.000	.000
	N	205	205	205	205	205	205	205	205
OD7	Pearson Correlation	.709**	.648**	.375**	.216**	.634**	.605**	1	.805**
	Sig. (2-tailed)	.000	.000	.000	.002	.000	.000		.000
	N	205	205	205	205	205	205	205	205
Total	Pearson Correlation	.911**	.863**	.592**	.416**	.798**	.800**	.805**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	
	N	205	205	205	205	205	205	205	205

**. Correlation is significant at the 0.01 level (2-tailed).

From Table 4.3, item 1 Sig.(2-tailed) showed that the value is statistically significant at a 1% level of significance with a significant value of 0.000. Since the value 0.000 < 0.01, it is concluded that item 1 is valid. The same thing is applicable to other items in Table 4.3 above. Where OD1 to OD7 represents the independent variables.

4.3 Test for the Hypotheses

As the name goes, a Chi-Square test of independence is used to determine whether or not there is a significant association between two categorical variables. Here, it is used to test our Null hypothesis to know if the dependent variable (Frequent vehicle breakdown) has any significant association with the independent variables (Roads,

drivers, auto technicians, maintenance culture, and vehicle age). In this project, our chosen alpha value (***α* = 0.05**) will be used to evaluate the test statistical value.

Null Hypothesis 1 - Bad roads with pot holes, rough surfaces, etc. does not contribute to frequent vehicles breakdowns.

Table 4.5: Chi-Square Tests-1

Chi-Square Tests 1

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	130.595[a]	1	.000		
Continuity Correction[b]	126.211	1	.000		
Likelihood Ratio	122.816	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	129.958	1	.000		
N of Valid Cases	205				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.46.

b. Computed only for a 2x2 table

From the Fisher's Exact Test value in Table 4.10, the exact Sig. (2-sided) column has a p-value of 0.000 which is statistically significant at 5% level of significance (0.05), implying that the null hypothesis is rejected, and the alternate accepted showing that there is an association between bad roads and frequent breakdown of vehicles.

Null Hypotheses 2 - Untrained and Reckless drivers cause frequent vehicles breakdowns

Table 4.6: Chi-Square Tests-2

Chi-Square Tests 2

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	65.150[a]	1	.000		
Continuity Correction[b]	60.708	1	.000		
Likelihood Ratio	55.533	1	.000		
Fisher's Exact Test				.000	.000

Linear-by-Linear Association	64.832	1	.000
N of Valid Cases	205		

a. 1 cells (25.0%) have an expected count of less than 5. The minimum expected count is 4.59.

b. Computed only for a 2x2 table

From the Fisher's Exact Test value in Table 4.10, the exact Sig. (2-sided) column has a p-value of 0.000 which is statistically significant at a 5% level of significance (0.05), implying that the null hypothesis is rejected, and the alternate accepted showing that there is an association between untrained and ill-equipped auto technicians and frequent breakdown of vehicles

Null Hypotheses 3 - Untrained and ill-equipped Auto-Technicians do not contribute to frequent vehicles breakdown

Table 4.7: Chi-Square Tests - 3

Chi-Square Tests 3

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	10.971[a]	1	.001		
Continuity Correction[b]	9.777	1	.002		
Likelihood Ratio	10.279	1	.001		
Fisher's Exact Test				.002	.001
Linear-by-Linear Association	10.917	1	.001		
N of Valid Cases	205				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 13.07.

b. Computed only for a 2x2 table

From the Fisher's Exact Test value in Table 4.10, the exact Sig. (2-sided) column has a p-value of 0.000 which is statistically significant at 5% level of significance (0.05), implying that the null hypothesis is rejected, and the alternate accepted showing that there is an association between untrained and ill-equipped auto technicians and frequent breakdown of vehicles.

Null Hypotheses 4 - Poor vehicle maintenance culture like negligence of preventive and corrective maintenance does not causes frequent vehicle breakdown.

