EFFECT OF MICROCREDIT ON THE PERFORMANCE OF AGRIPRENEURS IN KATCHA LOCAL GOVERNMENT AREA OF NIGER STATE, NIGERIA

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Abstract
External financing sources, especially for small businesses can be a crucial part of their expansion and sustainability, and for those operating within a struggling sector such as agriculture, this is particularly true for agripreneurs. This study is an empirical inquiry into the role microcredit plays on the performance of agripreneurs, with particular focus on businesses operating in Katcha Local Government Area (LGA) of Niger state. This was achieved in a cross-sectional analysis involving the collection of primary data from a cluster sample of 482 agripreneurs in the LGA. The study data was obtained in a questionnaire survey, in which copies of a structured questionnaire were administered to participants to collect their views and opinions on microcredit, as the independent variable, and productivity, profitability and risk management capacity, as dependent variables, and disaggregated components of performance. Questionnaire items formed indicators for their respective variable scale. Data obtained was used to estimate a path model, via Structural Equation Modeling (SEM), to test variable relationships. Findings arrived at from the analysis indicates that microcredit exerted positive and significant effect on all three components of performance. It was therefore, recommended that microcredit programmes should have an incorporated land leasing component to take care of low productivity issues.
Keywords**: Microcredit, Performance, Agripreneurs

Introduction
The development of agribusiness is one of the interesting grassroots and a fundamental business activity in which operators of the sector always embark upon for a better living and their sustainability. In ensuring the smooth operation, these units often requires external sources of finance to put in place strong and lifelong existing structure. For Nigerian producing agripreneurs, whom are predominantly small holders of agricultural land (Mgbenka & Mbah, 2016).

These external finances may be in form of microcredit which can be a crucial stimulus to business success and development. As a specialized source of funds, microcredit involves the provision of finance to low-income business owners through small loans, meeting their peculiar financing needs, and enabling them establish and/or expand their businesses and enhance their level of self-employment, self-sufficiency and employment of services in many communities (Mengstie, 2022; Tria, 2022). This form of credit can play a vital role in reducing the level of poverty through an increase in the productivity of farmers and others in agribusiness.

Agribusiness participation, involving the cultivation, processing, marketing and distribution of agricultural products to end users (Mirabelli & Solina, 2020), has huge potential in Nigeria, as an economy with both a conducive environment for a budding agricultural sector, as well as a ready market for its output. In addition to supporting economic growth and development, agribusinesses are essential in meeting the rising demand for food, as well as in being an important source of income for those dependent on agriculture. However, as observed by

scholars such as Balana and Oyeyemi (2022), lack of access to loans is a constraint to the establishment and expansion of these agricultural related businesses. In places such as Katcha Local Government Area (LGA) of Niger State, credit is especially crucial for agripreneurs, as most of these individuals operate on a small scale, and may have difficulty in accessing conventional loans due to the heavy weight of collateral involved.

The significance of agripreneurship as a career path has enjoyed increased recognition in recent times. In developing countries, especially those in Africa and Asia, agriculture entrepreneurs can operate in competitive environment and develop organizational and entrepreneurial competencies, allowing them compete in regional, national, and international markets. Additionally, sustainable development of the agricultural land and seedlings rests on the development of entrepreneurial and organizational competency of farmers. Agriculture has vast scope for entrepreneurship development and this can be grasped by effective and efficient management of Agri-elements such as water, soil, seed and market needs. Agricultural related businesses provide about 80% of employment in developing countries but fails in producing enough income to help in eradicating poverty (World Bank, 2023).

For Nigerian agripreneurs, microcredit exerts a multiplier effect on the productivity and profitability of their businesses allowing these smallholder farmers to purchase inputs they need to increase their productivity as well as financing other activities that will add value to agricultural activities. The injection of extraneous finance can stimulate a shift from traditional to modern means of agricultural production via the adoption of new technological inputs such as machines. The boost in agricultural productivity brings, results in an expansion of production to cater to mass consumption, and exportation of surplus products (Jimi et al., 2019; Adams et al., 2021).

The scope of expansion in production microcredit provides, can also bring about increased earnings from market response, which has a direct bearing on profits. Profitability is considered to be among the vital measures that signifies growth of a business as it is evident that an enterprise growth cannot be sustained without profits being readily available for ploughing back into the business (Alhassan, et al., 2016). Similarly, as the Nigerian business environment, is hardly free of risks, the availability of a financial cushion, through available microcredit, can help businesses better cope with risks that may occur in different dimensions in the course of their operation. Coping with risks can ensure continual business functioning and gives owner-managers the ability to stymie the adverse effects of unexpected occurences on business expansion.

Despite the availability of various sources of microfinance however, there have not seem to be any meaningful improvement in agricultural production thereby lowering the participation in agribusiness by agripreneurs (Akinfenwa, 2021). For Agripreneurs, conditions can only be enhanced by improving agricultural production of their farms, which, in turn is dependent on external finance. Given the fact that traditional funding sources such as the *adashi*, *esusu*, and *etoto*, as well as financing from friends, relatives, individuals and money lenders are usually inadequate to meet funding needs, despite the significance of the effect of microfinance to agribusinesses as highlighted.

A study of this nature is particularly important for an agriculturally based location such as Katcha LGA which has huge agrarian potentials and can offer entrepreneurs highly profitable and viable career path in the agricultural sector. Furthermore, pertinent studies have been made and reviewed by different researchers such as Ilori et al. (2021), Idi et al. (2019) and Offor et

al. (2020). However, to the best of the researcher's knowledge, no research on the effect of microcredit on the performance of agripreneurs has been done in Katcha Local Government Area in Niger state. The study also intends to fill this gap.

This study therefore, aims to examine the effect of Microcredit on the Performance of Agripreneurs in Katcha Local Government Area of Niger State in terms of productivity, profitability and risk management. The study sought to achieve the following specific objectives.

i. To examine the effect of microcredit on productivity of agripreneurs in Katcha Local Government Area of Niger State.
ii. To assess the effect of microcredit on the profitability of agripreneurs in Katcha Local Government Area of Niger State.
iii. To evaluate the effect of microcredit on risk management of agripreneurs in Katcha Local Government Area of Niger State.

Microcredit

External finance plays a critical role in business enterprises, providing them with monetary stimulus they require in maintaining smooth operations, as well as expanding beyond their known scope. For small business owners such as Nigerian agripreneurs, specializes this function to cover their peculiar needs and requirements. Microcredit, as defined by Kagan (2021), is used to refer to loans on a small scale, targeted to low-income individuals, especially those in Less Developed Countries (LDCs). Such funding arrangement is targeted towards operators of small businesses, in supporting venture creation, as well as the expansion of existing businesses. Also referred to as micro lending and micro loans, microcredit facilities are provided to support entrepreneurial endeavour among individuals, who are not normally captured by conventional funding frameworks, through the promotion of self-employment and self-sufficiency (Hayes, 2020; Kagan, 2021).

Nattan (2023) described microcredit as a category of financial service, typically provided to individuals and small businesses in developing countries to enable them boost their commercial activities. It is an extension of the microloan concept that involves providing small amounts of capital to people without access to traditional banking services, allowing them to start businesses or pay for unexpected expenses at unexpected time. Adabugah (2019) classified the concept of micro credit in three categories: firstly, it is a small amount of income and/or support from a bank, micro-finance or other institutions to poor people. Secondly, the poor people have to use the income/support to engage in income generating activities. Thirdly, the profits generated from the income generating institutions is supposed to improve the living standards of the poor people thereby making them better off than they were without the credit facility and their businesses.

Although microcredit can also be used to describe loans extended to cushion the plight of the poor and the less privileged such as widows and the needy identified within a community, as pointed out by Okeke (2014), the focus of the research study revolves, specifically, around agripreneurs. As small holders, microcredit provides these individuals with an optimal funding option, that can be channelled into positioning their businesses for wealth creation, self-sufficiency, self-reliance and sustainability. The appeal, and as such, the single most important feature of microcredit, is inherent in its provision for entrepreneurs who may otherwise lack access to mainstream financial services (Hayes, 2020). These are typically low-income and unemployed individuals who do not have enough income to do business with traditional

financial institutions (Kagan, 2021). They may also lack collateral and be characterized by not having any verifiable credit history (Corporate Finance Institute, 2021).

