



FACTORS INFLUENCING ARABLE CROP FARMERS' WILLINGNESS TO COLLABORATE WITH INVESTORS IN KWARA STATE, NIGERIA

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ABSTRACT

The study examined the factors influencing arable farmers' willingness to collaborate with investors in Kwara State, Nigeria. A multistage sampling procedure was used to select 150 arable farmers. Data were collected through a structured interview schedule and analyzed using descriptive statistics and binary logistic regression. Results revealed that majority (84.7%) of the respondents were male, with a mean age and farming experience of 52.7 years and 28.3 years, respectively. Also, majority (85.3%) expressed willingness to collaborate, awareness of available collaboration opportunities was generally low (WMS = 0.76). Off-taker (WMS = 1.25) and proxy-farming arrangements (WMS = 1.23) were the most familiar partnership models. Farmers exhibited positive perceptions of collaboration with investors. The logistic regression model ($\chi^2 = 56.874$, $p < 0.001$; Nagelkerke $R^2 = 0.547$) showed that sex, age, marital status, educational attainment, farm ownership, farm size, farming experience, awareness, and perception significantly influenced willingness to collaborate ($p < 0.05$). Major constraints identified included poor awareness of collaboration opportunities ($x = 2.29$), production risks ($x = 2.18$), market uncertainty ($x = 2.09$), and limited extension services ($x = 1.76$). The study concludes that sex, age, marital status, educational attainment, farm ownership, farm size, farming experience, awareness, and perception were the factors influencing arable farmers' willingness to collaborate with investors in the study area. It is recommended that targeted awareness campaigns, inclusive investment models, and strengthened extension systems be implemented to promote mutually beneficial collaborations that enhance agricultural productivity and sustainability.

Keywords: Arable, Farmers, Funding, Sustainable, Agriculture

INTRODUCTION

Agriculture remains a cornerstone of Nigeria's economy, providing employment for over 70% of the rural population and contributing significantly to food security, poverty alleviation, and national income. Within the agricultural sector, arable farming, covering the cultivation of crops such as maize, cassava, yam, rice, and vegetables, plays a critical role in ensuring food supply and raw materials for agro-based industries. Despite its importance, arable farming in Nigeria, continues to face numerous challenges such as inadequate access to credit, poor infrastructure, low productivity, and limited adoption of modern technologies (Owoade 2019; Olabanji *et al.*, 2025). These challenges hinder the sector's capacity to contribute effectively to economic growth and sustainable rural development. In recent years, agricultural investment has been recognized as a viable pathway to revitalize the sector. Both domestic and foreign investors have shown increasing interest in partnering with local farmers to enhance production efficiency, promote value addition, and ensure better market access (Mbelu & Ifionu, 2022). Agritech platforms use technology to connect farmers directly with investors, buyers, and markets, offering digital marketplaces and crowd-farming models that bypass traditional barriers.

Beyond digital platforms, a growing ecosystem of funds and public-private partnerships is emerging to catalyze investment in African agriculture. Joining forces with other farmers and growers is a proven way of reducing costs and increasing efficiency. Collaborative arrangements between farmers and investors can provide mutual benefits: farmers gain access to finance, inputs,



mechanization, and technical knowledge, while investors secure raw materials and achieve profitability through economies of scale (Velten *et al.*, 2021).

Collaboration between farmers and other stakeholders has been identified as a key strategy for sustainable agriculture (Maryono *et al.*, 2024). However, for collaboration to actually benefit sustainable agriculture, willingness of farmers is a critical condition to be met. This willingness could depend on several factors, such as socioeconomic and institutional factors, farmers' perceptions of risk, past experiences with partnerships, and access to information (Pérez-Pineda & Wehrmann, 2021). Farmers are rational; they weigh long-term versus short-term benefits, pursue the maximization of benefits, and make decisions that they consider reasonable production (Zhang *et al.*, 2022). Understanding the factors influencing farmers' willingness to collaborate is therefore crucial in developing models that encourage trust, fairness, and mutual benefit. It is against this background that the present study is designed to examine the factors influencing arable farmers' willingness to collaborate with investors in Kwara State, Nigeria. The specific objectives are to;

