# Impact of Banditry on Transportation of Agricultural Produce in Birnin-Gwari Area of Kaduna State.

<sup>1.</sup>Abdulmalik Muhammad Mustapha, <sup>2.</sup>Araoye Olarinkoye Ajiboye, <sup>1.</sup>Yusuf Ndagi Baba, <sup>1.</sup>Ibrahim Damana Abubakar, <sup>3.</sup>Fatima Yusuf

<sup>1</sup>Department of Transport Management, Faculty of Management and Social Sciences, Ibrahim Badamasi Babangida University Lapai, Niger State, Nigeria. <sup>2</sup>Department of Logistics and Transport Technology, School of Innovative Technology, Federal University of Technology, Minna. <sup>3</sup>Department of Urban and Regional Planning, Kaduna Polytechnic, Kaduna.

## Abstract

This study investigates the impact of banditry on the transportation of agricultural produce in Birnin-Gwari, Kaduna State, Nigeria. Agriculture as a critical sector for rural livelihoods and national food security, the efficient movement of agricultural produce is essential. Using a descriptive survey design, primary data were collected from 384 farmers, and market traders through structured questionnaires. Findings revealed that all transport routes (main highways, secondary roads, and village paths) are affected by banditry resulting in frequent delays, increased post-harvest losses, and reduced market access. Motorcycles and trucks are the most common transport means in transporting agricultural produce, and were considered reliable, however, the overall transport services has declined significantly. The coping strategies such as using alternative routes and reducing farming activities were found to be effective. Although, 65.75% of respondents has identified improved security as the most critical support needed. The study further revealed a strong statistically significant and positive relationship between transport disruptions due to banditry and effect on transportation of agricultural produce. The study concluded that banditry poses a grave threat to agricultural supply chains and rural economic stability, and it recommends urgent security interventions and policy collaborations that would help boost transportation security and rural economy.

Keywords: Agricultural Produce, Banditry, Market, Supply Chain, Transportation, Routes.

### Introduction

Agriculture is a vital sector in Nigeria's economy that continually provides employment opportunities and contributing substantially to food security (National Population Commission, 2022). In rural areas such as Birnin-Gwari, Kaduna State, agriculture is not only a means of economic sustenance but also a critical factor in maintaining social stability. The transportation of these agricultural produce as a major link between rural farming and urban markets has increasingly been threatened due to the frequent attacks of banditry. These frequent attacks by bandits such as kidnappings and road ambushes has significantly affected transport operations resulting into delayed deliveries,

reduced market access and increased postharvest losses (Varshney, 2022). For timely delivery of agricultural produce to reach urban and regional markets, processing facilities, and export hubs, efficient and reliable transport network is therefore very essential (Ajiboye et al, 2024; UNCTAD, 2018; Banister, 2019).

Banditry in Nigeria has been aligned to economic hardship, weak law enforcement, as well as the proliferation of arms has caused a barrier to rural development (Taesse, 2019; Varshney, 2022). Banditry engaged in road ambushes, kidnappings, and hijackings has been frequent in rural communities such Birnin-Gwari. These activities of attacks result in

severe damage to transport infrastructure such as roads which are very critical for the seamless movement of agricultural produce most especially perishable goods. The consequences of these is that farmers faced delays in getting their produce to market which has contributed to increased post-harvest losses and reduced income (Button, 2015; Banister, 2019). The transport disruptions due to banditry not only result to high operational costs but also hindered market integration (Ajiboye et al 2023). Transporters who are service providers for linking rural agricultural outputs to larger markets, often become reluctant to operate in high-risk areas (Ajiboye et al 2023). These challenges further hindered market access thereby forcing farmers and traders to sell their produce at lower prices within local markets or, in some cases, incurred losses through spoilage (Kotler & Armstrong, 2018; Lewis, 2021; Ajiboye, 2023). The impact of these cumulative challenges goes beyond the individual farmers, traders and transporters but also affects the overall food security and economic stability of the area and nation (Gwilliam, 2018).