Unlike the normal financing conditions where the lender is mainly concerned with the borrower having enough collateral to cover the loan, many microfinance organizations focus on helping entrepreneurs succeed. Its main aim is to support entrepreneur and alleviate poverty. The concept of microcredit is based on the percept of poverty as the result of a social process, that leads to deprivation of social resources such as loans. Advocates therefore, see microcredit as a means of bridging this gap, through catering to these specific individuals who percolate outside the system, by improving their socioeconomic statuses (Elahi & Rahman, 2006). Although the origin of the concept itself has been traced to 1880s where the theorist, Lysander Spooner hypothesized on the benefits of making small credits to entrepreneurs as a way of pulling people out of poverty, it was formally developed by economist, Muhammad Yunus in 1976, after he observed that for a very large amount of the world's population, access to soft loans, essential to poverty reduction, was problematic (The Encyclopedia Britannica, 2010).

Agribusiness

Agribusiness encompasses for-profit economic activities taking place in the agricultural sector by agripreneurs. Kozera-Kowalska and Uglis (2021), viewed agribusiness as a complex and diverse sub-system of the national economy, which includes entities responsible for handling production, processing and distribution of food items and its derivatives as well as other related services to the human society. It integrates independence, economically-separate entities that work as a team to jointly make the national food economy more competitive and always available for the society's consumption (Van Fleet, et al., 2014).

Henry et al (2022) defined agribusiness as business of farming and farm-related commercial activities towards enhancing agricultural productivity and overall wellbeing of the people and economic growth. In other words, it is the combination of agriculture and investment activities towards stimulating economic growth and development of a given country.

Agriculture plays a key role in the provision of food; access to food from agricultural activities enhances household food security and improves the nutritional needs of society, availing the market with greater quantity and variety of food for given income levels. Agriculture is also crucial in the supply of raw materials to other sectors for production of goods and services, in so doing, facilitating industrial promotion. This significance of the agricultural sector, especially in developing economies such as Nigeria, presents investment opportunities with ready market. Succinctly, agribusiness describes commercial farming, which Fleet (2016) highlights as the part of modern national economy devoted to the production, processing and distribution of food and fibre products and by-porducts. Hassanzoy (2019) used agribusiness as an umbrella term for various businesses involved in fiber and food production, including farming, agrichemicals, seed supply, farm machinery, wholesale and retail trade, as well as processing and marketing. These activities cover an integrated process of utilization of farm supplies, and the manufacture, storage and distribution of farm outputs (Hassanzoy, 2019).

Agripreneurship

The concept of Agripreneurship is seen as the application of entrepreneurship principles in agriculture. Birwa et al. (2014) defined agripreneurship as a profit-oriented marriage of agriculture and entrepreneurship. Agripreneurship is practiced by agripreneurs; these are individuals who seek market opportunities to exploit for gain in the agricultural sector, through

the utilization of innovative and sustainable production approaches. An agripreneur is therefore an entrepreneur whose main focus of business is agriculture or agriculture-related (Uche, 2018). They seize opportunities and translate them into fruition by bringing a business into existence or adding value to the existing business so as to attract more demand. Such methods provide opportunities to overtake the environmentally unsustainable agricultural systems developed in industrialized countries and move straight to integrated systems that manage natural resources effectively and sustainably (Lan, 2015).

Hilmi (2018) observed specific factors that characterize agripreneurs such as the ability to exercise foresight in resource and environmental constraints. They also engage in the application of specialized knowledge towards making agricultural businesses more sustainable through measures such as adopt new technologies to farming. Agripreneurs operate within a food system, located in, but not necessarily limited to, a rural location, and take part in a full range of opportunities in the extended food system, identifying novel ways of doing things in the agricultural sectors, utilizing innovative and sustainable production methods (Hilmi, 2018).

Agripreneurs in Nigeria are however, in most cases, necessity-oriented, their creation compelled by systematic factors, and others such as economic and social barriers, regulations and policies (Kahan, 2012). The Nigerian agricultural sector provides huge opportunities for agripreneurs and agripreneurship development, being a large source of income and employment, and a means of ensuring socioeconomic enhancement, development of agricultural value chain and overall economic growth (Unite, 2020).

Agricultural entrepreneurship also known as agripreneurship has been linked to establishing non-agricultural businesses by established farmers various communities (Seuneke *et al.*, 2013).

Pindado and Sánchez (2017) defined agriculture entrepreneurship as the decision of individuals to start a new agriculture business based on available opportunities around.

Agripreneurship is considered a growth engine in many countries worldwide, potentially reducing poverty level while increasing economic growth and development through agripreneurial business activities (Bannor et al., 2021). Nagalakshmi and Sudhakar (2013) opined that agripreneurship is the generally sustainable, community-oriented, directly-marketed agriculture.

Performance

Business performance is the ability of a business to achieve its desired organizational goals and objectives in terms of profit making and the growth of the business. Performance in this study was considered in terms of business development, which implies positive expansion in internal attributes of a business venture. Frederiksen et al. (2014) defined business development as the creation of long-term value for an organization from customers, markets and relationships. Frederiksen (2021), on the other hand, describe business development as an interplay of various factors, concerned with market expansion and the identification and nuture of opportunities, resulting in growth and profitablity. Agribusiness development denotes the development of businesses in an agricultral context through an appreciable increase in agricultural productivity and earning opportunities, as well as market share for the benefit of agripreneurs.

According to Uche and Familusi (2018) Agribusiness development will benefit the economy in different ways: it will bring about increase in employment and engage idle human and natural

resources, encourage capital formation through savings, promote linkages for industrial and economic development and improve a country's exports.

Productivity

Poductivity is a crucial measure of performance that reflects the effectiveness and efficiency of business operation. Singh and Chaudhary (2022) opined that productivity has become an important facet of work culture in any organization and went further and described productivity to mean the conversion of inputs such as human resources, money, time into outputs.

Tokarčíková (2013) defined productivity as a ratio determining how well an organization is able to convert input resources used in the production process, such as labour, materials, machines and financial resources, into finished goods and services. Productivity is a good indicator of the effectiveness with which a factory or firm is operating; a highly productive firm is one in which more output is being produced with a given number of inputs, i.e., resources available were utilized efficiently and effectively. On the other hand, if there is low productivity in a firm then that indicates an inefficient use of the available resources. High productivity rates are desirable due to the fact that resources such as time and capital are scarce and need be exploited in best possible way. The concept can, therefore, be referred to as the optimality in the utilization of resources and the effectiveness in accomplishment of targets, goals, or levels of performance (Heutel, 2012). As pointed out by Mozumdar (2015), productivity is measured as the quantity of agricultural output for a given quantity of inputs in a set of inputs. Hence, in cases where productivity is high, this relationship will be efficient, resulting in higher production levels, as an extension from an expanded production capacity.

Profitability

Profitability is the most important measure of business success; an unprofitable business cannot survive. On the other hand, highly profitable businesses offer large returns on investment for owners. Increasing profits, as pointed out by Hofstrand (2015), is therefore, one of the most important tasks of business managers. Profitability is defined as the ability of a firm in the utilization of resources at its disposal in the generation of revenues in excess of its expenses, i.e., its capacity for making profits from its sales and/or investments (Francis & Olori, 2017). This often manifests as the outcome of management decisions about sales and purchase prices, levels of investments and production, and innovaion.

Profitability can be decribed as an essential aspect of financial reporting that reflects the rate at which a firm is able to generate earnings from sales, asset level, as well as avaiable capital stock in a specified period of time (Margaretha & Supartika, 2016). Issues revolving around the profitability of firms and ways of improving its levels have remianed an area of immense interest in the field of economics, finance, accounting and management. Profitability supports the creation of value, employment of labour, and gives firms the means of being more socially responsible, and beneficial to the entire economy through payment of taxes (Odusanya et al., 2018).

