

# The Impact of Transportation Cost on the Price of Agricultural Commodities in Delta and Rivers States, Nigeria.

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## ABSTRACT

The unabated increase transportation costs and its impact on agricultural commodity prices in Delta and Rivers States, Nigeria has been a source of concern to the stakeholders in the agricultural sector who believed that increase in price of agricultural commodities poses a threat to individual purchasing power and subsequently, could lead to low standard of living and poverty. Therefore, this study is to examine the impact of transportation cost on price of agricultural commodities in Delta and Rivers States Nigeria. The study employed survey research design using a structured questionnaire and key informant interview to source and analyzed for both qualitative and quantitative data on the subject matter. The sampled population of this study was 348. The primary data collected was analyzed using Multiple regression analysis. Findings of the study revealed that transportation cost has positive and statistically significant relationship with price of agricultural commodities. More so, that increases in government multiple tax, levies and unauthorized fee, bribery pay by drivers and cost of repairs and maintain vehicle have statistically significant impact on the price of agricultural commodities. Based on findings of this study, the following recommendation are suggested; that Nigeria Governments at all level in collaboration with drivers and market men and women leaders should formulate policies to discourage government multiple tax, levies and unauthorized fee, bribery pay. More so, policy measures focusing on maintenance of road and water ways should be implemented in order to reduce transportation cost and subsequently reduces price of agricultural commodities.

**Keyword:** Government Taxes, Unauthorized Levies, Bribery.

## INTRODUCTION

From ancient times, transportation has been an important means of carrying living and none living things which include human, animal and materials from one place to another. With the help of transportation, goods and services are made available where they are needed. In particular; production of large quantities in rural areas will requires transportation in transporting such goods to the urban market or nearest warehouse thereby, necessitate transportation. Transportation in no doubt is an integral part of the economy. According to Akhitha (2020) transportation has a great role to play in society and economy at large. However, explicit and implicit cost of transportation determines the efficiency of moving goods and services from one location to another. This also affect the price of goods and services and by extension, profit of business organization.

There are several means of transportations which include; water, air, pipeline and space. However, in Delta and Rivers states, the major mean of transportation in conveying agricultural produces from the rural area to the city center or market area include the use of canoe, boat, bicycle, motorcycle, tricycle, car, bus, pickup and in some cases heavy duty vehicle such as trailer depending the area.

However, there are several factors that add up to the transportation cost; these factors include; bad road, government multiple tax and levies, cost of vehicle maintainers, fueling, illegal collection by the law enforcement agencies and unauthorized checking point. According to Uzonwanne, Ezenekwe, Nzeribe, Mathew and Adonike, (2020); Ifedi, (2020); Ugboaga; (2020); Elekwa, (2020) high cost of transportation is associated with the prices of commodities in the market place.

In the recent time, due subsidies removal on petroleum motor spirit that take place in Nigeria sometime May, 2023 high transportation cost has become one of the most obstinate problems for the businessmen and women who convey agricultural commodities from rural area to urban center. This high transportation cost has resulted to continuous rise in prices of agricultural commodities, the increase has effect on individuals in several ways, such as reduction in the purchasing power, poor standard of living, starvation, malnutrition and subsequently poverty. However, the extent to which transportation cost affect the price of agricultural commodities in Delta and Rivers states, Nigeria is yet to be empirically ascertain due to asymmetric information on the impact transportation cost have on the price of agricultural commodities. It is against this backdrop that this study makes an attempt to examine the impact transportation cost has on agricultural commodities in Delta and Rivers States, Nigeria.

Meanwhile, elsewhere there are few studies like; Uzonwanne, et.al, (2020); Adonike (2020); Barnabas (2017); Yaro, Okon and Bisong, (2014); Rabirou, Adeolu, Ezekiel, and Williams, (2012), that have been carried out on the effect of transportation on agricultural commodities but no such studies have been done in Delta and Rivers States. More so, none of these aforementioned studies have sufficiently provide an explanation on the impact of transportation cost on the price of agricultural commodities in relation to cost associated to transportation in terms of levy and unauthorized fee; government multiple tax and, cost of cost of repairing and maintenance as well as fueling as regard to Delta and Rivers States, Nigeria perhaps, due to the differences in mode of transportation. The aim of this study is to examine the impact of transportation cost on the price of agricultural commodities in the aforementioned States.

