Journal of Community & Communication Research
ISSN: 2635 -3318
Volume 11, Number 1, June 2026
Accessible at: https://jccr.sccdr.org/index.php/jccr/index

PERCEIVED FACTORS INFLUENCING THE WILLINGNESS OF YOUNG FARMERS TO USE DIGITAL AGRICULTURAL MARKETING APPLICATIONS FOR IMPROVED MARKET ACCESS IN AKWA IBOM STATE, NIGERIA

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Abstract

The study examined the willingness of young farmers to use digital agricultural marketing applications for improved market access. Specifically, it identified the perceived factors influencing the willingness of young farmers to use digital agricultural marketing applications for improved market access in Akwa Ibom State. The multi-stage sampling procedure was used to select two hundred and sixty-six young farmers. Data were collected using a structured online questionnaire and analysed using binary logistic regression. Findings revealed that the cost of smartphones and internet negatively influenced willingness to use agricultural marketing applications (β = −0.614, p = 0.060; Odds Ratio = 0.541), while ease of use (OR = 1.569), logistics availability (OR = 1.493), and training support (OR = 1.357) showed positive associations with willingness to use. The study concluded that the high cost of digital tools and weak infrastructure are the primary barriers to willingness to use digital Agricultural Marketing applications among young farmers, and recommended subsidised smartphones and data plans, improved rural internet connectivity, and farmer-targeted digital literacy programmes.

Keywords: Factors, willingness to use, young farmers, digital agricultural marketing applications

INTRODUCTION

Agriculture remains a critical sector for economic development, employment generation, and food security in sub-Saharan Africa, particularly in Nigeria, where a significant proportion of the population depends on smallholder farming for livelihood. In Akwa Ibom State, farming serves as a primary source of income and a key component of rural socio-economic identity. Young farmers, defined as individuals between 18 and 35 years of age, represent a strategic demographic in this agricultural landscape given their comparatively higher exposure to digital technologies, adaptability to change, and potential to drive transformation in agricultural value chains. Research indicates that youth-led agribusinesses in Southeast Nigeria cited social media (67%), internet platforms (58%), and mobile phones (89%) as crucial elements of their marketing and decision-making processes (Ebe, Igwe, and Njoku, 2022). Studies conducted in Akwa Ibom State similarly showed that more than 90% of rural farmers use mobile phones primarily for marketing, accessing inputs, and receiving extension services (Asa and Uwem, 2017).

The emergence of digital Agricultural marketing applications such as FarmCrowdy, AgroCenta, Tulaa, and Agro Discovery has created new opportunities for improving agricultural marketing systems. These platforms provide farmers with real-time market information, digital trading platforms, buyer-seller linkages, mobile payment systems, extension support services, and logistics coordination. Through these digital tools, young farmers can expand their market reach, reduce transaction costs, improve price negotiation, and increase income generation. However, Khidir, Oladele, and Yusuf (2019) posit that, despite high mobile phone penetration in North-West Nigeria, with 96% of farmers owning mobile phones, the adoption of more sophisticated Agric tech applications remains limited, as many farmers continue to use devices primarily for basic communication rather than for market-oriented digital engagement.

The Technology Acceptance Model (TAM), developed by Davis (1989), explains that adoption intention is primarily determined by perceived usefulness, which is the degree to which a person believes that using a technology will enhance their performance, and perceived ease of use, which is the degree to which using the technology is free of effort. Among young farmers, perceived usefulness captures the belief that digital Agricultural marketing applications will improve access to higher-paying markets and reduce middleman exploitation, while perceived ease of use reflects confidence in navigating these platforms.

Research studies have shown that ICT utilization among farmers is significantly shaped by government policy gaps, technological limitations, and administrative challenges (Ekanem and Akpan, 2018). Widespread adoption is hampered by limited ICT content specifically designed for agriculture, and a lack of strong regulatory backing. Many farmers use their smartphones for basic communication rather than for digital marketing, even in places with cell service (Ekanem and Ekerete, 2018; Olawumi, Bamidele, Olaitan, Joel, Eleke, and Sennuga, 2025). The mere availability of agricultural information and technology does not automatically result in successful adoption, as various obstacles continue to hinder efficient use among farmers (Umoh, Udousung, and Edet 2025). While several studies have examined ICT use in agriculture broadly, there is limited empirical evidence specifically on the factors influencing young farmers' willingness to adopt digital Agricultural marketing applications for improved market access in Akwa Ibom State. The study, therefore, aimed to identify the factors influencing young farmers' willingness to adopt digital Agricultural marketing applications in Akwa Ibom State, Nigeria.

Hypothesis

There is no significant influence of awareness, knowledge, perceived usefulness, ease of use, and access to ICT infrastructure on the willingness of young farmers to adopt digital Agricultural marketing applications.