Shmatkovska et al (2022), described the profitability of an agribusiness enterprise as a key indicator of the efficiency of its economic activity carried out in a given period. The most particular importance is that businesses must ensure maximum profit under the existing resource constraints, manifested in access to financial and credit resources, material support of the production process, and sufficient skills to perform the workforce's tasks. Therefore, only

the optimal combination of all these components allows companies to ensure the appropriate level of profitability in market competition environment.

Empirical Review

Obagbemi et al. (2022) studied microcredit scheme in rice production among Smallholder Farmers in Kwali Area Council, Abuja. The study adopted a survey research design in which multi-stage sampling was used to select respondents, who were smallholder agripreneurs, as participants of a questionnaire survey. Sampling was carried out in four stages. Four wards (Ashara, Dafa, Pai, Yangoji), which were farming communities, were firstly, purposively selected out of 10. Five communities were then, randomly selected from each of the wards, giving a total of 20 communities, from which 24 farmers were randomly selected, giving a total of 480 respondents. Accordingly, 120 questionnaires were administered per each ward. Primary data was obtained from the study sample via copies of a well–structured questionnaire. Regression analysis based on Cobb-Douglas model was estimated for the specified model to determine the influence of microcredit on productivity. Based on the findings, the study revealed that microcredit was a positive and significant determinant of productivity among agripreneurs. The actual sample used for the study was, however, 100, giving a response rate of about 24%. This is poor for empirical research seeking to establish variable relationships, and provide a basis for policy response. The representatives of the sample were, thus, found to be problematic. To work around this shortcoming, the current study adopted an increased sample size over and above the recommended number to address non-response and unusable questionnaire problems.

Rovidad, et al. (2020) undertook a study on the effects of microcredit on crop productivity in district charsadda, khyber pakhunkhwa. 200 was the sample size of this study. Questionnaire was administered and some farmers were equally interviewed. Paired sample T-Test was used to compare crop productivity with microcredit. The study found a negative relationship between microcredit and productivity. It thus recommended that interest rates should be reduced so as to encourage farmers to take loans on regular basis. However, the paper failed to adopt a more efficient tool of analysis to analyze the collected data so as to arrive at a more reliable finding.

Seven and Pumen (2020) presented cross-country evidence showing that agricultural credit positively affects agricultural productivity. Particularly, it was found that increasing agricultural credits generated about 4-5 percent increase in agricultural productivity. This suggested that the nature of the relationship between agricultural finance and agricultural output varied along the development path.

Gero and Egbendewe (2020) studied the macroeconomic effects of agricultural productivity in Benin Republic. They applied a dynamic computable general equilibrium (CGE) model. The results suggested that public policies that promoted growth in food crop productivity might become more effective in enhancing greater economic performance.

Again, Emenuga (2019) investigated the effect of credit supply to the Nigerian agricultural sector over a period of 37 years (1981-2017). The results of the Johansen cointegration test showed a long-run relationship between bank credit and agricultural sector development in Nigeria. The study also indicated that commercial banks' credit and Agricultural credit guarantee scheme were positively related to Agricultural sector development while interest rate showed a negative relationship with agricultural development in Nigeria.

Bangura et al. (2020), in a study carried out in Sierra Leone empirically investigated the impact of microcredit on productivity among smallholder agripreneurs in the Koinadugu District. Using a survey design, the study particularly focused on rice producers, who were selected to participate in a questionnaire survey to provide the needed data for the study. Although qualitative and secondary sources were also claimed to have been used in the study, no evidence of this was found. However, random and purposive sampling techniques were applied in the selection of two group of respondents – farmers who were microfinance beneficiaries, and those who were not, numbering 100 in total (50 for each group). Microfinance beneficiaries were those who were clients of the Kabala community bank and/or Financial Services Associations, which were other financial intermediaries operating at the village level. The analysis of the data was carried out with the multiple regression statistical technique. The findings provided for the study supported the fact that microcredit was a positive and significant determinant of agricultural productivity; the study reported that owners of agribusinesses who were clients of microfinance institutions realized high agricultural productivity compared to non-clients. The direction of the study was, however, in doubt; it was claimed that a comparative analysis was carried out, even when it was clear that that was not what was done. Additionally, the study would have adopted a more scientific and representative sampling procedure, rather than the arbitrary choice of 100 respondents.

Microfinance Theory of Change

The research study is guided by the Microfinance Theory of Change developed by Weijermars (2014). The theory specifies the effect of microcredit on business development through the functionality of an impact chain. Microcredit was initially developed to cater to the poor, as a response to the institutionalized exclusion of this group of individuals from formal financial systems. It was founded on the premise that increased access to credit by the poor was crucial for the improvement of returns to economic activities. In modern times, however, there have been specific applications of microcredit to small businesses for the aim of expanding self-employment, and the promotion of business and entrepreneurial activities. This is not linked to the recognition of the importance of external finance in improving income generation opportunities and living standards (Hearth, 2018).

The Microfinance Change Theory navigates the complexities of the socio-economic change process involved in the lives and business operations of the beneficiaries of microcredit intervention. Microcredit facilities extended to Agripreneurs establish sustainable livelihoods and financial empowerment for these individuals from channeling these external financial resources into their businesses. Sustainability is directly translated from an increase in income from increased profitability as well as increase in production of agricultural commodities. The impact chain established by the Microfinance Change Theory enshrines the indispensability of microcredit for agribusiness development.

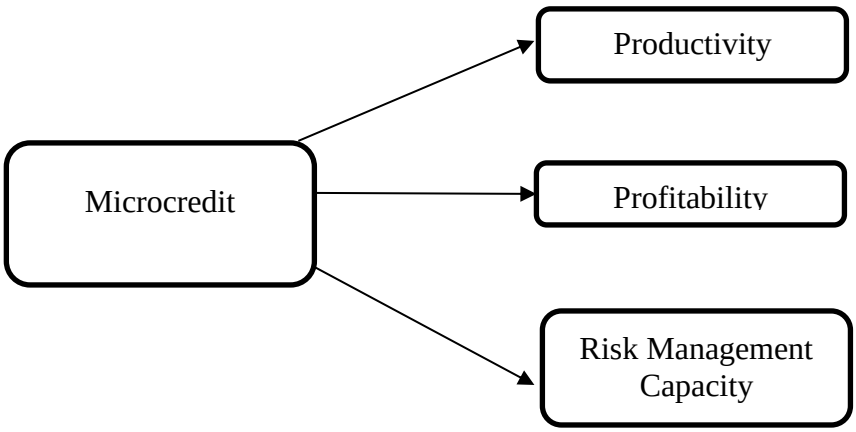
Methodology

This study adopted a causal research design. Here, the study obtained data through a survey involving the administration of questionnaires to agripreneurs operating in Katcha LGA of Niger State. The collected data was analyzed with pertinent statistical techniques in order to establish the cause and effect relationship among variables of the study.

The population of the study is the total number of agricultural microenterprises in Katcha Local Government Area of Niger state, Nigeria. However, as this number is presumably large and unknown, the study resorted to the use of a sample size which was determined with the formula developed by Remesher (2019) specified for unknown population of a study as below.