- i. Describe the socioeconomic profile of the arable farmers,
- ii. Determine the arable farmers level of awareness of collaboration opportunities,
- iii. Assess the perception of the arable farmers towards collaboration with investors,
- iv. Examine the arable farmers' willingness to collaborate with investors
- v. Identify factors influencing arable farmers' willingness to collaborate with investors
- vi. Identify the constraints to arable farmers' willingness to collaborate with investors

MATERIALS AND METHODS

The study was carried out in Kwara State, Nigeria. Kwara State is located in the North-Central geopolitical zone of Nigeria. The state lies between latitudes 7°45'N and 9°30'N and longitudes 2°30'E and 6°35'E, with an estimated land area of about 36,825 square kilometers. It shares boundaries with Kogi State to the east, Oyo State to the south, Niger State to the north, and the Republic of Benin to the west. The state has sixteen (16) Local Government Areas (LGAs) grouped into three agroecological zones by Kwara State Agricultural Development Project (KWADP): Zone A, B, C and D. The State has a tropical climate characterized by two distinct seasons: the wet season (April to October) and the dry season (November to March). The mean annual rainfall ranges between 1,000 mm and 1,500 mm, making it suitable for arable crop production. The major crops cultivated in the state include maize, cassava, yam, rice, sorghum, cowpea, and vegetables. Agriculture is predominantly practiced by smallholder farmers using traditional methods. The population for the study comprises all arable crop farmers in Kwara State, Nigeria.

Sampling Technique and Sample Size

A multistage sampling procedure was used to select respondents for the study. In the first stage, Zone C and D were purposively selected due to the abundance of arable farming in the area. In the second stage, two local government areas (Asa and Ifelodun LGA) with a high concentration of arable farmers were purposively selected from each zone. In the third stage, three farming communities were randomly chosen, giving a total of six communities. Finally, a systematic random sampling technique was used to select 25 farming households in each community. The main plot manager in each household was interviewed. A total of one hundred and fifty respondents were interviewed by the study.

Data Collection and Analysis

Data were collected using a structured interview schedule to obtain information on farmers' socio-economic characteristics, awareness of collaboration opportunities, perception towards collaboration with investors, willingness to collaborate, and constraints affecting their willingness to collaborate. Data collected were analysed using both descriptive and inferential statistical tools. Frequency counts, percentages, means, and standard deviations were used to summarize respondents' socio-economic characteristics, levels of awareness, and perceptions regarding collaboration with investors. Level of awareness was measured using three-point likert-type scale of fully aware (2), aware (1) and not aware (0). The perception was measured using five-point likert scale of Strongly agreed (5), agreed (4), undecided (3), disagreed (2) and strongly disagreed (1). The willingness of



arable farmers to collaborate with investors was measured using willing (1) and not willing (0). The possible constraints to collaborating with investors were identified using a four-point Likert type scale of Very Severe Constraint, Severe Constraint, mild constraint and Not a Constraint with assigned scores of 3, 2, 1 and 0 respectively. The scale measured as $X = \Sigma x / n$ Where, X = Likert value, Σ = summation, n = total respondents / sample size was used to form the basis for deciding the constraints to collaboration with investors. Thus, the decision rule holds that $X = (3 + 2 + 1 + 0) / 4 = 1.5$. so, constraints > 1.5 were considered important constraint while those < 1.5 were considered not important. The Logistic Regression Model (binary logit) was used to determine the factors influencing farmers' willingness to collaborate with investors. The binary dependent variable was 1 if the farmer is willing to collaborate and 0 if otherwise. For all purposes, p-value of 0.05 was considered as the level of significance.

