Financial Technology (Fin Tech) Credit Volume and its Implication on Women Cassava Farmers' Profit in Anambra State

Komolafe, J. O., Umeh, O. J., Ositanwosu, N. O. and Chilaka, P. C.*

Department of Agricultural Economics and Extension, Nnamdi Azikiwe University Awka, Nigeria.

KEYWORDS

Credit volume,
Financial technology,
Profit
Women cassava farmers,

***CORRESPONDING AUTHOR**

joe.komolafe@yahoo.com
+2348074025391

ABSTRACT

Access to microcredit by women farmers is challenged by lack of collateral security among others. This impacts negatively on the productivity and profitability of women cassava farmers. Thus, this study examined access to financial technology (fin-tech) credit volume and its implication on profit of women cassava farmers in Anambra State. A Three-stage sampling method was adopted. Five Local Government Areas (LGA) were purposively selected. Three villages were then randomly selected from each LGA, and random sampling was used to select ten 10 women cassava farmers. In all, 150 were sampled using structured questionnaires. Data collected were access to fintech credit and profit of farmers. Data were analyzed using descriptive statistics and Ordinary Least Square. Result showed that only (36.10) had access to credit through fin-tech. Majority (47.16%) of the farmers, had access to between 5,000-30,000 Naira, (22.64%) had access to credit range of 31,000-60,000 Naira, (20.75%) had access to between 61,000-100,000 Naira while (9.43%) had access to credit worth 100,000 Naira and above. Farm size, volume of loan accessed through fintech and cost of weeding had positive and significant influence on profit, while cost of transportation had negative and significant influence on profit. The profitability of women cassava farmers was established increased with an increase in the volume of credit access through fintech. The study recommends that farmers' access to fintech credit be improved through sensitization and provision of required resources.

INTRODUCTION

Women in agriculture play significant role in ensuring food security of a nation, (Adigun, (2022). Ogundele (2014) asserted that Women were now left in agricultural sector to provide hours of productive physical labour. Adigun (2022) stated that if women could have access to productive resources like their counterpart-men, they could improve their farm yields by 20-30%, raising total Nigeria agricultural output by 2.5-4%. Despite, their contributions to agriculture, women have been marginalization in accessing productive resources such as land, capital, agricultural input (Iwena 2015). Women lack access to credit, access new technology, access education and training which is an instrument for social, economic, and political change as they were exposed to unfavourable customs and traditions that stipulates that only males have right to land ownership (Iwena (2015).

Credit is key in agricultural production. Credit is the fund borrowed by individuals, farm, business, and others for use in producing, storing, processing, and marketing crops and livestock products (Ojukwu, 2017). Credit in agriculture is about lending and borrowing by organizations and farmers. Credit is a means of acquiring and control of assets, ownership by cash purchase or borrowing or leasing or custom hiring in agriculture by

farmers to bear the cost of productive activities to the time of returns. Access to credit, labour and other required inputs are stimulant for the use of modern technology in agriculture (Komolafe and Adeoti, 2018). Credit institutions plays a vital role in agriculture as it helps in the development of the agricultural sector by providing loans required by farmers to establish economic size farms or large-scale farmsand to expand existing farms to improve food production. Requirement of most credit facilities in Nigeria include clear plan of farmers, good asset base and collateral. Nwaru (2017) has described agricultural credit as transferring of purchasing power from the owner to someone who needs it on a temporary basis with the willingness and ability to repay it back at a specified period with or without interest. However, Komolafe and Adeoti (2018) asserted that farmers who had access to credit adopted modern technologies than those who do not. This implied that availability of credit facilitates to farmers would enhance technology adaptation which could further improve farmers' socio-economic condition, productivity and profitability. Female farmers were deprived of access to productive resources and access to credit in this part of the world Apeh, Ukwuaba, Osuagwu, Ugwuoti, and Apeh, (2023).

The potential of financial technology (fin-tech) for farmers to access credit is high, but there are serious challenges in adopting fin tech solution. These challenges are the required infrastructural facilities (smartphones and internet connectivity), financial exclusion, inadequate financial literacy and operating skills (Kou *et al*., 2021). Women cassava farmers have little awareness on the existence and potential benefits of fin-tech solutions for the agricultural production and this limit their ability to navigate digital financial platforms and make the most of available resources. Through fin-tech, saving of money and access to credit for investment in agriculture becomes easier, as well as managing their finances efficiently, and ultimately improving their financial well-being. Fin-tech facilitate seamless and efficient transactions within the agricultural value chain whereby farmers receive payments directly to their mobile wallets, eliminating the need for cash transactions, which are often time-consuming and prone to risks Craig and Caio-Scuarcialup, (2018). The potential of financial technology (fin-tech) has been underutilized by rural women who were majorly in the agricultural sector. Consequently, this study examined the financial technology (fin-tech) credit volume and its implication on women cassava farmers' profit in Anambra State with these specific objectives:

1. ascertained women cassava farmers' access to credit facilities through fin tech.
2. ascertained the volume of credit women cassava farmers access through fin-tech.

