



Effects of Risk Attitudes on Microcredit Demand of Retail Fruit Vendors in Abia State, Nigeria

¹Idu M. A., ²Aigbokie S. O., ³Ashiegbu G. N., ¹Osondu K. R. and ⁴Enoch O. C.

¹Department of Agricultural Economics, Michael Okpara University of Agriculture, Abia State, Nigeria

²Department of Agricultural Economics, Gregory University Uturu, Abia State, Nigeria

³Department of Extension and Rural Development, Michael Okpara University of Agriculture, Abia State, Nigeria.

⁴Department of Extension, Federal University of Technology, Owerri, Imo State, Nigeria.

*Corresponding Author: idianene@gmail.com, +2348063625600

ARTICLE HISTORY

Received: 27/02/2025

Accepted: 21/05/2025

Article Type:

Research Paper

Volume: 13

Issue: 1

Pp: 12 – 22

ABSTRACT

Fruit vendors in Abia State, Nigeria, face significant risks due to the perishable nature of their products, inadequate storage facilities, and poor handling during transportation. This study examined the effect of risk attitudes on the credit demand of fruit vendors in Abia State. Specifically, the study examined amount of credit demand, classified the fruit vendors by risk preferences and estimated the effect of risk attitudes on credit demand. A random sampling technique was adopted 60 respondents. The research utilized structured questionnaires and oral interviews to gather data, which were analyzed using frequency distribution, means, percentages, budgetary analysis, and ordinary least squares regression. Findings revealed that 55% of the vendors were classified as risk-preferring, 26.67% as risk-averse, and the remainder as risk-neutral. The average credit demand was ₦221,212.62 for risk-preferring vendors, ₦237,500.50 for risk-averse vendors, and ₦218,182.32 for risk-neutral vendors. Additionally, the gross profit and net farm income were higher for risk-preferring vendors, indicating a positive relationship between risk-taking behavior and financial performance. The ordinary least squares regression analysis confirmed a significant positive relationship between credit demand and both risk-averse and risk-taking behaviors, with coefficients significant at 1% ($p < 0.01$). The primary constraint identified by vendors was high transportation costs. The study concludes that risk attitudes significantly influence the credit demand of fruit vendors in Abia State. It recommends that the government provide credit facilities to support vendors in acquiring necessary processing resources, particularly labor, to modernize operations and improve financial stability.

Keywords: Risk Attitudes, Microcredit Demand, Retail Fruit Vendors, Abia State.

INTRODUCTION

Fruit vendor is a primarily an open-air business venue that sells seasonal fruit and many fruit products/produces from local growers. It might also sell vegetables and various processed items derived from fruit (Asfaw *et al.*, 2022). Fruit vendors are individuals that sales these fruits. A

fruit is the seed-bearing structure in flowering plants (also known as angiosperms) formed from the ovary after flowering. Fruits are the means by which angiosperms disseminate seeds. Edible fruits, in particular, have been propagated with the movements of humans and animals in a symbiotic relationship as a means for seed dispersal and nutrition; in fact, humans

and many animals have become dependent on fruits as a source of food (Lewis, 2022).

Nigeria has suitable agro-ecology to grow both temperate and tropical fruit crops. However, fruit production activity is at infant stage in most parts of the country and both small-scale fruit producers and traders have very limited knowledge and skill on fruit production (Asfaw *et al.*, 2022). Abia State, Nigeria is notable for marking of fruit, like banana, garden egg, pineapple, apple, carrot, cucumber, etc. Despite all these odds, the people still accept fruit marketing as a way of life and are making the best out of a bad situation as the state is endowed with a rich fertile soil that supports the growth of the fruit. Despite the great emphasis on increment of fruit crops, risk due to losses after harvest until the food reaches the consumer is significant.

Credit access facilities have been identified as the direct solution to increasing investment in agriculture in the country. In most cases, specialized agencies were created to support small-scale marketers that form the bulk of the marketing population (Idu *et al.*, 2021). Credit is recognized as a fundamental instrument for stemming and reversing the risk situation. Credit granted to marketers will increase their scale of operation and consequently generate high returns and improve their standard of living. Availability of adequate and timely credit help in expanding the scope of operation and adoption of new technologies, enhance the purchase and use of improved inputs and facilitate other up-stream and down-stream operations in marketing (Abdul *et al.*, 2017).