The effective transportation of agricultural produce is crucial for the economic stability of any community including Birnin-Gwari communities and the overall food supply chain thereby stabilizing food prices and reducing wastage (Ajiboye, 2023). Banditry attacks in Birnin-Gwari communities have led to several bottlenecks in the seamless transportation of agricultural produce. This frequent threat of banditry attacks has made it difficult for farmers to transport agricultural produce to markets causing significant economic losses (Litman, 2021, Ajiboye et al. 2024). The insecurity in rural communities has reduced food availability and poor nutritional status among the local population (Anjide, 2022). The disruption in transportation has also led to increased costs by forcing farmers and traders to take longer and safer routes or hire security escorts which further reduced their profit margins (Ajiboye, 2023). Similarly, banditry attacks in Birnin-Gwari have resulted in high transportation costs, prolonged delays, and a decline in agricultural productivity and food security of the area. The constant security threats being faced by the farmers in moving their produce forced them to sell locally at reduced prices or suffer losses through spoilage.

In the studies of Taesse (2019), it was revealed that additional security measures such as employing private escorts or taking alternative longer routes to avoid high-risk areas can inflate transportation expenses by up to 35%. In most cases, these financial burdens ultimately are being passed on to farmers, who are forced to sell their produce at lower prices locally (Lewis, 2021, Ajiboye, et al 2024). Hence, these increased costs undermine the profitability of farming activities and contribute to the overall decline in agricultural productivity. Such cost increments not only diminished profit margins

for rural producers but also elevates the market prices of agricultural produce, thereby affecting consumers and potentially exacerbates food scarcity in urban centers (Smith, 2016). Given the significant role that transportation plays in ensuring the timely delivery of agricultural produce, any disruption especially those caused by banditry poses a serious threat to rural economies (Ajiboye, et al 2009). Kotler and Armstrong (2018) and Ajiboye, et al (2023) in their studies revealed that the presence of armed groups discouraged transporters from operating in high-risk areas, thereby reducing the frequency and reliability of transport services.

Studies further revealed that during the periods of intensified banditry, there has be about 40% reduction in the volume of produce reaching the urban markets which not only leads to local market saturation but also contributed to food scarcity especially in larger urban areas (Gwilliam, 2018). The frequent transport disruptions and delays results to increased postharvest losses, reduced the quality of produce upon arrival at markets, and ultimately lower the income of rural farmers. Addressing this issue is very crucial for policymakers, stakeholders, and community leaders. This study therefore examined the impact of banditry on transportation of agricultural produce and to identify coping strategies adopted by farmers and traders to mitigate transportation challenges in the area.

# 2.0 Literature Review

Banditry in Nigeria is as a result of economic hardships, weak law enforcement and high the proliferation of arms (Taesse, 2019: Varshney, 2022). Banditry has become a significant challenge in Nigeria affecting various facets of rural development including the transportation of agricultural produce. Bandits frequently target and attack transportation routes to disrupt economic activities, hijackings, and exact ransom through kidnappings of citizens. This persistent insecurity challenge does not only endangers lives but also affects the economic stability of rural communities (Smith, 2016). The lack of adequate and robust security measures put in a place has left farmers and transporters vulnerable to these attacks. In Birnin-Gwari Kaduna State, the presence of banditry not only disrupts the seamless flow of agricultural produce but also increase production costs, increases post-harvest losses, and limits access to market by farmers (Varshney, Literature 2022). consistently revealed that insecurity caused by banditry affects transportation networks by damaging critical infrastructure such as roads thereby delaying the delivery agricultural produce especially perishable produce and increasing overall logistics costs (Button, 2015; Banister, 2019, Ajiboye, 2023). Transportation is crucial for linking rural producers to markets, thereby enhancing food security and reducing postharvest losses (Litman, 2021). Efficient transport systems not only lower logistical costs

but also contribute to broader economic development by facilitating trade and market access (Button, 2015). In rural settings, the quality of infrastructures such as roads and storage facilities directly impacts the reliability and cost-effectiveness of agricultural supply chains (Ajiboye, et al 2009; Gwilliam, 2018, Ajiboye, 2023).