Table 4.8: Chi-Square Tests-4

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	107.446[a]	1	.000		

Continuity Correction[b]	102.866	1	.000		
Likelihood Ratio	94.182	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	106.922	1	.000		
N of Valid Cases	205				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.80.

b. Computed only for a 2x2 table

From the Fisher's Exact Test value in Table 4.10, the exact Sig. (2-sided) column has a p-value of 0.000 which is statistically significant at 5% level of significance (0.05), implying that the null hypothesis is rejected, and the alternate accepted showing that there is an association between poor vehicle maintenance culture and frequent breakdown of vehicles.

Null Hypothesis 5 – Vehicle's overage does not contribute to the frequent breakdown and subsequent reduction in vehicle performance.

Table 4.9: Chi-Square Tests-5

Chi-Square Tests 5

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	100.648[a]	1	.000		
Continuity Correction[b]	96.561	1	.000		
Likelihood Ratio	89.156	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	100.157	1	.000		
N of Valid Cases	205				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.63.

b. Computed only for a 2x2 table

From the Fisher's Exact Test value in Table 4.10, the exact Sig. (2-sided) column has a p-value of 0.000 which is statistically significant at 5% level of significance (0.05), implying that the null hypothesis is rejected, and the alternate accepted showing that there is an association between Vehicles Overage and frequent breakdown of vehicles.

Null Hypothesis 6 - Frequent vehicle breakdown have economic impacts on motorists.

Table 4.10: Chi-Square Tests-6

Chi-Square Tests 6

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	107.525[a]	1	.000		
Continuity Correction[b]	103.045	1	.000		
Likelihood Ratio	94.341	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	107.001	1	.000		
N of Valid Cases	205				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.25.

b. Computed only for a 2x2 table

From the Fisher's Exact Test value in Table 4.10, the exact Sig. (2-sided) column has a p-value of 0.002 which is statistically significant at 5% level of significance (0.05), implying that the null hypothesis is rejected, and the alternate accepted showing that there is an association between economic impacts and frequent breakdown of vehicles.

4.4 Binary Logistic Regression

Table 4.11: Respondents, Frequency and Percentage

Respondents, Frequency, and Percentage

	Respondents	Frequency	Percentage
OD7-Does Frequent vehicle breakdown have economic impacts on motorists?	No	205	36	18%
	Yes	205	169	82%
OD3-Inexperienced and Reckless drivers cause frequent vehicles breakdowns	False	205	20	10%
	True	205	185	90%
OD4-Untrained and ill-equipped auto technician contribute to breakdown	No	205	57	28%
	Yes	205	148	72%
	False	205	34	17%

OD5-Poor vehicle maintenance culture like negligence of preventive and corrective maintenance causes frequent vehicle breakdown	True	205	171	83%
OD6-Vehicles overage contributes to frequent breakdown of vehicles.	False	205	42	20%
	True	205	163	80%
OD2-Bad roads contribute to frequent vehicle breakdown	False	205	50	24%
	True	205	155	76%

Table 4.11 represents 205 respondents' answers on individual independent variables based on their effect on frequent vehicle breakdown (Dependent variable). The answer as it relates to the dependent variable is binary, it is either Yes or No, or True or False.

Table 4.12: Classification Table for Block 0 Model

		Predicted OD1-Have frequent vehicle breakdowns?		
Observed		No	Yes	Percentage Correct
OD1-Experienced frequent breakdown of vehicles	No	0	47	0.0
	Yes	0	158	100.0
Overall Percentage				77.1

The binary logistic regression model was conducted with the frequent vehicle breakdown variable as the dependent variable with no independent variable(s) in block zero. The block zero (the null model) showed the overall classification ability of the logistic regression model before any independent variable is added to the model as 77.1% as shown in Table 4.14 above.

