Sokoto Journal of Geographical Studies (SJGS)

Volume 2, Issue 1, July, 2025 Edition

Volume 2, Issue 1, July 2025 Edition

Sokoto Journal of Geographical Studies (SJGS)

Volume 2, Issue 1, July, 2025 Edition

Published by the Department of Geography, Sokoto State University, Sokoto P.M.B. 2134, Along Birnin Kebbi Road, Sokoto State-Nigeria

© DEPARTMENT OF GEOGRAPHY, SOKOTO STATE UNIVERSITY, SOKOTO
Volume 2, Issue 1, July 2025 Edition

Department of Geography, Sokoto State University, Sokoto P.M.B. 2134, Along Birnin Kebbi Road, Sokoto State-Nigeria

(July 2025 Edition, Issue 1, Number 2)

E-ISSN: 3115-5812, PRINT ISSN: 3034-551X

Volume 2, Issue 1, July 2025 Edition

ABOUT THE JOURNAL

Sokoto Journal of Geographical Studies (SJGS) is a double-blind peer reviewed journal that is being published in **July** and **December** annually, by the Department of Geography Sokoto State University, Sokoto-Nigeria. The Journal provides a platform for researchers and academicians around the world in order to promote healthy intellectual discourse concerning research, preservation and dissemination of academic knowledge. The journal adopts a multidisciplinary approach to scholarship in all areas of Geographical Studies.

Prof. I. M. Dankani

Editor-in-Chief

Volume 2, Issue 1, July 2025 Edition

AUTHOR'S GUIDELINES

Manuscript should be typed, doubled line spacing, 12 fonts size Time New Romans, not more than 3000-5000 words pages including references and appendixes. The text should be organized into an introductory section, conveying the background and purpose of the paper, and then into sections identified with subheadings. References should be in APA style of references 6 edition. An abstract should not be more than 250 words. All pages should be numbered at the bottom centre of the page beginning with the title page. The abstract should not contain abbreviations or references. Keywords should be provided below the abstract in alphabetical order for indexing.

Title page should be placed on a cover sheet (less than 40 characters) and it should contain, tittle of the paper, the full name(s) of the author(s) and the addresses of the institution(s) at which the work was carried out along with full postal and email addresses, and phone numbers to whom correspondences about the manuscript should be sent

However, manuscripts that do not meet the criteria outlined in these instructions will be returned back to the Author without review. Similarly, views expressed in the articles are those of authors, not publishers.

The following are the instructions needs to be respected

i. The entire article (including figures and tables) should be supplied as a single document file
ii. Authors should supply their accepted paper as formatted text
iii. Manuscripts are to be prepared and submitted in word document (.doc) or rich text format, only on manuscript.

Authors can only submit their manuscripts electronically in MS word format through the Journal Email: sjgs@ssu.edu.ng Papers are submitted on the understanding that they have not been published elsewhere (except in the form of an abstract, as part of a published lecture, reviewed, or thesis) will not be submitted anywhere else and are not currently under consideration by another journal or any other publications.

Acknowledgements

The sources of financial grants and other funding must be acknowledged, including a frank declaration of the authors, commercial links and affiliations. The contributions should also be acknowledged.

Assessment Fee (Non-Refundable) & Publication Fee

Account Name: Sokoto Journal of Geographical Studies
Account Number: **1312472903**
Bank: **Zenith Bank**

Volume 2, Issue 1, July 2025 Edition

All correspondence shall be addressed to**:**

Secretary Editorial Board,
Sokoto Journal of Geographical Studies
Department of Geography
Faculty of Social and Management Sciences
Sokoto State University, Sokoto
P.M.B 2134, Along Birnin Kebbi Road, SokotoState-Nigeria

Tel: 080-6950-1786 (Secretary Editorial Board)
Email: sjgs@ssu.edu.ng
Website: https://sjgs.org.ng

Volume 2, Issue 1, July 2025 Edition

EDITORIAL BOARD

EDITORIAL ADVISERS

Volume 2, Issue 1, July 2025 Edition

TABLE OF CONTENTS

Volume 2, Issue 1, July 2025 Edition

THE ROLE OF TRANSPORTATION IN AGRICULTURAL DISTRIBUTION CHAIN IN SOUTH-WEST, NIGERIA

ODULEYE, Olusola & OJEKUNLE, Joel Ademola

Department of Logistics and Transport Technology, Federal University of Technology, Minna, Niger State

