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EFFECT OF DIGITAL FINANCIAL SERVICES ON HOUSEHOLD FOOD SECURITY IN NIGERIA

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ABSTRACT

The main objective of this study was to examine the effect of digital financial services on household food security in Nigeria, while the specific objectives were to examine the effect of mFarms and the Nigerian e-wallet system on household food security. The study adopted a cross-sectional survey research design, and the population comprised farming households in Nigeria with access to digital financial services, from which a sample size of 384 respondents was determined using Cochran's formula. Primary data were collected through a structured questionnaire administered to the selected respondents, while the hypotheses were tested using multiple regression analysis with the aid of the Statistical Package for Social Sciences (SPSS) version 26 at a 5 percent level of significance. The findings revealed that: mFarms had a positive and significant effect on household food security in Nigeria (β = 0.417; p = 0.000); The Nigerian e-wallet system had a positive and significant effect on household food security in Nigeria (β = 0.454; p = 0.000). The study concluded that digital financial services play an important role in improving household food security in Nigeria by strengthening farmers' access to agricultural information, financial resources, and government support programmes. The study therefore recommended that government agencies, financial institutions, and agricultural stakeholders should expand access to mFarms and the Nigerian e-wallet system through improved digital infrastructure, greater awareness, enhanced digital literacy, and increased support for rural farming households.

Key words: *Digital Financial Services, Household Food Security, Mobile Farms (Mfarms), E-Wallet System*

INTRODUCTION

The rapid growth of digital technology has transformed the way financial services are delivered across the world, creating new opportunities for individuals, businesses, and governments to participate in economic activities. In many developing countries, digital financial services have become an important means of expanding access to financial products among people who were previously excluded from the formal financial system (Adeyemi & Odefunsho, 2024; Williams, 2025). Mobile phones, internet platforms, and digital payment systems now enable households to save money, receive payments, access credit, and carry out financial transactions without visiting conventional banking facilities. Nigeria has experienced significant growth in digital financial services through initiatives such as mobile

banking, mobile money, the Nigerian e-wallet system, and digital agricultural platforms such as mFarms (Oyebamiji, 2025). These innovations have been introduced to improve financial inclusion, increase agricultural productivity, and strengthen the welfare of households, particularly those living in rural communities (Balana & Olanrewaju, 2024). At the same time, food security has remained a major concern despite the country's vast agricultural resources. Rising food prices, climate related challenges, insecurity, poverty, and limited access to agricultural support services have continued to affect the ability of many households to obtain sufficient, safe, and nutritious food (Okyere et al., 2024). As governments and development agencies continue to promote digital solutions for economic development, greater attention has been directed towards understanding whether digital financial services can contribute meaningfully to improving household food security in Nigeria (Daudu & Orkoh, 2026).

Household food security has become an important issue because it directly affects the health, productivity, and general wellbeing of individuals and families (Danso-Abbeam et al., 2024). A household is regarded as food secure when all members have regular access to sufficient, safe, and nutritious food required for an active and healthy life. Achieving this goal has become increasingly difficult for many Nigerian households because of inflation, unstable household incomes, high production costs, and disruptions in food supply. As a result, improving household food security has remained a priority for government institutions, development organisations, and policymakers. At the same time, digital financial services have become increasingly relevant in today's business environment because they provide faster, safer, and more convenient methods of conducting financial transactions (Williams, 2025). Farmers, traders, consumers, financial institutions, and agribusiness firms now rely on digital platforms to receive payments, transfer funds, obtain credit, purchase farm inputs, and access market information. Platforms such as mFarms and the Nigerian e-wallet system have expanded opportunities for farmers to participate in agricultural markets while reducing some of the barriers associated with traditional financial services (Oyebamiji, 2025). These digital platforms also support greater transparency, reduce transaction costs, improve efficiency, and strengthen financial inclusion. Consequently, digital financial services have become an important component of agricultural development and household welfare in Nigeria, particularly among low income and rural households that depend largely on agriculture for their livelihoods (Balana & Olanrewaju, 2024; Umeh et al., 2025).