$$n = \frac{Z^2 \times P(1-P)}{e^2} \quad \ldots\ldots\ldots\

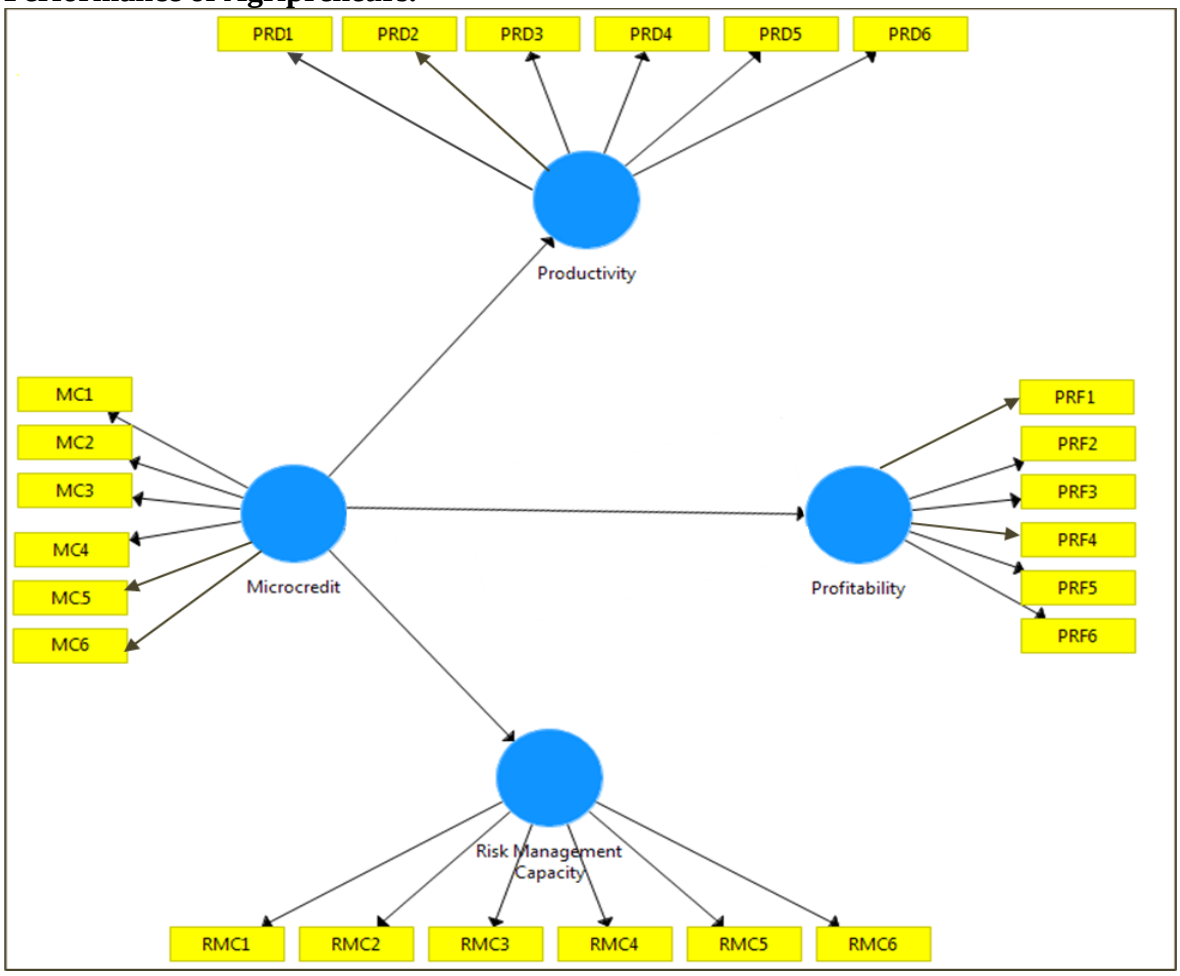
Figure 1: Model Specification for the Study



Source: Researcher's Compilation, 2022.

Path analysis, through Partial Least Squares Structural Equation Modeling (PLS-SEM), was applied in analyzing primary data collected from the questionnaire survey carried out in the course of the study. The PLS-SEM approach to multivariate analysis involved the estimation of a path model, in the case of the study, shown in figure 3.2.

Figure 2: Path Model for the Study Specifying the Relationship between Microcredit and Performance of Agripreneurs.



Source: SmartPLS Output, 2022.

RESULT AND DISCUSSION

Test for Multicollinearity

The Variance Inflation Factor (VIF) was used in the study to determine the presence of multicollinearity among indicators. The presence of multicollinearity presents a number of problems that adversely affects the reliability of indicators in accurately capturing magnitude of effect, as well as the existing relationship expressed in the specified path model. The estimated VIF statistics is shown in table below.

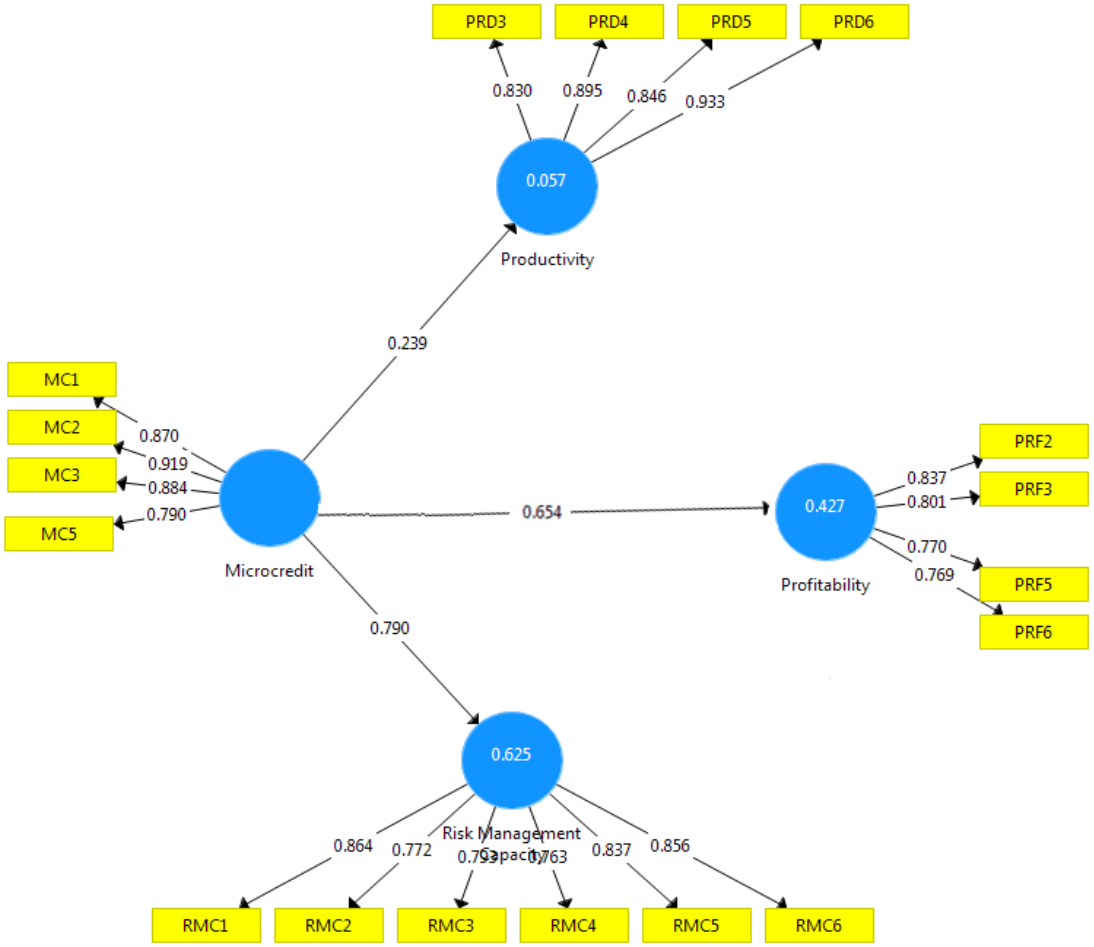
Table 4.1: Variance Inflation Factor Statistics for Indicators

Indicators	VIF
MC1	2.805
MC2	3.801
MC3	2.759
MC5	1.794
PRD3	2.570
PRD4	2.948
PRD5	2.182
PRD6	4.251
PRF2	2.088
PRF3	1.861
PRF5	1.798
PRF6	1.978
RMC1	3.348
RMC2	2.284
RMC3	2.548
RMC4	3.063
RMC5	3.915
RMC6	2.634

Source: SmartPLS Output, 2022.

There are different criteria for measuring the presence of multicollinearity from an interpretation of VIF values. The study however, relied on the recommendation provided by Wijayanti and Darma (2019), establishing a threshold value of 10. Accordingly, as all the outer VIFs were found to be less than 10, all indicators used where determined to be free from multicollinearity problem.

Figure 3: Estimated Path Model for the Study



Source: SmartPLS Output, 2022.