The following hypotheses are formulated to guide this study;

H<sub>01</sub>. Levy and unauthorized checking point does not have impact on the price of agricultural commodities

H<sub>02</sub>. Government multiple tax does not have impact on the price of agricultural commodities

H<sub>03</sub>. Cost of repairing and maintenance as well as fueling of vehicle does not have impact on price of agricultural commodities

## LITERATURE REVIEW

### Conceptual Review

Conceptually, transportation is seen as a means of moving goods from their places of production to their places of consumption Uzonwanne, et, al, 2020). Transportation is the means of mobility used to carry goods and persons from one place to another (Rabirou, Adeolu, Ezekiel and Williams, 2012).

However, transportation cost is the monetary value associated with transportation of moving goods and services from one location to other.

According to Lawrence (2020) agricultural commodities are staple crops and animals produced or raised on farms or plantations. Most agricultural commodities such as grains, livestock, and dairy provide a source of food for people and animals across the globe. Food and Agricultural organization (2020) define agricultural commodities as all varieties of crops and animal produced or raised by farmer. Similarly, price of agricultural commodity is the payment or compensation given by one party to another in return for one unit or quantity of agricultural commodity or services rendered for the produce of agricultural commodity (Schindler 2012).

In this study agricultural commodities are defined as varieties of farm produces, animals rearing, animals hunting, as well as, fisheries. Furthermore, price of agricultural commodities is the cost consideration in monetary value of agricultural commodities in the market place. In other words, the price of exchanging agricultural commodities between buyers and sellers of agricultural produces.

## THEORETICAL REVIEW

Theoretically, transportation theory or transport theory is the study of transportation optimization through

resources allocation. This theory was formalized by the French mathematician Gaspard Monge in (1781) During World War II. There are so many advances transportation theory by the Soviet mathematician and economist Leonid Kantorovich hence known as the Monge–Kantorovich transportation problem. An important type of transportation problem which was addressed by the Linear Programming (LP) is in the area of physical distribution of goods and services from several supply centres to demand centres. Transportation problems deal with the movement of commodities from different sources to different destinations, with the overall objective of minimizing transportation costs. Transportation problem is much concerned on best way and the pattern resource allocation should follow.

In economics, resource allocation is the assignment of available resources to various uses. In the context of an entire economy, resources can be allocated by various means, in particular through markets. Much of the study of the allocation of resources is devoted to finding the conditions under which particular mechanisms of resource allocation lead to Pareto efficient outcomes, in which no party's situation can be improved without hurting that of another party. Tjalling Charles Koopmans (1985) theory of the optimum allocation of resources showed that on the basis of certain efficiency criteria, it is possible to make important deductions concerning optimum price systems.

In the same manner, optimum pricing system also applied in business of transportation. Business of transportation involves the movement of humans, animals, and goods from one location to another. That is, from a point A (a place of origin) to a point B (a place of destination) which suggests that at any given point, optimum allocation of resources is required.

The prerequisites to solve a transportation problem include; The number of sources (S), The number of destinations (D), The total quantity available at each source (QS), The total quantity required at each destination (QD), The cost of transportation of one unit of the commodity from each source to each destination (CT). When using any transportation technique, the following basic assumptions are made; the total quantity available at all the sources is equal to the total quantity required the destinations ( $TQS = TQD$ ). If they do not match each other, dummy sources or dummy destinations are added. The unit transportation cost from one origin to a destination is known and certain. The unit cost is independent of the number of goods transported. The objective is to minimize the total transportation cost. Although transportation problems can be formulated as a linear programming (LP), other easier algorithms are developed for solving them. The relevance of transportation theory in this study is to relate the problem of resource allocation to transportation cost and agricultural commodity price with its attendant effect on the final consumer of agricultural commodities who bear the final burden in term of price pay on per unit agricultural commodities.

