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EFFECTS OF TRANSPORTATION CHALLENGES ON FUFU PRODUCTION IN YEWA SOUTH LOCAL GOVERNMENT AREA OGUN STATE NIGERIA

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ABSTRACT

The study aims at assessing various transportation modes utilized by fufu processors and determining the correlation between the transport mode and the productivity of the processors. Data was collected with the use of questionnaire and focus group discussion with association of fufu processors. A sample of 136 processors was selected from the population of 210 processors identified from ten organised processing sites, Descriptive and inferential statistical analysis were used in the presentation of result. Transportation significantly (prob > F =0.0000) affect the operations of fufu processing and by extension 36% variation in the production output of fufu processors is explained by transportation factor. The study concludes that efficient transportation services will enhance food processing, production and supply.

Keywords: Transportation, Fufu Production, Mode of Transit, Productivity

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1. INTRODUCTION

The role of transportation in virtually all areas of human endeavours, particularly production activites cannot be over emphasised. There is hardly a sector where this overacting importance of effective transportation system is more germane than in the area of agricluture and agro-allied industries. Buttressing this point, [1] asserted that over the years transportation has added to farm produce, through regional trade/commerce. Therefore, continual probing into the many facets of relationship between transportation and agricultural

related activities should be expected particularly in countries with huge agrarian economy like Nigeria.

As a matter of fact, many scholars have blamed the persistent problem of food supply shortages in many nations on transportation constraint which heavilly weigh down agricultural production [2, 3]. It must also be added that the problem is not limited to the evacuation of farm produce from the farms which is often talked about but also extend to the agricultural product processing. For instance, [4] observe that potential marketing of processed agricultural product by small scale farmers is usually hampered by inadequate or poor transport facilities available to them.

However, while there are plethora of studies on the effects of transportation on agricultural produce and food supply generally as discovered in literature there was no evidence of any major study on the effect of transportation on fufu processors productivity in the region. It is against this backdrop that this study intends to examine the effects of transportation on Fufu processing industry in the study area with a view to contribute to the existing body of knowledge in this particular field. The study objectives are basically two; first is to assess various transportation modes utilized by fufu processors in the study area and secondly, to determine the correlation between the transport mode and the productivity of the processors

2. LITERATURE REVIEW

Studies have revealed that an adequate, reliable and efficient transport system is very germane in sustaining a local economy [5]. Efficient transportation system is a timely and safe movement of goods and services from the point of low demand to the point where the value is most appreciated. Most agricultural produce are produced some distance away from where they are needed. Transportation, therefore, provides the mobility that reduces the distance between point of production and point of delivery. Agrarian communities are mostly rural area, that are faced with mobility challenges which include poor road conditions, high cost of transportation, inadequate or periodic supply of transport facilities which of course have a negative effect on production and the price of produce [6]. The long distances between the farm and the service centre such as market or process centre have also been identified [7] as a contributing factor. Also, the routes are geographically not suitable especially in wet or raining seasons. Hence, rural dwellers resort to using means of transportation that can traverse the rugged and wet road, not minding the cost.

Over time rural dwellers use animals, human portage, and other intermediate means of transportation such as bicycle, motorcycle, car, boat and canoe which of course have low or medium load carrying capacity [8]. According to [9], very few farmers and cassava processors use high capacity vehicles. Also, they stated that over 70% use intermediate means of transport and this limits the potential for high yield of production because fewer quantities can be moved at a time with the intermediate means of transport or human porterage. [10] observes that rural travel and transport in most rural areas in Nigeria still take place with great difficulties, thereby compounding and worsening the problem of rural productivity and rural poverty. Improvement in transport will encourage farmers to work harder, increase production, add value to their products, reduce spoilage and wastage, and empower the farmers. It will also have positive impact on the productivity, income, employment level and poverty reduction level in the rural area [6].

Furthermore, studies on the impact of transportation on agriculture are now universal. This is not unconnected with the fact that one of the most challenging issues in the world today is food insecurity. [11] observed that the number of undernourished people in the world has been on the rise since 2014, reaching an estimated 821 million in 2017. The number of

undernourished people from sub-Saharan Africa (SSA) rose from 181 million to 222 million in 2016. Surprisingly, this is a region where approximately 70% of the population involve in agriculture [12]. This anomaly has been adduced to the fact that food availability is not a sufficient condition for food accessibility at household level [13]. Food access is hinged on two key factors viz; physical and economic access. Economic access relates to the person(s) available disposable income and prevailing price while physical access mainly depends on physical infrastructure that necessitates easy access most especially transportation [14]. Ajiboye [15] posits that although availability of food does not guarantee access to food but access to food is contingent on availability. The availability of food is a function of food production, processing, storage, and transportation while transport infrastructure is a key factor in food security.