Digital financial services influence household food security through several important channels. First, they improve access to financial resources by enabling households to save

securely, receive payments promptly, and obtain credit that can be invested in farming or other income generating activities. Increased financial access allows households to purchase quality seeds, fertilizers, farm equipment, and other productive inputs that improve agricultural output and food availability (Balana & Olanrewaju, 2024). The Nigerian e-wallet system has contributed to this process by delivering subsidised farm inputs directly to farmers through digital channels, reducing delays and leakages that previously limited access to agricultural support (Oyebamiji, 2025). Second, digital financial services improve farmers' access to market information and extension services. Platforms such as mFarms provide information on market prices, weather conditions, production practices, and marketing opportunities, enabling farmers to make better production and marketing decisions. Better information reduces uncertainty, increases productivity, and improves household income, thereby strengthening the ability of households to purchase sufficient food throughout the year (Daudu & Orkoh, 2026). Digital financial services also reduce transaction costs and minimise the risks associated with carrying cash, making financial transactions more efficient and accessible even in remote communities. Furthermore, digital payment systems allow households to receive government support, remittances, and emergency assistance more quickly during periods of economic hardship or natural disasters (Okyere et al., 2024). However, the benefits of digital financial services may be limited by factors such as poor internet connectivity, inadequate digital literacy, limited ownership of smartphones, weak electricity supply, and low confidence in digital financial platforms (Ogunfolaju et al., 2025; Oyebamiji, 2025). These challenges may prevent many households, especially those in rural areas, from fully benefiting from available digital financial services.

Digital financial services have increasingly been promoted as an important tool for improving agricultural development and household welfare in Nigeria. Through platforms such as mFarms and the Nigerian e-wallet system, farmers are able to access financial services, receive subsidised agricultural inputs, obtain market information, and carry out financial transactions more conveniently (Oyebamiji, 2025). These services are intended to improve agricultural productivity, increase household income, and strengthen food security by making farming activities more efficient and reducing barriers to financial access. As digital technology continues to expand across the country, digital financial services are increasingly viewed as an important means of improving food availability, food access, and the overall welfare of households (Daudu & Orkoh, 2026).

Despite these developments, household food insecurity remains a serious challenge in Nigeria. Many households continue to experience difficulty in accessing sufficient and nutritious food because of rising food prices, low household income, poor agricultural productivity, limited access to finance, and inadequate rural infrastructure. Although digital financial services have become more available, many rural households still face challenges such as poor internet connectivity, limited digital literacy, irregular electricity supply, low awareness, and concerns about the safety of digital transactions (Ogunfolaju et al., 2025; Oyebamiji, 2025). These factors have reduced the level of adoption and effective use of digital financial services, particularly among smallholder farmers who depend heavily on agriculture for their livelihoods (Kolawole et al., 2023; Okadi et al., 2026). As a result, the contribution of digital financial services to improving household food security has remained uncertain in many parts of the country.

The continued existence of these challenges has important consequences for households and the wider economy. Although previous studies provided substantial evidence on digital financial services and household food security, important gaps remained. Daudu and Orkoh (2026), Okadi et al. (2026), Oyebamiji (2025), Umeh et al. (2025), Ogunfolaju et al. (2025), Williams (2025), Balana and Olanrewaju (2024), Adeyemi and Odefunsho (2024), Okyere et al. (2024), and Kolawole et al. (2023) examined digital extension services, financial inclusion, mobile financial services, mobile money, information and communication technology, and digital financial service adoption from different perspectives. However, these studies largely focused on broad digital financial services, financial inclusion, mobile money, or agricultural technology without specifically examining the separate effects of mFarms and the Nigerian e-wallet system on household food security in Nigeria within a single empirical framework. This study addressed this empirical gap by investigating the individual effects of mFarms and the Nigerian e-wallet system on household food security using primary data collected from farming households in Nigeria and analysed through multiple regression analysis.

Objectives

The main objective of the study was to examine the effect of digital financial services on household food security in Nigeria. However, the specific objectives were to:

1. examine the effect of mFarms on household food security in Nigeria.
2. assess the effect of the Nigerian e-wallet system on household food security in Nigeria.

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Hypotheses

The study tested the following hypotheses as stated in their null form:

H_{01}: mFarms has no significant effect on household food security in Nigeria.

H_{02}: The Nigerian e-wallet system has no significant effect on household food security in Nigeria.