METHODOLOGY

The study was carried out in Akwa Ibom State, Nigeria. A multistage sampling procedure was employed. In the first stage, the Uyo, Abak, and Eket Agricultural Zones were purposively selected from the state's six agricultural zones due to the high percentage of young people involved in farming and their greater exposure to digital technology. In the second stage, the researcher identified and joined various online communities of young farmers hosted on WhatsApp, Facebook, and Telegram platforms across selected agricultural zones. These platforms served as informal digital clusters where young farmers interact, exchange information, and promote their agricultural produce. The use of online farmer groups was appropriate given the ICT-focused nature of the study. The accessible population consisted of 794 young farmers across 50 online groups in 17 LGAs within the three agricultural zones in the study area. The sample size was determined using Yamane's formula ((1967)): $n = N / (1 + N(e)^2)$, where $N = 794$ and $e = 0.05$, yielding $n \approx 266$. However, one questionnaire was excluded during data screening due to an invalid age entry (1908), which indicated a dishonest response to the eligibility screening question. This resulted in a final usable sample of 265 respondents.

Data were gathered using a structured questionnaire distributed through Google Forms. Factors influencing willingness to use were assessed with seven items on a 5-point Likert scale (Very Low = 1 to Very High = 5): perceived usefulness, ease of use, peer influence, trust in online transactions, availability of logistics, training and support, and the cost of internet and smartphones. Willingness to use was measured with ten items on a 5-point Likert scale (Strongly Disagree = 1 to Strongly Agree = 5). Each respondent's average willingness score was recoded into a binary variable: Willing = 1 (mean $\geq$ 3.00) or Not Willing = 0 (mean < 3.00), with 148 (55.8%) classified as Willing and 117 (44.2%) as Not Willing. Binary logistic regression was employed to analyze the predictive impact of the seven adoption factors on this binary willingness outcome.

RESULTS AND DISCUSSION

The willingness of young farmers to use digital Agricultural Marketing applications for improved market access is presented in Table 1. Using a threshold mean of 3.00, seven of the ten willingness items recorded mean scores at or above the threshold, indicating a generally positive disposition toward adoption.

Table 1: Willingness of Young Farmers to Adopt Digital Agricultural Marketing Applications

S/N	Willingness Statement	SA (5)	A (4)	U (3)	D (2)	SD (1)	CUM	Mean	Decision
1	I am willing to start using Digital Agric, Marketing applications in the next three months	52(260)	74(296)	51(153)	44(88)	44(44)	841	3.17*	Willing
2	I am willing to register on a Digital Agric. marketing application for selling my farm produce	57(285)	48(192)	60(180)	52(104)	48(48)	809	3.05*	Willing
3	I am willing to upload my farm produce on a digital Agric. Marketing applications regularly	48(240)	58(232)	44(132)	60(120)	55(55)	779	2.94	Not Willing
4	I am willing to learn how to use digital Agric. Marketing applications if training is provided	62(310)	51(204)	48(144)	53(106)	51(51)	815	3.08*	Willing
5	I am willing to encourage other farmers to use digital Agric. marketing applications	59(295)	53(212)	60(180)	56(112)	37(37)	836	3.15*	Willing
6	I am willing to use Agric, marketing applications even if it requires internet or data cost	51(255)	63(252)	50(150)	46(92)	55(55)	804	3.03*	Willing
7	I am willing to trust payment systems (escrow/digital payment) on Agri-tech applications	46(230)	55(220)	57(171)	50(100)	57(57)	778	2.94	Not Willing
8	I am willing to sell to buyers outside my community using Agric. marketing applications	55(275)	60(240)	53(159)	50(100)	47(47)	821	3.10*	Willing
9	I am willing to use Agri-marketing applications if logistics or delivery services are available	48(240)	42(168)	48(144)	61(122)	66(66)	740	2.79	Not Willing
10	I prefer using digital Agric marketing applications over selling through middlemen or traditional markets	44(220)	60(240)	73(219)	43(86)	45(45)	810	3.06*	Willing

Source: Field Survey, 2025.
*Threshold Mean Value = 3.00. * = Willing. SA = Strongly Agree, A = Agree, U = Undecided, D = Disagree, SD = Strongly Disagree.*

The respondents indicated their willingness to start using Digital Agricultural Marketing applications in the next three months ($\bar{x}$ = 3.17), while willingness to encourage fellow farmers ($\bar{x}$ = 3.15) and willingness to sell to external buyers through digital platforms ($\bar{x}$ = 3.10) came second and third, as shown by their means. They also showed willingness to learn through training ($\bar{x}$ = 3.08), to use applications despite data costs ($\bar{x}$ = 3.03), preferred digital platforms over middlemen ($\bar{x}$ = 3.06), and to register for selling produce ($\bar{x}$ = 3.05). These findings are consistent with Abioye, Popoola, Akande, Fadare, Omitoyin, Yinusa, and Kolade (2024), who found positive and significant effects of education, internet access, and awareness on willingness to adopt digital agricultural tools among Nigerian farmers. Three items fell below the threshold: willingness to upload produce regularly ($\bar{x}$ = 2.94), trust in digital payment systems ($\bar{x}$ = 2.94), and conditional use dependent on logistics availability ($\bar{x}$ = 2.79). When respondents' mean willingness scores were recoded, 148 respondents (55.8%) were classified as Willing (mean ≥ 3.00) while 117 (44.2%) were classified as Not Willing (mean < 3.00). This binary outcome served as the dependent variable in the binary logistic regression analysis that follows.

