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1. Erudification and Edification of inter-state heavy goods vehicles (hgvs) drivers on HIV/aids spread. 1 - 12
Obi. P And Odumosu A.O
2. A study of the Traffic Operational Parameters on major arterials to assess the socio-economic working of a city the case study of Ilorin, Nigeria. 13 - 29
Y.A. Jimoh, E.O. Akinyemi and N.O. Okunlola
3. Transportation challenges in the movement and distribution of agricultural products in Ibadan region 30 - 43
O. Ipingbemi, O.J Omirin and O.P. Adesoye
4. The Need to Improve Mobility in Our Cities: A Case Study of Zaria Metropolis 44 - 52
Olatunde Ajayi, Oluwole Arigbede
5. The Effects of Transportation System on Food Marketing and Security in Nigeria 53 - 68
Ajiboye, Araoye Olarinkoye
6. Evaluation of Rutting Models Using Reliability for Mechanistic-Empirical Design of Flexible Pavement 69 - 79
Dr. Adekunle Taiwo Olowosulu, Mite and Abdulfatai Adinoyi Murana, Mite
7. An Analysis of Articulated Vehicle Operation in Nigeria 80 - 91
Oni, S. I., Okanlawon, K. R. & Olagunju, K.
8. A Study on International Ship and Port Security (Isps) Code Compliance in Nigeria. 92 - 98
JATAU, S.U
9. Private Operation of Bus Services in Niamey Metropolis 99 - 111
Odumosu, Bayero, Yousouf and Tijanni
10. An Analysis of Road Traffic Volume on Nigeria's Lagos-Ibadan Expressway 112 - 129
Oni, S. I; Ege, E. E.; Hammed, T.; and Afuye, B

THE EFFECTS OF TRANSPORTATION SYSTEM ON FOOD MARKETING AND SECURITY IN NIGERIA

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Abstract

Food is wasted at all stages of the food chain, from production and harvest all the way through to post-purchase by the consumer. In developing countries the highest losses occur at the post-harvest stage, typically owing to such factors as spillage and spoilage brought about by inadequate transport and storage infrastructure. This paper therefore examines how transportation systems affect food marketing and security in Nigeria. A total of 300 respondents were randomly selected and interviewed which represented 20% of the registered food traders within the study area while the analysis of the data obtained were based on simple statistics supported by a series of tables showing percentage distribution of some variable. For the rank analysis, the variables; strongly agree, agree, neutral and disagree and strongly disagree were given these values namely 2.5, 2, 1.5, 1 and 0.5 by multiplying them with the number agreeable to the variables and then summed up. In conclusion, it has been observed that the inadequacy in transportation facilities, high cost of transport and high level of wastage due to poor storage and processing facilities in the study area has affected greatly the level of food marketing and security in the study area.

Keywords: Transportation System, Food Marketing, Food Security.

1.0 INTRODUCTION

Transportation refers to the movement of people, products and services from one geographical location to another through a mode or modes for a specific purpose at a specific time Ajiboye (1995). The unique role of transport in food distribution and security cannot however be ignored as many scholars have observed. Adefolalu (1977) identified transport as a phase in the production process of which is not complete until the products get to the final consumer while Odugbemi and Ajiboye (1998), Ajiboye and Afolayan (2009) and Ajiboye and Ayantoyinbo (2009) opined that for an effective distribution to take place there must be a very good transport system. Transportation is therefore very important in the overall development of any country and very crucial in the production process.

In most parts of the World, most transportation infrastructures are owned and managed as public good (Chopra et al 2010). This ensures optimal allocation of investments for maintenance and build-up of transport capacities as needed. Transportation policy aims to prevent abuse of monopoly power, promotes fair competition, and balances environmental,

energy, and social concerns in transportation. By means of optimizing a country's transport infrastructure, the distance that products travel can be reduced by creating more localized supply chains and by shifting from roads to rail or from air to sea. Flint and Gammelgeard (2008) believe that transportation innovations can also contribute to the sustainability of distribution processes by improving fuel-efficiency of engines, optimizing vehicle loads and implementing intelligent transportation management systems. However, direct transportation is more efficient when large quantities are to be moved, whereas transportation through regional distribution centers is most efficient in case of small amount of products according to Chopra et al (2010)

Transport is very crucial in the production process whether agriculture or manufacturing. For instance, Ajiboye (1994, 1995 and 2009), Odugbemi and Ajiboye (1998) as well as Abumere and Oluwasola (2001) identified availability of transport facilities as a critical investment factor that stimulate economic growth through increased accessibility. Its efficiency and effectiveness all affect the basic function of production, distribution,

marketing and consumption in many ways and also influence the cost of commodity consumed and the purchasing power of the consumers. When it is in place it will ensure an efficient movement of agricultural products, raw-materials, finished and semi-finished products, services as well as people from the point of production to the market centers. However, in developing world, limited infrastructure and transport service has occasionally disrupted food production and circulation according to Odugbemi and Ajiboye (1998), Abumere and Oluwasola (2001), Egbuna (2001), Flint and Gammelgeard (2008) as well as Ajiboye and Afolayan (2009).

