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Challenges, Effects, Coping Strategies, and Measures of Financing Agriculture: Socio-dynamics of Conventional and Islamic Sources of Finance in Kaduna State, Nigeria

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Abstract
Kaduna State in Nigeria is a predominantly agricultural society with active farmers within the median age group of between 35- 54 years who are into food crop production with maize as the major food crop and ginger as the major cash crop produced in Kaduna State. Their business activities are spread almost evenly across the geographical zones in Kaduna State. The main aim of this paper is to examine the causal relationships of the effects of the challenges of financing agriculture on the challenges of financing agriculture and also evaluate the effects of the measures to mitigate the challenges of financing agriculture on the coping strategies adopted in financing agriculture in Nigeria. Data were collected using the questionnaire as the instrument of data collection in a quantitative method based on the cluster sampling technique, 663(50%) questionnaires were administered across 17 different clusters across the three (3) geographical zones in Kaduna State and some centralized offices of financial institutions within Abuja and 562 responses were received with a sample error margin of -17.9%. An Ordinary Least Square (OLS) linear regression test conducted revealed the effects of challenges of financing agriculture on the lack of collateral to obtain a loan with a *B .820* and managerial/government bureaucracy in financing agriculture coming second with a *B* .638. Privatization of energy is a major challenge to agro manufacturing and the value chain with *B .585* is in third place while lack of finance for mechanization and irrigation technology is in fourth place with *B .572*. In addition, the study also revealed the impact of the measures on the coping strategies is strongest on Zakat with a *B 1.679*. The effect of the measure on contribution from family and friends as a coping strategy comes in second place with a *B .912*. The study also revealed insecurity and infrastructural development as other impediments to financing agriculture in Nigeria based on the explored open-ended question. It is recommended that a central zakat fund be established to provide stable non-interest finance to smallholder farmers.
Keywords: Conventional Finance, Coping Strategy, Insecurity, Income, Islamic Finance, Islamic Development Bank, World Bank, Poverty, Unemployment.
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1.0 Introduction.

The challenges of financing agriculture are steadily increasing with resultant effects outcome arising from these challenges to financing agriculture that are worrisome with unemployment, poverty, malnutrition, and criminality in Nigeria. Nigeria's over 200 million people are moving consistently from a relative poverty position to a more absolute poverty position within the last decade and a half, due to inconsistencies in the distribution of resources from conventional, Islamic financial systems, and government agencies toward financing the critical agriculture sector which accounts for 70% of the employable labor and provides for income of most people domiciled in the rural areas. Consistent vital statistics have shown that the resultant effects of malnutrition and child mortality rate as indicated by GHI, (2022) with 27.3% of the population with serious hunger levels is factual, considering the enormous flooding, insecurity, and drought faced within this year. In addition, there are 21 million malnourished people including children in Nigeria according to UNICEF, (2022) with an unemployment rate forecast for 2021-2022 at 32.5% in 2021 and 33% in 2022 Statista, (2020), the social dynamics of societal change with adverse resultant effects can be argued to be a result of the forces and behavior of conventional, Islamic, and government financial institutions and agencies and their inability to provide financial support to empower farmers, cooperatives, and other stakeholders within the agriculture sector.

Ethiopia, Nigeria, and Kenya have the largest contribution of agriculture to the Gross Domestic Product (GDP) in Africa, this shows that with positive planning in financing agriculture and the advantage of arable land and labor, Nigeria will not only provide sustainable food security for its population but will also maintain a supply market outlet to Africa's demand for food consumption. While Nigeria falls in third place in food import after Algeria and South Africa in 2017, the staggering amount of $4.5 billion in capital flight for food import

indicated the make-up for food shortage that can be homegrown, a loss of income, and savings of smallholder farmers, thus, contributing to the rise of unemployment and poverty as explained by Oyaniran & Omomia, (2022). Agriculture must be viewed from a multi-dimensional approach to tackle the challenges faced and funding technological innovations have a profound effect on agricultural production in increasing high yield and ensuring sustainable efficiency in the agriculture sector as Emmanuel, Bawa, & Abdullahi., (2020) indicated which forms a major challenge to the agriculture sector in modern-day Nigeria. The lack of funding for climate change issues has over time accrued challenges with effects on the environment that have affected agriculture and have led to conflicts based on the strangled use of the commons as Abdullahi & Gupta., (2022) have indicated. The structural and process problems of financial institutions and government agencies can arguably be said to be the major factor in financing agriculture because of the lack of accessibility to smallholder farmers with little or no effort to reorganize and reorient smallholder farmers as Todaro 1979 argued to improve macroeconomic policy based on the government's Marshall Plan to drive the critical sectors of the economy and achieve the desired goals of a robust social, economic, and human development through the agricultural sector which can only be achieved with sustainable electricity as also argued by Abdullahi & Gupta (2022).