LITERATURE REVIEW

Conceptual Issues and Synthesis of Existing Empirical Studies

Digital financial services refer to financial products and services that are delivered through digital technologies such as mobile phones, computers, the internet, and electronic payment platforms (Okadi et al., 2026). They enable individuals and businesses to carry out activities such as making payments, transferring money, saving, borrowing, and accessing other financial services conveniently without relying solely on traditional banking channels. mFarms is a digital agricultural platform that uses mobile technology to provide farmers with services such as market information, weather updates, agricultural advice, and access to buyers and financial services (Baumüller, 2015). The platform helps farmers improve production decisions, reduce information gaps, and increase their income by connecting them with markets and relevant agricultural support.

The Nigerian ewallet system is a digital platform introduced by the Federal Government of Nigeria to distribute subsidised agricultural inputs, such as improved seeds and fertilizers, directly to registered farmers through mobile phones (Oyebamiji, 2025). The system was designed to improve transparency, reduce leakages in the distribution process, and ensure that government support reaches the intended beneficiaries efficiently. Household food security refers to a situation where all members of a household have consistent physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs for a healthy and active life (Danso-Abbeam et al., 2024). It reflects the ability of a household to obtain adequate food at all times without facing the risk of hunger or food shortages.

The empirical evidence generally supports the view that digital financial services contribute positively to household food security by improving access to financial resources, agricultural services, and productive opportunities. Daudu and Orkoh (2026) found that digital extension services significantly improved both agricultural income and household food security, with agricultural income serving as an important pathway through which digital services enhanced food security outcomes. Similarly, Oyebamiji (2025) reported that digital initiatives such as

mFarms, the Nigerian e-wallet system, and Digital Green enhanced farmers' income, increased market access, reduced post harvest losses, and improved food distribution in rural communities. Umeh et al. (2025) also established that financial inclusion through bank account ownership, savings, mobile banking, access to credit, and financial advice significantly improved food security among rural women farmers. These findings suggest that digital financial services strengthen household food security by expanding access to financial products, improving agricultural productivity, and increasing household income. They also provide direct support for examining how mFarms and the Nigerian e-wallet system influence household food security in Nigeria.

Several studies further demonstrated that digital financial services improve household welfare by encouraging greater use of agricultural inputs, increasing household consumption, and enhancing resilience against food insecurity. Balana and Olanrewaju (2024) found that households with greater financial inclusion adopted agricultural inputs more intensively, experienced lower levels of severe food insecurity, and consumed more diversified diets, although the benefits were relatively smaller among female farmers. Likewise, Williams (2025) observed that mobile financial services promoted formal savings, increased household consumption expenditure, and expanded financial access among rural households despite infrastructural limitations in remote communities. At a broader regional level, Adeyemi and Odefunsho (2024) established that stronger information and communication technology infrastructure combined with improved financial development significantly increased food production across Sub Saharan Africa. Okyere et al. (2024) equally reported that mobile money adoption improved dietary diversity, reduced food insecurity, and strengthened household resilience through improved access to social safety nets, household assets, and basic services. Collectively, these findings indicate that digital financial services improve food security through multiple channels, including financial inclusion, increased agricultural investment, higher household income, and improved resilience to economic shocks.

Despite the largely positive findings, the reviewed studies consistently identified several factors limiting the effective adoption and utilisation of digital financial services. Ogunfolaju et al. (2025) found that although ownership of mobile phones and internet enabled devices was relatively widespread, the actual adoption of digital financial services remained below expectations because educational attainment played a more important role than technology ownership alone. Similarly, Kolawole et al. (2023) reported that age, education, farming experience, farm size, extension contact, and annual income significantly influenced the

adoption of digital financial services, while fraud, scams, and high transaction charges discouraged their use. Oyebamiji (2025) also highlighted poor digital literacy, weak internet connectivity, and inadequate infrastructure as major barriers limiting the effectiveness of mobile technologies such as mFarms and the Nigerian e-wallet system. Williams (2025) reached a similar conclusion by noting that poor rural infrastructure reduced the welfare gains associated with mobile financial services. These findings suggest that expanding digital financial services alone may not be sufficient unless complementary investments are made in digital infrastructure, education, and user confidence.