# 2.1 Impact of Banditry on Agricultural Transportation

The disruption of efficient transportation system has both immediate and ripples effects. Transporters exposed to constant security threats always avoid high-risk areas leading to reduction in available transportation services (Ajiboye, 2023; Ajiboye, et al 2023). Farmers are forced to rely on local markets where prices are typically lower due to overall food urban centers (Kotler insecurity in & Armstrong, 2018). Recent empirical studies suggest that areas heavily affected by banditry, transportation costs can surge as high as 35% due to the need for additional security measures and longer alternative routes (Lewis, 2021). Such cost increases are thereby passed on to consumers, further distorting the market dynamics. Similarly, the additional expenses related to security measures and route diversions are passed on to farmers and consumers thereby inflating the overall cost of agricultural produce (Lewis, 2021). The disruptions of transportation of agricultural produce due to banditry further leads to increased costs, delays, and losses for farmers

and transporters that consequently result in food shortages and higher prices for consumers (Adeyemi et al., 2023). In addition, banditry affects food security, increase rural poverty, and contribute to regional instability (Gwilliam, 2018). The vital role that transportation plays in agricultural supply chain, the adverse effects of banditry is far beyond immediate economic losses (Ajiboye, 2023). This frequent security threats have led to a significant decline in the number of transporters willing to operate in areas with high-risk such as Birnin-Gwari thereby reducing the availability of transportation services (Taesse, 2019).

# 2.2 Empirical Review

Several empirical studies have provided significant insights into how banditry disrupts the transportation of agricultural produce in rural Nigeria. In a study, Ajiboye et al. (2024) assessed the effects of insurgency on agricultural product distribution and marketing in Shiroro LGA of Niger State. The study employed the survey research design. It was revealed from the study that the insurgency resulted in low productivity from the farmers who are always on the run and thereby leading to increase cost of labour for the few that are around to work on the farms as well as increased on other farm inputs due to increase in transportation cost while there were reduction in supply and demand for agricultural produce. The study conclude that insurgency has negatively affected agricultural productivity, its

transportation, distribution and marketing in the study area.

Similarly, Odunsi-Oyewole (2022) assessed the impact of insurgency on Nigeria's agricultural sector using an ex-post facto research design. The study revealed that there was a causal link between insurgency and the agricultural sector. Furthermore, insurgency was observed to be a major factor that can determine the level of agricultural output in an economy or determine the future trend in agriculture. The study recommended that job opportunities be provided by government in order to stimulate the economy and reduce the level of vulnerability of unemployed individuals to acts of kidnapping and terrorism.

Ajiboye (2023) investigated the influence of armed banditry on agro-food supply chains in Niger State. The study revealed that armed banditry has a negative influence on yam production, transportation, and marketing in the area, resulting in low agricultural (yam) productivity and a high cost of agricultural (yam) produce and transportation. His study further revealed that banditry leads to the blocking of key transportation routes, forcing transporters to take longer alternative paths, thereby inflating costs and reducing the timely delivery of yam produce. Similarly, Varshney (2022) conducted a cross-regional survey in conflict-prone areas of Nigeria and found that areas experiencing regular banditry witnessed a

25% increase in road maintenance costs and considerable delays in the movement of goods.