Table 4.13: Classification Table for Block 1 Model

	Predicted OD1-Have frequent vehicle breakdowns?		
Observed	No	Yes	Percentage Correct
No	40	7	85.1

OD1-Experienced frequent frequent breakdown of vehicles	Yes	2	156	98.7
Overall Percentage				95.6

Table 4.14: Variables in the Block 1 Model Equation

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B) Lower	Upper
Step 1[a]	OD2	2.291	.851	7.256	1	.007	9.887	1.867	52.363
	OD3	2.935	1.396	4.419	1	.036	18.819	1.219	290.425
	OD4	2.127	.969	4.823	1	.028	8.391	1.257	56.004
	OD5	2.536	.977	6.730	1	.009	12.627	1.859	85.763
	OD6	2.419	.895	7.311	1	.007	11.235	1.946	64.879
	OD7	2.219	1.000	4.928	1	.026	9.198	1.297	65.254
	Constant	-9.376	2.216	17.894	1	.000	.000		

a. Variable(s) entered on step 1: OD2-Bad roads contributes to frequent vehicle breakdown, OD3-Inexperienced and Reckless drivers cause frequent vehicles breakdowns, OD4-Untrained and ill-equipped auto technician contribute to breakdown, OD5-Poor vehicle maintenance culture like negligence of preventive and corrective maintenance causes frequent vehicle breakdown, OD6-Vehicles overage contribute to frequent breakdown of vehicles., OD7-Does Frequent vehicle breakdown have economic impacts on motorists?.

Table 4.14 above is showing variables that are statistically significant at 5% level of significance and the odds ratio which explains the extent of association between the independent and dependent variables.

Table 4.15: Logistics Regression – Model Summary

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	50.321[a]	0.565	0.856

a. Estimation terminated at iteration number 8 because parameter estimates changed by less than .001.

The model summary is used to evaluate the extent of the variation of the dependent variable on the addition of independent variables to regression model block 1. The Nagelkerke R Square is preferable to be use, hence from table 4.14 above the dependent variable shows 85.9% variation.

Table 4.16: Logistics Regression – Hosmer and Lemeshow Test

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	0.823	3	0.844

The Hosmer-Lemeshow test is very important in evaluating the fitness of the model. A nonsignificant chi-square indicates that the model fits the data very well. From Table 4.15, the P-value is 0**.**342 which is not statistically significant, because it is greater than the 5% level of significance (.05), and this implies that the model fits the data very well.

4.5: Discussion of Findings

Reliability and Validity

The Alpha Cronbach's test statistic is used to check the reliability of the data. The coefficient of reliability range is between 0 and 1, with higher values indicating that the data is reliable. Table 4.3 shows the coefficient of reliability as 0.860 which implies the instruments are very reliable and good for the required analysis. In the same vein, the validity test was carried out using the Pearson correlation table as shown in Table 4.4. With a 1% level of significance (0.01), and sig. (2-tailed) values, the p-values were shown to be 0.000 for all the items, and 0.000 < 0.01 which implies that the instruments are valid and good for the required analysis.

Hypothesis Testing

Table 4.17: Summary of Hypothesis Testing

Summary of Hypothesis Testing

Test	P-value	Independent Variable
Test 1	0.000	Bad roads
Test 2	0.000	Reckless Drivers
Test 3	0.002	Untrained Technicians
Test 4	0.000	Poor Maintenance
Test 5	0.000	Vehicle overage
Test 6	0.000	Impacts on Motorists

The chi-square test of association was carried out on the 6-null hypothesis, and the p-values for the six tests were statistically significant at a 5% level of significance (0.05) implying that the null hypothesis was rejected and the

alternates were accepted, showing bad roads, Reckless driving, untrained auto technicians, poor vehicle maintenance and vehicle overage can influence frequent breakdown of vehicles, it also showed that frequent breakdown of vehicles can create impacts on the motorists.

Logistics Regression Analysis

The binary logistic regression block zero (the null model) showed a regression model test conducted with the frequent vehicle breakdown as the dependent variable without any independent variable. The overall classification ability of the logistic regression model before the addition of the independent variable is 77.1%, as shown in Table 4.12. As the independent variables were added to the Block 1 model, overall classification accuracy in percentage, increased from 77.1% in the Block 0 model to 95.6% in the Block 1 model as shown in the classification Tables 4.13. This is an indication that the model predicted correctly from the observed.

Nagelkerke's R^2 = 0.856, indicating approximately 86% of the variation in frequent vehicle breakdown is attributed to the model. It demonstrates the strength of the model.