## EMPIRICAL REVIEW

Uzonwanne,et.al, (2020) examined the impact of transportation cost by exploring its causes and effects on the prices of consumable commodities in Anambra state. The study employed survey research. The results show that high transportation cost which is linked to bad roads, illegal collection of money by high way patrol team, high price of motor spare parts and high fuel prices contributes to the continuous rise of consumable commodities in Anambra state of Nigeria. Olutumise (2020) assessed the nexus between the transportation system and output market participation among yam producers in Southwest region of Nigeria using multinomial logit (MNL). The results of the MNL showed that farming experience, extension services, distance, household size and market participation were the factors influencing the preference for the mode of transportation used by the farmers. Therefore, the study concludes that there is a synergy between transportation system and output market participation which has significant impact on the production and availability of food (yam) in the market. Kleon (2018) examined the impact of transportation cost on consumer's retail goods process in Enugu South L.G.A. The study employed descriptive statistics for the data analysis. The study found out that cost of production affects agricultural goods retailers than **manufacture good retailers**. However, the study findings may not likely explain the nexus between cost of transportation and price of agricultural commodity in Delta and River states due to state differences in mode of transportation especially transportation via waterways.

Barnabas (2017) examines the effect of transportation in the marketing of agricultural products in selected

markets in Jos North LGA of Plateau State. Survey research method was employed. Findings of the study showed that transportation plays an important role in the distribution of agricultural products, helps in creating market for agricultural products and reduces spoilage and wastage of farm products. It also showed that improvement in transportation can encourage farmers to work hard in increasing production. Yaro, Okon and Bisong (2014) assessed the impact of rural transportation on agricultural development in Boki LGA. The study adopted a questionnaire survey method for data collection as well as key informant interview and focus group discussion and analyzed the data collected with paired sample test. The result reveals that transportation system has positive effect on agricultural development in relation to income, and employment

Ikejiofor and Ali (2014) analyzed the characteristics of road transport and its effect on marketing of agricultural produce in Nsukka L.G.A, South Eastern Nigeria. The study employed survey research. The data collected were analyzed using frequency distribution, percentages and Simple Regression. Findings of the study revealed that there is strong and positive relationship between transport cost and distance and nature of roads travelled by farmers. Volpe, Roeger and Leibtag (2013) examine the effect of transportation costs on fresh fruit and vegetable prices in united states. Descriptive technique was employed. Findings of the study revealed that transportation costs significantly increase the costs of marketing these products and their wholesale price. The study concluded that the impact of fuel prices on the prices of these products depends on a number of factors, such as the distance between wholesale markets and the source of the produce, the method of transportation, the importance and timing of imports, and commodity- However, since the study is not conducted in Nigeria and in particular, Delta and Rivers states, its findings may not be applicable in Nigeria due to country transportation regulation differences.

An attempt has been made to review several conceptual, theoretical and empirical literature related to this subject matter, that is, effect of transportation cost on the price of agricultural commodities. The reviews have shown that there is a gap in contextual literature, the existing literature reviewed indicates no consensus on the impact of transportation cost on the price of agricultural commodities. More so, no previous empirical studies yet on the impact of transportation cost on the price of agricultural commodities in Delta and Rivers States, Nigeria. In addition, in term of methodology many of the studied reviewed above only employed single method of data collection either quantitative or qualitative method which is not sufficient for this kind of study. This study attempted mixed method of data collection and triangulated both quantitative and qualitative for better results in order to fill the gap in literature.

## METHODOLOGY

This study employed survey research design. Primary data was sourced through questionnaire instrument and structured interview on the impact transportation cost has on the price of agricultural commodity in Delta and Rivers states, Nigeria. The quantitative and qualitative data collected were analyzed by employs descriptive statistics and inferential statistics of multiple regression analysis with the aid of Statistical Package for Social Science (SPSS) Software version 23. The population of the study include both drivers and market women and men dealing with agricultural products. **Nevertheless, due to the large unspecified and indefinite numbers of customers and drivers that exist in this market, this study employed a sample representation using unknown population formula by Languets, Patrick (2013) as cited by Méndez-Suárez, (2013) stated as follows;**

$$n = (z^2) * p (1 - p) / e^2$$

where;

**n is the size of your sample; p = proportion you study; 1 - p = one minus proportion you studied; and, e: precision needed that is 5%.**

Given, a confidence level of 95% which suggests 2.5% probability in each tail, the value of  $z = 1.96$  and  $p = 50\%$  (since the proportion of the target population is unknown, this study use the maximum error) a precision of  $e = 5\%$ , confidence interval

Given;  $n = (z^2) * p (1 - p) / e^2$  substitute the value of z, p and e into the formula, thus,

$n = (1.96^2) * (0.5 * (1 - 0.5) / 0.05^2) = 384.16$  Therefore, the targeted population sample could be 384 respondents.