Although there is broad agreement that digital financial services positively influence agricultural development and household welfare, differences exist regarding the extent of these benefits across population groups and specific digital platforms. Daudu and Orkoh (2026) found that female headed households experienced greater improvements in food security, whereas male headed households achieved larger gains in agricultural income. Likewise, Okadi et al. (2026) reported that male farmers adopted digital financial services more frequently than female farmers, while education, extension services, farm income, and mobile phone ownership significantly increased adoption. The study further showed that digital credit and digital savings strengthened climate adaptation, whereas digital insurance produced no significant effect. Balana and Olanrewaju (2024) also observed weaker welfare gains among female farmers despite the positive overall impact of financial inclusion. While these studies provide substantial evidence on digital financial services generally, limited attention has been given specifically to the individual contributions of mFarms and the Nigerian e-wallet system to household food security in Nigeria. This gap provides justification for the present study, which focuses specifically on assessing the effects of these two digital financial service platforms on household food security in Nigeria.

Theoretical Framework

This study was anchored on the Financial Inclusion Theory. The theory was developed by Leyshon and Thrift in 1995 to explain the importance of providing individuals and businesses with access to affordable and appropriate financial services (Mhlanga, 2022). The theory emerged from concerns about financial exclusion, particularly among low income households and people living in rural communities who had limited access to formal banking services. It emphasised that access to financial services is an important requirement for economic participation, poverty reduction, and social development. Over time, the theory has become widely applied in studies examining financial inclusion, digital finance, rural development,

agricultural productivity, and household welfare, especially in developing countries where access to formal financial institutions remains uneven (Sapre, 2023).

The Financial Inclusion Theory maintains that individuals and households are more likely to improve their economic wellbeing when they have access to affordable, reliable, and convenient financial services (Aina & Oluyombo, 2014). These services include savings, credit, insurance, payment systems, and money transfer facilities that enable people to invest in productive activities, manage financial risks, and respond to unexpected events. The theory further explains that financial exclusion limits economic opportunities because households without access to formal financial services often depend on costly and unreliable informal financial arrangements. It also recognises that technological innovations such as mobile banking, digital payment systems, and other digital financial platforms can reduce barriers to financial access by making financial services available to people regardless of their geographical location.

The Financial Inclusion Theory is relevant to this study because it explains how digital financial services can improve household food security by increasing access to financial resources and agricultural support services. Platforms such as mFarms and the Nigerian e-wallet system provide farmers with easier access to market information, digital payments, subsidised farm inputs, and other financial services that can improve agricultural production and household income (Oyebamiji, 2025). As household income and financial access improve, families are better able to purchase sufficient and nutritious food throughout the year. The theory therefore provides a suitable foundation for explaining the relationship between digital financial services and household food security in Nigeria and supports the expectation that greater access to digital financial services will contribute positively to household welfare and food security.

METHODOLOGY

This study adopted a cross-sectional survey research design to examine the effect of digital financial services on household food security in Nigeria. The design was considered appropriate because it enabled data to be collected from respondents at a single point in time, allowing the researcher to examine the relationship between digital financial services and household food security (Nworie & Odah, 2024; Nworie et al., 2023). The design also provided an opportunity to obtain information directly from households regarding their use of mFarms and the Nigerian e-wallet system and how these digital financial services influenced

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their food security status. In addition, the design supported quantitative analysis, making it suitable for determining the effect of the independent variables on the dependent variable.

The population of the study consisted of households engaged in farming activities across selected states in Nigeria who had access to digital financial services. Since the exact number of households using digital financial services across the country could not be accurately determined, the population was treated as infinite for the purpose of sample size determination. A multistage sampling technique was employed to select the respondents. In the first stage, selected states with active participation in digital agricultural programmes were purposively chosen. In the second stage, local government areas with high agricultural activities were selected. Communities were then randomly selected from the chosen local government areas, after which farming households were selected using a simple random sampling technique. This procedure ensured adequate representation of respondents from different locations. The sample size for the study was determined using Cochran's formula for an infinite population:

$$n = \frac{Z^2 pq}{e^2}$$

Where:

n = Sample size

Z = Standard normal deviation at 95% confidence level (1.96)

p = Estimated proportion of the population possessing the characteristic (0.5)

q = 1 − p

e = Margin of error (0.05)

Substituting into the formula:

$$n = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2}$$

$$n = 384$$

Therefore, a sample size of 384 respondents was adopted for the study.