Structural Model Predictive Capability

The estimated path model was assessed in terms of predictive capability with the use of Coefficient of Determination (R^2) and Effect Size (f^2). R^2 measures the variance in the endogenous variables explained by the exogenous variable, i.e., changes in the endogenous variables that are attributable to movements in the exogenous variable. f^2, on the other hand, denotes a change in R^2 when the exogenous variable is removed from the model. Both the R^2 and f^2 coefficients computed for the study are shown in table 4.2.

Table 4.2: Coefficient of Determination (R^2) and Effect Size (f^2) Values

	R Square	R Square Adjusted	f^2
Productivity	0.057	0.055	0.061
Profitability	0.427	0.426	0.746
Risk Management Capacity_	0.625	0.624	1.665

Source: SmartPLS Output, 2022.

Applying the measurement criteria highlighted by Fauzi (2022), the computed R^2 value for the study was interpreted based on the following rule of thumb:

$R^2 = 0.67$ - Substantial Level
$R^2 = 0.33$ - Moderate Level
$R^2 = 0.19$ - Low Level

Accordingly, a cut-off value of 0.1 was also established, lower than which endogenous constructs cannot be marginally accepted as being predicted by exogenous constructs. From the results obtained, and contained in table 4.2, Microcredit, as the exogenous variable, can be said to have high (higher than moderate), but not substantial, predictive power for all constructs (with the exception of Productivity). The Productivity construct, on the other hand, was found to have a less than 0.1 R^2 value, which was below the cut-off point, indicating that microcredit was not a good predictor of productivity. The adjusted R^2 values with respect to the endogenous constructs only showed marginal difference.

f^2 is also essential in the detection of weak relationships, and highlights the importance of exogenous variables. The essentiality of considering effect sizes is emphasized by Sullivan and Feinn (2012) who argued in its favour for the purpose of avoiding a Type II error, where the absence of effect can be reported when it actually exists. For interpreting f^2 coefficients, the study Cohen's framework of 0.02 for small, 0.15 for moderate, and 0.35 for large effect. With the exception of the Productivity variable which was determined to have less than moderate effect size (0.061, $p < 0.05$), all other endogenous variables, Profitability (0.746, $p < 0.05$) and Risk Management Capacity (1.665, $p < 0.05$) were found to have large effect sizes. This implies that microcredit was a strong predictor for the specified dependent variables for the study.

An in-depth predictive power assessment of the model was also done using the popular PLSpredict procedure. This follows a holdout sample-based process, generating case-wise predictions on construct item level. This became important in order to ensure that the estimated model has out-of-sample predictive ability, i.e., its ability to predict values of new cases not included in the estimation process. The Root Mean Squared Error (RMSE) was applied as the prediction statistic for the study. Sharma et al. (2019) advocates for the use of RMSE in its reliable selection of models that best balance model fit and predictive power. The assessment process involved the establishment of a benchmark which uses a linear regression model (LM) to generate predictions for the manifest variables by running a linear regression of each of the dependent construct's indicators on the indicators of the exogenous latent variables in the PLS path model (Evermann and Tate, 2016). The PLS-SEM-based predictions are expected to be better than the naïve LM benchmark, by having small prediction errors.

Table 4.3: PLSpredict Assessment of Indicator Variables

	PLS-SEM		LM	
Item	**RMSE**	**Q^2_predict**	**RMSE**	**Q^2_predict**
PRD3	0.669	0.020	0.675	0.002
PRD4	0.789	0.103	0.810	0.056
PRD5	0.702	0.064	0.709	0.047
PRD6	0.801	0.065	0.814	0.034
PRF2	0.415	0.416	0.448	0.323
PRF3	0.670	0.260	0.672	0.255
PRF5	0.613	0.309	0.630	0.271
PRF6	0.416	0.308	0.443	0.218
RMC1	0.377	0.600	0.407	0.533
RMC2	0.593	0.301	0.606	0.270
RMC3	0.443	0.396	0.466	0.331
RMC4	0.663	0.376	0.697	0.310
RMC5	0.519	0.639	0.595	0.526
RMC6	0.715	0.470	0.717	0.468

Source: SmartPLS Output, 2022.

As can be seen in the results contained in table 4.3, most of the indicators of the endogenous variables have lower prediction errors than the naïve LM benchmark, substantiating the high predictive power of the model.

Test of Hypotheses

The estimated path coefficients and their respective significance statistics are summarized in table 4.4. All path relationships were estimated to be statistically significant at the 5% level, they were also all determined to be positively signed in accordance with a priori expectation

Table 4.4: Estimated Coefficient of Path Model for the Study

	β	Sample Mean	STDEV	t	P Values
Microcredit -> Productivity	0.239	0.242	0.045	5.278	0.000
Microcredit -> Profitability	0.654	0.655	0.029	22.446	0.000
Microcredit -> Risk Management Capacity	0.790	0.790	0.023	34.949	0.000

Source: SmartPLS Output, 2022.

Test of Hypothesis I

Ho_1: Microcredit has no significant effect on productivity of agripreneurs in Katcha Local Government Area of Niger State.

Microcredit was estimated to exert positive and significant effect on productivity (0.239, $p < 0.05$), implying that productivity is likely to increase with increases in the level of microcredit used. This provides sufficient empirical evidence for the rejection of the hypothesis, as well as the adoption of the conclusion that microcredit, indeed has significant effect on productivity among agripreneurs in Katcha LGA of Niger state.

Test of Hypothesis II

Ho_2: Microcredit has no significant effect on profitability of agripreneurs in Katcha Local Government Area of Niger State.

The effect of microcredit on profitability was estimated to be positive and significant (0.654, $p < 0.05$). The hypothesis of no significant effect is therefore rejected, and we conclude that microcredit has significant effect on profitability among agripreneurs in Katcha LGA.

Test of Hypothesis III

Ho_3: Microcredit has no significant effect on risk management capacity of agripreneurs in Katcha Local Government Area of Niger State.

The estimated effect of microcredit on risk management capacity was positive and significant (0.790, $p < 0.05$). This result supports the rejection of the pertinent null hypothesis, and the conclusion that microcredit has significant effect on the capacity for risk management of agripreneurs in Katcha LGA.

Discussion of Findings

All estimated signage and significance of path coefficients, were in line with a priori expectations, implying that increases in the magnitude of microcredit will predict higher levels of productivity, profitability and risk management capacity of agripreneurs in Katcha LGA. Hence, with higher levels of microcredit, agripreneurs will be able to achieve improvements in their productive capacity, resulting in higher levels of productivity. The positive effect of

microcredit on productivity is supported by findings put together by studies such as Obagbemi et al. (2022), Girabi and Mwakaje (2013), and Raza et al, (2018). This finding is, however, contradicted by Rovidad, et al. (2020), whose study found a negative effect of microcredit on productivity. Of all the estimated path relationships, however, microcredit was found to have the lowest effect on productivity, as supported by low values for its estimated coefficient and R^2. This implied that increasing magnitudes of microcredit will only bring about small increments in productivity levels.

In terms of profitability, microcredit was, perhaps unsurprisingly, found to be a positive and significant predictor of profitability. The injection of external funds can enable agripreneurs make investment decisions that will yield returns. This positive effect is supported by Ilori et al. (2021), Ibrahim and Bauer (2013), Ekunwe et al. (2015), and Ogunleye (2018). The increasing use of microcredit is, thus, expected to lead to higher levels of profitability of agripreneurs.

Furthermore, microcredit was found to be a positive determinant of risk management capacity, i.e., the ability of agripreneurs to manage risks improved with higher levels of microcredit as extraneous funding. Risks are inevitable in agribusiness operations, especially within the Nigerian business climate, and can have serious implications for business survival and sustainability. With financial buoyancy afforded by microcredit, agripreneurs can better accommodate such occurrences.

CONCLUSION AND RECOMMENDATIONS

The role of microcredit in bringing about business development cannot be gainsaid. However, while it was found that microcredit more than moderately predicted changes in profitability, technological adoption and risk management capacity among agripreneurs, its effect on productivity was determined to be very low. This meant that increasing microcredit will, at best, bring about marginal changes in productivity among agripreneurs in Katcha LGA, implying that the ability to increase productive capacity was hampered among agribusinesses in the area. This could be as a result of land constraints. Most of the agripreneurs were, observably, smallholder farmers whose output may be constrained by their land size.