Moreover, it is observed that shortage of food supply and incessant price hike of food stuff can be attributed to inefficient transportation and distribution [16]. Inadequate transport provision leads to the total waste of 25% of the total agricultural foodstuff produced [17, 18 cited by 3] averred that transportation among other factors represents the most serious constraint to agricultural product and development in Nigeria. In a study by [2], it was reported that transportation is ranked next after insufficient fund as the major constraint to cassava processing in Ogun state. The authors concluded that provision of good road network used by cassava farmers may likely reduce the cost of the cassava production.

However, recent study by [19] examined the effect of transportation on the marketing of agricultural products in Jos North. He concluded that transportation plays an important role in the distribution of agricultural products, helps in creating market for agricultural product and reduces spoilage and wastage of farm products. He reiterated the need for adequate transportation system as improvement in transportation can encourage farmers to work hard in increasing production. Again, related study by [6] examined the impact of transportation on production of kolanut in Ogun state. In consonance with previous studies, the study revealed that an improved transportation will encourage farmers to work harder in the rural areas for increased production, add value to their products, reduce spoilage and wastage, and empower the farmers as well as having positive impact on their productivity, income, and employment. Also, the study revealed that improved transportation reduce poverty level in the rural areas since it will be easier to move inputs and workers to farm as well as products to markets and agro-allied industry.

It is affirmed that each year, 200 billion metric tons of foods are transported globally — 35 percent by land, 60 percent by sea, and 5 percent by air [20]. The choice of the means of transport depends on the various factors such as cost, distance and the nature of the product. Air freight is used to transport food with a limited shelf life between continents. Rail and road transportation is preferred at a national or regional level with the train being mostly used in countries where vast distance have to be covered. In sub-Sahara Africa, road transportation accounts for 90% of all transport services, and in most cases provides generally the only access for communities of rural areas [21].

In a study conducted by [3], on the impact of transportation on agricultural production in developing countries, he observes that the means of transportation available and mostly used in transporting Kolanut are head porterage, bicycle, motor-cycle, taxi, public transport (pick-up van and buses) and Lorries. In another related study carried out by [9], majority (38%) used head porterage, 16.7% employed the use of bicycle, 22% use motorcycles, 18.7% indicated pick-up vans and 4.6% used Lorries. According to them, head porterage accounted for the highest percentage of use but has limited capacity to improve the level of production because they can only carry certain quantity at a time. The study also discovered that the low usage of automobile recorded was due to the bad condition of roads.

While commenting on the modes of transporting food in developing countries, [22] opined that absence of coordinated product delivery system forced farmers themselves to transport most of the produce, either as head loading or using pack animals, to both nearby and long distance markets. There are many constraints of such transport conditions: amount of produce that can be transported by head loading or pack animals is limited; transport time and distance is long; drudgery on farmers; and spoilage of produce during transport. These constraints may result in reducing production and marketing opportunities for farmers, and consequently shortage of food for consumers.

3. METHODOLOGY

Ilaro is a major town in Yewa South Local Government of Ogun State, south west Nigeria. Ten (10) Fufu Processing sites were identified through the reconnaissance survey of the study area. This figure was obtained during a Focus Group Discussion (FGD) exercise with the selected leaders of the Association of fufu processor. These sites include Oladandu, Iganmu, Kerekere, Ifelodun, Double Crown, Oke-Ela, Odo-Osun, Akewe, Ileba, and Ojurin-Eleba. A subsequent pilot study revealed that a total number of 224 people ply their trade as fufu processors in all the 10 production sites of which 14 was reportedly not available. Impliedly, the remaining 210 processors formed the population of the study.

Meanwhile, the researchers employed sampling size determination procedures developed by Krejcie and Morgan in 1970, which has been previously applied in [23]. The result yields 136 as required sample size. Production data were collected in a field-survey on all the 10 fufu sites through the use of well-structured questionnaire instrument. It is important to mention that question items as contained in the questionnaire were read in a local language to each of the fufu processor during the field survey and appropriate responses obtained and recorded. Detailed cross-sectional field-level data were collected between the months of June and July. Systematic random sampling technique was adopted to select the respondents in the main field survey as the questionnaires were administered among every 2nd approached fufu processors at each production site. Lastly, the formula used for sample size determination as contained in [23] is stated below:

$$S = \frac{X^2 \ NP(1-P)}{d^2 \ (N-1)+X^2 \ P(1-P)}$$

Where s = sample size; X^2 = table value of chi-square at 1 degree of freedom for desired confidence level (0.95); N = population size (210); and P = population proportion (0.5).

4. DATA PRESENTATION AND DISCUSSION

This section presents the results from the analysis of cross-sectional data collected on sampled fufu processors. The results were presented in three tables. Table 1 shows the description of demographic factors of the sampled respondents for the study, while Table 2 present the transport mode used in transporting cassava input and fufu while Table 3 illuminates empirical result of the study.