Button (2015) revealed that recurrent attacks does not only damage critical transport routes but also lead to extended travel times and increased post-harvest losses, thereby severely affecting the timely delivery of agricultural produce. In another study, Balogun et al., (2022) examined the broader impact of banditry on Nigeria's agricultural output. Findings revealed that recurrent attacks are associated with increased transportation delays and elevated operational costs which have important implications for transportation. Anjikwi et al. (2021) examine the effect of Boko Haram insurgency on crop production in Hawul Local Government Area of Borno State, Nigeria. The study employed multistage random sampling. The study emphasized on the influence of insurgency on-farm operation, farm inputs, and crop yield before and after the war. The study revealed that as result of increased cost of the farm operation and input consumption during the insurgency, farmers in the study region had low yields. In the same vein,

Maina et al (2021) assessed the impact of the Boko Haram insurgency on the nutritional condition of two villages in Yobe State, Nigeria. The study used a simple random sample approach to perform a descriptive crosssectional. The results of the study revealed that Boko Haram insurgency continues to pose

major hurdles to farming operations, resulting in higher food costs and lower nutritional conditions among impacted communities. Bello et al (2021) examined the effects of farmerherdsmen conflict, cattle rustling, and banditry in Anka and Maradun local government areas of Zamfara State using exploratory research. While the study adopted the environmental resource scarcity and frustration-aggression theories. The study revealed that farmers and herdsmen conflict usually triggers acts of armed banditry and cattle rustling in the area, which has contributed to the conflicts between the herdsmen and farmers in Zamfara State. It was concluded that the combination of armed banditry, cattle rustling, and conflicts among the farmers and herdsmen had caused great risk to the security and safety of the people living in the area hence, constituting a major challenge to the nation's security.

Similarly, Ladan & Matawalli (2020)investigated the impacts of banditry on food security and highlighting efforts made by the government in tackling banditry to improve food security in Katsina State. Focus group discussions, involving two groups of five persons each from the state LGAs (namely Batsari, Dandume, Faskari, Jibia, and Safana), affected by banditry activities were used to acquire data for the study. The result revealed that the activities of the banditry in Katsina State were the blocking of access ways used for local trading, burning and looting of the stored

grain in the silos, destruction of properties and farms, driving farmers from their farms, and kidnapping and killing of farmers, which has resulted in food insecurity in the State. Their study further revealed that several efforts have been made by the Katsina State and Federal governments to tackle the activities of banditry with the aim of improving food security in the State. However, these efforts are still ongoing and are yet to achieve the desired results. Hence, it was recommended that the government should put more decisive measures in place to tackle banditry for improved food security in the State.

impact of banditry on The agricultural transportation in Nigeria has been the subject of various studies, yet certain research gaps remain. Existing literature primarily focuses on the direct effects of insecurity on agricultural activities and market dynamics. There are limited comprehensive studies that specifically analyse how banditry disrupts transportation within the agricultural sector. Understanding these disruptions, such as delays, increased costs, and altered supply routes, is crucial. for Hence, the need research on the effectiveness of various coping strategies employed by farmers and traders.

# 3.0 Research Methodology

A descriptive survey research design was employed. Primary data were collected through structured questionnaires administered to farmers and market traders. The population of Birnin-Gwari with 3.4% growth rate and a projection for 2025 is approximately 473, 191. A stratified random sampling technique was used to select 384 respondents determined using the Taro Yamane formula, ensuring that various sub-groups within the population are adequately represented. The strata used comprised of the farmers and market traders involved in the agricultural supply chain within Birnin-Gwari. Due to the absence of accurate population data on the number of farmers and market traders in study area, an equal allocation of the questionnaires was administered to the strata to ensure a balanced representation. The total sample size of 384 was divided equally, selecting 192 farmers and 192 market traders. Each stratum were randomly selected using simple random sampling technique to administered questionnaires. Data obtained were analysed using descriptive statistics such as frequency counts and percentages. The results were displayed in tables to facilitate easy interpretation and to support the study's conclusions.

## 4.0 Data Analysis and Presentation





Fig. 1 revealed that out of 384 respondents, 233 representing (60.68%) are male while 151 representing (39.32%) are female. This result revealed a higher participation of male than female in the surveyed activities because of the energetic nature of the agro-food supply chain and also due to cultural norms that influences participation rates.