Attitudes towards risk, is referred to as risk preferences, are considered of major importance in farmers' and marketers decision-making behaviour in situations that includes risk and uncertainty (Fausayana *et al.*, 2018). Although market vary widely with respect to enterprise mix, financial situation, and other business and household characteristics, many sources of risk are common to all farmers, ranging from price and yield risk to personal injury or poor health. These personal risks common to all in one form

or the other transcend to the marketing aspect of the produce, when there is low yield, there was low supply and hence increase in prices thus low demand for produce, for example, falling prices resulting from large worldwide production could have devastating consequences for local farm incomes (Phoebe *et al.*, 2018).

Risk attitudes can be categorized into risk-averse, risk-seeking / lovers and risk-neutral which represent a working definition of risk attitude (Murray-Webster and Hillson 2008). Risk-averse people are those who are highly uncomfortable with the uncertain outcome; this may guide them to sacrifice expected profit to avoid risk. They are willing to accept a lower average income to avoid or reduce threats (Murray-Webster and Hillson 2008). Risk seekers are quite interested with uncertainties, and they do not have a desire to avoid or reduce threats. They perceive risk as a profitable chance and thus, they seek to pursue the venture and accept losses to take their chances (Murray-Webster and Hillson 2008). Between the two extremes attitudes, there exist have risk-neutral individuals who are uncomfortable with uncertainty in the long term; therefore, they are able to take whatever necessary short-term activates to gain a certain long-term outcome (Lawrence *et al.*, 2018).

Furthermore, credit is essential for starting up a marketing process, which has been noted to be capital intensive and requires sufficient amount of credit to meet the capital needs. Credit is very beneficial in marketing though it poses serious threat to most small scale marketers as they are mostly unable to meet up with the terms of many credit facilities due to the scale of their enterprises. This study therefore aims to contribute to the understanding of determinants of risk attitudes of fruit vendors in Abia State, Nigeria

MATERIALS AND METHODS

Study Area

The study was conducted in Abia State. The state was created out of Imo state in August,

1991. The State has a land mass of 700 square km with 17 Local Government Areas. The state lies between longitudes 7° 23' and 8° 02' East of Greenwich meridian and latitudes 5° 49' and 6° 12' North of the equator. Abia State is bounded on the east by the Cross River and Akwa Ibom States, on the north by Ebonyi and Enugu States, on the West by Imo State and on the South by Rivers State. Abia consists of three agricultural zones, namely; Aba, Umuahia and Ohafia. The population of Abia State is 2,833,999, comprising, 1,434,193 males and 1,399,806 females. This population consists of people in all walks of life with about 65 percent of them engaging in agriculture (NBS, 2024). The

annual rainfall ranges from 2000-2500mm while the temperature ranges from 22°C to 35°C. The area is characterized by a tropical wet climate (April to October), and dry climate (November to March). The major occupation of the people is farming, although farming is done at subsistence level. The state is endowed with a rich fertile soil that supports the growth of the crops; such as yam, cassava, cocoyam, melon, maize, oil palm, garden egg, cocoa, to mention but a few. Poultry, goat, pigs and sheep are the major livestock kept. The rivers in the area support a wide range of irrigation farming and fishing, while its green vegetation also supports livestock farming.