Following the sample size of 384 determined, multi-stage sampling technique of non-probability or non-random sampling was employed in order to allocate the questionnaire to the respondents in the understudy area.

### Model Specification of Multiple Regression Model

$$PAC = (TRC) \dots\dots\dots (1)$$

And

$$TRC = f(LUC, GMT, CRM)$$

Therefore,

$$PAC = f (LUC, GMT, CRM) \dots\dots\dots (2)$$

$$PAC = \beta_0 + \beta_1 X_1 LUC + \beta_2 X_2 GMT + \beta_3 X_3 CRM \dots\dots\dots (3)$$

Where

The independent variables in the study is associated transportation cost which include; Levy and unauthorized checking point ((LUC); Government multiple tax (GMT), Cost of repairing and maintenance as well as fueling (CRM) and dependent variable is price of agricultural commodities (PAC).

$\beta_0$  = intercept

$\beta_1, \beta_2$ , and  $\beta_3$  are the parameters estimate

$\varepsilon$  = Measurement error. In this model, the main parameter of interest will be  $\beta_1$  in terms of sign and significance.

**Aprior Expectation:**  $\beta_1, \beta_2$ , and  $\beta_3 < 0$

## ANALYSIS AND DISCUSSION OF RESULTS

### Descriptive Statistics

#### SECTION I

Descriptive statistics help to summarize the demographic characteristics of the respondents in the study areas as reported in table 1 to 4 as follows.

**Table 1** Sex of the Respondents

Sex	Frequency	Percent
Male	144	41.0
Female	204	59.0
Total	348	100.0

Source: SPSS Statistics 23 Output from study data, 2025

Table 1 present sex of the respondents. The results showed that both male and female participated in the study. However, female recorded highest percentages with 59.0% while, male recorded 41.0%. The sex distribution



reveals that both male and female engaged in the economic activities *that involving* transportation business and moving of cargo involving agricultural commodities from one location to another location.

**Table 2** Age of the Respondents

Age Bracket	Frequency	Percent
18 – 23	28	8
24 – 29	39	11
30 – 35	60	17
36 – 40	65	19
41- Above	156	45
Total	348	100.0

Source: SPSS Statistics 23 Output from study data, 2025

Table 2 present the age bracket of the respondents. The results indicate that the entire ages bracket considered adulthood in Nigeria participated in the study. However, the age bracket between 41 years and above recorded the highest frequency of 156 respondents, representing *approximately* 45 percent of the entire sample population. Followed by age bracket between 36 and 40 years with frequency of 65 respondents, representing *approximately* 19 percent and next to is the age bracket between 30 and 35years with frequency of 60 respondents, representing *approximately* 17 percent. Subsequently, is the age bracket between 24 and 29 years with frequency of 39 representing *approximately* 11 percent and lastly, age bracket between 18 and 23 years having frequency of 28 which representing *approximately* 8 percent of the entire population. The entire age bracket that participated in this study is matured to provide useful information on the subject matter.

**Table 3** Occupational status of the Respondents

Occupation	Frequency	Percent
Drivers	46	13.0
Traders	302	87.0
Total	348	100.0

Source: SPSS Statistics 23 Output from study data, 2025

Table 3 present the occupational status of the respondents. The table shows that the frequency of drivers is 46 representing *approximately* 13 percent while the frequencies of traders are 302 representing *approximately* 87 percent.

**Table 4** Educational Status of the Respondents

Qualification	Frequency	Percent
No formal education	140	40
Primary	96	28
Secondary	76	22
Tertiary Education	36	10
Total	348	100.0

Source: SPSS Statistics 23 Output from study data, 2025

Table 4 present educational statuses of the respondents. The table 4 reveals that the frequency of those respondents with no formal education is 140 representing *approximately* 40 percent. The frequency of those respondents with primary school leaving certificate are 96 representing *approximately* 28 percent. While, the frequency of those respondents with secondary leaving certificate are 76 representing *approximately* 22 percent and lastly, the frequency of those respondents with tertiary education are 36 representing *approximately* 10 percent. **The data in this table show that in respect of educational status every respondent (participant) in this areas of study have the understanding of the effect of transportation cost on price of agricultural commodities in understudy areas.**

## SECTION II

### Analysis of the Research Questions and Results Presentation

**Research question 1:** What is the impact of government multiple tax and unauthorized levy on price of agricultural commodities in Delta and Rivers States? The responses of the respondents are reported as follows.