The model is specified as:

$$\text{Logit}(P) = \ln\left(\frac{P}{1-P}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$$

Where,

P_i = Probability that the i -th farmer is willing to collaborate with investors

$1 - P_i$ = Probability that the i -th farmer is not willing to collaborate

$\ln(P_i / (1 - P_i))$ = Natural logarithm of the odds of willingness to collaborate

β_0 = Intercept term

$\beta_1, \beta_2, \dots, \beta_n$ = Coefficients of the independent variables

X_1, X_2, \dots, X_n = Independent variables influencing willingness to collaborate [X terms: Sex (e.g., male = 1, female = 0), Age (years), Marital status (e.g., married = 1, otherwise = 0), Educational attainment (coded ordinal or dummies), Farm ownership (owner = 1, renter/other = 0), Farm size (ha), Years of farming experience, Awareness of collaboration opportunities (aware = 1, not aware = 0), Perception of collaborating with investors (favourable = 1, unfavourable = 0)]

μ_i = Error term

RESULTS AND DISCUSSION

Socioeconomic Profile of the Respondents

The results in Table 1 showed that majority (84.7%) of the respondents were males while (15.3%) were females. This implies male dominance of arable farming in the study area. This could be connected to the tedious nature of farming activities. The limited female participation could be attributed to cultural roles and land access challenges (Olabanji *et al.*, 2025). The mean age of 52.7 years suggests that most farmers are middle-aged or older. This aligns with Alabi (2023), who observed that older farmers dominate rural farming because younger individuals often migrate to urban areas. Such an age distribution could influence openness to innovation or collaboration, as older farmers may be more risk-averse. The Table further revealed that majority (88.7%) of the farmers were married. Married people are saddled with the responsibility of catering for their families, hence their high involvement in arable crop farming. This is also in line with the findings of Olabanji *et al.*, (2025) that reported that the majority of arable crop farmers were married people indicating stable family structures that could support long-term farming decisions. In terms of education, 47.3% had secondary education, while 20.7% had no formal education. This moderate literacy level implies some capacity to seek collaboration opportunities and understand partnership agreements. In addition, 42% practiced lease or shared cropping, while 38.7% inherited their farms. This reflects the prevalence of customary land tenure systems, which may limit farmers' capacity to enter long-term partnerships due to unclear ownership (Olabanji *et al.*, 2025). The results of farm size revealed that 65.3% of the farmers had farm sizes less than 5 acres and an average of 4.8 acres implying that most of the farmers are small-holder farmers. Mixed cropping (74.0%) was the major cropping system in the area. On farming experience, the results revealed that the highest proportion of farmers, 74.7%, had over 10 years of farming experience with an average of 28.3 years. This level of experience places the farmers at a level of mastery of arable crop production with sufficient understanding of what is required for



sustainable production. Lastly, majority (86.0%) of the farmers have contacts with extension personnel just once in a year, signifying poor access to extension services, an issue that limits awareness of partnership opportunities (Ikoyo-Eweto *et al.*, 2023).

Table 1: Distribution of Respondents based on Socioeconomic Characteristics

Socioeconomic Variables		Frequency (N150)	Percentage	Mean
Sex				
	Male	127	84.7	
	Female	23	15.3	
Age (in years)				
	Less than 30	24	16.0	52.7 years
	30-40	31	20.7	
	41-50	39	26.0	
	51 and above	56	37.3	
Marital Status				
	Single	17	11.3	
	Married	133	88.7	
Educational Attainment				
	No formal Education	31	20.7	
	Primary Education	44	29.3	
	Secondary Education	71	47.3	
	Tertiary Education	04	2.7	
Farm Ownership Status				
	Inherited	58	38.7	
	Lease/Rented/shared cropping	63	42.0	
	Purchased	29	19.3	
Farm Size				
	Less than 5 acres	98	65.3	4.8 acres
	5-10 acres	40	26.7	
	11 acres and above	12	8.0	
Farm Cropping System				
	Mono-cropping	07	4.7	
	Mixed cropping	111	74.0	
	Intercropping	32	21.3	
Years of farming Experience				
	Less than 5 years	06	4.0	26.7 years
	5-10 years	32	21.3	
	Above 10 years	112	74.7	
Frequency of Extension Contact				
	Monthly	21	14.0	
	Yearly	129	86.0	

Source: Field Survey, 2025

Farmers' Awareness of Collaboration Opportunities

Results from Table 2 show that the farmers' awareness of collaboration opportunities was generally low (WMS = 0.76). However, off-taker arrangement of partnership has the highest level of awareness among the arable farmers (WMS = 1.25). Proxy farming (WMS = 1.23) was the second most common type of collaboration that the farmers were aware of. This finding suggests that farmers are more familiar with traditional forms of partnerships (such as off-take agreements) than modern investment models like crowdfunding. Abioye *et al* (2024) similarly reported low awareness of digital agricultural investment tools among rural farmers in Nigeria.