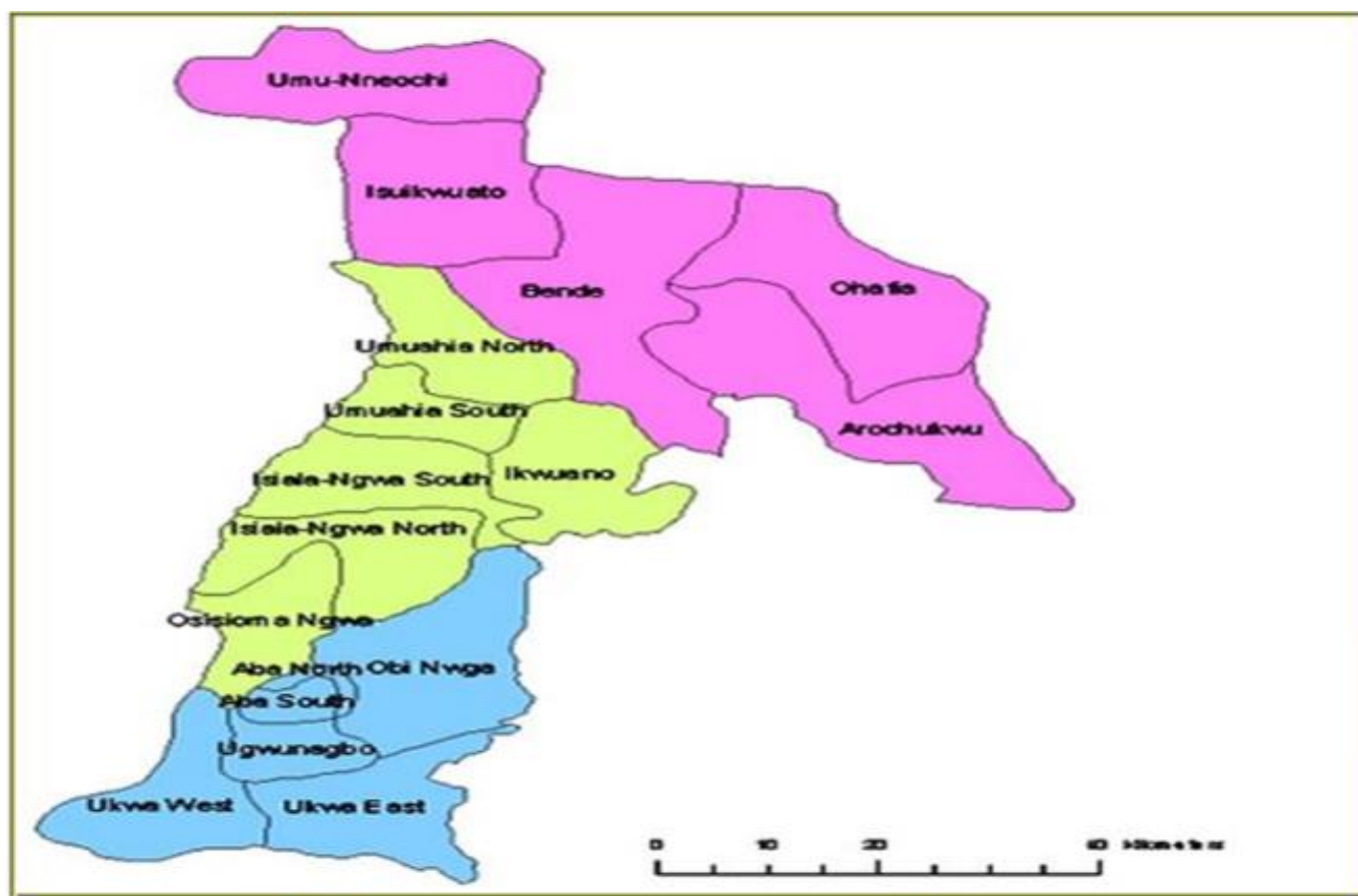


Figure 1: Map of Abia State Showing the Study Area
Source: Office of the Surveyor General of the Federation. (2023).

Sampling Techniques

Multi-stage sampling techniques was adopted in selecting respondents. The choice of this method is based on the need to minimize the risk of sampling bias and to draw inferences from the sample about the population from which the sample was drawn, with levels of confidence that could be estimated statistically. In the first stage, all the three agricultural zones was selected across the state. The second stage involved a random selection of two LGAs from each zone. Third stage involved a random selection of two communities from each LGA to give a total of 12 communities. From each of the community one village was randomly selected to get 12 villages. From each village, the researcher made a sample frame. The sampling frame was obtained with the assistance of market heads within the villages. Then from the sample frame of each village, a random sampling was used to select one markets and finally from the markets, five (5) fruit marketers were selected from each; making a total of 60 respondents that was used for the study.