Table 4.14 shows the variables in the equations, a product of the logistics regression block 1 model after the addition of independent variables. With a 5% level of significance (0.05), the statistical significance values of the test are found in the "Sig." Column of Table 4.14 which shows that for OD2, p = 0.007; For OD3, p = 0.036; For OD4, p = 0.028; For OD5, p = 0.009; For OD6, p = 0.007, and for OD7, P = 026. These values with positive coefficient values indicate an association with frequent breakdown of vehicles.

The information in Table 4.14 is also used to predict the probability of an event occurring based on a one-unit change in an independent variable when all other independent variables are kept constant. With Bad roads, Reckless drivers, poor vehicle maintenance, untrained auto technicians, and vehicle age as independent variables, a unit increase in the independent variables, increases the odds of frequent vehicle breakdown by 889%, 1782%, 739%. 1163%, and 1024% respectively with inexperienced and reckless drivers having the highest influence over frequent vehicle breakdown with 1782%.

The overall analysis revealed that frequent vehicle breakdown has economic impacts on motorists, and identified causes of frequent vehicle breakdown as, Vehicle overage, Inexperienced and reckless drivers, Poor vehicle maintenance, Untrained and ill-equipped auto technicians, and Bad roads. These factors will be discussed in details below.

1) Economic impacts of frequent breakdown of vehicles including road traffic accidents

The economic impacts of frequent vehicle breakdown including road traffic accident is enormous, they include the time and cost of maintaining the breakdown vehicles, properties and valuables lost in road traffic accidents, businesses being neglected as a result of vehicle breakdowns, and motorist missed business schedules and appointments as a result of vehicle breakdown. Analysis of the data from the University Teaching Hospital indicates that out of the 1,967 victims of road traffic accidents that happened between 2017 and 2021, 94.26% sustained various degrees of injuries, 2.90% were amputated, and 2.84% were dead. considering those who have been amputated, and those who were dead, who takes care of their economic responsibilities, the families of these people will have huge economic setbacks which might take several years where possible to recover.