Test of Hypothesis

H_o: Profitability of women cassava farmers do not change with volume of credit accessed through fin-tech.

MATERIAL AND METHODS

Three-stage sampling method was adopted. In the first stage, the study purposively selected Ihiala, Idemili North, Ogbaru, Anambra west and Anaocha Local Government Areas based on Anambra State Agricultural Development Program (ASADP, 2019) report of high dominance of women cassava in these areas. Three villages were then randomly selected from each LGA and in the third stage, random sampling was used to select ten (10) women cassava farmers. Total of thirty (30) farmers were sampled per LGA. In all, one hundred and fifty farmers were sampled, but only 147 questionnaires that gave consistent responses were analyzed. Data were collected on farmers' characteristics, fintech data and profit of farmers. Data were analyzed using using descriptive statistics and Ordinary Least Square α0.05.

Analytical framework

Ordinary Least square (OLS)

Ordinary least squares estimates the unknown parameters in a linear regression model, aimingto minimize the sum of the squares of the differences between the observed responses in the dataset and estimated parameters by a linear function of explanatory variables. Visually, this is observed as the sum of the squared vertical distances between each data point in the set and the corresponding point on the regression line – the smaller the differences, the better the model fits the data. The resulting estimator can be expressed by a simple formula. Equation below represents a basic OLS regression equation

$Y_i = \alpha + \beta x_i + \varepsilon_i$. In this equation,

Y_i represents the dependent variable,
α represents a constant,

β represents the coefficient,
x_i represents the independent variable and
ε_i represents the error term.

OLS analysis provides a predictive equation.
$Y_i = \beta_0 + \beta x_i + \varepsilon_i$. In this equation,
Y_i represents the dependent variable,
$\beta_0$represents a constant,
β represents the coefficient,
x_i represents the independent variable and
ε_i represents the error term.

The explanatory variables
X_1 Labour used (Man-days)
X_2 = Farm size (Ha)
X_3 = cost ofcassava cuttings used (kg)
X_4=Volume of loan through fintech (₦)
X_5= Cost of weeding (naira)
X_6 = Cost of land preparation (naira)
X_7 = Cost of transportation naira)
X_8 = Cost of harvesting (naira)
X_9 = Depreciation on fixed assets (naira)
X_{10}= Rent on farmland (naira)

RESULTS AND DISCUSSIONS

Table 1 shows the responses on if the farmers have access to credit facilities. The result shows that (63.9%) of the farmers did not have access to credit facilities through fin tech while (36.1%) have access to credit facilities. This means that majority of farmers do not has access to credit facilities. This align with the work of Apeh, Ukwuaba, Osuagwu, Ugwuoti, and Apeh,. (2023).

Table 1: Farmers responses on whether they have access to credit facilities through fin tech

Responses	Frequency	Percentages (%)
No	94	63.9
Yes	53	36.1
Total	147	100

Source: Field survey, 2021

Table 2 shows the range of credit available to women cassava farmers accessed through fin-tech. The table show that (47.16%) of the farmers had access to credit worth 5,000-30,000 Naira, (22.64%) had access to credit worth 31,000-60,000 Naira, (20.75%) had access to credit worth 61,000-100,000 Naira while (9.43%) had access to credit worth 100,000 Naira and above. This corroborate the work of Apeh, Ukwuaba, Osuagwu, Ugwuoti, and Apeh,. (2023).

Table 2: Distribution of farmers on the range of credit they have access to through fin-tech

Responses	Frequency	Percentages (%)
5,000-30,000	25	47.16
31,000-60,000	12	22.64
61,000-100,000	11	20.75
Above 100,000	5	9.43
Total	53	100

Source: Field survey, 2023

Test of Hypothesis

H_o: Profitability of women cassava farmers do not change with volume of credit accessed through fin-tech

Effect of financial technology (fin tech) credit on profit of women cassava farmers

The factors influencing the profitability of women cassava farmers was presented in Table 3. The coefficient of multiple determinant (R^2) of 0.763 implies that 76.3% of variation in the profit of women cassava farmers was explained by the joint action of the explanatory variables, while the remaining resulted from the omitted variables and error beyond the control of the farmers. The F-statistics value of 71.97** significant at 1% indicates that the effect of the explanatory variables was significant which means that the production factors influenced the profitability of women cassava farmers. The coefficient of the farm size (1.77) was positive and significant at 1% level of significance. This implies that increasing the farm size by one percent would increase the profit realized from the sales of cassava by 177%. This agrees with the findings of Ogunleye, (2018), Agboklou, and Ozkan, (2023) who asserted that as the area of land cultivated increases, the yield tends to increase, so also the profitability of the producer moves in the same direction.