Data Collection and Analysis

Data for this study were collected from primary sources. Structured questionnaire and oral interview were used in getting primary data. Random sampling techniques was adopted in selecting respondents. The choice of this method is based on the need to minimize the risk of sampling bias and to draw inferences from the sample about the population from which the sample was drawn, with levels of confidence that could be estimated statistically. The socioeconomic characteristics of retail fruit vendors, amount of credit demand and constraints faced by the retail fruit vendors were achieved using descriptive statistics such as frequency distribution, means, and percentages. To examine and classify the retail fruit vendors according to risk attitude was achieved using descriptive statistics through a four-point rating scale of Strongly Agree (SA)=4; Agree(A)=3; Disagree (DA)=2; and Strongly Disagree (SD)=1. Each of the fruit vendors to the

questions on risk aversion from four (indicating high acceptance) to one (indicating low acceptance) and this was used to classify the risk attitude of the fruit vendors with the value $\{1,2,...J\}$ for J, take a positive integer. The mean response of each fruit marketing entrepreneur was determined and used to classify their risk attitude as follows: 1.00 - 2.49 = Risk-averse, 2.50 – 3.00 = Risk neutral and 3.01 - 4.00 = Risk-taking

The effect of risk attitudes on credit demand was analyzed with the aid of ordinary Least Square regression (OLS). The model is specified as follows:

$$CRE = b_0 + b_1R_1 + b_2R_2 + b_3R_3 + e_i \quad 1$$

Where:

CRE = Credit Demand (Naira)

R₁ = Risk Averse (Mean value)

R₂ = Risk Neutral (Mean value)

R₃ = Risk Taking (Mean value)

RESULTS AND DISCUSSION

Socioeconomic of Retail Fruit Vendors in Abia State, Nigeria

The result shows that 56.7 percent of the fruit marketers in Abia State were female while 43.3 percent of them were male. This is because female take greater responsibilities for fruit marketing and enhanced economic contributions to family. Using this information, it could be deduced that females participate more in the marketing of fruit. This can be attributed to the believe of the people in the study area that fruit marketing is the duty or work of female. The concur with findings of (Wasiu and Burhan, 2018) who noted that female take greater responsibilities for fruit marketing

Table 1 shows that the mean age of the fruit marketers was 46 years with majority (31.7%) within the age range of 40 and 49 years. This is an indication that the fruit marketers in the study area were mostly middle aged that were within the active productive work force. This has implication on fruit marketing because of the ability of this segment of the population to effectively withstand the rigours, strain and stress involved in fruit marketing. Middle aged

fruit marketers within the active productive work force can effectively shoulder the rigours and tedium involve in fruit marketing (Agbayekhai, 2010).

Table 1 shows that majority (70.0%) of the fruit marketers in the study area were married while 11.7% of them were single. Also, 13.3% and 5.0% of them were widowed and divorced respectively. This therefore implies that the married class was more involved in marketing relates to giving appropriates attention to fruit and marketing operations.

Table 1 shows that majority (75.0%) of the fruit marketers had household sizes of between 1 and 4 persons. The mean household size was 4 persons. This result indicates that the fruit marketers in the study area had moderate family sizes. It has been shown in the past that household sizes provide enough labour for fruit marketing. The economic implication is that household members provide the marketers with family labour and reduce cost of marketing and increase their revenue. This conforms to Aigbokie, *et al.*, (2021), that a relatively large household size may likely enhance family labour supply in the market.

Table 1 shows a good proportion of the respondent 86.7% of the fruit marketers in the study area were literate possessing divers' formal educational levels ranging from primary school education to tertiary education. Possession of literacy (ability to read and write) enable the fruit marketers to better utilize effectively and efficiently whatever available resources in the area and curtail frivolous spending. As expected, higher education would enhance improved technology adoption hence increased marketers' income (Asfaw *et al.*, 2022).

Majority (81.7%) of the marketers belongs to marketer's association while the rest (18.3%) were not. The marketers join cooperatives in order to fend off low pricing and collectively tackle other problem facing the business. The implies that an overwhelming majority of the fruit marketers in Abia State belong to marketing union, which may help the marketers

because of the need to supplement the family's means of livelihood. Asfaw, *et al.*, (2016) who noted that marriage should create a conducive environment for good citizenship training, development of personal integrity and entrepreneurship. This implies that a greater percentage of the population had family members. The dominance of the married people in marketing in the area may be attributed to the fact that married people are more settled as it get adequate information on fruit marketing and other benefit that may be obtainable from a union.