In the absence of funds from financial institutions and government agencies, smallholder farmers have manifested coping strategies as the only informal source to finance their agricultural and agro-business activities. Imagine the contributions made by smallholder farmers using asusu in the absence of finance from financial institutions and agencies to support agricultural activities, and imagine what agricultural development will be like if financial institutions boost the expected funding to smallholder farmers within the agricultural sector. Coping strategy can be defined as an individual or group's effort or action in providing other means of rectifying challenges in social and economic life situations on a micro level. While there are three forms of coping; administrative, political, and social coping identified by Sun, Li. (2018) which addresses the structural issues of financial services in the context of this paper, the administrative coping of financial institutions and government agencies have been instrumental in the financial exclusion of smallholder farmers due to bureaucratic bottlenecks in their structures and processes. While technological know-how has not been able to transform farming from traditional farming to modern farming because of the lack of finance for smallholder farmers ' financial institutions. Political coping has also been a major impediment to the development of the agricultural sector in Nigeria because of the government's inability to set in a Marshall Plan to address the macroeconomic policy of unemployment, exchange rate, and inflation as well as energy challenges that affect the agriculture sector. These administrative and political copings of financial institutions and agencies necessitate the social coping of farmers, in the absence of money and other material inputs to support the farming business they employ other sources of funds to sustain themselves.

Another scholarly work on coping from a sociological point of view indicates the classification of coping strategy in three forms highlighting Psychological coping, Psychophysiological coping, and Social coping which tries to address social problems and conflicts as explained by Gerhardt, (1979). The pressure and frustration farmers undergo to meet their needs in the absence of affiliation with financial institutions and government agencies have made the informal social coping method of financing inevitable. The "asusu" personal or group contributions have been a very active source of funds for farmers in Nigeria for agriculture and other small and medium enterprise businesses. Saving which is rare, and working extra jobs, are also other social coping done by farmers with sales of agricultural stocks at the center of farmers 'social coping and agricultural finance. The absence of short, medium, and long-term loans from the financial systems in Nigeria must be improved and the need for reevaluating the framework of existing structures of financial institutions and government agencies will go a long way to provide measures that will improve finance to smallholder farmers and address conflicts, unemployment, poverty, malnutrition, social inequality and criminality faced within Nigeria's society.

1.1 Objectives

The objectives of this paper are to -

1. Examine the effects of the challenges of financing agriculture and the challenges of financing agriculture
2. Analyze the impact of the measures to mitigate financing agriculture and the coping strategies adopted in financing agriculture.

1.2 Research Questions

1. What are the effects of the challenges of financing agriculture and the challenges of financing agriculture
2. What are the effects of the measures to mitigate the challenges of financing agriculture and the coping strategies adopted in financing agriculture?

1.3 Hypotheses

Ho *1*: There is no significant relationship between the effect of the challenges of financing agriculture and the challenges of financing agriculture.

Ho *2*: There is no significant relationship between the measures to mitigate financing agriculture and the coping strategies adopted in financing agriculture

2.0 Literature Review

The literature review focuses on the conceptual review of the challenges of conventional and Islamic sources of financing agriculture in Nigeria and the empirical review of the challenges of conventional and Islamic sources of financing agriculture in Nigeria.