**Table 5** Impact of government multiple taxes, and unauthorized levy on price of agricultural commodities

Response	Frequency	Percent	Likert Scale	Weighted	Weighted Mean
Strongly Agreed	120	34	4	480	1.4
Agreed	160	46	3	480	1.4
Disagreed	48	14	2	96	0.3
Strongly Disagreed	20	6	1	20	0.0
Total	348	100.0	10	1076	3.1

Source: SPSS Statistics 23 Output from study data, 2025

Table 5 present the responses of the respondents on the impact levy and unauthorized fee on price of agricultural commodities in Rivers State. The results shown that the frequency of the respondents that strongly agreed that levy and unauthorized fee have impact on price of agricultural commodities are 120 *representing* 34 percent, with weighted mean of 1.4. The frequency of the respondents that agreed that levy and unauthorized fee have impact on price of agricultural commodities in Rivers State are 160 *representing* 46 percent with weighted mean of 1.4. However, frequency of the respondents that disagreed that levy and unauthorized fee have impact on price of agricultural commodities are 48 *representing* 14 percent with weighted mean of 0.3 and the frequency of the respondents that strongly disagreed that levy and unauthorized fee have impact on price of agricultural commodities are 20 *representing* 6 percent with weighted mean of 0.0. The result suggested that those respondents that strongly agreed and agreed on the levy and unauthorized fee have impact on price of agricultural commodities have sum weighted mean of 2.8 while those respondents that disagreed and strongly disagreed have sum weighted mean of 0.3. This result indicates that in overall the majority sampling population concord that levy and unauthorized fee have impact on price of agricultural commodities. However, this tentative statement will be tested by inferential statistic.

**Research question 2:** What is the impact of bribery and unauthorized checking point on price of agricultural commodities in Delta and Rivers States? The responses of the respondents are reported as follows.

**Table 6** Impact of bribery and unauthorized checking point on price of agricultural commodities

Response	Frequency	Percent	Likert Scale	Weighted	Weighted Mean
Strongly Agreed	180	52	4	720	2.1
Agreed	145	42	3	435	1.3

Disagreed	15	4	2	30	0.1
Strongly Disagreed	8	2	1	16	0.0
Total	348	100.0	10	1201	3.5

Source: SPSS Statistics 23 Output from study data, 2025

Table 6 present the responses of the respondents on the impact of bribery and unauthorized checking point on price of agricultural commodities. The results shown that the frequency of the respondents that strongly agreed that bribery and unauthorized checking point have impact on price of agricultural commodities are 180 **representing** 52 percent, with weighted mean of 2.1. The frequency of the respondents that agreed that bribery and unauthorized checking point have impact on price of agricultural commodities are 145 **representing** 42 percent with weighted mean of 1.3 However, frequency of the respondents that disagreed that bribery and unauthorized checking point have impact on price of agricultural commodities are 15 represent 4 percent with weighted mean of 0.1 and the frequency of the respondents that strongly disagreed that bribery and unauthorized checking point have impact on price of agricultural commodities are 8 represent 2 percent with weighted mean of 0.0.

The result suggested that those respondents that strongly agreed and agreed that bribery and unauthorized checking point have impact on price of agricultural commodities have sum weighted mean of 3.4 while those respondents that disagreed and strongly disagreed have sum weighted mean of 0.1. This result indicates that in overall the majority sampling population concord that bribery and unauthorized checking point have impact on price of agricultural commodities. However, this tentative statement will be tested by inferential statistic.

**Research question 4:** What is the impact cost of repairing and maintenance vehicle have on the price of agricultural commodities in Delta and Rivers States? The responses of the respondents are reported as follows.