The study, through empirical evidence, establishes microcredit as essential for the performance of agripreneurs, acting as impetus for increasing productive capacity of these businesses, as well as their ability to make profits. As previously stated, the study found that microcredit increased the profit-making ability of agribusinesses in Katcha LGA. Here, microcredit improves their financial capacity to take advantage of beneficial opportunities, as well as to effectively navigate bad market conditions. Therefore, for a country such as Nigeria, in which various administrations have continuously emphasized a need for the development of the agricultural sector, state-level commitment to improving the accessibility and expansion of microcredit in Niger state is a step in the right direction.

Based on the findings arrived at by the study, the following recommendations are put forward.

i. Farmers may be constrained by their land size, owing to their predominantly smallholder status, given the fact that increasing microcredit has been found to bring about only negligible improvement in productivity, even when profitability, technological adoption and risk management capacity were found to be highly determined by microcredit. It could therefore, be beneficial that microcredit schemes

be possibly be carried out in conjunction with land leasing programmes, that will give agripreneurs access to larger landholdings.

ii. The provision of microcredit should be intensified, especially among vulnerable areas, to spur entrepreneurial activities in the agricultural sector. Findings from the study has shown that effective administration of microcredit can establish agricultural production as a viable business venture. Further, potential agripreneurs may be enticed into participating in the agricultural value chain with the presence of an explicit framework that ensures financial support for agricultural investment.

iii. There should be increased provision of insurance services aimed at the peculiar needs of agribusinesses. The fact that the risk management capacity of these businesses increases with increasing levels of microcredit may signify that agripreneurs are using microcredit as a substitute for insurance against risks. The provision of specialized services to take care of the peculiar risks and uncertainties these business owners face will free up available funds for more profitable endeavours.

References

Adabugah, T. A. (2019). *Effect of microcredit on households' income in the Kassena-Nankana Municipality of the Upper East Region*. A thesis submitted to the department of African and general Studies, faculty of integrated development studies, University for development studies, in partial fulfilment of the requirements for the award of master of philosophy degree in development studies.

Adebayo, C. O., Sanni, S. A., & Baiyegunhi, L. J. (2012). Microcredit scheme impact and food security status of beneficiaries in Kaduna state; Nigeria: A propensity score aproach. *African Journal of Agricultural Research, 7*(37), 5191-5197.

Adedolapo, K. D., & Kehinde, M. (2020). The impact of credit access and cooperative membership on food security of rural households in South-Western Nigeria. *Journal of Agribusiness and Rural Development, 3*(57), 255-268.

Al Qubtan,T. R., Gan, P., Abd.Hadi, F. S., Abdul Jalil, N., Rambeli, N. (2021). Practical risk management approaches among small and medium enterprises. *TEM Journal*, 10(2), 996-1004.

Bahkia, A. S., Awang, Z., Afthanorhan, A., Ghazali, P. L., & Foziah, H. (2019). Exploratory factor analysis on occupational stress in context of malaysian sewerage operations. *AIP Conference Proceedings.*

Balana, B. B., Oyeyemi, M. A. (2022). Agricultural credit constraints in smallholder farming in developing countries: evidence from Nigeria. *World Development Sustainability.*

Bangura, S., Sesay, A., Sesay, K. D., Bah, C. J., & Mansaray, I. (2020). The impact of micro-finance on smallholder agricultural productivity in Sierra Leone: A case study of Koinadugu District. *Global Scientific Journals, 8*(12), 1586-1620.

Bannor, R. K., Ros-Tonen, M. A. F., Mensah, P. O., Derkyi, M., & Nassah, V. F. (2021). Entrepreneurial behavior among non-timber forest product-growing farmers in Ghana: an analysis in support of a reforestation policy. *Forest Policy and Economics*, 122, 102331.

Boye, M., Raza, H. A., Asghar, M., Saleem, M. & Wudil, A. H. (2022). A systematic mapping of agripreneurship studies in developing countries: A review of research direction and gaps. *Journal of Global Innovations in Agricultural Sciences.10:111-119.*

Brown, J. D. (2002). The cronbach alpha reliability estimate. *JALT Testing & Evaluation SIG Newsletter, 6*(1), 17-18.

Central Bank of Nigeria. (2021). Microfinance. Retrieved from Central Bank of Nigeria: https://www.cbn.gov.ng/devfin/microfinance.asp

Ebikebina, T., & Godwin-Biragbara. F. (2020). Management information system and office productivity of the print media in Rivers State, Nigeria. *International Journal of Business & Law Research 8*(1), 74-84.

Emenuga, P. E. (2019). Effect of commercial banks' credit on agricultural productivity in Nigeria. *ACTA Universitatis Danubius, 15*(3), 417-428.

Epule, T. E., Ford, J. D., Lwasa, S., Nabaasa, B. & Buyinza, A. (2018). The determinants of crop yields in Uganda: what is the role of climatic and non‑climatic factors? *Agriculture & Food Security, 7*(10), 1-17.

Fauzi, M. A. (2022). Partial least square structural equation modelling (PLS-SEM) in knowledge management studies: Knowledge sharing in virtual communities. *Knowledge Management & E-Learning, 14(*1), 103-124. doi:10.34105/j.kmel.2022.14.007

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50. https://doi.org/10.2307/3151312

Francis, N. W., & Olori, W. O. (2017). Time management and organizational effectiveness: A study of manufacturing companies in Port Harcourt, Nigeria. *International Journal of Advanced Academic Research, 3*(4), 31-49.

Frederiksen, L. (2021). Business development strategy: A high-growth approach. Retrieved from http://www.hingemarketing.com/blog/story/business-development-strategy-a-high-growth-approach

Gabriel, L. (2022). Agribusiness - overview, purpose, value chain. Corporate Finance Institutehttps://corporatefinanceinstitute.com.

Gamble, J. R., Clinton, E., & Díaz-Moriana, V. (2021). Broadening the business model construct: Exploring how family-owned SMEs co-create value with external stakeholders. *Journal of Business Research, 130,* 646-657. doi: 10.1016/j.jbusres.2020.03.034

Gero, A., & Egbendewe, A. (2020). Macroeconomic effects of semi-subsistence agricultural productivity growth: Evidence from Benin and extension to the WAEMU countries. *Scientific African, 7*(1), 1-10.

Havierniková, K., & Kordoš, M. (2019). Selected risks perceived by SMEs related to sustainable entrepreneurship in case of engagement into cluster cooperation. *Entrepreneurship and Sustainability Issues, 6(*4), 1680-1693. doi: 10.9770/jesi.2019.6.4(9)

Henry**,** C. E**.**, Kingsley**,** O. O**.** & Nnachi**,** C. O**.** (2022). Determinants of Agribusiness Output in Nigeria: An Empirical Analysis**.** *Amity Journal of Management Research Vol. 5, 1 (1), (1-19)*

Heutel, G. (2012). How should environmental policy respond to business cycles? Optimal policy under persistent productivity shocks. *Review of Economic Dynamics, 15*(2), 244-264.

Hilmi, M. (2018). Entrepreneurship in farming: What is the current status of knowledge in the Kurdistan Region of Iraq? *Middle East Journal of Agriculture Research, 7*(3), 858-875.

Hinson, R., Lensink, R. & Mueller, A. (2019). Transforming agribusiness in developing countries: SDGs and the role of FinTech. *Current Opinion in Environmental Sustainability, 41*, 1-9.

Hofstrand, D. (2015). Grain farming profitability headed down. *Ag Decision Maker,* 13(11), 2-4.

Hwang, B.-G. (2018). Performance and improvement of green construction projects. Butterworth-Heinemann. doi:https://doi.org/10.106/C2017-0-01403-9

Ibrahim, F. D., Oseghale, A. I., & Ogaji, A. (2019). Effect of credit access on productivity of rice farmers in Niger state, Nigeria. *Journal of Agripreneurship and Ssuatainable Development, 2*(1), 213-218.