2.1 Challenges of Conventional and Islamic Sources of Financing Agriculture in Nigeria: An Empirical Review

Fundamentally, the role of financial institutions and government agencies in economic development is inevitable because it forms the superstructure of all structures, especially in financing productive sectors like agriculture and manufacturing. Macroeconomic policy is critical for the Nigerian government to achieve social and economic development plans. However, Oyaniran & Omomia (2022) argued that financial disbursement to the agriculture sector is a meager amount, and the lack of funding from federal, state, and local governments to invest in the agriculture sector has also contributed to the decline of agriculture. The national budget for 2013 and 2017 was N4,990 trillion and N7,440 trillion respectively, and only N83.2 billion and N135.6 billion were budgeted for the agricultural sector respectively which is contrary to the Maputo Declaration that suggests African countries should at least maintain 10% of their annual budgets for the agricultural sector every year to boost the overall social system considering its role as the employer of labor and income to smallholder farmers. In addition, the international donor agencies have over the decades cut down on financing the agriculture sector while emphasizing infrastructural development which includes railways lines, urban renewal, and road construction to the neglect of agriculture. A study conducted by Bezemer, and Headey, (2007) has indicated that the low investment by the World Bank (WB) in funding the agriculture sector and the removal of subsidies to the agricultural sector by the Nigerian government most especially in terms of infrastructure, and the imposed taxes on smallholder farmers have subjected farmers to open market challenges and exploitation due to a lack of regulation and non-standardization of export goods for international markets. The Islamic Development Bank (IsDB) too as an international Islamic financial institution has inadequate resources for the agriculture sector in sub-Saharan Africa. The (IsDB) has indicated that 72% of the population in OIC countries mostly in sub-Saharan Africa and Asia are excluded from financial services while according to the World Bank 92% of the citizens in Iran above 15 years have bank accounts and only 15% of the population in Sudan have account numbers OECD, (2020). While Zakat as one of a pillar of Islam must be reorganized to fight for social justice as prescribed by Allah considering the rising issues of unemployment and poverty in Nigeria, and the lack of financial support to smallholder farmers by Islamic financial institutions like Jaiz bank. The World Bank (WB) and Islamic Development Bank (IsDB) and the Islamic Ummah are short of structures for financial institutions and a Zakat Fund Organization that reach out to smallholder farmers in developing countries like Nigeria. In addition, the Organization for Economic Cooperation and Development (OECD) report on the use of Islamic finance in partnership with the (IsDB) and other Islamic financial institutions within the Organization of Islamic Countries (OIC) and Development Assistance Committee (DAC) to sustain development in sub-Saharan Africa must ensure that Islamic finance use of Zakat, Sukuk, Waqaf, and micro-financing using mudarabah and musharakah in providing sustainable financial stability in achieving sustainable development goals should focus on financing the agriculture sector.

Financial Institutions especially in Nigeria are equally responsible for the decline of the agriculture sector due to the long-term investment bias in the oil mono economy neglecting agriculture. Emediegwu and Okeke (2017) have argued that the dependence on oil is a key factor in the increased unemployment and poverty rate in Nigeria with 23% of the banking sector finance going to the oil and gas sector and a meager 3.8% going to the agriculture sector as in 2018 as (Oyaniran & Omomia,2022) observed. Why are there issues with smallholder farmers accessing finance from financial institutions? Both conventional and Islamic financial institutions can be argued not to be associated with the farmers because of high-risk defaults in repayment from the agricultural investment. For this reason, financial institutions don't want to stake out depositors 'funds in medium and long-term investment and decided to set aside a 5% contribution for the sector under the Agriculture, Small and Medium Enterprises Equity Investment Scheme (AGSMEEIS) as shown in (Isa & Terungwa 2011). Financial institutions' lack of interest in investing in the agriculture sector has not only excluded smallholder farmers from finance but has further distanced them from affiliation with financial institutions and the need for any achievement. A recent study on Agricultural Credit Guarantee Scheme Fund (ACGSF) by (Mubarak, 2021) argued that while there is a significant relationship between (ACGSF) and agricultural performance from 1981-2019, there still exists no significant relationship to the Gross Domestic Product (GDP). In addition, one may further argue that agricultural performance can be explained based on another empirical fact that macroeconomic policy, the exchange rate, and inflation between 1981 - 2019 have not been consistent to support agricultural

growth and have remained a macroeconomic impediment to agricultural production and growth as (Obansa & Maduekwe 2013) indicated. For instance, the exchange rate in 1981 was N 0.61 to $1, while in 2019 the exchange rate is N 306 to $ 1, as presented by (Solutionwheels, 2022) so savings will be low in addition to the fact that the high cost of goods and services coupled with unemployment has made an income for smallholder farmers difficult. The lack of technological innovations affects high-yield efficiency and productivity in Nigeria as (Emmanuel, Bawa & Abdullahi., 2020) have indicated in their study that agricultural efficiency will make effective the agriculture sector but with electricity challenges to local content agro fabricators and agro-manufacturing industries, this has continued to impede agricultural development and to increase the smallholder farmers 'yield that will provide the sustainable physiological needs of their families.