**Table 7** Impact of cost of repairing and maintenance vehicle on the price of agricultural commodities

Response	Frequency	Percent	Likert Scale	Weighted	Weighted Mean
Strongly Agreed	110	32	4	440	1.3
Agreed	205	59	3	615	1.8
Disagreed	25	7	2	50	0.1
Strongly Disagreed	8	2	1	16	0.0
Total	348	100.0	10	1121	3.2

Source: SPSS Statistics 23 Output from study data, 2025

Table 7 present the responses of the respondents on the impact cost of repairing and maintenance vehicle have on the price of agricultural commodities. The results shown that the frequency of the respondents that strongly agreed that cost of repairing and maintenance vehicle have impact on price of agricultural commodities are 110 **representing** 32 percent, with weighted mean of 1.3. The frequency of the respondents that agreed that cost of repairing and maintenance vehicle have impact on price of agricultural commodities 205 **representing** 59 percent with weighted mean of 1.8 However, frequency of the respondents that disagreed that cost of repairing and maintenance vehicle have impact on price of agricultural commodities are 25 **representing** 7 percent with weighted mean of 0.1 and the frequency of the respondents that strongly disagreed that cost of repairing and maintenance vehicle have impact on price of agricultural commodities are 8 represent 2 percent with weighted mean of 0.0.

The result suggested that those respondents that strongly agreed and agreed that cost of repairing and maintenance vehicle have impact on price of agricultural commodities have sum weighted mean of 3.1 while



those respondents that disagreed and strongly disagreed have sum weighted mean of 0.1. This result indicates that in overall the majority sampling population concord that cost of repairing and maintenance vehicle have impact on price of agricultural commodities. However, this tentative statement will be tested by inferential statistic.

### Test of Hypotheses

In order to test the hypotheses of this study multiple regression analysis technique was adopted. The results are reported in tables as follows:

**Table 8** Multiple Regression Analysis Coefficient Results

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.035	.085		-.414	.679
	GMT	.471	.043	.510	11.080	.000
	BUC	.314	.040	.277	7.842	.000
	RMV	.228	.051	.196	4.469	.000
Dependent Variable: PAC						

Source: SPSS Statistics 23 Output from study data, 2025

Table 8 present the coefficients of the explanatory variables. The results show that transportation cost (TRC) vis-à-vis, government multiple tax and unauthorized levy (GMT); bribery and unauthorized checking point (BUC) and Cost of repairing and maintenance of vehicle (RMV) has a positive impact on price of agricultural commodities (PAC) with the coefficient of GMT, BUC and RMV having 0.47, 0.31 and 0.23 respectively. This result suggests that One percent increase in Levy and unauthorized fee (GMT), Bribery paid by transporter (BUC) and Cost of repairing and maintenance of vehicle (RMV) lead to about 47%, 31% and 23% respectively increase in price of agricultural commodities in the understudy areas.

Furthermore, all the predictors standard error values is less than beta values, likewise all the t-test value is greater than standardized coefficients (beta) value with the Sig value of 0.000 less than 0.05 significant level at 95% confident level suggests that transportation cost (TRC) vis-à-vis, Levy and unauthorized fee GMT), Bribery paid by transporter (BUC) and Cost of repairing and maintenance of vehicle (RMV) have statistically significant impact on the price of agricultural commodities.

**Table 9** Analysis of Variances (ANOVA)

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	182.718	3	60.906	795.180	.000 <sup>b</sup>
Residual	26.348	344	.077		
Total	209.066	347			
a. Dependent Variable: PAC					
b. Predictors: (Constant), LUF,BUC, RMV					

Source: SPSS Statistics 23 Output from study data, 2025

The next table 9 present the analysis of variances (ANOVA) in which all overall model is adjudged using the

estimation of F-value statistics. The ANOVA table 9 results present the F-test which explained the joint impact of the predictor variables on the dependent variable. The F-value of 795.180 with Significance value of 0.00 less than 0.05 level of significance indicated that the overall model is statistically significant in explaining the relationship between the dependent and independent variables.