Corresponding Author's Email: solaoduleye@gmail.com

Abstract

Food security remains a critical global challenge, particularly in developing nations where agricultural productivity, transportation infrastructure, and distribution systems are often inadequate. This study focuses on the role of transportation in the agricultural distribution chain in South-Western Nigeria. The aim of the study is to identify the bottlenecks in the agricultural distribution and propose sustainable solutions to enhance efficient food distribution in South-West region. Three of the six (6) states that constitute the South-West, Nigeria were selected for the study (Oyo, Osun, and Ekiti States). Four Hundred (400) structured questionnaires were administered based on the Taro Yamen's formula. 389 of the returned questionnaires were adjudged suitable for the study. The data obtained was analyzed using both the descriptive and Inferential Statistics. The findings show that youth (30.8%) between the ages of 36-45 are actively involved in the agricultural chain. This reveals that the agricultural chain is income generating, and providing employment for the teeming population of the region. The study concludes by recommending the rehabilitation of rural roads, provision of infrastructure, introduction of appropriate digital platforms to enable farmers' access markets more effectively, and elaborate stakeholder engagement at all levels as some of the measures of dissemination of information, to strengthen the agricultural chain in South-West, Nigeria.

Keywords: *Sustainable, Agricultural, Distribution, Transportation and Food Security*.

Introduction

Food security remains a critical global challenge, particularly in developing regions where agricultural productivity, transportation infrastructure, and distribution systems are often inadequate. In Nigeria, agriculture contributes significantly to the economy, employing over 70% of the labor force and accounting for approximately 22% of the nation's Gross Domestic Product (GDP) (World Bank, 2020). Despite this, the country faces persistent food insecurity, with millions of people experiencing hunger and malnutrition due to inefficiencies in food production, transportation, and distribution systems. South-Western Nigeria, a region known for its agricultural productivity, arable land, and favorable climate is not exempt from these challenges. This study focuses on the role of transportation in the agricultural distribution chain in South-Western Nigeria. The aim of the study is to identify the bottlenecks in the agricultural distribution process, and propose sustainable solutions to enhance efficient food distribution which will ultimately lead to food security in the region.

The South-Western region of Nigeria, comprising states of Lagos, Oyo, Ogun, Osun, Ondo, and Ekiti, is a hub for the cultivation of staple food crops such as cassava, maize, yam, and vegetables. However, the region's potential to contribute to national food security is undermined by inefficient agricultural distribution system, poor transportation networks, and inadequate storage facilities. According to Adebayo and Adeyemi (2018), post-harvest losses in Nigeria

account for up to 40% of total agricultural output, with transportation and distribution inefficiencies being significant contributors. These losses not only exacerbate food insecurity but also result in economic losses for farmers and other stakeholders in the food supply chain. Food distribution systems in the region are problematic. The lack of organized markets, inadequate cold storage facilities, and poor coordination among stakeholders often lead to significant post-harvest losses and price volatility. For instance, a study by Olayemi et al. (2016) reveal that over 30% of perishable food crops in South-Western Nigeria are lost during distribution due to poor handling and lack of preservation technologies. Additionally, the dominance of numerous middlemen in the food supply chain often results in exploitative practices, reducing the income of smallholding farmers and increasing the cost of food for consumers. The importance of addressing these challenges cannot be overstated. Efficient food crop transportation and distribution systems are essential for reducing post-harvest losses, stabilizing food prices, and ensuring that agricultural products reach consumers in a timely and cost-effective manner. Moreover, improving these systems can enhance the livelihoods of smallholder farmers, who constitute the majority of food producers in the region.

The Study Area

The South-West region of Nigeria encompasses a diverse and vibrant landscape, comprising six states: Lagos, Ogun, Oyo, Osun, Ondo, and Ekiti. This region is characterized by its mix of urban centers, agricultural landscapes, and coastal areas, making it a significant hub of economic activity and cultural heritage within the country. Lagos, the economic capital of Nigeria, is situated in the South-West and serves as a major commercial and industrial center, driving economic growth and development across the region. Ogun State is known for its agricultural prowess, particularly in the production of both food and economic crops such as tubers and cocoa, while Oyo State boasts fertile lands and a rich agricultural tradition, producing a variety of food crops including cassava, maize, and yam. Osun, Ondo, and Ekiti states also contribute significantly to agricultural production in the region, with a focus on crops such as grains, vegetables, fruits, and economic crops, (Adebayo 2019; Olukemi et. al., 2020).