Classification of Retail Fruit Vendors According to their Risk Attitudes in Abia State.

Table 2 reveals that some 55 percent of the retail fruit vendors in the study area have positive risk coefficients (3.10 – 5.00) and were therefore categorized as risk preferring. This result corroborates the inference with findings of Lim *et al.*, (2010). Risk preferring attach more utility to the potential of additional wealth without considering the risk elements of the investment. For earning a given wealth (or return) they are prepared to assume higher risk. The individual under this is characterized as more adventures, some, with a preference for more risky agribusiness ventures (Lawrence *et al.*, 2018). This group of processing will select the alternatives with some probability of higher outcome. In order to get this higher income, this person must also accept a probability of a lower outcome compared to the risk averters. The investor likely has a greater risk bearing ability and therefore is less concerned with the increased probability of a lower outcome and primarily focuses on the higher outcome potential. The wealthy investors are more risk preferring (Lim *et al.*, 2010). They can afford to accept higher risk in seeking higher returns, they prefer volatile industries where they take risk and exploit opportunities coming their ways and hence have wider choice of strategies. Risk-takers, by implementing assertive strategies, often achieve substantial returns through value innovation, leveraging core

competencies, and establishing a competitive edge. These elements are central to creating sustained competitive advantages. About 26.67% of smallholder retail fruit vendors were risk averse. The implication of this findings is that the retail fruit vendors will sacrifice some level of expected return in order to reduce possibility of a loss; investors have a low risk

bearing ability, risk bearing of the investor is directly related to liquidity and solvency measures of the firm. This confirms with the findings of Ayinde, (2008). Thus, the business situation would be such that a large income loss would seriously disrupt or end the business investment.

Table 1: Socioeconomic of Retail Fruit Vendors in the Study Area

Gender	Frequency	Percentage (%)
Female	34	56.7
Male	26	43.3
Age (years)		
20-29	6	10.0
30-39	13	21.7
40-49	19	31.7
50-59	15	25.0
60 -69	6	10.0
70-79	1	1.7
Mean	46	
Marital Status		
Single	7	11.7
Married	42	70.0
Widowed	8	13.3
Divorced	3	5.0
Household Size		
1-4	45	75.00
5-8	11	18.3
9-12	4	6.7
Mean	4	
Educational Level		
No formal Education	8	13.33
Primary Education	28	46.67
Secondary Education	17	28.33
Tertiary Education	7	11.67
Membership status		
Member	49	81.7
Non member	11	18.3
Total	60	100.0

Source: Field Survey (2024)

The implication is that for a given wealth (or return), they prefer less risk to more risk. The behavior of investor reflects the risk aversion, with poorer investors accepting lower returns exchange for lower risk to smooth their consumption. In this case, choice of alternative is small and hence growth rates are also slower. The risk adverse investors are satisfied with lower returns and always wanting to play safe rather than engaging in risky ventures with higher returns. Risk averters are cautious individuals who prefer less risky sources of

income or investments. They will sacrifice some amount of income to reduce the probability of low income or losses; this implies that they will forego some possible gains to reduce the probability of losses. This is referred to as his “risk premium” and it increases with the degree of risk aversion. Averting risk does not mean that the individual was not at risk; instead, he must be compensated for taking risks by receiving a return that is greater than what would be

received if the outcome of an action choice were certain.

Furthermore, about 18.33% of the sample respondent are risk indifferent/neutral. This confirms with findings of Ayinde, (2008). The implication of this findings is that the retail fruit vendors will have acceptable levels of risk bearing ability such that large losses are not of concern but at the same time achieving the

highest outcome is not the focus either. Their attitude to risk and consequent return (wealth) are indifference. The implication is that they are not interested to less or more risk for a given wealth (or return). The investor will select the alternative with the highest expected Outcome (return) regardless of the probability associated with potential gains or losses.