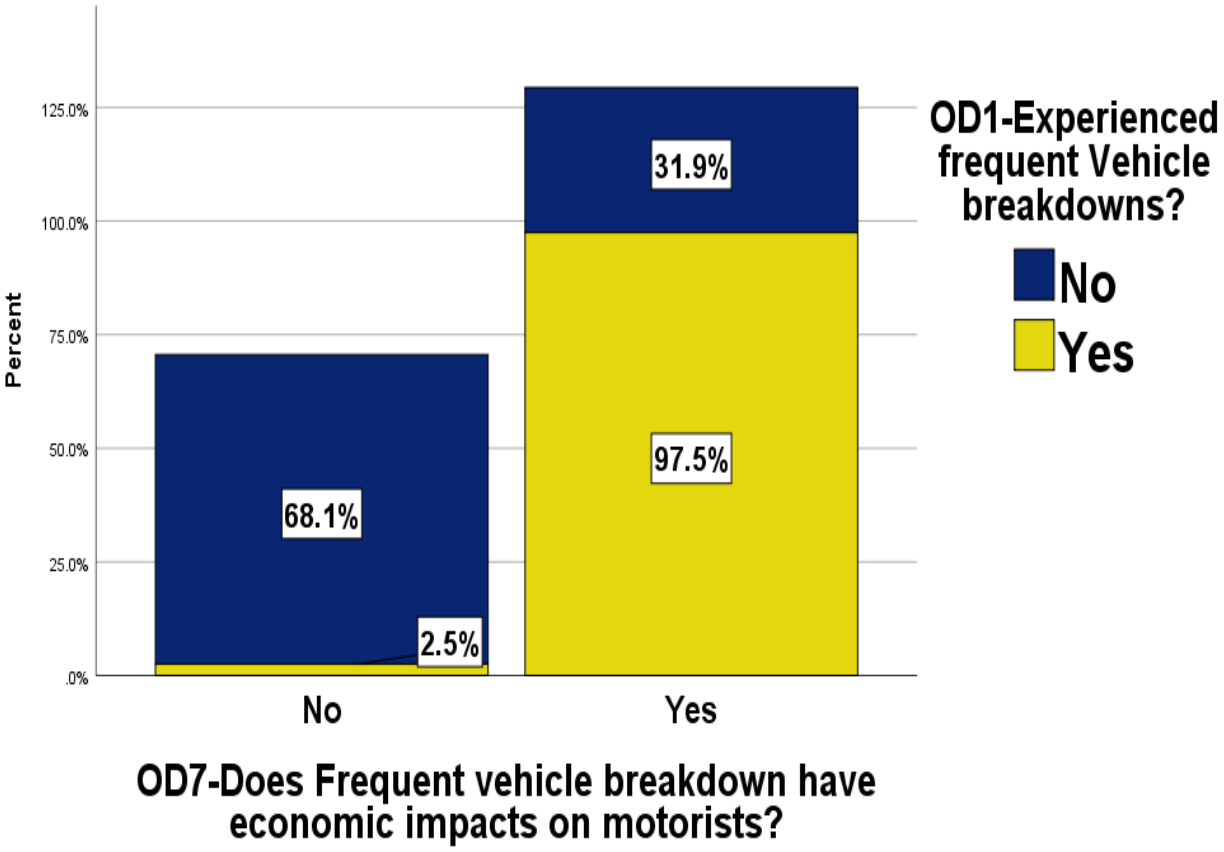

Fig. 4.2: shows how frequent breakdown of vehicle relates to economic impacts on motorists

Figure 4.2 shows that approximately 98% of those who experienced frequent breakdown actually confirmed from their experience that frequent vehicle breakdown including road traffic accidents creates huge impacts on motorists.

1)-Effects of inexperienced and reckless drivers on frequent breakdown of vehicles.

From Tables 4.11 and 414, inexperienced and reckless drivers are the worst contributors to frequent breakdowns of vehicles with 90% of the respondents accepting that inexperienced and reckless drivers cause frequent vehicle breakdowns, and from analysis, a unit increase in inexperienced and reckless drivers will increase the odds of frequent vehicle breakdown by 1782%. Aggressive driving behaviors have been identified as a significant factor in traffic accidents[**9**]. Some of the drivers were not properly trained to drive, some drove without driver's licenses, and many knew nothing about road traffic rules and regulations. Some of them violate red light signals causing accidents, and some drive with many distractions including telephone conversions. From Analysis, 90% of the respondents confirmed that inexperienced and reckless drivers cause frequent vehicle breakdowns