Social coping in the context of this paper is an individual social action carried out by smallholder farmers in the absence of administrative and political coping as a necessity to ensure agricultural financing to meet their physiological needs. The inability to expand agricultural businesses and make savings a priority has made smallholder farmers cut down on household expenses due to the inflation of agricultural goods which also limits their ability to pay for rendered services and inputs in their agricultural field work (Akinola, 2014) attested. Furthermore, the lack of technological innovation has made a sizable number of marginalized smallholder farmers focus on affordable animal traction use maintaining a general traditional way of agricultural mechanization for production. The lack of information dissemination about government agricultural programs and bureaucracy in accessing funds from government programs are still problems farmers and associations face. In addition, financial institutions do not utilize the technology of registered Point of Sale (POS) financial services in the remotest rural areas where there is ample Internet use provided by telecom service providers to reach out to smallholder farmers. This decreases their yield and income and without financial support and mechanization, smallholder farmers may never improve in agricultural production with a lack of technological information delivery services across the agriculture sector as indicated by (Shakya, Jain, & Badal 2015).

The livestock agricultural segment has been able to adapt to drought resilience and coping strategy based on a recent study where the absence of favorable climatic conditions and financial resources in sustaining cattle farming have indicated the sales of cattle stock as a major coping strategy while farming has also been indicated as an alternative as a coping strategy in sustaining household and animals in terms of food, the study also provides other coping strategies which include the seeking of employment to raise funds, migration from drought resistant areas, the use of drought resistant breeds and the use of savings and income from investments and the lease of the farms to sustain the household and sustain the cattle business as argued by (Bahta & Myeki, 2021). While Nigeria's climate change is affecting agricultural production due to flooding, desertification, soil and water pollution oil spillages, and bunkering, the lack of sensitization and funding to stop the environmental degradation challenges has made it more difficult for farmers to cope with meeting their food security. Furthermore, and most importantly, smallholder farmers especially in crop production in a developing country like Nigeria, have resorted to "Asusu" as a significant coping strategy in their social coping for years to mitigate against the lack of funds from conventional, Islamic, and international financial institutions and government agencies as (Abdullahi & Gupta 2022) indicated. The absence of funds and the pressure of coping to meet social financial needs have led to conflicts between farmers and established institutions, and conflicts between farmers and cattle rearers due to the use of the common for instance lack of stock route, grazing land, and water bodies for cattle. In addition, a new dimension of social problems in Nigeria now is banditry, cattle rustling, terrorism, kidnapping due to loss of employment, and poverty. These critical problems must, however, be addressed by a revaluation of the meta-analysis of the challenges of financing agriculture with a process model to overcome the challenges of financing agriculture, alleviate poverty and resolve conflicts to improve development in all spheres of society with a focus on the agriculture sector. This can be achieved by the reorganization and collaboration of financial institutions and government agencies including the sensitization and dissemination of information to re-orient smallholder farmers about modern technologies in farming, and the processes of accessible government loans with little or no interest rates and collateral burden to the loan application.

2.2 The Challenges of Conventional and Islamic Sources of Financing Agriculture: A Conceptual Review.

Conventional financing revolves around interest rates and premiums in all debt- and non-debt-related transactions. On the other hand, Islamic financing revolves around non-interest rates and contributions respectively to debt and non-debt-related transactions. With a focus aimed to meet the consequentialist and utilitarian or (halafa) well-being of the citizenry by ensuring sustainable access to finance for sustainable production within the agricultural sector, conventional and Islamic financial institutions have moved away from their corporate social responsibility to finance the weak marginalized group of smallholder farmers in the agricultural and manufacturing sectors, thus, creating unemployment and poverty, and social inequality gaps. While the conventional process or mode of financing is seen as exploitative, the Islamic mode of financing has given leverage to the farmers while maintaining zero interest in all transactions.

Islamic products like Mudarabah (direct loan) As-salam (advance payment in agriculture) for Muzarah and

Musaqat, Juala (service charge) Ijarah Wal Iqtina (lease purchase), Musharaka (joint financing), Qard Al-Hassana (Benevolence loan), Murabaha (trade finance), ijarah (leasing) and Istisna (payment for deferred goods) Sukuk (equity shares) Takaful (insurance) categorized into debt and non-debt instruments guided by sharia rules, uphold ethical standards that are essential in the agriculture sector to enhance the financing needs of smallholder farmers but are un-utilized in the practical sense of Islamic finance.