Table 2: Distribution of Retail Fruit Vendors by Risk Preferences

Category	Risk aversion index	Frequency	Percentage
Risk Preferring	3.10 – 5.00	33	55.00
Risk neutral	2.51 – 3.00	11	18.33
Risk Averse	1.00 – 2.49	16	26.67
Total		60	100.0

Source: Field Survey (2024)

Credit Demand and Performance of the Retail Fruit Vendors in Abia State, Nigeria

The distribution of respondents based on credit demand among retail fruit vendors, categorized by their risk attitudes, is summarized in Table 3. The average credit demanded was ₦221,212.62 for risk-preferring vendors, ₦218,182.32 for risk-neutral vendors, and ₦237,500.50 for risk-averse vendors. These figures suggest that fruit vendors with risk-averse attitudes tend to demand higher credit amounts compared to their risk-preferring counterparts. This finding aligns with the study by Ogunleye *et al.* (2024), which concluded that credit constraints negatively affected the adoption of risk management strategies and income among farmers in Northern Nigeria. Access to credit is a significant determinant of business outcomes, influencing factors such as technology adoption and productivity. Improved access enables enterprises to engage in more productive, income-generating activities, thereby enhancing their standards of living. Specifically, access to credit facilitates the acquisition of productive capital, which is essential for income generation. However, despite its importance, access to credit remains a challenge for many businesses in Nigeria. The National Bureau of Statistics (2024) reported that only 7% of farming communities received micro-credits from banks in 2022. This limited access to formal credit sources hinders the

growth and sustainability of agricultural enterprises.

Credit Demand and Performance of the Retail Fruit Vendors in Abia State, Nigeria

The distribution of respondents based on credit demand among retail fruit vendors, categorized by their risk attitudes, is summarized in Table 3. The average credit demanded was ₦221,212.62 for risk-preferring vendors, ₦218,182.32 for risk-neutral vendors, and ₦237,500.50 for risk-averse vendors. These figures suggest that fruit vendors with risk-averse attitudes tend to demand higher credit amounts compared to their risk-preferring counterparts. This finding aligns with the study by Ogunleye *et al.* (2024), which concluded that credit constraints negatively affected the adoption of risk management strategies and income among farmers in Northern Nigeria. Access to credit is a significant determinant of business outcomes, influencing factors such as technology adoption and productivity. Improved access enables enterprises to engage in more productive, income-generating activities, thereby enhancing their standards of living. Specifically, access to credit facilitates the acquisition of productive capital, which is essential for income generation. However, despite its importance, access to credit remains a challenge for many businesses in Nigeria. The National Bureau of Statistics (2024) reported that only 7% of farming communities received

micro-credits from banks in 2022. This limited access to formal credit sources hinders the

growth and sustainability of agricultural enterprises.

Table 3: Distribution of Respondents According to Credit Demand

Credit Size	Risk Preferring		Risk neutral		Risk Averse	
	Frequency	%	Frequency	%	Frequency	%
1 – 100000	11	33.33	4	36.36	4	25.00
100001 – 200000	9	27.27	2	18.18	4	25.00
200001 – 300000	5	15.15	2	18.18	3	18.75
300001 – 400000	4	12.12	1	9.09	2	12.50
400001 – 500000	2	6.06	1	9.09	2	12.50
500001 – 600000	2	6.06	1	9.09	1	6.25
Total	33	100.00	11	100	16	100
Mean	221,212.62		218,182.32		237,500.50	

Source: Field Survey (2024) Key: 33 = Total respondents classified as Risk Preferring, 11 = Total respondents classified as Risk neutral, 33 = Total respondents classified as Risk Averse

Effect of Risk Attitudes on Credit Demand of Retail Fruit Vendors in Abia State, Nigeria

Ordinary least square regression analysis was used to determine the effect of risk attitudes on credit demand and investment of fruit vendor entrepreneurs is presented in Table 4. From the Ordinary least square regression model in Table 4, the R^2 value was 0.614 which indicates that 61.4% of the total observed variations in level of investment was explained by the Risk averse, risk taking and risk neutral indices included in the model while 38.6% of the variation was due to error. The F-ratio was significant at 1% indicating the goodness-of-fit

of the model. The F-ratio was 13.143 which is statistically significant at 1% indicating a high goodness of fit of the model. The result also shows that there was a positive and significant relationship between credit demand and Risk averse and risk taking in the area in the area. The coefficient of Risk averse and risk taking were significant at 1% ($p < 0.001$). This indicate that a unit increase in risk averse will leads to 2.1% increase in credit demand, while a unit increase in risk taking will led and 26.9% increase in credit demand and vice versa. The implication of these findings is that risk averse and risk-taking farmers will demand for more credit as risk attitude increase in the area.