Figure 2 present the age distribution of the respondents. The result revealed that majority of respondents representing (50.26%) are aged between 31 and 40 years, indicating a significant representation of individuals in their prime working years. A substantial portion of the respondents representing (32.29%) are within the category of 18 to 30-year age bracket, suggesting active involvement of younger individuals. While those within the ages of 41 to 50 years and those 51 years and above constitute 11.72% and 5.73%. respectively, reflecting lower participation among older age groups. The result revealed involvement high trend of vouth in agriculture/farming activities in the study area

that could enhance productivity and sustainability.

Table 1: Marita	al Status (	of Res	pondents
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Marital	Frequency	Percentage (%)	
Status			
Single	75	19.53	
Married	187	48.70	
Divorced	43	11.20	
Widow	79	20.57	
Total	384	100	

Source: Authors' Computation, 2025.

Table 1 indicates the marital status of the respondents. The result revealed that majority of the respondents 48.70% are married, 20.57% are widowed, 19.53% are single while 11.20% are divorced. The study revealed that almost half of the respondents are married with considerable widowed and divorced individuals. Hence, the study area is likely to have more dependents which could affect the economic responsibilities as а result of banditry disruption.



Figure 3: Educational Qualification of Respondents

Figure 3 indicates the educational qualification of the respondents. Out of the 384 respondents, 255 of the respondents representing (66.41%) signifies majority have attained only primary education. 71 of the respondents representing (18.49%) attained secondary education while 58 of the respondents representing (15.10%) have tertiary education. The result revealed that majority of the respondents have basic education, indicating potential challenges in skill development and economic opportunities.

Occupation	Frequency	Percentage (%)
Farmers	213	55.47
Trader	102	26.56
Civil servant	32	8.33
Unemployed	37	9.64
Total	384	100%

 Table 2: Occupation Distribution of Respondents

Source: Authors' Computation, 2025.

Table 2 revealed that farmers are the majority of the respondents representing (55.47%), traders representing (26.56%) of significant portion, 9.64% of the respondents are unemployed while 8.33% of the respondents are employed in government or public service. This revealed that the study area is predominantly an agrarian economy with a significant trading activity.

 Table 3: Primary means of transporting agricultural produce.

Responses	Frequency	Percentage (%)
Motorcycles	192	50
Tricycles	45	11.7
Trucks	147	38.3
Total	384	100

Source: Authors' Computation, 2025.

The primary means by which agricultural produce is transported is shown in Table 3. Out of the total 384 respondents, motorcycles were the most commonly used means of transporting agricultural produce which account for 50% of the total responses, followed by the use of trucks as the second most used means with

38.3%, while tricycles were the least utilized means representing only 11.7%. The result revealed that motorcycles and trucks are dominantly means for transporting agricultural produce. The dominancy of these means could be attributed to their affordability, efficiency and larger-scale operations, where the volume of produce requires vehicles with greater capacity particularly in rural areas.

Table 4: Reliability of primary means of transportingagricultural produce.

Responses	Frequency	Percentage (%)
Very reliable	302	78.7
Reliable	78	20.3
Unreliable	4	1
Total	384	100

Source: Authors' Computation, 2025.

Respondents' perceptions of the reliability of their primary means of transporting agricultural produce is shown in table 4. 78.7% of respondents attested their means of transportation as "Very reliable" with an additional 20.3% as "Reliable", while about 1% attested to be unreliable. This result revealed that majority of agricultural producers have access to transport means that consistently support their logistical needs (agricultural operations).

Table 5: Transportation routes mostly affected bybanditry in Birnin- Gwari area.

Responses	Frequency	Percentage (%)
Main highways	37	10
Secondary	29	8
roads		
Village paths	40	10
All of the above	278	72
Total	384	100

Source: Authors' Computation, 2025.

From Table 5, 72% of the respondents indicating majority attested that all nature of transport routes (main highways, secondary roads, and village paths) is affected by banditry, followed by main highways and village paths that were attested by 10% of the respondents respectively while 8% attested that secondary roads are mostly impacted. The result revealed alarming impact of banditry on an transportation routes in the study area thereby leaving no route untouched, hence hindering the movement of agricultural produce.