Data were collected using a structured questionnaire designed to obtain information on respondents' use of mFarms, the Nigerian e-wallet system, and household food security. Responses were measured using a five point Likert scale ranging from Strongly Disagree to Strongly Agree. The questionnaire was administered personally by the researcher with the

assistance of trained research assistants to improve the response rate and ensure that respondents clearly understood the questions.

To establish the validity of the research instrument, the questionnaire was presented to experts in agricultural economics, finance, and research methodology for content and face validation. Their observations and recommendations were incorporated before the final administration of the instrument. A pilot study involving 20 farming households outside the study area was conducted to determine the clarity and reliability of the instrument. Reliability was assessed using Cronbach's Alpha, which produced a coefficient of 0.901, indicating that the instrument possessed high internal consistency and was suitable for the study. The data collected were analysed using the Statistical Package for Social Sciences (SPSS) version 26. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarise the demographic characteristics of the respondents and their responses to the study variables. The hypotheses were tested using multiple regression analysis because the study examined the joint effect of two independent variables on household food security.

Model Specification

The multiple regression model was specified as:

$$HFS = \beta_0 + \beta_1 MFA + \beta_2 EWS + \varepsilon \ldots\ldots Eqn\ 1$$

Where:

HFS = Household Food Security

MFA = mFarms

EWS = Nigerian e-wallet system

β_0 = Constant

$\beta_1 - \beta_2$ = Regression coefficients

ε = Error term

The hypotheses were tested at a 5 percent level of significance ($\alpha = 0.05$). The decision rule was that any probability value less than 0.05 led to the rejection of the null hypothesis, while probability values greater than 0.05 resulted in the acceptance of the null hypothesis. This approach enabled the study to determine the individual and combined effects of mFarms and the Nigerian e-wallet system on household food security in Nigeria.

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RESULTS AND DISCUSSIONS

Descriptive Analysis

Table 1 Descriptive Statistics

S/N	mFarms	VLE	LE	N	HE	VHE	Mean
1	I use mFarms to obtain information on market prices for agricultural products.	8	49	68	197	62	3.67
2	mFarms has improved my access to agricultural information and advisory services.	5	104	57	160	58	3.42
3	The use of mFarms has helped me make better farming decisions.	51	68	15	190	60	3.36
4	mFarms has improved my farming productivity and income.	22	8	40	115	199	4.20
	Nigerian e-wallet system	**VLE**	**LE**	**N**	**HE**	**VHE**	**Mean**
5	The Nigerian e-wallet system has improved my access to subsidised farm inputs.	15	52	86	177	54	3.53
6	The Nigerian e-wallet system has made it easier to receive agricultural support from the government.	9	102	81	163	29	3.26
7	The Nigerian e-wallet system has reduced delays in accessing farm inputs.	51	86	16	176	55	3.26
8	The Nigerian e-wallet system has contributed to increased agricultural production.	26	2	31	97	228	4.30
	Household Food Security	**VLE**	**LE**	**N**	**HE**	**VHE**	**Mean**
9	My household has regular access to sufficient food throughout the year.	8	52	76	192	56	3.61
10	My household can afford nutritious food most of the time.	11	112	65	156	40	3.27
11	My household's food situation has improved because of increased farm income.	48	80	2	197	57	3.35
12	Digital financial services have contributed to improving my household's food security.	32	0	19	81	252	4.36

Source: Field Survey (2026)

Table 1 presents the descriptive statistics and frequency distribution of respondents' views on mFarms, the Nigerian e wallet system, and household food security. The responses to the statement that respondents use mFarms to obtain information on market prices for agricultural products showed that 8 respondents indicated Very Low Extent, 49 selected Low Extent, 68 were Neutral, 197 indicated High Extent, while 62 selected Very High Extent. The majority of the respondents indicated High Extent and Very High Extent, giving a mean score of 3.67. This suggests that most of the respondents use mFarms to obtain market price information for agricultural products.

Regarding the statement that mFarms has improved access to agricultural information and advisory services, 5 respondents indicated Very Low Extent, 104 selected Low Extent, 57

were Neutral, 160 indicated High Extent, and 58 selected Very High Extent. Although a considerable number of respondents reported Low Extent, the combined number of respondents who selected High Extent and Very High Extent was greater, resulting in a mean score of 3.42. This indicates that respondents generally believed that mFarms improved their access to agricultural information and advisory services.