Idi, D. E. (2019). Impact of micro-credit utilization on profitability and productivity efficiency of maize farmers in Kaduna state, Nigeria. *Dutse Journal Of Economics And Development Studies,*7(2), 57-65.

Igwe, E., & Ugwu B. (2018). Effect of microcredit on agricultural risk management strategies among small holder farmers in Abakaliki local government area of Ebonyi state. Retrieved from https://www.academia.edu/36279733/

Ilori, O. D., Ashagidigbi, W. M., Oparinde, L. O., Thompson, O. A., & Afolabi, J. A. (2021). Effect of microcredit on poverty status and profitability of poultry egg producers in Oyo state, Nigeria. *Journal of Economics and Finance, 12*(2), 17-34.

Imran, M., Ul Haq, S., Ozcatalbas, O. (2022). Role of microcredit in sustainable rural development. *Sustainable Rural Development Perspective and Global Challenges*. https://doi.org/10.5772/intechopen.102588.

Islam, A., Maitra, C., Pakrashi, D., & Smyth, R. (2016). Microcredit programe participation and household food security in rural Bangladesh. *Journal of Agricultural Economics*, 1-40. doi:10.1111/1477-9552.12151

Jan, I., Khan, S., Khan, N. P., & Ashfaq, M. (2017). Effects of microcredit programme of Khushali bank limited on agricultural productivity in district Mardan. *Sarhad Journal of Agriculture, 3*(4), 688-693.

Jimi, N. A., Nikolov, P., Malek, M. A., & Kumbhakar, S. (2019). The effects of access to credit on productivity: separating technological changes from changes in technical efficiency (12514). Boon: Institute of labour economics.

Kagan, J. (2021). *Microfinance*. https://www.investopedia.com/terms/m/microfinance.asp

Kozera-Kowalska, M. & Uglis, J. (2021). Agribusiness as an attractive place to work—A gender perspective. *Agriculture* 2021, 11, 202. https://doi.org/10.3390/ agriculture11030202

Kuehne, G., Llewellyn, R. Pannell, D. J., Wilkinson, R. & Dolling, P. (2017). Predicting farmer uptake of new agricultural practices: A tool for research, extension and policy. Agricultural Systems 156: 115–125.

Margaretha, F., & Supartika, N. (2016). Factors affecting profitability of small-medium enterprises (SMEs) firms listed in Indonesia stock exchange. *Journal of Economics, Business and Management, 4*(2), 132-137.

Mecha, N. S. (2017). Effect of microfinance on poverty reduction: a critical scrutiny of theoretical literature. *Global Journal of Commerce & Management Perspective,* 6(3), 16-33.

Mengstie, B. (2022). Impact of microfinance on women's economic empowerment. *Journal of Innovation and Entrepreneurship*, *11*(55), 1-12. https://doi.org/10.1186/s13731-022-00250-3.

Mirabelli, G., & Solina, V. (2020). Blockchain and agricultural supply chains traceability: Research trends and future challenges. *Procedia Manufacturing, 42*, 414–421. https://doi.org/10.1016/j.promfg.2020.02.054

Muraya, B.W., & Ruigu, G. (2017). Determinants of agricultural productivity in Kenya. *International Journal of Economics, Commerce and Management, 5*(1), 159-179.

Nathan M. (2023). Microcredit overview & purpose | what is a microloan? (2023, January 11). Retrieved from https://study.com/academy/lesson/microcredit-overview-purpose.html.

Nosheen, S., Khan, T. M., & Rehman, F. U. (2020). SMEs exports are influenced by different risk factors: Empirical study of emerging economy. *Journal of Accounting and Finance in Emerging Economies, 6*(1), 201-218. doi: 10.26710/jafee.v6i1.1078

Ntare, P. C., Shau, I. R., & Ojwang', E. (2022). Effects of enterprise risk management practices on performance of small and medium scale enterprises. a case of Dar es Salaam city, Tanzania. *African Journal of Applied Research, 8*(1), 182-199. doi: 10.26437/ajar.03.2022.13.

Nwachukwu, N. I., & Shisanya, C. A. (2017). Determinants of agricultural production in Kenya under climate change. *Open Access Library Journal, 4*(3), 1-10.

Obagbemi, S. D., Bamidele, J., Bako, H., Alabuja, F. O., Ajayi, A. H., & Sennuga, S. O. (2022). Effect of micro-credit scheme on rice production among smallholder farmers in Kwali area council, Abuja. *European Journal of Business and Management Research, 7*(6), 26-34. doi: 10.24018/ejbmr.2022.7.6.1666.

Odusanyaa, I. A., Yinusab, O. G., & Ilo, B. M. (2018). Determinants of firm profitability in Nigeria: Evidence from dynamic panel models. *Journal of Economics and Business, 68*(1), 43-58.

Offor, O. S., Idiong, I. C., & Archibong, B. E. (2020). Effect of access to microcredit on food security Status of farm households in Niger-Delta, Nigeria. *Nigerian Agricultural Journal, 51*(3), 227-232.

Ogunleye, A. S. (2018). Effect of access to microcredit on productivity and profitability of cassava farming in Osun state, Nigeria. *Journal of Tropical Agricultural, Food Environment and Extension, 17*(2), 51-57.

Ohize, I. R., & Aliu, J. N. (2021). Effect of microfinance banks on the development of youth entrepreneurs in Nigeria. *Al-Hikmah International Journal of Finance, 1*(1), 120-129.

Okeke, R. C. (2014). Microcredit alternatives for sustainable national development: A focus on Nigeria's political economy. *Review of Public Administration and Management, 3*(5), 31-44.

Olabisi, S. (2021). Open Education Online. Retrieved from https://openeducationonline.com/magazine/what-does-agripreneurship-mean/

Oladokun , Y. O. (2019). Effect of utilization on the productivity of rice farmers in Oyo state, Nigeria. *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, 1*(4), 227-232.

Omekwe, S. O. P., Bosco, I. P., & Obayori, J. B. (2018). Determinants of agricultural output in Nigeria. *International Journal of Science and Management Studies, 1*(4), 65-73.

Omiti, J., Otieno, D., Nyanamba, T., Mc Cullough, E. (2009). Factors influencing the intensity of market participation by smallholder farmers: A case study of rural and peri-urban areas of Kenya. *Afjare 3*(1), 57–82.

Omorigunje, R. V., Ogunleye, A. S., & Kehinde, A. D. (2020). Effect of microcredit on profit efficiency of smalll-scale poultry farmers. *Agricultura, 17*(1-2), 37-46.

Owusu, S. (2017). Effect of access to credit on agricultural productivity: Evidence from cassava farmers in the Afigya-Kwabre district of Ghana. *International Journal of Innovative Research in Social Sciences & strategic Mangement Technique, 4*(2), 55-67.

Oyaniran, T. (2020). Current state of Nigeria agriculture and agribusiness sector. *AfCFTA Workshop* (1-14). Lagos: AfCFTA.

Phiri, S. (2018). Determinants of agricultural productivity in Malawi. Published Thesis, Lilongwe University of Agriculture and Natural Resources, Bunda Campus, Malawi.

Pindado, E., & Sánchez, M. (2017). Researching the entrepreneurial behaviour of new and existing ventures in European agriculture. Small Business Economics. 49:421-444.

Plotnikova, L. I., & Romanenko, M. V. (2019). Creative methods of innovation process management as the law of competitiveness. *Management Science Letters,* 9(5), 737-748. doi: 10.5267/j.msl.2019.1.015.

Raza, G. K. (2018). Impact of microcredit on agricultural development of farmers of rural areas of Pakistan. *North American Academic Research, 1*(7), 54-63.

Raza, H., Shoukat, G., Saeed, Y., & Bhutto, N. A. (2014). Effect of Punjab rural support program (PRSP) Microcredit scheme on agricultural productivity of small scale Farmers in district Gujrat, Pakistan. *The Grassroots, 48*(2), 273-278.