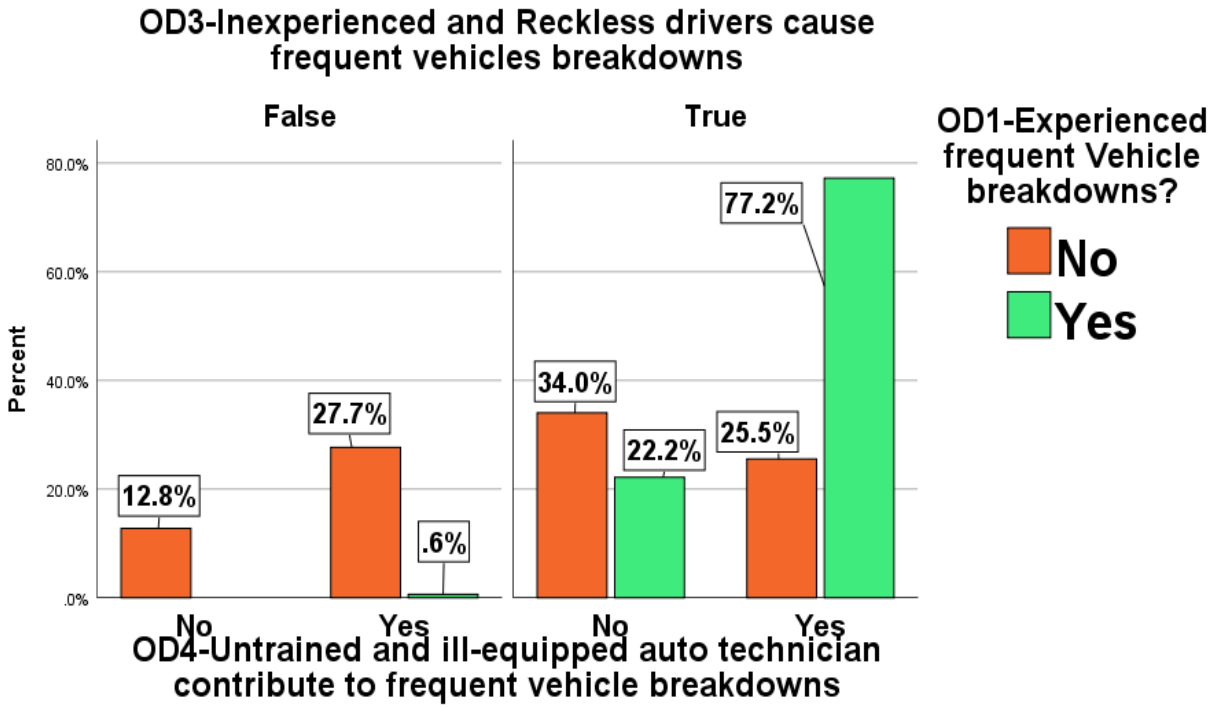

Fig. 4.3 shows the effects of inexperienced and reckless drivers, and untrained and ill-equipped auto technicians on frequent vehicle breakdowns.

From Figure 4.3 above, 99.4% (77.2 +22.2) of inexperienced and reckless drivers cause frequent breakdowns of vehicles,

2)-Untrained and ill-equipped auto technicians' effect on Frequent Vehicle breakdown

Poor educational background, non-technical training, and lack of good auto shops with good tools and equipment created some challenges for auto technicians that resulted in poor quality maintenance services which created more problems for the vehicles. Analysis shows that 72% of the respondents confirmed that untrained and ill-equipped auto technicians contribute to the frequent breakdown of vehicles Table 4.11). From Figure 4.3 above 77.8% (77.2 + 0.6) of untrained and ill-equipped auto technicians contribute to frequent vehicle breakdowns.

3)-Vehicle overage causes frequent vehicle breakdown

One of the causes of frequent breakdown of vehicles is vehicle overage. Aged vehicles are associated with wear and tear, and for the fact that most of the vehicles imported into Nigeria are used vehicles, many of them have problems with the vehicle components even before they were imported. Analysis shows that 80% (Table 4.11) of the respondents confirmed that vehicle overage contributes to frequent vehicle breakdowns and subsequent reduction in Vehicle performance. From Figure 4.2 below, 97.5% (93.7 + 3.8) of people who have overage vehicles contributes to frequent breakdown of vehicles.