Weitz (2003) have shown that transportation is a final function of the marketing system that connect almost all the stages of production systems namely from the production to the distribution and marketing of product. According to Kohls and Uhl (1985) agricultural products are geographically dispersed and the task of linking the several agricultural producing areas with the consumption centers is not an easy one. Nigeria is basically an agrarian nation; hence the majority of the goods transported are mostly agricultural products which are bulky, low priced, highly perishable and need to be conveyed

from the production areas to consumption areas with minimum delay and cost. Agricultural products are therefore transported from the farms to the consumers by nearly every available and conceivable method because of the characteristics.

Agricultural transport needs vary widely because of the seasonality and condition of the crops which complicates the food distribution. For instance, if there are large harvest it put severe strains on the capacity of the transport equipment. The biological and bulky nature of farm produce makes special demands on the transportation system. For instance, grains require high capacity equipment, live animals need special equipment and perishable products required rapid transportation and liquid products like palm oil, and groundnut oil etc required tanker vehicles while some other products require diverse transportation needs. Because of these conditions farmers and marketers have always been concerned with the in adequacy and costs of transportation of agricultural products (Odugbemi and Ajiboye 1998) Abumere and Oluwasola (2001), Ajiboye and Afolayan (2009) as well as Ajiboye and Ayantoyinbo (2009) The movement of agricultural products from where they are

produced to their consumption centers creates place utility which the consumers are ready to pay for, but often exceed the cost of transportation. Improved transportation has therefore expanded the market area for farm products from a local to national and as well as international level. However, in spite of the inevitable role of transportation in the distribution of agricultural products, there is an increasing concern about the ability of existing transportation system to meet the growing demand while food is wasted at all stages of the food chain, from production and harvest all the way through to post-purchase by the consumer. In developing countries the highest losses occur at the post-harvest stage, typically owing to such factors as spillage and spoilage brought about by inadequate transport and storage infrastructure. Inadequate capital for investment and poorly functioning socio-economic institutions hamper waste reduction, though Parfitt *et al.* (2010) suggested that waste in traditional or small-scale agriculture may have been over-estimated. In industrialized countries, substantial waste occurs in households after purchase, though retail, distribution and processing are also responsible for significant amount of waste; there is a marked inadequate data on the magnitude of waste in catering and public food

outlets. A reduction in waste early in the food chain has occurred in many countries as they move from low- to middle-income status, though these gains are sometimes mitigated by increasing waste by consumers and the retail trade. Encouragingly, a variety of targeted incentive schemes in high-income countries have demonstrated significant potential for waste reduction, given the political will Weitz (2003), Flint and Gammelgaard (2008) and Chopra *et al.* (2010).

Their abound so many definitions on food security but essentially is mainly concerned with food availability and food accessibility to all people at all times to the food required for a healthy life according to Egbuna (2001). The food security operates at all levels: individual, household, regional, national and global while the 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, storage and transportation while transport infrastructure is a key factor in food security.

1.1 OBJECTIVES OF THE STUDY

The major aim of this study is to identify the effects of transportation

system on the marketing and security of food products in Nigeria. This paper will make an attempt to examine the linkage between transportation and marketing as well as on the security of food product within Ijebuland, Nigeria and as well profess some recommendations based on the findings.

1.2 METHODOLOGY

1.2.1 DATA COLLECTION

Simple random sampling technique was used for the purpose of the study in this design. Each sampling unit has equal chance of being selected as the first member sample. After the first member is selected, each of the remaining units in the population has an equal chance of being the member of the sample. The primary data were collected through the questionnaires and scheduled interview so as to achieve the objectives of the study. A total of 300 respondents were randomly selected and interviewed which represent 10% of the registered food traders within the study area - Ijebuland.