The Weather condition of the region varies between two distinctive weather conditions of the country: the wet season (March-November) and the dry season (November-February). The region has a total Land Area of: 77,818km2 (Faleyimu, et.al., 2013). In terms of vegetation, the South-West is split with the Central African mangrove in the coastal south, while the major inland eco region is the Nigerian lowland forest. Culturally, vast majority of the region falls within Yoruba land, economically, the urban centers of the South -West contribute significantly to the Gross Domestic Product (GDP) of the country while the rural areas are major source of food & economic crops, and major suppliers of raw materials to the industries in the cities, Adeyemo and Kuhlman (2009). Major cities in the South-West includes: Lagos, Ibadan, Osogbo, Abeokuta, Akure, (Ojo, 2022). It is estimated that 70% of the population of the South-West are engaged in agriculture (World Bank, 2020).

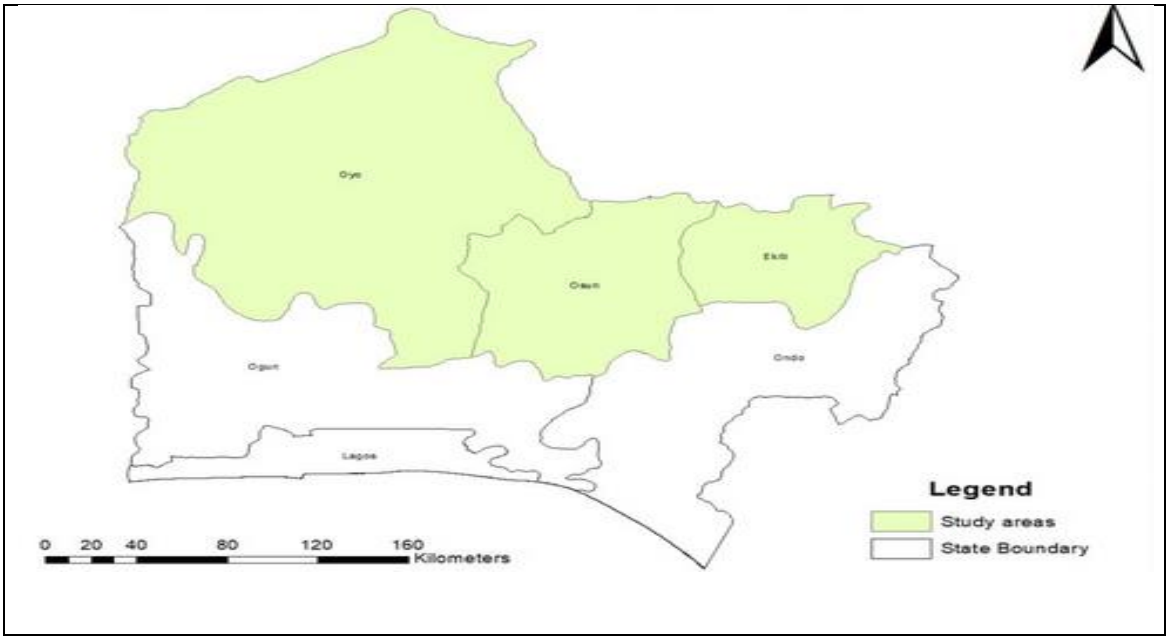

Figure 1: Map of South-West, Nigeria Showing the Study Area
Source: Authors Computation, 2024

Empirical Review

The agricultural distribution chain in Nigeria encompasses various activities that are involve in moving agricultural produce from the farm to the consumers. These includes various stakeholders such as: farmers, farm input suppliers, traders (middlemen and retailer market seller) transport service operators and the consumers. Individuals in the chain add value to the products from production, storage, marketing and distribution. Each player in the agricultural distribution chain has a link with the next to form a viable system. Zaman *et al*., (2019) aver that value chain consists of full-range value adding activities required to bring the products or service through the various phases of production. These includes: procurement of raw materials, necessary inputs, physical transformation, engagement of necessary services such as transportation service, packaging, etc. Thereby, ultimately responding to the demand of the customers. The process of value addition is vital to addressing post-harvest losses, market competitiveness and food security in the South-West, Nigeria. The agricultural distribution chain involves the process of taking agricultural produce from the farmer to the consumer, which includes: farmer, input suppliers, production, processing, marketing and finance. The agricultural distribution chain in Nigeria is grossly underdeveloped, resulting in food shortages, which has made the country a net importer of food commodities to the tune of 4.2 billion dollars annually, Illyasu and Mohammed (2022).