The coefficient of the volume of loan accessed through fintech (0.24) was positive and significant at 5% level of probability. This implies that 5 percent increase in the volume of loan accessed through fintech would increase the profit from the sale of cassava by24%. This corroborates the findings of Assouto (2020) who reported that farmers' access to credit leads to an increasing of productivity and profitability. The coefficient of the cost of transportation (-0.204) was negative and significant at 1% level of probability. This implies that one percent increase in the cost of transportation would reduce profit by 20.4%. The coefficient of the cost of weeding (0.993) was positive and significant at 5% level of probability, this implies that 5 percent increase in the 0.993 would increase the profit from the sale of cassava by 99.3%.

Table 3: Effect of financial technology (fin tech) credit on profit of women cassava farmers

Variable	Coefficient	(P>|t|)
Intercept	3.132	(3.35)
Labour used (Man-days)	0.020*	(0.041)
Farm size (Ha)	1.77***	(0.000))
Cost of cassava cuttings used (kg)	-0.377	(-0.86)
Volume of loan through fintech (₦)	0.24 * *	(0.009)
Cost of transportation (naira)	-0.204 ***	(0.000)
Cost of weeding (₦)	0..993**	(0.004)
Cost of harvesting (naira)	-0.020*	(0.021)
Depreciation on asset	-0.353	(1.53)
Rent on farmland(naira)	0..993**	(0.004)
F-statistics	71.97***	
R^2	0.763	
Adj R^2	0.721	

Source: Filed Survey, 2023. (*, ** and ***) Sig. @ 10%, 5% and 1% respectively.

CONCLUSION

The study empirically established that there is an increase profitability of women cassava farmers with an increase in the volume of credit access through fintech.

RECOMMENDATIONS

Based on the findings of the study, the researcher recommends among others that:

1. More credit facilities should be made available to farmers through fintech since it allows for flexible inaccessing the creditfacilityand enable farmers to expand their scale of production and improve farmers' cultural practices such as weeding that enhances profitability. This could be done through sensitization and provision of required resources.

2. Government should provide suitable means of transportation for agricultural produce at reduced cost to improve the profit of women cassava farmers.

REFERENCES

Adigun, G.T., (2022). Determinants of Credit Access among Smallholder Women Farmers in Kwara State, Nigeria. Nigerian Agricultural Journal Vol. 53, No. 2 | Pp 121-128

Agboklou,K. E. and Ozkan, B., (2223) Analysis of Rice Farmers' Access to Agricultural Credit and Profitability in South Togo JBEF- Vol. 12 (1)-Pp.1-14

Ajadi, A.A., Oladele, O.I., Ikegami, K. and Tsuruta, T,. (2015). Rural women's farmers access to productive resources: the moderating effect of culture among Nupe and Yoruba in Nigeria. *Agriculture and Food Security* **4** (26) https://doi.org/10.1186/s40066-015-0048-y

Apeh, C. C., Ukwuaba, S. I., Osuagwu, C. O., Ugwuoti, O. P. and Apeh, C. P. (2023). Barriers to Agricultural Pproductive Resources among Female Farmers in the Southeastern Zone of Nigeria. Journal of Agricultural Economics, Environment and Social Science 9 (2):119- 130

Assouto. A.B., (2020). Access to Credit and Agricultural Productivity: Evidence from Maize Producers in Benin. AERC Biannual Workshop.23-30 November 2020

Craig, M. and Caio Scuarcialup, M., (2018). The Use of Financial Technology in the Agriculture Sector Asian Development Bank Working Papers NO: 872

Iwena, O.A (2015). *Essentials of Agricultural Science for Senior Secondary Schools* Ogun. Tonad publishers.

Kou G, Xu Y, Peng Y, Shen F, Chen Y, Chang K, Kou S (2021) Bankruptcy prediction for SMEs using transactional data and two-stage multi-objective feature selection. Decision Support System 140:113-429

Komolafe J. O. and Adeoti I. A. (2018). Influence of Social Capital on the Use of Improved Maize Seed among Farmers in Southwestern Nigeria. *International Journal of Agriculture and Forestry* 8(3): 129-138 DOI: 10.5923/j.ijaf.20180803.03.

Nwaru, U. E., (2017). Determinants of credit access and demand among poultry farmers in Akwa Ibom state, Nigeria. *American Journal of Experimental Agriculture*, *7* 293-307.

Ogundele, F.O, (2014). Management of agricultural human resources for increased food production and industrial raw materials. *Unpublished M.Sc thesis Dissertation. EBSU, Ebonyi State.*

Ogunleye A.S. (2018) Effect of Access to Microcredit on Productivity and Profitability of Cassava Farming in Osun State, Nigeria. Agro-Science Journal of Tropical Agriculture, Food, Environment and Extension Vol. 17 (2) pp. 51 – 57