 Table 6: Frequency of experiencing transportation

 delays/disruptions due to banditry.

Responses	Frequency	Percentage (%)	
Very frequently	242	63	
Frequently	89	23	
Occasionally	53	14	
Total	384	100	
Source: Authors' Computation 2025			

Source: Authors' Computation, 2025.

From table 6 above, majority of the respondents representing 63% attested to have experienced transportation delays very frequently, 23% experience delays/disruptions frequently, while only 14% of respondents experienced transport delays/disruptions occasionally. This indicates that 86% which is a significant majority of respondents experienced transport delays/disruptions due to banditry on a consistent basis. The result revealed that transportation delays are a major concern that disrupts agricultural supply chains that could lead to increased post-harvest losses and competitiveness for decreased market agricultural produce.

Table 9: Strategies deployed to cope with transport disruptions caused by Banditry

Responses	Frequency	Percentage (%)
Using alternative routes	201	52.3
Transporting smaller quantities more frequently	59	15.4
Hiring private security for transport	25	6.5
Reducing farming activities	99	25.8
Total	384	100

discourage transport operators from operating in

high-risk areas and forces a shift in transport

routes or methods to avoid dangerous zones.

Source: Authors' Computation, 2025.

Table 9 presents various strategies employed by respondents to cope by transport disruptions caused from banditry. Majority of the respondents (52.3%)affirmed to using alternative routes, 25.8% have reduced farming activities, 15.4% opt to transporting smaller quantities more frequently, while a smaller proportion of the respondents (6.5%) hire private security for transport. This result revealed that shifting to less risky routes as the most viable and immediate solution calls for critical need for real-time intelligence and dynamic route planning in areas plagued by banditry. Furthermore, reduced farming activities that might minimize exposure to

Table 7: Impact of transport disruptions on your agricultural activities.

8			
Responses	Frequenc	Percentage (	% significant change. The findings revealed
	У		1 ditme on a mitigal factor undermined
Delayed deliveries	251	65.4	banditry as a critical factor undermined
Increased transportation cost	22	5.7	transportation accessibility and safety with
Loss of perishable goods	75	19.5	transportation accessionity and safety with
Reduced market access	36	9.4	significant implications for logistical efficiency
Total	384	100	
Source: Authors' Computation.	2025		and socio-economic stability. This could further

Source: Authors' Computation, 2025.

Table 7 outlines how the impact of transport disruptions banditry affect caused by of agricultural activities. Majority the respondents (65.4%) attested delayed deliveries as the most significant consequence, followed by the loss of perishable goods (19.5%). Reduced market access with (9.4%) while the least is increased transportation costs with (5.7%). The result revealed that delayed deliveries and the loss of perishable goods directly reduce farmers' income, increase postharvest losses, lead to missed market windows and disruptions in the agricultural supply chain. These challenges contribute to food insecurity and diminished economic stability.

Table 8: Effects of banditry on the availability of transportation services in the area.

Responses	Frequency	Percentage	
		(%)	
Services has	303	78.9	
significantly decreased			
Services has	71	18.5	
moderately decreased			
No significant changes	10	2.6	
Total	384	100	
G 1 1 1 G	2025	·	

Source: Authors' Computation, 2025.

Table 8 reveals that majority (78.9%) of respondents affirmed that transportation services in the area has significantly decreased due to banditry, while 18.5% affirmed a

Journal of the Nigerian Institute of Town Planners (jnitp) Vol. 30 No. 2 (2025) moderate decrease and only 2.6% attested to no

repeated disruptions could potentially lead to decreased agricultural output and food insecurity.

 Table 10: Effectiveness of these strategies in ensuring produces reaches the market.