Ume *et al.* (2018) posited that transportation has significantly facilitated agricultural distribution chain and enhance the marketing of its produce despite various challenges of bad roads, high transportation cost, insufficient transport service providers, poor bridges, culvert and drainage channels. The distribution of agricultural produce is marred with shortage of access roads, resulting in delayed travel time, and high transportation cost. The absence of adequate storage facilities, and integrated processing facilities are largely responsible agricultural wastage and poor quality of farm produce by the time it gets to the markets. Transportation plays a prominent role in the agricultural distribution chain. This is because it is impossible move agricultural produce from the farm to the market without transportation. The optimum marketing of agricultural produce requires effective transport system, Akello (2024). It is therefore, important to address the issue of transport cost through effective and efficient transport service,

rehabilitation of rural roads, and the provision of infrastructures in order to maintain the competitiveness of agricultural produce at the rural markets. In rural communities in Nigeria, the major modes of transportation are the traditional mode (human portage, animal transport comprising of donkeys, camel, and horses) are use in support of the distributive trade. Modern transport which includes: road transport utilizing vehicle truck, lorries etc., railways, inland water ways are now being used in transporting agricultural produce, Tunde and Adeniyi (2012). The traditional and the modern modes of transport co-exists in the South-West region. The continuous use of traditional means of transportation in the rural area is as a result of lack of good roads which are mostly not pliable during the rainy season, low aggregate demand for road transport which renders the operations of transport service uneconomical. This situation will prevail until the concerned authorities' addresses the issue of rural accessibility, which will in turn have a multiplier effect on agricultural production that will create demand for transport service.

Significant percentage of food consumed in Nigeria is produced from the rural communities by smallholder farmers and are distributed by traders (part-time or full-time) majorly through the road transport system, (Ikejiofor and Ali; 2014). The deplorable conditions of most rural accessibility have constituted a major bottleneck to the effective and efficient distribution of agricultural produce, resulting in wastages, reduced or poor income, widespread poverty, low quality of rural life, thereby exacerbating threat to national food security and stunt economic growth of the nation. (Zakaree 2022; World Bank 2024; Ali et. al., 2019), have all proffered solutions to these rural challenges to include holistic spatial planning and rural development, stability in the pump price of gasoline, addressing the issue of extortion by security agents from commercial transport operation, improvement in security to prevent theft whilst in transit, improving rural accessibility that forms 64% of the total Nigerian road network, provision of storage facility and cooling vans, provision of standard measuring procedure and improved packaging of agricultural produce, Zakaree (2022). If the aforementioned are put in place, it will encourage more participation in agricultural distributive trade, thereby improving the GDP of the nation, improving food security, with abundant availability of raw materials for industries, improvement in the quality of rural life and economic prosperity to the nation.

Methodology

This study employs a descriptive survey research design to assess food crop transportation and distribution in South-Western Nigeria, covering Oyo, Osun, and Ekiti States. These states were selected based on rurality, vegetation, and viable farming population base. The sample size of the survey was determined based on projected population sizes (2024) of these states, and using the Taro Yamane's formula to determine the sample frame. 400 respondents were selected across the three (3) states, distributed based on the proportion of their population sizes as follows: Ekiti State: 89, Oyo State: 200, and Osun State:111 questionnaires were administered in each state. The target population includes stakeholders in the agricultural chain such as: farmers, traders, transporters, and consumers, selected using a stratified random sampling technique to ensure fair representation. A stratified random sampling technique was adopted for the study based on the numbers of rural markets in each state which were obtained from the local government office, economic reports of each state, and using GIS to determine the locations of the markets. Numbers were assigned to each rural market, the first rural market is selected, the next will be the eleventh market. This gives a stratum of ten (10) markets interval. 389 valid responses were obtained. This represents 97.3% response rate. Data were collected using a structured questionnaire divided into sections covering demographic details, transportation costs, market effects, and alternative solutions. Responses were measured on a five-point Likert scale, and the validity of the instrument was verified by experts in agriculture and logistics. The reliability test yielded a Cronbach's Alpha of 0.81, indicating strong internal consistency. Data were analyzed

using descriptive statistics (frequency tables) and inferential statistics (Analysis of Variance) using SPSS version 26 to determine relationship among the variables considered.