For the statement that the use of mFarms has helped respondents make better farming decisions, 51 respondents indicated Very Low Extent, 68 selected Low Extent, 15 were Neutral, 190 indicated High Extent, while 60 selected Very High Extent. Despite the presence of respondents with negative opinions, the largest proportion selected High Extent, producing a mean score of 3.36. The result shows that many respondents believed that the use of mFarms assisted them in making better farming decisions. The responses to the statement that mFarms has improved farming productivity and income revealed that 22 respondents selected Very Low Extent, 8 indicated Low Extent, 40 were Neutral, 115 selected High Extent, and as many as 199 respondents selected Very High Extent. With a mean score of 4.20, the responses clearly indicate that a very large proportion of respondents believed that mFarms had greatly improved their farming productivity and income.

The responses on whether the Nigerian e wallet system has improved access to subsidised farm inputs showed that 15 respondents selected Very Low Extent, 52 indicated Low Extent, 86 were Neutral, 177 selected High Extent, and 54 selected Very High Extent. Since the majority of respondents indicated High Extent and Very High Extent, the statement recorded a mean score of 3.53. This suggests that respondents generally agreed that the Nigerian e wallet system improved their access to subsidised farm inputs. For the statement that the Nigerian e wallet system has made it easier to receive agricultural support from the government, 9 respondents selected Very Low Extent, 102 indicated Low Extent, 81 were Neutral, 163 selected High Extent, and 29 selected Very High Extent. Although many respondents reported Low Extent, the highest number selected High Extent, resulting in a mean score of 3.26. This indicates that respondents generally believed that the Nigerian e wallet system made it easier to receive agricultural support from the government.

The responses to the statement that the Nigerian e wallet system has reduced delays in accessing farm inputs showed that 51 respondents indicated Very Low Extent, 86 selected Low Extent, 16 were Neutral, 176 indicated High Extent, and 55 selected Very High Extent. The largest number of respondents selected High Extent, giving a mean score of 3.26. This suggests that respondents generally agreed that the Nigerian e wallet system reduced delays

in accessing farm inputs. Regarding the statement that the Nigerian e wallet system has contributed to increased agricultural production, 26 respondents selected Very Low Extent, 2 indicated Low Extent, 31 were Neutral, 97 selected High Extent, while the largest group of 228 respondents selected Very High Extent. The high mean score of 4.30 indicates strong agreement among respondents that the Nigerian e wallet system contributed substantially to increased agricultural production.

The responses to the statement that the household has regular access to sufficient food throughout the year revealed that 8 respondents selected Very Low Extent, 52 indicated Low Extent, 76 were Neutral, 192 selected High Extent, and 56 selected Very High Extent. Since most respondents selected High Extent, the mean score of 3.61 indicates that respondents generally believed that their households had regular access to sufficient food throughout the year. For the statement that the household can afford nutritious food most of the time, 11 respondents selected Very Low Extent, 112 indicated Low Extent, 65 were Neutral, 156 selected High Extent, and 40 selected Very High Extent. Although a relatively large number selected Low Extent, the highest frequency was recorded under High Extent, resulting in a mean score of 3.27. This suggests that respondents generally agreed that their households could afford nutritious food most of the time.

The responses to the statement that the household's food situation has improved because of increased farm income showed that 48 respondents selected Very Low Extent, 80 indicated Low Extent, 2 were Neutral, 197 selected High Extent, and 57 selected Very High Extent. The majority of respondents selected High Extent, producing a mean score of 3.35. This indicates that respondents generally believed that increased farm income had improved their household food situation. Finally, the responses to the statement that digital financial services have contributed to improving household food security revealed that 32 respondents selected Very Low Extent, no respondent selected Low Extent, 19 were Neutral, 81 selected High Extent, and the overwhelming majority of 252 respondents selected Very High Extent. The statement recorded the highest mean score of 4.36, indicating that respondents strongly believed that digital financial services had made a substantial contribution to improving household food security.

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Test of Hypotheses

1. H_{01}: mFarms has no significant effect on household food security in Nigeria.
2. H_{02}: The Nigerian e-wallet system has no significant effect on household food security in Nigeria.