4.1. Demographic profile of the respondents

Table 1 describes important information about the respondents of the study i.e. sampled fufu processors, who are units of the analysis. In terms of characteristics description, important demographic indicators such as age, education status, and income levels were used to elicit cogent information about the respondents. From the descriptive analysis, it was observed that 26.09% of the respondents were within the age bracket of 19-35 years; 60% were found between 36-50 years; 13.04% are older people within 51-65 years; and negligible 0.87% was found as the oldest group of respondent. The result indicates that 86.09% of sampled fufu

processors are young adults. This finding implies that fufu processing as an occupation in Ilaro, Yewa South Local Government of Ogun State is mostly engaged in by young people. Intuitively, this finding points to the fact that innovation and modernization of operating activities could help to attract and stimulate the interests of more young entrepreneurs into the industry. In term of education, more than half (53.04%) of the fufu processors in the study area had no formal education. Those who attended primary school were 31.30% of the population while only 15.66% obtained secondary education. However, out of the minute proportion of the population that had post-primary education 6.09% did not proceed beyond junior secondary education. This result implies that the occupation is grossly dominated by illiterates, which justify the adoption of interviewer-administered survey technique used by the researchers.

Moreover, the information available from the descriptive statistics depicts that the range of incomes of the respondents was between ₦1 - ₦60,000. From Table 1, 76.52% of the population earns less than ₦30,000 as monthly average income while 23.48% of the population earns between ₦30,000 - ₦60,000 income on monthly basis. In comparison to current average monthly income in the formal sector particularly public sector the range of incomes earned by fufu processors in Yewa South Local Government of Ogun State is moderately impressive. However, such income levels will be significantly unattractive if compared with average incomes in organized private settings.

Table 1: Respondents' Descriptive Statistics

	Frequency	**Percentage**	**Cumulative**
Age			
19-35years	30	26.09	26.09
36-50years	69	60.00	86.09
51-65years	15	13.04	99.13
65 years and above	1	0.87	100.00
Total	115	100.00	
Education			
No Formal Education	61	53.04	53.04
Primary Education	36	31.30	84.35
Junior Secondary	7	6.09	90.43
Senior Secondary	11	9.57	100.00
Total	115	100.00	
Income			
Less than ₦30,000	88	76.52	76.52
₦30,000-₦60,000	27	23.48	100.00
Total	115	100.00	

Source: Authors' Computation from STATA 12 Outputs, 2019

4.2. Mode of transport adopted by respondents

The mode of transport used by respondents was presented in Table 2. The table revealed that 44.35% uses lorry/pick-up van as a transport mode to convey raw materials most especially cassava from farm to production centres. Again, 42.61% employed the services of motorcycle as a means of transportation while 13% often use bus as transport system. Negligible proportion (0.875%) sought for services of taxi and tricycle respectively in the course of production activities. The finding implies that more than 86% of the population use either lorry/pick-up van or motorcycle as transport modes. This is not unconnected to load carrying capacity of lorry and common usage of motorcycles among people in semi-rural areas such as Ilaro, Yewa South Local Government of Ogun State.

Table 2: Transport mode used

Transport Mode	Frequency	Percentage	Cumulative
Lorry /pickup van	51	44.35	44.35
Bus	13	11.30	55.65
Taxi	1	0.87	56.52
Tricycle	1	0.87	57.39
Motorcycle	49	42.61	100.00
Total	115	100.00	

Source: Authors' Computation from STATA 12 Outputs, 2019

4.3. Effects of transportation on fufu production

Table 3 presents Cross-sectional OLS Model result for the effect of transportation on fufu production in the study area. From the analysis, the average capacity; average cost of transport mode system; and the accessibility to alternative transport mode were found to be significant at 5% level in influencing production performance of fufu processors in the study area. Absolutely, the coefficient of *TCAP* (measured of transport mode capacity) was significantly larger than any other predictor coefficients in the model. Beta value measures the degree to which predictor (transportation measures) variables affect the dependent variable (fufu production). The beta coefficients of predictors from the model are .675*(TCAP)*; -.202 *(TDIS)*; -.041*(TTIM)*; -.202 *(TCOS)*; and .354 *(TACS)* respectively. The result implies that a bag increase in loads that can be carried by a transport mode, e.g. lorry/pick-up van, bus, or motorcycle increases fufu production by almost three-quarter (67.5%) of a bag used to package fufu produce, *ceteris paribus (*all other factors remain constant). Again, every increase in the level of transport mode accessibility increases fufu production by 35% of a fufu produce bag, *ceteris paribus*.