Table 2: Distribution of the Respondents based on their Awareness of Collaborative Opportunities

Variable	FA F (%)	PA F (%)	NA F (%)	Mean	SD
Crowd funding	08 (5.3)	22 (14.7)	120 (80.0)	0.25	0.83
Off-takers	51 (34.0)	85 (56.7)	14 (9.3)	1.25	0.91
Proxy-farming	48 (32.0)	89 (59.3)	13 (8.7)	1.23	1.00
Loan based partnership	08 (5.3)	21 (14.0)	121 (80.7)	0.24	0.90
Cooperative farming	10 (26.0)	16 (70.7)	124 (3.3)	0.83	0.96
Cumulative Average				0.76	0.92

Source: Field Survey, 2025

Farmers' Perception of Collaboration with Investors

Overall, the cumulative average perception score (3.70) on Table 3 indicates a positive perception toward collaboration. Respondents agreed that collaborating with investors could enhance financial returns (mean = 3.42), increase production (4.21), reduce risks (4.09), and open new markets (3.77). These findings align with Maryono *et al.* (2024), who found that partnership with investors can improve productivity and income among smallholder farmers through access to finance and technology.

Table 3: Distribution of Respondents based on Perception on Collaboration with Investors

Perception Statements	WMS	SD
By collaborating with investors, I will gain more financial returns	3.42	0.91
Collaborating with investors may affect my control over farm decisions	2.98	1.01
Having funds from investors can increase production targets	4.21	0.87
Investment partnerships can create a win-win situation	3.97	1.00
Collaboration can reduce risks and enhance productivity	4.09	1.00
Collaborating with investors can help me access new markets	3.77	0.99
Investors should be made to occupy a unique position within agricultural value chain, making them critical stakeholders in sustainability efforts	3.89	1.01
Effective collaboration with investors can drive transformative changes in farming activities	4.01	0.85
Sourcing for investors and getting the right people in place are rigorous tasks	3.78	0.90
Sharing profit with investors could create rift	2.86	1.00
Cumulative Average	3.70	0.95

Source: Field Survey, 2025

Willingness to Collaborate

Table 4 shows that majority (85.3%) of the respondents indicated willingness to collaborate with investors, while only 14.7% were unwilling. This high willingness reflects farmers' recognition of potential benefits such as improved financing, input access, and market linkages. Similar results were reported by Maryono *et al.* (2024), who found that smallholders are generally open to collaboration when benefits outweigh perceived risks.

Table 4: Distribution of Respondents based on Willingness to Collaborate

Willingness Status	Frequency	Percentage
Willing	128	85.3
Not Willing	22	14.7

Source: Field Survey, 2025

Factors Influencing Willingness to Collaborate with Investors

Table 5 shows a statistically significant regression model ($\chi^2 = 56.874$, $p < 0.001$), indicating that the included variables jointly explain the likelihood of willingness to collaborate among arable farmers. The Nagelkerke R^2 value (0.547) suggests that approximately 55% of the variation in willingness to collaborate is explained by the predictors. The model further shows that male farmers are 3.14 times more likely to collaborate than females, possibly due to higher farm access and