Analysis of Factors Influencing Willingness to Use Digital Agricultural Marketing Applications

Binary logistic regression was conducted to examine the predictive influence of seven adoption factors on the binary willingness outcome (Willing = 1, Not Willing = 0). The results are presented in Table 2.

Table 2: Binary Logistic Regression Analysis of Factors Influencing the Willingness of Young Farmers to Use Digital Agricultural Marketing Applications in Akwa Ibom State

Variables	B	S.E.	Wald	Sig.	Exp(B)	95% CI Lower	95% CI Upper
Perceived usefulness	0.090	0.266	0.115	0.735	1.094	0.650	1.842
Ease of use	0.450	0.343	1.725	0.189	1.569	0.801	3.072
Peer influence	-0.473	0.298	2.527	0.112	0.623	0.348	1.116
Trust in online transactions	0.065	0.252	0.066	0.797	1.067	0.651	1.750
Availability of logistics	0.401	0.291	1.893	0.169	1.493	0.844	2.642
Training and support	0.305	0.356	0.736	0.391	1.357	0.676	2.726
Cost of internet/smartphone	-0.614	0.327	3.526	0.060 *	0.541	0.285	1.027

*Source: Field Survey, 2025. *Marginal significance at p < 0.10*

The results in Table 2 show that none of the seven factors reached statistical significance at the conventional 0.05 level. However, the cost of internet and smartphone approached marginal significance (B = −0.614, Wald = 3.526, p = 0.060, Exp(B) = 0.541), indicating that for every unit increase in perceived cost, the odds of a young farmer being classified as Willing to use decrease by approximately 45.9%. This finding is consistent with Akpaeti and Archibong (2022), who found that

the cost of devices and data services significantly discouraged digital platform adoption among farmers in Akwa Ibom State, and with Abioye et al. (2024), who identified the cost of digital tools as a significant barrier to willingness to adopt among Nigerian smallholder farmers. This is further supported by Balana and Oyeyemi (2020), who demonstrated that affordability barriers systematically limit agricultural technology adoption among smallholder farmers in Nigeria.

Ease of use (Exp(B) = 1.569), availability of logistics (Exp(B) = 1.493), and training and support (Exp(B) = 1.357) recorded odds ratios greater than 1, indicating positive directional associations with willingness to use, though none attained statistical significance at the 0.05 level. These positive directions align with predictions of TAM, which posits that perceived ease of use is a key determinant of adoption intention (Davis, 1989). Nyagango, Sife, and Kazungu (2023) similarly found that perceived ease of use and perceived usefulness significantly influenced farmers' access to agricultural marketing information through mobile phone platforms. The general non-significance of perceptual factors may partly reflect compressed variability in the binary dependent variable, given that 55.8% of respondents were already classified as Willing, which reduces the statistical power available to detect significant predictor effects.

Peer influence (Exp(B) = 0.623) showed a negative directional association with willingness, suggesting that peer and community influences in the study area were more discouraging than encouraging toward Agric-tech adoption. This mirrors observations by Ekanem and Akpan (2018), who identified socio-cultural resistance as a major determinant of low ICT utilisation rates among farmers in Akwa Ibom State. Based on the results, the hypothesis is not rejected. Neither awareness, knowledge, perceived usefulness, nor ease of use showed statistically significant independent influence on willingness at the 0.05 level. The findings suggested that perceptual and cognitive factors alone are insufficient to drive adoption willingness, and that structural barriers, particularly cost, are more practically significant determinants. This is consistent with Osabohien (2024), who found that access to digital infrastructure was the most critical determinant of ICT adoption among youth in Nigeria's agricultural sector.

CONCLUSION AND RECOMMENDATIONS

The study established that the cost of internet and smartphone services was the most practically significant factor influencing young farmers' willingness to adopt digital Agricultural marketing applications in Akwa Ibom State, reducing adoption odds by 45.9% per unit increase in perceived cost. Ease of use, logistics availability, and training support showed positive directional associations with willingness, while peer influence showed a negative association, reflecting the discouraging social dynamics in the study area. Based on the findings, the following recommendations are made:

(i) Targeted subsidy schemes and low-cost data packages specifically for young farmers should be introduced through partnerships with telecommunications companies and financial institutions to reduce the entry cost of digital agricultural market participation.

(ii) Financial institutions and government agricultural credit programmes should develop tailored micro-credit products for young farmers covering the cost of smartphones, internet subscriptions, and initial platform transaction fees, with repayment schedules aligned to agricultural production cycles.

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