Test of Hypotheses

Table 2 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.817[a]	.667	.665	1.45996

a. Predictors: (Constant), Nigerian ewallet system, mFarms

Table 3 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1624.899	2	812.449	381.168	.000[b]
	Residual	812.091	381	2.131		
	Total	2436.990	383			

a. Dependent Variable: Household Food Security
b. Predictors: (Constant), Nigerian ewallet system, mFarms

Table 4 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.963	.464		4.232	.000
	mFarms	.417	.047	.426	8.810	.000
	Nigerian ewallet system	.454	.050	.437	9.045	.000

a. Dependent Variable: Household Food Security

Source: SPPS V. 26 Output (2026)

Tables 2, 3 and 4 present the results of the multiple regression analysis carried out to examine the effect of mFarms and the Nigerian e-wallet system on household food security in Nigeria. The model summary, in Table 2, showed an Adjusted R Square of 0.665, indicating that mFarms and the Nigerian e-wallet system jointly explained 66.5 percent of the variations in household food security in Nigeria, while the remaining 33.5 percent was explained by other factors outside the model. This result suggested that the explanatory variables had strong predictive ability and that the regression model provided a good explanation of household food security among the sampled farming households.

The ANOVA result in Table 3 showed a probability value of 0.000, which was less than the 5 percent significance level (0.05). This indicated that the overall regression model was

statistically significant and valid for explaining the effect of digital financial services on household food security in Nigeria. Therefore, the model was considered appropriate for testing the hypotheses because the independent variables jointly made a significant contribution to explaining variations in household food security. The regression result in Table 4 further showed that the constant coefficient was 1.963 with a probability value of 0.000, which was less than 0.05. This implied that even when mFarms and the Nigerian e-wallet system were held constant, household food security would still record a baseline value of 1.963 units because of other factors not included in the model. Since the probability value was below the 5 percent significance level, the constant was statistically significant, indicating that household food security was also influenced by factors outside those examined in this study.

The coefficient of mFarms was 0.417 with a probability value of 0.000. This meant that a one unit increase in the use of mFarms would lead to a 0.417 unit increase in household food security, holding other variables constant. The positive coefficient indicated that increased use of mFarms contributed positively to improving household food security among farming households in Nigeria. The probability value of 0.000 was less than the 5 percent significance level of 0.05, indicating that the effect was statistically significant. Therefore, the null hypothesis which stated that mFarms has no significant effect on household food security in Nigeria was rejected, while the alternative hypothesis was accepted. This finding showed that greater utilisation of mFarms significantly improved household food security in Nigeria.

The coefficient of the Nigerian e-wallet system was 0.454 with a probability value of 0.000. This implied that a one unit increase in the use of the Nigerian e-wallet system would result in a 0.454 unit increase in household food security, assuming all other factors remained constant. The positive coefficient showed that greater utilisation of the Nigerian e-wallet system increased household food security among farming households. Since the probability value of 0.000 was lower than the 5 percent significance level of 0.05, the effect was statistically significant. Consequently, the null hypothesis which stated that the Nigerian e-wallet system has no significant effect on household food security in Nigeria was rejected, while the alternative hypothesis was accepted. This indicated that the Nigerian e-wallet system significantly improved household food security in Nigeria.

Discussion of Findings

The study found that mFarms had a positive and significant effect on household food security in Nigeria (β = 0.417; p = 0.000). This result indicates that increased use of the mFarms platform improved household food security by providing farmers with easier access to market prices, agricultural advisory services, weather information, and production recommendations. Access to timely information enables farmers to make better decisions regarding planting, harvesting, and marketing, which can increase farm productivity and household income. Higher income improves the ability of households to purchase sufficient and nutritious food throughout the year, thereby strengthening food security. The result also suggests that digital agricultural platforms serve as effective channels for connecting farmers with valuable information that supports both production and household welfare. This finding is consistent with the study by Daudu and Orkoh (2026), who found that digital extension services significantly improved agricultural income and food security among farming households in Nigeria. It also agrees with Oyebamiji (2025), who reported that mFarms improved farmers' incomes, expanded market access, reduced post harvest losses, and enhanced food accessibility in rural communities.