decision-making autonomy (Adefalu *et al.*, 2019). A negative coefficient of age ($B = -0.042$) indicates that older farmers are less likely to embrace collaboration. Also, more educated farmers are significantly more willing to collaborate. Married respondents are about 2.7 times more likely to be willing to collaborate. Marital status can proxy for household stability or pooled labor/resources, making household decisions (including investor collaboration) more feasible and less risky. Educational attainment ($\text{Exp}(B) = 1.87$) significantly increases willingness. Education improves partnership literacy. Furthermore, farm ownership ($\text{Exp}(B) = 2.04$) increases confidence in engaging investors. In regards to farm size ($\text{Exp}(B) = 1.29$), larger farms imply greater capacity and attractiveness to investors, hence more willingness. Experienced farmers recognize potential benefits of partnerships due to long-term exposure to market dynamics ($\text{Exp}(B) = 1.04$). Additionally, awareness ($\text{Exp}(B) = 1.81$) significantly predicts willingness, consistent with Ren *et al* (2025) who found that information access drives investment participation. Lastly, positive perceptions of collaboration double the odds of willingness ($\text{Exp}(B) = 2.02$), emphasizing the importance of trust-building and investor-farmer engagement.

Table 5: Analysis of Factors Influencing Willingness to Collaborate with Investors

Variables	B (Coefficient)	S.E.	Wald	Sig. (p-value)	Exp(B) (Odds Ratio)
Constant	-4.215	1.487	8.012	0.005	-
Sex (Male=1, Female=0)	1.143	0.514	4.950	0.026**	3.14
Age (Years)	-0.042	0.019	4.891	0.027**	0.96
Marital Status (Married=1, Single=0)	0.981	0.446	4.847	0.028**	2.67
Educational Attainment	0.628	0.210	8.935	0.003**	1.87
Farm Ownership (1=Purchased, 0=Otherwise)	0.715	0.323	4.902	0.027*	2.04
Farm Size (Acres)	0.252	0.094	7.194	0.007**	1.29
Years of Farming Experience	0.038	0.018	4.417	0.036**	1.04
Awareness of Collaboration Opportunities	0.591	0.198	8.900	0.003***	1.81
Perception of Collaboration	0.705	0.217	10.541	0.001***	2.02

-2 Log Likelihood = 108.521; Cox & Snell $R^2 = 0.382$; Nagelkerke $R^2 = 0.547$; ($\chi^2 = 56.874$, $p < 0.001$)

Source: Data Computation, 2025

Possible Constraints to Collaboration with Investors

Table 6 shows that the main constraints identified include poor awareness of collaboration opportunities ($\text{WMS} = 2.29$), market uncertainty (2.09), and risk associated with production (2.18). These reflect systemic challenges that limit farmers' capacity to engage in partnerships. Owoade (2019) observed that inadequate information and unstable markets hinder investment-driven agriculture in Nigeria. Other constraints include lack of trust (1.12), fear of losing land ownership (1.76), limited extension services (1.76), and land tenure insecurity (1.33). Insecure tenure and weak institutional frameworks can discourage long-term collaboration between farmers and investors.

Table 5: Distribution of the respondents based on possible constraints to collaborate with investors

Constraints	WMS	SD
Poor awareness of collaboration opportunities	2.29	0.98
Lack of trust for investors	1.12	1.00
Risk associated with production	2.18	0.86
Fear of losing land ownership or control	1.76	0.90
Cultural and traditional beliefs	1.09	1.01
Limited access to extension and advisory services	1.76	1.00
Rigor of sourcing investors	1.53	1.00
Land tenure insecurity	1.33	0.89
Fear of Exploitation	1.98	1.00
Market uncertainty	2.09	1.00

Source Field Survey, 2025



CONCLUSION AND RECOMMENDATIONS

The study concludes that sex, age, marital status, educational attainment, farm ownership, farm size, farming experience, awareness, and perception were the factors influencing arable farmers' willingness to collaborate with investors in the study area. The arable farmers exhibit a high level of willingness and positive perception toward collaboration with investors, largely driven by their recognition of the potential benefits of such partnerships. However, despite this strong willingness, the level of awareness about available collaboration opportunities remains low, and institutional barriers continue to hinder effective engagement. Based on the findings, the study recommends that;

- i. Government agencies, NGOs, and agritech platforms should intensify awareness campaigns on available collaboration and investment opportunities through extension services, radio programs, and farmer cooperatives.
- ii. Regular extension contact should be institutionalized to improve farmers' understanding of partnership models, contract terms, and risk management strategies.
- iii. Promote Inclusive Investment Models: Policies should encourage investment frameworks that protect farmers' interests, build mutual trust, and ensure equitable profit-sharing arrangements.