Secondly, increase in average distance covered by a transport mode and time spent reduces fufu production by 20% and 4% of produced fufu per unit of production *ceteris paribus*. Surprisingly, an increase in cost of transportation causes an increase in fufu production by 20% of a fufu-produced per unit of production, *ceteris paribus*. From Table 3, it is also revealed that capacity, cost and accessibility of used transport modes significantly have effect on fufu processing in term of production at 5% level of significance while average distance and time spent by transport modes are insignificant factors that affect fufu processing in the study area. This result implies that certain aspects of transportation have significant impacts on fufu production in Ilaro, Yewa South Local Government of Ogun State. In addition, the results indicated by magnitude of beta values of prediction implied that coefficients of transport mode average capacity (.675), average distance covered (-.202), average time spent (-.041) and accessibility of transport modes (.033) conform to a priori expectation of the study while coefficient of average cost of used transport modes (.202) fails to conform to a priori expectation.

Furthermore, the prob > F (0.0000) indicates that transportation significantly affect the operations of fufu processing in the study area and by extension 36% variation in the activities of fufu processors in the study area is explained by transportation. The F – statistics measures overall joint significance of both models. Also, the researchers test for autocorrelation or serial correlation in the model through the use of Durbin-Watson statistics. According to [24]**,** OLS is very sensitive to serial autocorrelation and the presence of such incidence in the model could make regression estimates unreliable and inconsistent. From Table 3, the Durbin-Watson measure of 1.725 reveals absence of serial correlation among the disturbance terms in the study model. This implies absence of association/correlation among the error terms of explanatory variables employed in the model.

Table 3: Regression Model Output: Dependent Variable: *PRODRATE*

Variable	Coefficients				
	β_1	β_2	β_3	β_4	β_5
TCAP	.675 (.175) 0.000*				
TDIS		-.202 (.185) 0.277			
TTIM			-.041 (.160) 0.801		
TCOS				.202 (.134) 0.037*	
TACS					.354 (.164) 0.033*
Constant	1.253 (.711) 0.081				
Model Summary					
Prob > F	0.0000				
R^2	0.3618				
Adjusted R^2	0.3323				

Source: Authors' Computation from STATA 12 Outputs, 2019

5. DISCUSSION OF FINDINGS

The current study aimed at providing scientific responses to an explanation about the characteristics of fufu processors and enquiry about how transportation affect food production (fufu processing) in semi-urban areas such as Ilaro, Yewa South Local Government in Ogun State. Consequently, the study found that large proportion of fufu processors in Ilaro, Yewa South Local Government of Ogun State are informal young and active adult earning incomes not exceeding ₦30,000 monthly. These entrepreneurs often employ the services of lorry/pick-up van as transport mode to convey their raw materials largely cassava from farmland. Meanwhile, the finding that sizeable proportion of sampled population uses lorry/pick-up van reflect the production capacity of the processor, this is not different from previous researches by [25, 9, 26, 8, 22, 27, 28]. The previous studies asserted that majority of farmers in their respective study areas use intermediary means of transportation (IMT) of which lorry/pick-up van is a type. These points to the fact that similar challenges exist across most agricultural producing localities.

Inferentially, the study found that transportation significantly affects production process of fufu as a food in the study area. This affirmation was based on the outcome of probability value of overall significance of the model (p > F at .05: 0.0000) which implies that transportation model specified by the study can be effectively employed to explain variation in production of fufu among the processors in the study area. At individual level of prediction, it was discovered that increase in average distance covered and average time spent by transport modes used by processors reduces the rate of fufu production in the study; however, such occurrence was found statistically insignificant. This finding was highlighted by

magnitude and significance of variables. The negative effect of distance has been previously established by [7] however, this current study found such effect insignificant.

6. CONCLUSION

In conclusion, the study found that increase in average capacity, average cost and accessibility of transport modes used by the processors significantly increase production of fufu in the study area. Surprisingly, the finding about average cost of transport mode was against the existing theory of cost relative to purchase decision. This was unexpected by the researchers. In theory, production activities such as fufu production reduce when there is an increase in the cost of transportation ceteris paribus. However, the present finding illustrates that an increase in average cost of transportation significantly increase the production activities of fufu processors in Ilaro. This finding may be attributed to desire of suppliers/producers to significantly maximise their profit levels when there is increase in cost of fuel which often results in high cost of production in Nigeria. Furthermore, the study finding about potential positive impacts of transportation on productivity has been previously confirmed by [6, 5, 19].

More importantly, the findings from the study indicate that sizeable variation in fufu production in Ilaro, Yewa South Local Government of Ogun State is accounted for by transportation. This points to the direction that provision of transport facilities and services will significantly enhance food production system and preserve the quality of processed food such as fufu. In particular, food security in developing countries like Nigeria can be to a large extent guaranteed. Meanwhile, scientific research that will specifically evaluate probable causative factors for positive impact of cost of transportation on fufu processing in the study area is required in future.

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