Results and Discussions

Demographic Characteristics of the Respondents

The demographic profile of respondents in indicates a higher representation of male participants (57.8%) compared to females (42.2%). This aligns with previous research findings suggesting that men dominate transportation and agricultural supply chain activities in Nigeria due to the physical demands of the job, while the women are engaging in processing and marketing activities (Ajiboye *et al*, 2023; Dere *et al*, 2024; UNDP, 2024). The age distribution shows that the majority (30.8%) fall within the 36-45 age group, suggesting that food crop transportation and distribution are primarily handled by middle-aged individuals who have acquired significant experience. Additionally, 69.1% of respondents have more than five years of experience in food crop production and distribution, indicating a well-informed respondent pool (Ikuemonisan, & Akinbola, 2019).

The study indicates that respondents were primarily farmers (38.6%) and traders (30.8%), with transportation workers representing 16.7%. This distribution highlights that a significant portion of individuals involved directly in the food supply chain have firsthand experience of transportation challenges. Additionally, the religious makeup—59.1% Christian and 36.0% Muslim mirrors the broader religious demographics typical of South-Western Nigeria (Olanrewaju & Adebayo, 2023).

Table 1: Demographic Characteristics of the Respondents

Variable	Categories	Frequency (n)	Percentage (%)
Gender	Male	25	57.80%
	Female	164	42.20%
Age	18-25	45	11.60%
	26-35	110	28.30%
	36-45	120	30.80%
	46-55	75	19.30%
	56 and above	39	10.00%
Occupation	Farmer	150	38.60%
	Trader	120	30.80%
	Transporter	65	16.70%
	Government Official	30	7.70%
	Other	24	6.20%
Religion	Christianity	230	59.10%
	Islam	140	36.00%
	Other	19	4.90%

Source: Authors Computation, 2025

Analysis of Food Crop Distribution Channels in Oyo, Osun, and Ekiti States Using One-Way ANOVA

Table 2: ANOVA Table for Food Crop Distribution Channels

Independent Variables	Regression Coefficient (β)	t-Statistic	p-Value
Distance (km) (x_1)	-0.328	-4.23	0.000**
Average Travel Time (hrs) (x_2)	-0.46	-5.71	0.000**
Cost of Transportation (₦/km) (x_3)	-0.512	-6.38	0.000**
Constant (β_0)	3.85	8.21	0.000**
R^2 Value	**0.71**	-	-
F-Statistic	**31.24**	-	**$p < 0.001$**

Source: Authors Computation, 2025

The ANOVA analysis for food crop distribution channels in the study area demonstrates a statistically significant difference in efficiency between direct and indirect methods. The between-groups sum of squares (SS) was 14.62 with 1 degree of freedom, yielding a mean square (MS) of 14.62 (Table 2). In contrast, the within-groups SS was 137.38 across 387 degrees of freedom, resulting in an MS of 0.36. This led to an F-statistic of 9.41, which was statistically significant ($p = 0.002$). These findings underscore that the choice of distribution channel substantially impacts the efficiency of food crop transport and market access (Ajiboye, 2011).

The higher mean efficiency score for direct distribution (Mean = 4.25, SD = 0.91) compared to indirect distribution (Mean = 3.39, SD = 1.05) suggests that direct farm-to-market channels are more efficient. Previous researches support this finding, are Obisesan (2018), Donkor et.al., (2018). indicating that farmers who sell directly to consumers will have a higher profit margin, faster market access, and reduced post-harvest losses compared to those relying on intermediaries (Okoch, 2022). Direct distribution eliminates multiple handling stages, thereby minimizing delays and ensuring fresher produce reaches consumers (Begum et.al. 2022). Conversely, indirect distribution channels often involve higher costs due to multiple intermediaries, longer travel times, and the potential increased risk of food spoilage. Studies have shown that extended food supply chains, particularly in developing regions, contribute to food price inflation and inefficiencies in agricultural marketing (Saheed, 2022). Middlemen add extra transportation and storage costs, which inflate food prices and reduce farmer profits. Additionally, transportation and infrastructural challenges, such as poor road infrastructure and inadequate transport facilities, further exacerbate the inefficiencies in indirect food distribution (Ajiboye,2011). These findings underscore the benefits of direct distribution channels in enhancing the efficiency, affordability, and accessibility of food crop distribution. Policies should encourage farmer cooperatives, digital marketplaces, and investments in rural transportation infrastructure to further optimize food supply chains and reduce inefficiencies in the agricultural sector (Okocha, 2022).