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Ijebu land is in Ogun East senatorial district. It has six local government areas. Namely Ijebu East, Ijebu North, Ijebu North East, Ijebu Ode, Odogbolu and Ogun Waterside. Ijebuland

has two state universities at Ago Iwoye and Ijebu Ode, a College of Education at Omu Ijebu, a polytechnic at Ijebu Igbo, a School of Nursing at IjebuOde and School of Health Technology at Ilese while Ijebu Ode is the headquarter of Ijebus where the Awujale, the paramount ruler resides and the second largest town in Ogun State. The Ijebus are predominantly farmers and traders. The study food item is Gari- Ijebu which is a leading staple food from cassava within local, regional, national and international trade as a result of its delicacy, easy to prepare and relatively cheap price. It is consume by almost all the tribes in Nigeria. The cassava is peeled, grated, packed in a container to ferment for three to four days and then press to dry water from the fermented cassava and fried. It is the major staple food produced in Ijebuland. It can be eating raw, soak in water to drink and most often use in preparing a solid food known as 'Eba'.

1.2.2 DATA ANALYSIS TECHNIQUE

The analysis of the data is based on simple statistic supported by a series of tables, showing percentage distribution of some variables. For the rank analysis, 5 points Likert scale from strongly agreed, agreed, neutral, disagree and strongly disagreed were given these values namely 2.5,2, 1.5,1 and 0.5 respectively which

were used to determine which factor influence most significantly the parameter being considered. These formed the basis for the conclusion reached and the recommendations made.

$$\text{The Relative Importance Index} = \frac{\sum af}{AF}$$

Where

a = Value assigned variable, A = Highest value assigned to variable

F/ f = Frequency of occurrence

1.3 ANALYSIS OF THE EFFECTS OF TRANSPORTATION SYSTEM ON FOOD MARKETING AND SECURITY IN NIGERIA

From the analysis of the responses of the respondents, it was discovered that all the respondents agreed that they engage in food trading and 42% of them are for commercial purpose only and the rest 58% engaged in trading for consumption and commercial reasons while the traders were asked about the length of time they have been involved in gari trading. The responses were grouped into five classes namely below 5, 6-10, 11-15, 16-20 and above 20 years while 24%, 16%, 21%, 20% and 19% falls into the groups

respectively. The quantity of gari purchased varies from one trader to another. For instance, 37% of the respondents purchased more than 10 tonnes at a time, another 49% purchased 2 – 10 tonnes, 8% purchased only one tonne and the remaining 6% purchased less than a tonne at a time. The factors responsible for the disparity in purchases are the limitation of trading capital, storage facilities of the traders, accessibility of some producing areas as well as the associated transportation problems.

The migration characteristics of the traders were also considered. 75% of the respondents came to buy gari from the other parts of the country. Such as Lagos, Abuja, Kano, Minna, Kaduna, Benin, Warri, Port Harcourt, Ibadan, Osogbo where there are Ijebus as well as people who are in love with Ijebu gari among other garis while the remaining 25% are internal traders within Ijebuland. This shows that gari marketing in Ijebuland attract more outsiders than the indigenes. However on the destination of the gari, it was found that 48% of it ends up in Lagos because of it nearness to Ijebuland and high population density, 17% goes to the Northern Nigeria with about 45% of it ending up in Abuja, the federal capital and neighbouring towns, 5% to the East, 7% to

the West, 3% to the international market, 2% within Remoland, 10% to Ijebu division and 8% to other parts of Ogun State.

On the sourcing of gari, 47% of the respondents get their supply from the middlemen, 35% of them received theirs through the various collecting centres established by the traders and their agents, 13% others got their through the various gari markets and the remaining 5% of the respondents received their supply of gari through direct buying from the farmers on the farms. Furthermore, it was found out that the 35% of the respondents have collecting centres of their own and 18% of them move from one village to another and the remaining 47% of the respondents do move about as well as having a collecting centre. This however, shows the significant role of middlemen and women whom Onakomaiya (1975) referred to as Assembler – Processors and Bulking agents.

The cost of transporting gari also varies from one location to another and from one trader to another corroborating Olaosegba's (1973) view that road transport cost is an active determinant in the marketing of farms product. For instance, 16% of the respondents paid less than ₦5000 to move a tonne of gari for a

distance less than 10km, 47% of them moved their products with a sum between ₦5000 – ₦7500 < - 15km, and 23% of them transport a tonne of gari within a range of ₦7500 – ₦8000 < 20km while only 14% of the sampled traders agreed that it cost them above ₦8000 to transport a tonne of gari above 20km. The cost of transporting gari by the traders from the source to destination depends on the number of so many variables which also affect the choice of the means of transport. Such factors are the distance to be covered, the nature of the roads, the security personnel on the roads and the size and quantity of gari to be transported as well as the availability of transport (vehicle). If the supply is lower than the demand, it will make the price to rise and thereby resulting in a higher fare change by the transporters.