REFERENCES

- Abioye D.O., Popoola, O., Akande, A., Fadare, D.A., Omitoyin, S.A., Yinusa, B. and Kolade, O.O. (2024). Farmers' willingness to adopt digital application tools in Ogun State, Nigeria. *Journal of Strategy and Management*, **3**(2): 1-10. <https://doi.org/10.1108/JSMA-06-2023-0135>
- Adefalu, L.L., Olatinwo, L.K., Olabanji, O.P., Musa, M.O. and Folayan, B. (2019): Vegetable farmers' perception on record keeping in Akinyele Local Government Area, Oyo State, Nigeria. *Agricultural Economics and Extension Research Studies*, **7**(1): 34-40.
- Alabi, S. T. (2023). Aging Farmers and Agricultural Productivity in Ondo State: Implications for Food Security in Nigeria. *Cross Current International Journal of Agricultural Veterinary Science*, **5**(6), 128-135.
- Ikoyo-Eweto, G.O., Adedokun, I.F., Archibong, J.P. and Okwukenye, G.F (2023). Rural farmers access to extension services: Implications for increased adoption of improved farm technologies in Delta State. *Nigeria. Journal of Agriculture and Food Sciences*, **21**(2): 135-152. <https://dx.doi.org/10.4314/jafs.v21i2.11>
- Maryono, M., Aditya, M.K., Rajendra, A., and Ammar, A.A, (2024). Agriculture development through multi-stakeholder partnerships in developing countries: A systematic literature review. *Agricultural Systems*, 213. <https://doi.org/10.1016/j.agsy.2023.103792>
- Mbelu, O.N., and Ifionu, E.P. (2022), Agricultural Financing and Economic Growth in Nigeria. *African Journal of Accounting and Financial Research*, **5**(3): 30-48. <https://doi.org/10.52589/AJAFRVV0CKXM8>.
- Olabanji, O.P., Ayodele, G.A., Olabanji, F.A and Olasehinde, E.M (2025). Assessment of Arable Farmers' Response to the Impact of Urbanisation in Ilorin Metropolis, Kwara State, Nigeria. In: Chukwu O., Ikeogu C.F., Ezegbe C.C., Obiekwe N.J and Ebenebe C.I. (eds). Proceedings of the 3rd Annual International Conference of the Faculty of Agriculture, Nnamdi Azikiwe University, Awka, Nigeria. pp 304-311.
- Owoade, O. A (2019). Sustaining Agricultural Transformation in Nigeria: Challenges, Issues and Strategies. *International Journal of Innovative Agriculture & Biology Research* **7**(4):13-22
- Pérez-Pineda, J.A., and Wehrmann, D. (2021). Partnerships with the Private Sector: Success Factors and Levels of Engagement in Development Cooperation. In: Chaturvedi, S., *et al.* The Palgrave Handbook of Development Cooperation for Achieving the 2030 Agenda. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-57938-8_30
- Ren, Y., Liu, X., Zhu, Y. (2025). Can the development of digital finance and information transparency improve enterprise investment efficiency?, *Finance Research Letters*, **73**. <https://doi.org/10.1016/j.frl.2024.106597>.



Nigerian Journal of Agriculture and Agricultural Technology (NJAAT)
Volume 5, Number 4A, December, 2025
ISSN (Print): 2811-1885; ISSN (Online): 2811-1893



- Velten, S., Jager, N.W. and Newig, J. (2021). Success of collaboration for sustainable agriculture: a case study meta-analysis. *Environment, Development and Sustainability* 23, 14619–14641. <https://doi.org/10.1007/s10668-021-01261-y>
- Zhang, Y., Lu, X., Zhang, M., Ren, B., Zou, Y and Lv, T. (2022). Understanding farmers' willingness in arable land protection cooperation by using fsQCA: Roles of perceived benefits and policy incentives. *Journal for Nature Conservation*, 68. <https://doi.org/10.1016/j.jnc.2022.126234>