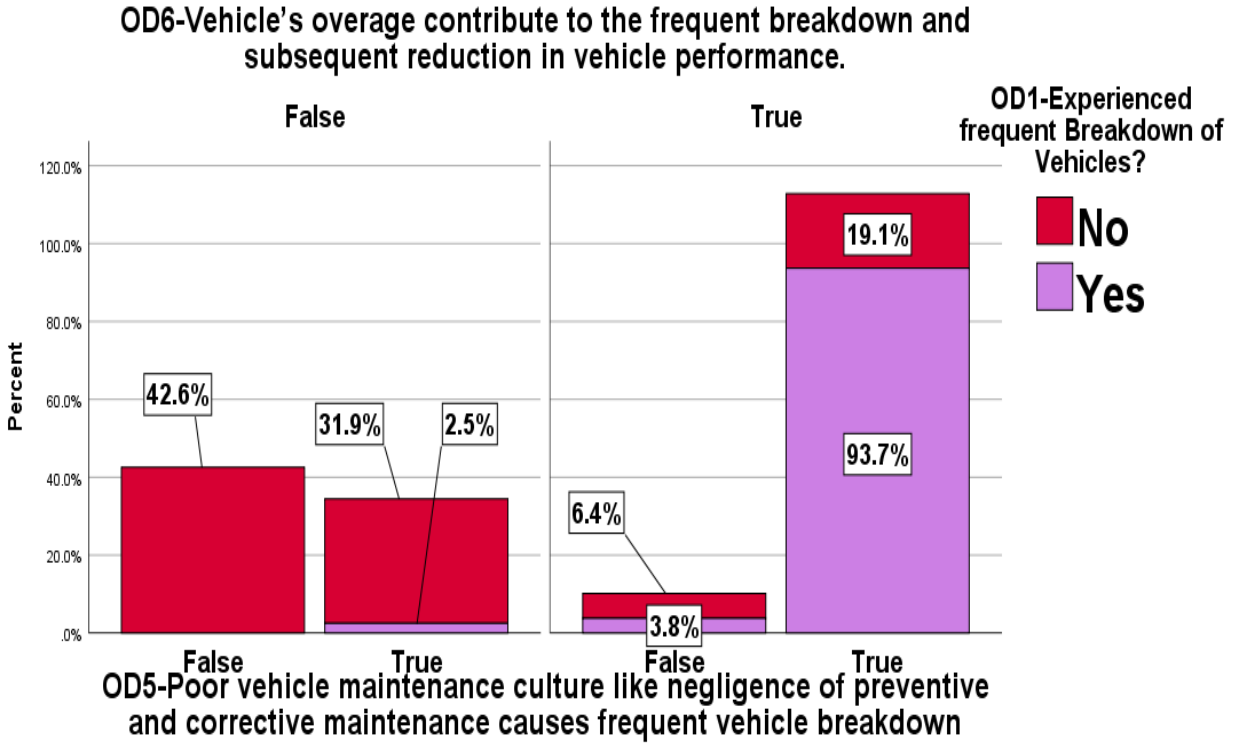

Fig. 4.4 shows how poor vehicle maintenance culture and overaged vehicles contribute to frequent vehicle breakdowns

4)-Poor vehicle maintenance is a major cause of frequent vehicle breakdown

Poor vehicle maintenance culture like negligence of preventive and proactive corrective maintenance contributes to frequent breakdown of vehicles. Analysis shows that 86% (Table 4.11) of the respondents confirmed that poor vehicle maintenance culture contributes to frequent breakdown of vehicles. Figure 4.2 above shows that 96.2% (93.7 + 2.5) of those who have experienced frequent breakdowns, also confirmed that Poor vehicle maintenance contributes to frequent breakdown of vehicles.

5)-How bad roads contribute to frequent vehicle breakdowns.

Bad road with potholes, cracked surfaces, gullies, waterlogged is one of the major causes of

Frequent breakdown of vehicles. Many vehicles have had accidents by running into potholes. Many of the suspension components of the vehicles have been damaged because of the rough surfaces of roads. 78% (Table 4.11) of the respondents confirmed that bad roads with potholes, crack surfaces, etc. contributes to frequent breakdown of vehicles. From figure 4.3 below, 93% of those who have experienced frequent breakdown, confirmed that bad roads with potholes, cracked surfaces, etc. contributes to frequent breakdown of vehicles.