The finding further supports Umeh et al. (2025), who found that financial inclusion and mobile banking significantly improved food security among rural women farmers by increasing access to financial resources. Similarly, Balana and Olanrewaju (2024) reported that greater access to formal financial services increased agricultural input adoption, improved household welfare, reduced severe food insecurity, and promoted more diverse diets. The result also aligns with Adeyemi and Odefunsho (2024), who found that stronger information and communication technology infrastructure contributed positively to food production and food security across Sub Saharan Africa. In the same manner, Okyere et al. (2024) established that digital financial platforms such as mobile money improved household dietary diversity and reduced food insecurity among farming households. Although Ogunfolaju et al. (2025) and Kolawole et al. (2023) focused mainly on factors influencing the adoption of digital financial services rather than food security outcomes, their findings that education, extension contact, and digital literacy encouraged greater use of digital platforms also provide indirect support for this result because wider adoption increases the likelihood of obtaining the benefits associated with platforms such as mFarms.

The study revealed that the Nigerian e-wallet system had a positive and significant effect on household food security in Nigeria (β = 0.454; p = 0.000). This finding suggests that the

Nigerian e-wallet system improved household food security by making subsidised farm inputs more accessible to farmers through digital channels. Easier access to fertilisers, improved seeds, and other agricultural inputs encourages higher agricultural productivity, increases farm output, raises household income, and improves the ability of households to obtain sufficient and nutritious food. The digital delivery system also reduces delays, leakages, and inefficiencies that often accompany conventional methods of distributing agricultural support, allowing farmers to receive assistance at the appropriate farming period. As agricultural production increases, households become better able to meet their food needs and generate additional income from surplus produce. This finding agrees with Oyebamiji (2025), who found that the Nigerian e-wallet system improved farmers' incomes, increased market access, reduced post harvest losses, and strengthened food accessibility in rural Nigeria. The result also supports Daudu and Orkoh (2026), whose study showed that digital extension services enhanced agricultural income and food security by improving access to agricultural information and support services. It is also consistent with Umeh et al. (2025), who established that financial inclusion, savings, mobile banking, and proper use of credit significantly improved food security among rural women farmers. Likewise, Balana and Olanrewaju (2024) found that households with better access to formal financial services adopted more agricultural inputs, experienced lower food insecurity, and achieved better household welfare. The finding is further supported by Adeyemi and Odefunsho (2024), who reported that improvements in information and communication technology together with greater access to credit increased food production across Sub Saharan Africa.

Similarly, Okyere et al. (2024) found that digital financial technologies improved household dietary diversity and reduced food insecurity among farming households. In addition, Williams (2025) demonstrated that mobile financial services improved household welfare, financial access, savings behaviour, and consumption expenditure, all of which contribute to stronger household food security. Although Okadi et al. (2026) concentrated on climate adaptation rather than food security, the study found that digital financial services increased farmers' adoption of productive adaptation strategies, which could also contribute to higher agricultural output and improved food availability.

CONCLUSION AND RECOMMENDATIONS

The findings showed that digital financial services play an important role in improving household food security in Nigeria by strengthening farmers' access to agricultural information, financial resources, and government support programmes. The positive effects

of both mFarms and the Nigerian e-wallet system indicate that digital platforms contribute to better farming decisions, increased agricultural productivity, improved household income, and greater access to sufficient and nutritious food. This demonstrates that digital financial services have become an important part of modern agricultural development and household welfare. The results also show that integrating digital technology into agricultural activities can reduce some of the challenges associated with traditional methods of delivering financial and agricultural services. In addition, the findings provide evidence that households that make greater use of digital financial platforms are more likely to experience improved food security than those with limited access or use. These results also strengthen existing evidence that financial technology can support national efforts to reduce food insecurity and promote agricultural development. Furthermore, the findings contribute to existing knowledge by providing empirical evidence that specific digital financial platforms used in Nigeria can improve household food security, thereby expanding understanding of the role of digital financial services in achieving better welfare outcomes for farming households.

Based on the finding that mFarms had a positive and significant effect on household food security in Nigeria, the Federal Ministry of Agriculture and Food Security should expand the coverage of the mFarms platform by ensuring that more farmers, especially those in rural communities, have access to its market information, weather updates, and agricultural advisory services through regular awareness campaigns, farmer training programmes, and improved digital support services.

Based on the finding that the Nigerian e-wallet system had a positive and significant effect on household food security in Nigeria, the Federal Ministry of Agriculture and Food Security, in collaboration with relevant government agencies, should strengthen the Nigerian e-wallet system by ensuring the timely digital distribution of subsidised farm inputs, improving the reliability of the platform, and making it more accessible to eligible farmers across all parts of the country to improve agricultural production and household food security.

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