Conclusion and Recommendations

The findings indicate that the ineffective agricultural distribution system significantly impact food availability in the markets in South-Western Nigeria. This has resulted in wastages of farm produce, reduce income to the farmers, high food prices and exacerbated food insecurity in the region. This is because poor rural accessibility, insufficient infrastructure hampers timely delivery of agricultural produce to the various markets across the region. In addressing these challenges, robust policy and regulatory framework which will enhance the agricultural chain, provision of rural infrastructure and efficient rural transport service are recommended.

The study's findings highlight critical areas for policy intervention in improving food crop distribution in South-Western Nigeria. Given the significant role of the food chain distribution in addressing food insecurity and availability, policymakers should prioritize:

1. Road Rehabilitation and Maintenance**:** Investment in all-weather roads could enhance accessibility to farming communities, reducing transportation costs and ensuring more efficient food distribution (Adepoju & Salman, 2013).
2. Adoption of appropriate Technology such as "SELL HARVEST" a digital platform that connect farmers' to the markets, thereby enhancing the agricultural chain, reducing post-harvest loses and improving food security (Salahudeen et.al., 2024).
3. Engagement of stakeholders at various levels and ensuring accountability will enhance food management and distribution strategies (Ufua et. al., 2018).
4. The government could offer transport subsidies or incentives for agricultural supply chain participants to lower costs and improve food affordability (Ajiboye *et al*, 2024).
5. Developing and strengthening railway and inland water for transporting agricultural goods would diversify logistics options and reduce dependence on road transport, thereby minimizing cost fluctuations (Ikuemonisan & Akinbola, 2019).

References

Adebayo, O., & Adeyemi, O. (2018). Post-Harvest Losses and Food Security in Nigeria: A Review. *Journal of Agricultural Economics and Rural Development*, 4(2), 123-130.

Adebayo, O.A. (2019). Group Dynamics Features and Socio-Economic Status of Cocoa Farmers in Ogun State, Nigeria. *International Journal of Agricultural Management and Development,9(2),27-88*.

Adepoju, A.A., and Salman, K.K. (2013). Increasing Agricultural Productivity Through Rural Infrastructure: Evidence from Oyo and Osun states, Nigeria. *International Journal of Applied Agriculture and Apiculture Research; 9(1-2), 1-12.*

Adeyemo, R., & Kuhlmann, F. (2009). *Resource Use Efficiency in Urban Agriculture in Southwestern Nigeria*. *Tropicultura*, 27(1), 49–53.

Ajiboye, A. O. (2011). The Effects of Transport System on Food Marketing and Security in Nigeria. Journal of Logistics and Transport 4 (1), 57-72**.**

Ajiboye, A.O., Abdullahi, M.I., and Ohida, M.E. (2023). Influence of Armed Banditry on Agro-Food Supply Chain in Niger State, Nigeria. *Benin journal of Geography, Planning and Environment, 3(1), 156-173.*

Ali, A.N., Madu,I.A., and Okafor, U.P. (2019). Fcators Constraining Rural Road Transport Systems in Enugu State, (Study).

Begum, M., Marium, B., Farid, S., and Hasan, M. (2022). Post-Harvest Loss Assessment and Marketing Practices of Fruits: An Empirical Study of Maulvi bazar District in Bangladesh. *Journal of Economics Management and Trade. Doi 10.9734/JEMT/2022/v28i130385.*

Bwande, A. (2024). The Role of Road Transportation in The Marketing of Agricultural Produce. Research Invention Journal of Current Research in Humanities and Social Sciences, 3(2), 49-52.