Responses	Frequency	Percentage (%)	
Very effective	57	14.8	
Effective	198	51.6	
Somewhat	115	29.9	
Effective			
Ineffective	14	3.6	
Total	384	100	

Source: Authors' Computation, 2025.

Table 10 presents respondents' perceptions regarding the effectiveness of their coping strategies against transportation disruptions caused by banditry. Out of 384 respondents, 51.6% rated these strategies as 'Effective' and an additional 29.9% as 'Somewhat effective'. Only 14.8% considered the strategies as 'Very effective' and 3.6% affirmed to be 'Ineffective'. The findings revealed a temporal and positive impact of the coping strategies that mitigate the immediate challenges posed by transportation disruptions. Hence, the need for exploration of new methods and technologies for enhancing transportation security.

Table	11:	Critical	support	needed	to	ease
transpo	ortatio	n of agricu	iltural pro	duce.		

Responses	Frequency	Percentage
Improved security	263	65.75%
Better transportation	22	5.5%
infrastructure		
Financial support	50	12.5%
Alternate livelihood	65	16.25%
options		
Total	384	100%

Source: Authors' Computation, 2025.

Table 11 presents most critical support needed by respondents to ease transporting agricultural produce. Majority of the respondents (65.75%) affirmed improved security as the most critical support for easing the transportation of agricultural produce in the study area, while better transportation infrastructure (5.5%), support (12.5%), financial and alternate livelihood options (16.25%) signifies a lower needed support by the respondents affected by banditry. This dominant preference indicates high level of insecurity experienced on transportation routes which could leads to disruptions and discourages transport operators to engage in long-distance or high-volume transportation of produce. Hence, policymakers and security agencies should concentrate on robust security measures, such as increased patrols or community-based security initiatives to create a safer and more reliable transportation environment in the area.

Findings from the hypothesis revealed that oneunit increase in frequency of transport disruption is associated with an average 1.54 unit increase in it effect. When frequency disruption is zero, the model predicts a negative effect value of -69.15. The p-value (0.012) is less than 0.05, so the null hypothesis is rejected, hence, a strong statistically significant linear relationship between frequency disruption and its corresponding effect. The R<sup>2</sup> value (0.9997) suggests that 99.97% of the variability in transportation disruption is due to banditry. The result revealed that as transportation disruptions due to banditry increases and worsen, it thereby affects agricultural supply chains.

# **5.0 Conclusion**

This study examines the impact of banditry on transportation of agricultural produce. Findings revealed that while the primary means of transport particularly motorcycles and trucks reliability, indicates major the overall transportation process is severely affected by repeated security consistent and threats. Frequent transport delays/disruptions, and the significant impact of banditry on all transportation routes have led to adverse economic consequences, including delayed deliveries, loss of perishable goods, and reduced market access. Similarly, the decline in available transport services further exacerbates the vulnerability of agricultural supply chains.

Farmers and traders in the community have adopted various coping strategies such as using alternative routes, and, in some cases, reducing farming activities. Although these measures are as effective and/or perceived somewhat effective by the majority, they fall short of achieving sustained efficiency and security in the transportation of agricultural produce. Findings revealed that majority of respondents (65.75%) prioritize improved security as a support to ease transportation of agricultural produce in the study area. The study further revealed a strong and positive relationship between transport disruptions due to banditry and the disruption of agricultural transportation in Birnin-Gwari.

# 6. Recommendations

Based on the analysis, it is suggested that the Federal Government should strengthen law enforcement operations and establish community-based security initiatives aimed at protecting key transport corridors. Develop designated secure lanes or corridors for the movement of agricultural produce by using modern technologies such as mobile communication platforms, GPS tracking and digital mapping. These tools can offer real-time update information on safety conditions to reduce risks at vulnerable transit points. Similarly, government agencies, local communities, and private sector partners need to collaborate to formulate and implement policies that help boost transportation security and rural economy. In addition, the long-term effectiveness of the current coping mechanisms should be investigated. This would help to explore new methods and technologies to improve transportation security.

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