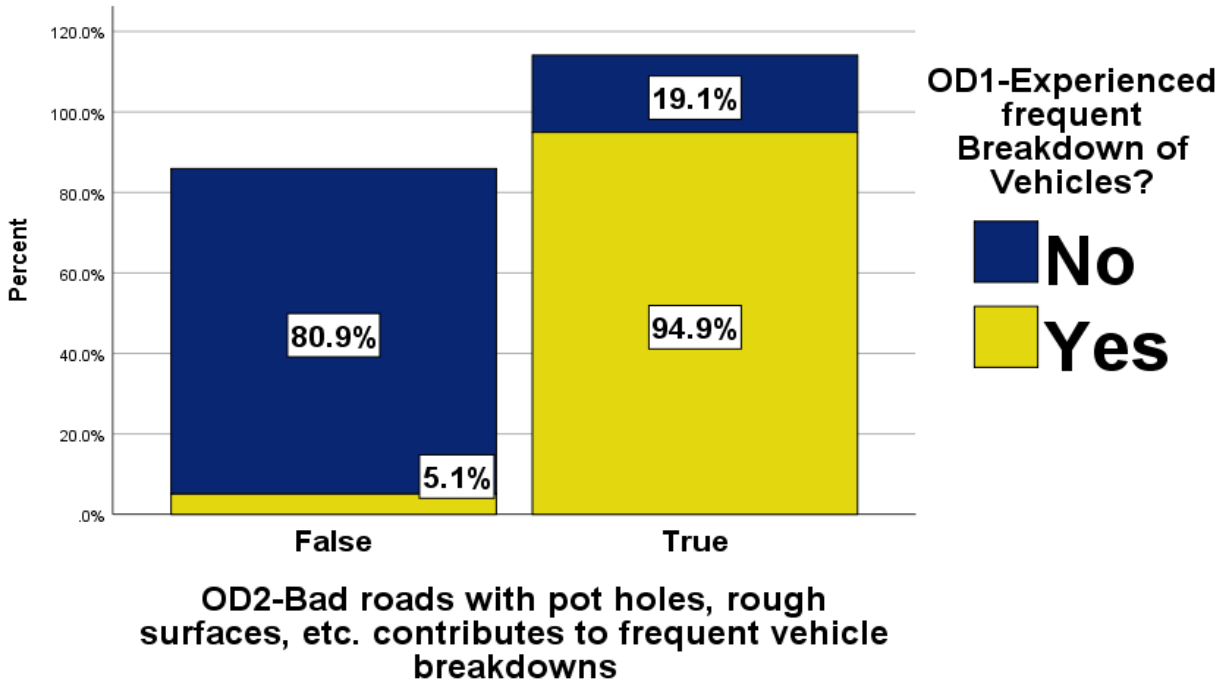

Fig. 4.5 Shows how bad roads relates with frequent breakdown of vehicles

Figure 4.4 shows that 94.9% of people who have experienced frequent breakdowns of vehicles, from their experiences confirmed that bad roads with potholes, rough surfaces, etc. contribute to frequent breakdowns of vehicles.

5.0: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1: SUMMARY OF FINDINGS

1. The reliability analysis using the Cronbach Alpha Test model, and the validity test using Pearson correlation table yielded satisfactory results.
2. The Chi-square test model for hypothesis testing also yielded significant results, showing that the independent variables have an association with the dependent variable.
3. The Binary Logistic Regression model predicted correctly from the observed.
4. The probability of an event occurring based on a one-unit change in an independent variable when all other independent variables are kept constant, shows that with Bad roads, Reckless drivers, poor vehicle maintenance, untrained auto technicians and vehicle age as independent variables, a unit increase in the independent variables, increase the odds of frequent vehicle breakdown by 889%, 1782%, 739%. 1163%, and 1024% respectively with inexperienced and reckless driver having the highest odds of the independent variable 1782% followed by poor vehicle maintenance culture with 1163%.
5. The analysis also revealed that frequent breakdown of vehicles actually causes enormous economic impacts with motorists spending much money and time in fixing breakdown vehicles, missed business schedules and delayed appointments, Analysis of medical data shows that out of the 1092 who are accident victims, 95% were involved in various categories of injuries, 2,5% were amputated and 2.4% lost their life.

5.2: CONCLUSION

Based on the investigation of the six research questions, the study confirmed the reliability and validity of the data collected using appropriate statistical methods. The analysis revealed the major causes of frequent vehicle breakdowns, with inexperienced and reckless drivers identified as the primary contributors, followed by poor vehicle maintenance culture, overaged vehicles, bad roads, and untrained and ill-equipped auto technicians.

The economic impacts of frequent vehicle breakdowns were found to be significant and include various negative consequences on Nigerians like financial burdens, delayed schedules and stress, injuries, and loss of lives and properties.

This paper serves as a comprehensive guide, providing valuable insights for future researchers, transport fleet managers, vehicle owners, and commercial drivers, on issues related to frequent vehicle breakdowns. There is an urgent need for intervention to end the economic impact of frequent breakdowns of vehicles.

5.3: RECOMMENDATIONS

To address the issue of frequent vehicle breakdowns, especially those caused by inexperienced and reckless drivers, it is recommended to implement realistic and strategic policies that will ensure compliance with all road safety rules and regulations and good maintenance culture. These policies should focus on improving driver training, promoting good maintenance culture and more severity of sentence for offenders. An increase in the statutory severity of sentence maxima for traffic violations leads to a decrease in accident and injury rates[**9**]

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