Table: 4. Effect of Risk Attitudes on Credit Demand of Retail Fruit Vendors

Variable	Coefficient	Std. Error	Z-test	Prob
Constant	10.712	0.089	121.002***	0.000
Risk Averse	0.021	0.007	3.144***	0.002
Risk Taking	0.269	0.049	5.481***	0.000
Risk Neutral	-0.088	0.074	-1.180	0.239
R^2	0.614			
R^{-2}	0.513			
F-ratio	13.143***			

Source: Field survey (2024) Key: *** = Significant at 1%, ** = Significant at 5%

Constraints Faced by the Retail Fruit Vendors in Abia State, Nigeria

The result in Table 5 showed that the major problems faced by the marketers include high transport cost, which accounted for 60%. Usually, the price of petrol was unstable and this created sharp rise in the cost of transportation. On seasonal price variation,

36.7% of the respondents identified it as a constraint. Also, inadequate market information and bulkiness was also noted as a constraint. During off season, the prices varied tremendously. The least problem identify by the marketers was perishability of the product, this shows that fruit spoilage was not a major constraint.

Table 5. Distribution of Respondents According to Constraints Faced by the Retail Fruit Vendors in the Study Area

Constraint	*Frequency	Percentage (%)	Rank
High cost of transportation	36	60.0	1 st
Bulkiness	22	36.7	2 nd
Inadequate market information	22	36.7	2 nd
Seasonal price variation	20	33.33	3 rd
Perishability of the product	18	30	4 th
Poor pricing	12	20.0	5 th
Market Remoteness	12	20.0	5 th
Bad road network	8	13.3	6 th
Poor storage facilities	8	13.3	6 th

Source: Field Survey (2024) Key: * = Multiple responses recorded.

CONCLUSION AND RECOMMENDATIONS

The study revealed a positive and statistically significant relationship between credit demand and risk attitudes among retail fruit vendors in Abia State, Nigeria. Specifically, vendors who exhibited risk-averse behaviors tended to demand higher credit amounts compared to their risk-preferring counterparts. This finding underscores the influence of individual risk profiles on financial decision-making in agricultural enterprises.

Based on the study's findings, the following recommendations are proposed:

1. **Government Support for Credit Access:** The government should facilitate access to credit for

fruit vendors to enable them to acquire essential processing resources, particularly labor, which remains a significant constraint. Providing such support will empower vendors to modernize operations and enhance productivity.

2. **Development of Risk Mitigation Programs:** Efforts should be directed towards creating programs and institutions that address risks critical to marketers. This includes providing adequate capital, improving market infrastructure, and expanding and maintaining roads leading to markets. Such initiatives will reduce operational challenges and promote sustainable business growth.

REFERENCES

Abdul W., Jianhua Y., Zahid A., Kalsoom R., Muhammad A., (2017). Is marketing limited to promotional activities? the concept of marketing: a concise review of the literatur. *Asian Development Policy Review*, 5(1): 56-69.

Agbayekhai M.O. (2010) Risk Management Strategies in Financing Agriculture in Nigeria, West Africa Regional Workshop. Pp 44 – 59

Alderman, H. (2008). Managing risks to increase efficiency and reduce poverty”, Background Paper for the World Development Report, World Bank.

Ashford, J.R., Sowden R.R. (1978)