The frequency of purchase by the traders was also considered, in which 13% of the respondents agreed that they came to buy gari occasionally, 18% said everyday, 23% mentioned twice weekly and 20% of them every week while the remaining 26% of the respondents purchase the gari on monthly basis. The factors that determine what quantity of gari to be purchased by the traders were also considered as shown in Table 1. These are availability of capital to purchase the gari

which ranked first followed by the availability of the gari in terms of quantity and quality. Next is the type and nature of the gari since a well process and dried types of gari command a higher price because of their demand. The cost of transporting the gari from the source to destination was ranked next and the availability of vehicle and driver that can take the traders to their destination safely and in a good time irrespective of the distance and condition of the road was ranked next while the availability of storage facilities ranked last. From this analysis we could see that availability of capital is the most important factor in any food trade including gari marketing.

From the analysis of the respondent responses to the question on possession of vehicle, only 17% of them have a vehicle of their own which they use for their businesses while the remaining 83% depend on the commercial vehicles. Some 45% of the traders that have a vehicle of their own have at least a pick – up van and 24% of them have lorry and the remaining 31% have saloon cars. Furthermore, 62% of all the respondents put together agreed that it is economically better to hire a vehicle for transportation of gari rather than having a vehicle of their own, but 38% of the respondents indicated otherwise. The reasons are based on quantity of shipment and frequency of the trip at a given period.

Table 1: Factors responsible for bulk purchase of Gari

Factors	Strongly Agree	Strong	Neutral	Disagree	Strongly Disagree	Total	Score Total	Rank
Cost of Transportation	279	21	-	-	-	300	739.5	3 rd
Availability of Storage Facilities	180	90	30	-	-	300	675	5 th
Availability of vehicles	150	100	27	15	8	300	634.5	6 th
Availability of Gari	294	6	-	-	-	300	747	1 st
Type and Nature of Gari	200	91	9	-	-	300	695.5	4 th
Availability of Capital	290	10	-	-	-	300	745	2 nd
TOTAL	1393	318	66	15	8	1800	4236.5	

Source: Author's field survey

The mode of transport used in bringing the gari to the major collecting centers and markets were also considered as shown in Table 2. The combination of the head portorage and vehicle as a dependable means of transportation recorded the highest number of 75 respondents which represent 25% and 51 of the respondents representing 17% make use of pick – up van while the use of motorcycles and lorries by the respondents recorded 13% each and head portorage alone recorded 12%. Furthermore, 10% each of the respondents use bicycles and bus as well as taxi respectively. From table 2 it is also revealed that many of the traders still use paid porters to move gari a great deal as a result of inaccessibility of some villages and farms as well as the poor condition of some roads which make the transportation of gari very slow and energy sapping and only allow small quantity to be carried though gari transportation required a fast and reliable transport system.

The reasons for the choice of vehicle used by the respondents were also analysed. Some 30% of the respondents considered the distance to be covered as the greatest factor followed by the quantity of gari to be transported with 26% of them attested while 21% considered the condition of the roads as a determinant factor since many transporters would not want to travel on a bad road except well remunerated by the traders. Furthermore, 18% of the respondents said that availability of capital is another factor, another 30% listed time factor as reason moreso that transportation of gari requires a faster and safer means of transport and the remaining 2% of the respondents considered the condition of the vehicle as determining factor. A vehicle with a spacious strongly built body, mechanically well maintained and with a disciplined and effective driver will attract more marketers for the movement of the gari.

Table 2: Means of transporting gari to market

Means of Transportation	Frequency	Percentage (%)
Lorry	39	13
Pick Up Van	45	15
Head Portorage + Vehicle	75	25
Motorcycle	39	13

Bicycle	30	10
Head Porterage Alone	36	12
Bus and taxi	30	10
Total	300	100

Source: Author's field survey

From Table 3 below, the factors responsible for the price a trader buys a particular quantity of gari were considered by ranking them into strongly agreed, agreed, neutral, disagree and strongly disagreed. For instance, among the variables that dictate the price the marketer would pay for a particular quantity of gari at a particular market, include the type and quality which is considered as the main reason.

The type and nature of gari was ranked first by the respondents while availability of adequate capital for the traders to purchase large quantity and quality gari were ranked second since traders demand can only be backed by money as a means of exchange. Furthermore, the quantity of gari to be purchased affects the price paid and was ranked third since most regular customers are often given discounts on large quantities. Availability of vehicle to transport the gari to their destination was ranked next by score total of 740 and 94%

of the respondents strongly agreed that the cost of transportation to and from the market affect the price they offer to buy the gari since a high transportation cost will increase the selling price which the traders do not favourable support, since the higher the price the lower the gains. Other factors that affect the amount of price the marketers are ready to offer are the distance to be covered, which was ranked sixth with 652.5 score total since a short distance will reduce the transport cost and may lead to a reduction in the price offered for the gari while availability of storage facilities by the trader could mean more space to store the gari and more profit if they sell at the period of scarcity; so a trader with large storage facilities can buy at any price with the hope that he will sell for higher price and profit at a more favorable time. This score total for this was 656.