Dere, G.I., Ajiboye, A.O., and Aliyu, M.T. (2024). Evaluation of Logistics of Sweet Potatoes Transportation in Offa and Oyun LGAs of Kwara State. *Research Journal of Agricultural Economics and Development, 3(2), 1-22***.**

Donkor, E., Onakuse, S., Bogue, J., and De los Rios-Carmendo. (2018). Determinants of Farmer Participation in direct Marketing Channels: A Case Study for Cassava in Oyo State of Nigeria. *Spanish Journal of Agricultural Research, 16(2), e0106.*

Faleyimu, I.O., Agbeja, B.O., and Akinyemi, O. (2013). State of Forest Regeneration in South-West, Nigeria. *African Journal of Agricultural Research. Vol. 8(26), pp.3381-3383, 11 July, 2013. Doi:10, 5897/AJAR09,035. ISSN191-637X© 2013 Academic Journals, http://www.academic journals.org/AJAR.*

Ikejiofor, I.G., and Ali, A. (2014). The Effects of Road Transport Charateristics on The Marketing of Agricultural Produce in Nsukka LGA, Enugu State, South-Esatern, Nigeria. *Innovative Journal of Social Sciences.*

Illyasu, I., Mohammed, I. (2022) Food Import Demand and Domestic Food Production. *Lafia Journal of Economics and Management Sciences. 6(2), 21-38.*

Okocha, E.R. (2022). Effective Distribution Channel of Cassava Produce in Umuahia North Local Government Area, Abia State, Nigeria. *Journal of Basic and Applied Research International, 28(3), 1-16. https://doi.org/10.56557/jobari/2022/v28i37744***.**

Olanrewaju, A., and Adebayo, A. (2023). Religious Diversity and Socio-Economic Development in South-West, Nigeria. *International Journal of Social Sciences and Management Research, 9(11),38-66***.**

Olayemi, J. K., Adegbola, J. A., Bamishaiye, E. I., & Daura, A. M. (2016). Assessment of Post-Harvest Challenges of Small-Scale Farmers in Kwara State, Nigeria. *Asian Journal of Agricultural Research*, 10(3), 103-111.

Olukemi, A.L., Ahamad, S.H., Taofeek, A.A., Ojo, A.G., and Abiola, M. (2020). Profitability of Cassava/Maize in Iwo and Egbeda Soil series in Oyo State, Nigeria. *Canadian Journal of Geography, 4(2).*

Saheed, O. A. (2022). *Road transport system in the rural areas and food security in Nigeria: A case of Akinyele Local Government of Oyo State, Nigeria*. *International Journal of Logistics and Transport Management, 5*(1), 32–45.

Salahudeen, M.M., Mukhtar, M.A., Abubakar, S.S, and Salawu, I.S. (2024). Mobile Technology: A panacea to Food Insecurity in Nigeria: A Case Study of "SELL HARVEST Application. arxivpreprint; arxiv: 240716614. https://arxiv.org/abs/2407.16614**.**

Tunde, A.M., and Adeniyi, E.E. (2012). Impact of Road Transport on Agricultural Development: A Nigerian example. *Ethiopian Journal of Environmental Studies and Management, 5(3).*

Ufua, D., Osabohien, R., Moses, C.L., and Osabohien, E. (2020). Accountability in Agricultural Governanace and Food Security in Nigeria. *Brazilian Journal of Food Technology, 23, e2019089 https://doi.org/10.1590/1981-6723.08919.*

Ume, S.I., Kandoise, K.O. and Kadurumba. (2018). Marketing in Enhancing Agricultural Production in Ikwo Local Government Area of Ebonyi State, Nigeria.

World Bank (2024). Nigeria To Enhance Road Infrastructure To Benefit Four Million In Rural Communities (Press Release).

World Bank. (2020). Nigeria Economic Update: Agriculture and Food Security. Washington, D.C.: World Bank Group.

Yamane, Taro. (1967). Statistics: An Introductory Analysis (2nd ed.). New York: Harper and Row.

Zakaree, S. (2022). Road Transport System in Rural Areas and Food Security in Nigeria: A Case of Akinyele Local Government of Oyo State, Nigeria. *Journal of Business Management and Accounting, 12(2), 103-118.*

Zaman, E.Y., Abdul, Y.M., Otinwa, Odey, G., Bernard, O., Adaja, B.O. and Raji, U.E. (2009). Overcoming The Challenges of Value Chain Development of Selected Crops for Poverty Reduction in Nigeria: The Entrepreneurial Dimension.