**Table 10** Multiple Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.935 <sup>a</sup>	.874	.873	.27676

a. Predictors: (Constant), RIF, RWF, PBF

Source: SPSS Statistics 23 Output from study data, 2025

Table 10 presents the multiple regression model summary. The result shows that R-square is 0.874 and Adjusted R-square is 0.873. The  $R^2$  value of 0.874 indicates that approximately 87% of the variation in the price of agricultural commodities in understudy areas of the Rivers state, Nigeria is explained by the regressors. That is, 87% increase in the price of agricultural commodities can be explained increase in transportation costs, specifically due to levy and unauthorized fees (GMT), bribery paid by transporters (BUC), and costs of vehicle repair and maintenance (RMV), while the 13% remained can be explained by others factor outside this model. The coefficient of multiple determinations, that is, the adjusted  $R^2$  is also very strong at 87%. This demonstrates the strong explanatory power of the independent variables in accounting for changes in the dependent variables. Thus, following the foregoing multiple regression coefficient results and their significant values at 5% the hypothesis **two, three and four can be restatement as follows**,

At the 5% level of significance, the p-value of levy and unauthorized fee GMT) is 0.00 less than 0.05. Therefore, the study reject the null hypothesis two ( $HO_2$ ) which state that levy and unauthorized fee GMT) do not have impact on price of agricultural commodities in Rivers State, Nigeria and, accept the alternative hypothesis which states that levy and unauthorized fee GMT) have positive and statistically significant impact on price of agricultural commodities. This finding is in agreement with findings of Kleon (2018); Barnabas (2017); Yaro, Okon and Bisong (2014) and Tunde and Adeniyi (2012) who concluded that there is a positive and significant effect of transportation cost on the price of agricultural output.

At 5% level of significant, the p-value of bribery paid by transporter (BUC) is 0.00 less than 0.05 levels of significance. Therefore, this study rejects the null hypothesis three ( $HO_3$ ) which stated that bribery paid by transporter (BUC) does not have impact on price of agricultural commodities in Rivers State, Nigeria and, accept the alternative hypothesis which state otherwise, that bribery paid by transporter (BUC) have positive and statistically significant impact on price of agricultural commodities. This finding is in agreement with findings of Kleon (2018); Barnabas (2017); Yaro, Okon and Bisong (2014) and Tunde and Adeniyi (2012) who concluded that there is a positive and significant effect of transportation cost on the price of agricultural commodities.

At 5% level of significant, the p-value of cost of repairing and maintenance of vehicle (RMV) is 0.00 which is less than 0.05 level of significance; Therefore, the study rejects the null hypothesis four ( $HO_4$ ) stated that cost of repairing and maintenance of vehicle (RMV) does not have impact on price of agricultural commodities in Rivers State, Nigeria and, accept the alternative hypothesis which state otherwise, that cost of repairing and maintenance of vehicle (RMV) have positive and statistically significant impact on price of agricultural commodities. This finding is in agreement with findings of Kleon (2018); Barnabas (2017); Yaro, Okon and Bisong (2014) and Tunde and Adeniyi (2012) who concluded that there is a positive and significant effect of transportation cost on the price of agricultural commodities.

## CONCLUSION AND RECOMMENDATIONS

This study examined the impact transportation cost has on the price of agricultural commodities in Delta and

Rivers states Nigeria. In particular, this study examines the impact levy and unauthorized fee GMT); bribery paid by transporter (BUC) and cost of repairing and maintenance of vehicle (RMV). The study employed survey research design, to source for primary data which include quantitative and qualitative data. Both quantitative and qualitative data collected were triangulated and analyzed with the help of SPSS Statistics 23 package. The primary data sourced was analyzed with econometric technique of multiple regression analysis and results of the findings lead to the following conclusions. That, government multiple tax and unauthorized level have positive and statistically significant impact on the price of agricultural commodities.

That bribery paid by transporter (BUC) have positive and statistically significant impact on the price of agricultural commodities. That cost of repairing and maintenance of vehicle (RMV) have positive and statistically significant impact on price of agricultural commodities.

Based on the study's findings, the following recommendations are made; that Government in collaboration with drivers and market men and women leaders should come up with policy formulation that will discourage bribery paid by transporter (BUC) in order to reduces transportation cost such policy include educating the drivers and passenger on the implication of bribery on price of agricultural commodities as well as, close monitoring of the security personnel on the **high way been land and water way**. More so, **policy measures focusing on the maintenance of roads and waterways in order to reduce vehicle wear and tear** of a vehicle such that, cost of repairing and maintenance of vehicle (RMV) will drastically reduce. In addition, policy formulations that will eliminate government multiple tax and unauthorized fee GMT) should **be implementing** in order to reduce transportation cost and subsequently reduces price of agricultural commodities.

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