- Multivariate probit analysis. *Biometrics*. 26: 535-546
- Aigbokie, S. O., Ibe, G. I. C., Inyang, N. N., Eze, A. A., Bassey, I., Uchendu, C. O. and Umeadi, S. C. (2021). Gender differentials in labour source and utilization among rural Rice farmers In Enugu State, Nigeria. *Nigerian Agricultural Journal*. 52(2021): 181-187.
- Asfaw, S. G., Mosisa, C. A., and Refisa, J. G. (2022). Assessment of Post-harvest Losses of Fruits in West Shewa Zone, Oromia, Ethiopia. *Plant*. 10(4): 89-96. doi: 10.11648/j.plant.20221004.11
- Ayinde, O. E., Omotesho O. A., Adewumi, M. O. (2008). Risk attitudes and management strategies of small scale crop producer in Kwara State, Nigeria: A ranking approach. *Afr. J. Bus. Manag.* 2(12): 217-221.
- Idu, M. A and Aigbokie, S. O. (2021). Expository analysis of labour utilization and cost efficiency of food crop credit beneficiaries in Abia State, Nigeria. In: Onwumere J.C., Ogbonna M.C and Obasi I.O (Eds) repositioning agriculture for economic development in Nigeria. *Book of readings in Honour of Professor Remmy Onyekachi Mejeha*. Academic Researcher Committee of friends of *Professor Remmy Onyekachi Mejeha*. 128 – 133.
- Korir LK (2011). Risk Management among Agricultural Households and the Role of Off farm Investment in Uasin Gishu County, Kenya. Unpublished M.Sc. Thesis, Department of Agricultural and Applied Economics. Egerton, University. Pp. 1-61.
- Lawrence O.O., Taiwo T.A., Oluyede A.A., and Adebisi G.D., (2018) Attitudes Towards Risk and Risk Combating Strategies among Maize and Cassava Farmers in Southwest, Nigeria. *Journal of Economics, Management and Trade*, 21(7): 1-12,
- Lewis, Robert A. (2002). *CRC Dictionary of Agricultural Sciences*. CRC Press. ISBN 978-0-8493-2327-0. Pp 1 – 88.
- Lim, Stephen S.; Vos, Theo; Flaxman, Abraham D.; Danaei, Goodarz; Shibuya, Kenji; Adair-Rohani, Heather; Amann, Markus; Anderson, H. Ross; Andrews, Kathryn G. (2012). *"A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions*. Pp 22 – 49.
- Lingard, J. (1992). The Influence of Risk Aversion on the Uptake of Set-Aside: A MOTAD and CRP Approach". *J. Agric. Econ.* 43(3):401-411.
- Luke K.K., (2011) Risk management among agricultural households and the role of off-farm investments in Uasin Gishu County, Kenya Luke Kipkurgat Korir. A thesis submitted to the graduate school in partial fulfillment for the requirements of the Master of Science Degree in Agricultural and Applied Economics of Egerton University.
- Murray-Webster R, Hillson D (2008). Managing group risk attitude. Gower Publishing, Ltd. Pp 1 – 59.
- National Bureau of Statistics (NBS). (2024, June 26). Only 7% of farming communities receive agricultural loans from banks in Nigeria. *Nairametrics*. Retrieved from <https://nairametrics.com/2024/06/26/only-7-of-farming-communities-receive-agricultural-loans-from-banks-in-nigeria-nbs/>. Pp 1 – 139
- Office of the Surveyor General of the Federation. (2023). *Map of Abia State*. Federal Ministry of Works and Housing, Nigeria.
- Ogunleye, A., Akinloye, M. O., Kehinde, A., Ajayi, O. M., and Wongnaa, C. A. (2024). Impacts of credit constraints on adoption of risk management strategies and income of maize farmers in Northern Nigeria.

Agricultural Finance Review, 84(2/3): 114–142. <https://doi.org/10.1108/AFR-11-2023-0152>.

Phoebe B.M, Wasike C.W, Ombok B.O, Kipsat M.J (2018). Farmers' Attitude towards Risk on Indigenous Chicken in Nyanza Region. *Journal of Agricultural Economics and Rural Development*, 4(2): 469-476.

Wasiu O. Fawole, Burhan O., (2018) Food insecurity risks perception and management strategies among households: Implications for zero hunger target in Nigeria NEW MEDIT N. 2/2018. Pp 1 - 164.

Wencong, L., Aiqin X, Jian Y (2006). Modeling Risk Behavior of Agricultural Production in Chinese Small Households. Poster paper prepared for presentation at the International Association of Agricultural Economics

Zsidisin, G. A., Wagner, S. M., Melnyk, S. A., Ragatz, G. L., and Burns, L. A. (2008). Supply Risk Perceptions and Practices: An Exploratory Comparison of German and US supply Management Professionals. *International Journal of Technology, Policy and Management*, 8(4): 401 – 419.