Remesher, A. N. (2019). How to calculate your ideal sample size. Retrieved from https://blog.remesh.ai/how-to-calculate-sample-size#

Reynolds, P. D., Hay, M., & Camp, M. S. (1999). Global Entrepreneurship Monitor 1999 Executive Report. Center for Entrepreneurial Leadership.

Roodman, D., & Morduch, J. (2014). The impact of microcredit on the poor in Bangladesh: Revisiting the evidence, *The Journal of Development Studies, 50*(4), 583-604.

Rosano-Pena, C., Guarnieri, P., Sobreiro, V.A., Serrano, A. L. M. & Kimura, H. (2014). A measure of sustainability of Brazilian agribusiness using directional distance functions and data envelopment analysis, *International Journal of Sustainable Development and World Ecology, 21*(3), 210-222.

Rovidad, M., Raza, A., & Akbar, S. (2020). Effects of microcredit on crop productivity in district Charsadda, Khayber Pakhtunhwa. *International Review of Mnagement and Business Research, 9*(4), 130-137.

Sadiq, A. I., Damisa, M. A., & Oladimeji, Y. (2019). Impact of micro-credit utilization on profitability and productivity efficiency of maize farmers in Kaduna state, Nigeria. *Dutse Journal Of Economics And Development Studies, 7*(2), 58-65.

Saleem, M. A., & Jan, F. A. (2011). The impact of agricultural credit on agricultural productivity in Dera Ismail Khan. *European Journal of Business and Management*, 38-44.

Seven, U., & Pumen, S. (2020). Agricultural credits and agricultural productivity: cross-country evidence, GLO Discussion Paper, no. 439, Global Labor Organization (GLO), Essen.

Shah, T. (2015). Impact of microcredit on agricultural development in district Mastung Balochistan: A case study of Balochistan rural support programme (BRSP). *Journal of Poverty, Investment and Development, 9*, 21-36.

Sharma, P. N., Shmueli, G., Sarstedt, M., Danks, N., & Ray, S. (2018). Prediction-oriented model selection in partial least squares path modeling. *Decision Sciences.* doi:10.1111/deci.12329.

Shital, M. (n.d.). Productivity: Meaning, Concept, Formulas, Techniques, Measurement and Advantages. Retrieved from economics discussion: https://www.economicsdiscussion.net/management/productivity-meaning-concept-formulas/32324

Shmatkovska, T., Dziamulych, M., Vavdiiuk, N. Petrukha, S. Koretska, N. & Bilochenko, A. (2022). Trends and conditions for the formation of profitability of agricultural enterprises: A case study of Lviv Region, Ukraine. *Universal Journal of Agricultural Research, 10(1), 88 - 98. DOI: 10.13189/ujar.2022.100108.*

Shukran, M. K., & Rahman, F. (2011). A Grameen Bank Concept: Micro-Credit and Poverty Alleviation Program in Bangladesh. Bangkok.

Singh, S. & Chaudhary, N. (2022). Employee productivity: An analysis of dimensions and methodology through systematic literature review. *Empirical Economics Letters, 21 (Special Issue: 4 ISSN 1681 8997.*

Slack, K. (2013). The growing battle between mining and agriculture. Retrieved from https://politicsofpoverty.oxfamamerica.org/the-growing-battle-between-mining-and-agriculture/

Sudharani, V. (n.d.). Study material on Entrepreneurship Development. Rajaendranagar: Acharya N-G Ranga agricultural university.

Sullivan, G. M., & Feinn, R. (2012). Using effect size—or why the P value is not enough. *Journal of Graduate Medical Education, 4*(3), 279–282

Sunding, D. and Zilberman, D. (2001). The Agricultural Innovation Process: Research and Technology Adoption in a Changing Agricultural Sector. *Handbook of Agricultural Economics* 1: 207-261.

Surya, B., Saleh, H., Hamsina, H., Idris, M., & Ahmad, D. N. A. (2020). Rural agribusiness-based agropolitan area development and environmental management sustainability: regional economic growth perspectives. *International Journal of Energy Economics and Policy, 11*(1), 142–157. doi:10.32479/ijeep.10184.

Tau, M. (2020). The role of microfinance on entrepreneurial development: The case of Urban Maseru. A Dissertation Submitted in Partial Fulfilment of the Requirements for Award of The Degree of Master of Development Studies (MDS) of The University of the Free State

Tegengne, Y. (2017). Factors affecting adoption of legume technologies and its impact on income of farmers: The Case of Sinana and Ginir Woredas of Bale Zone. MSc in Agriculture (Agricultural Economics) MSc dissertation: Haramaya University, Haramaya.

Temple, L., Bienabe, E., Barret, D. (2016). (2014). Methods for Assessing the Impact of Research on Innovation and Development in the Agriculture and Food Sectors. *African Journal of Science, Technology, Innovation and Development*, 8: 399-410.

Theriou, N. G. (2000). The effect of productivity on profitablity: A case study at firm level (unpublished doctorate thesis*).* University of Derby.

Tokarčíková, E. (2013). Measurement of highly qualified employees' productivity. *Annals of Dunarea de Jos University of Galati, 3,* 5-10.

Tria, D., Harun, M., Alam, M. M., & Wang, M. (2022). Microcredit as a strategy for employment creation: A systematic review of literature. *Cogent Economics & Finance, 10*(1), 1-17.

Uche, C., & Familusi, L. C. (2018). The adoption of agripreneurship as a mitigating measure to unemployment in Nigeria: A topical review. *Global Journal of Management Research, 18*(2), 25-31.

Ugwu, C. S. (2008). Micro-credit as a sustainable economic development and poverty reduction tool: The Enugu state experience. *Professor Bassey Andah Journal of Cultural Studies*, 90-100.

Ugwu, S. (2011). Micro credit and capacity enhancement in Nigeria: An evaluation of the national poverty eradication programme (NAPEP) in Enugu State (2001-2007) [doctoral thesis], University of Nigeria, Nsukka.

Umar, S. (2019). Developing a research framework for youth engagement in agripreneurship: application of the theory of planned behaviour. Nigerian Journal of Rural Sociology. 19:1-9.

Uneze, E. (2013). The relationship between capital formation and economic growth: Evidence from sub-saharan countries. *Journal of Economic Policy Reform, 16*(3), 272-286. doi:10.1080/17487870.2013.799916

Unite, C. (n.d.). Adopting agripreneurship education for Nigeria's quest for food security in vision 20: 2020. *Greener Journal of Educational Research, 3*(9), 52-65.

Verma, R. K., Sahoo, A. K. & Rakshit, S. (2017). Opportunities in agripreneurship in India: need challenges and future prospects. Rashtriya Krishi. 13:7172.

Wadud, M. A. (2013). Impact of microcredit on agricultural farm performance and food security in Bangladesh. Bangladesh: Institute of microfinance (InM).

Weber, O., & Ahmad, A. (2014). Empowerment through microfinance: The relation between loan cycle and level of empowerment. *World Development, 62*, 75–87.

Weijermars, B. (2014). Microfinance: the road to development? resutls of an impact study - visionfund *Ghana.* Wageningen University.

Wikipedia. (2021). Agribusiness. Retrieved from Wikipedia: https://en.wikipedia.org/wiki/Agribusiness

Wim, N., & Adam, Z. (2013, September 8). Technological innovation, entrepreneurship and development. *The European Business Review*. Retrieved from http://www.europeanbusinessreview.com/technological-innovation-entrepreneurship-and-development/

Wong, K. K. K. (2013). Partial least squares structural equation modeling (PLS-SEM) techniques using SmartPLS. *Marketing Bulletin, 24,*

Wongtschowski, M., Belt, J., Heemskerk, W., & Kahan, D. (2013). *The Business of Agricultural Business Services. Working With Smallholders In Africa.* AgriProFocus.

World Bank. (2023). Agricultural Innovation Systems: An Investment Sourcebook. Washington: World Bank. Retrieved from http://hdl.handle.net/10986/2247

Zhao, E. Y., & Lounsbury, M. (2016). An institutional logics approach to social entrepreneurship: Market logic, religious diversity, and resource acquisition. *Journal of Business Venturing, 31*(6), 643–662.

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