Table 3: Determining factors for price paid for gari

Factor	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total	Score Total	Rank
Availability of Storage Facility	182	68	30	20	-	300	656	8 th
High Cost of Transport	255	45	-	-	-	300	727.5	5 th
The quantity of Gari	268	32	-	-	-	300	734	4 th
Distance to be covered	201	43	36	20	-	300	662.5	7 th
Availability of Capital	282	18	-	-	-	300	741	2 nd
Monopolistic nature of Ijebu Traders	126	64	50	35	25	300	600.5	9 th
Availability of Vehicle	280	20	-	-	-	300	740	3 rd
Relationship with the farmers	150	134	16	-	-	300	667	6 th
Type and Quality of Gari	300	-	-	-	-	300	750	1 st
TOTAL	2044	424	132	75	25	2700		

Source: Author's field survey

The relationship between the traders and the buyers and farmers also determine the price since a close relationship often lead to very low price charge and 50% of the respondents seriously agreed to it. Finally monopolistic nature by the Ijebus, the main buyers of gari determining the price they offer for gari is also considered as one of the factors that determine the price paid for gari as 48% of the respondents strongly agreed.

From this analysis it can however be observed that the quality and quantity of gari, and the availability of capital play more significant role than transport related factors in determining the price of gari as shown in Table 4. From this table, it is evident that type, nature, quality and quantity of gari still plays a significant role among the factors that determine the price the traders will sell or buy their gari and the distance.

Table 4: Determining factors for price charge for gari

Factors	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Total	Score Total	Rank
Distance covered by the buyer	198	72	30	-	-	300	684	4 th
Volume of purchase	255	45	-	-	-	300	727.5	3 rd
Cost of transport	273	27	-	-	-	300	736.5	2 nd
Personal relationship with buyer	207	45	23	15	10	300	662	6 th
Type and quality of gari	300	-	-	-	-	300	750	1 st
Payment for purchase	200	65	35	-	-	300	682.5	5 th
TOTAL	1433	254	88	15	10	1800		

Source: Author's Field Survey

The factors that determine the price a gari trader sell or buy his gari were also analysed according to the ranking given by the respondents as shown in Table 4 below. Type and quality of gari was ranked first with 750, the cost of transporting the gari from the farm to the market or collecting centre was ranked second, followed by the volume of gari to purchase, and distance covered by the buyer to purchase the gari as well as the, personal relationship with the buyers and sellers with score total of 727.5, 684, 682.5 and 662 respectively

An attempt was made to analyze the influence of the Gari Trading Association such as the Women Gari Traders Association of

Nigeria. It was discovered that 97% of the sampled traders agreed they are active members of the food distribution and trading association. This association admit new members, perform-socio-economic functions, train the new members in the art of the trading in gari business, ensure the welfare of their trade and members as well as constitute a political/trading pressure group that lobby the governments to ensure adequate supply, maintain and improve marketing facilities and security at the main markets in the study area.

1.3 SUMMARY, RECOMMENDATIONS AND CONCLUSION

The role of transportation according to Onakomaiya and Ekanem (1981) is to promote interaction through accessibility between places and between producing area to consumption areas. For this reason, this study therefore concerned itself with the analysis of the impact of transportation system on the food marketing and security in Nigeria. It has therefore observed that the inadequacy in transportation facilities, high cost of transport and high level of wastage at all stages of the food chain, from production and harvest all the way through to post-purchase by the consumer due to poor storage and processing facilities in the study area has affected greatly the level of food marketing and security. This study agreed with some other findings in developing countries including Nigeria that losses occur mostly at the post-harvest stage, typically brought about by inadequate transport and storage infrastructure. The fuel required in the movement of food items depend on the distance between producers and purchasers or end-customers, the quality of the transport infrastructure that connects the two parties and the density of depots

involved in supplying goods to purchasers, intermediaries or directly to customers according to Schulte (1999), Ajiboye and Fapohunda (2008) and Belz et al (2009). Therefore, there is an urgent need to open up the agricultural producing areas that have not been linked effectively in order to achieve the objective of integrated rural development as explained by Ajiboye (1994, 1995 and 2009) and food marketing and security in Nigeria

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