Table 2.2.1 Sources and Challenges of Financing Agriculture: Debt and Non-Debt Instruments

Sources of Financing Agriculture	Sources of Financing Agriculture	Sources of Financing Agriculture	Sources of Financing Agriculture
Commercial Banks Debt Instruments	**Government Agencies. Debt Instruments**	**International Banks Debt Instruments**	**Private Funding Debt**
Conventional Banks Challenges; • High interest rates on debt • Collateral • No access to Financial Institutions in rural areas	Development Finance Challenges; • Inadequate funding • Low-Interest rate on debt • Collateral • Lack of access to financial institutions in rural areas	World Bank. Challenges; • High-interest rates on debt exchange rate factor • Collateral • Access to financial institutions in rural areas	Private Funding Smallholder Farmers Challenges; • Lack of finance from conventional banks, finance development finance banks, and world bank due to collateral and interest rates • Non effective coopératives • High interest in private funding (Asusu) • Exploitation of farmers by private companies
Islamic Banks Challenges; • Unutilized use of agricultural debt modes of financing • Collateral for smallholder farmers • Access to Financial Institutions in rural areas	Central Bank Challenges; • Macro/Micro policies • Collateral for smallholder farmers • Low-Interest rates charges • Inadequate funding from government programs through commercial banks.	Islamic Development Bank Challenges; • Unutilized use of agricultural debt modes of financing • Lack of collateral for smallholder farmers • Access to financial institutions in rural areas	Private Funding Smallholder Farmer Challenges; • Lack of finance from Islamic banks. • Lack of smallholder farmers' access to government programs in Islamic banks. • Exploitation of farmers by private companies
Commercial Banks Non Debt Instruments	**Government Agencies. Non Debt Instruments**	**International Banks Non Debt Instruments**	**Private Funding Non Debt Instruments**
Conventional Banks Challenges; • NAIC, NIRSAL's insufficient insurance agricultural coverage and high premiums on loans and losses. • Lack of investment in the utilization of hire/ lease purchase in agricultural tractorization and equipment	Government Agencies Challenges; • Lack of lease and hire purchases in tractorization and agricultural equipment and machinery to smallholder farmers • Lack of investment in electricity and infrastructure to support agriculture	World Bank Challenges; Lack of structural support for leasing and hire purchase In mechanization, equipment, and technology.	Private Funding Challenges; • Lack of benevolence loan • Lack of organizational structure to support zakat distribution • Lack of insurance Takaful and Re takaful in agricultural loans and losses. • Lack of utilization of Ijarah leasing in agricultural mechanization, technology equipment, and tractorization.

• Lack of venture capital in agricultural plantation and agro-processing	production in dams, roads, etc • Inadequate insurance coverage in agricultural loans and losses		• Lack of zakat central funds
Islamic Banks Challenges; • Unutilized use of non-debt modes of financing to support smallholder farmers In terms of takaful and re-takaful • Unutilized use of Ijarah to support tractorization, fabrication of agricultural equipment, and hire purchase. • Lack of equity (Sukuk) investment to support Small and Medium Businesses	Central Bank Challenges; • Lack of effective macro-economic policy especially electricity • Lack of expansion and regulation of guaranteed loans by commercial banks • Lack of insurance coverage protection for farmers • Lack of hire purchase in agricultural equipment and tractorization.	Islamic Development Bank Challenges; • Lack of structural support for Takaful and Retakaful in financing agriculture. • Lack of structural support for Ijarah in plants and machinery and tractorization • Lack of Sukuk investment in small and medium enterprises and venture capital support.	Private Funding Challenges: • Inadequate funds for leasing equipment and tractors • Lack of insurance premium payment for private funds and input. • Nonexistent Islamic insurance contribution for cooperatives and associations. • Inactive cooperatives and associations that can guarantee loans. • Lack of Zakat central fund

Source: Constructed by the Researcher (2022)

Understanding the challenges of financing agriculture from both conventional and Islamic sources can inevitably improve the agricultural sector and mitigate the consequences of poverty, malnutrition, unemployment, and social inequality. From the above table sources of finance are grouped into debt and non-debt instruments for both conventional and Islamic sources of finance. While the existing problem of interest rate and collateral persists as a challenge in loan accessibility in conventional banks, their structures and processes in rural areas are also very challenging to finance agriculture. In the same vein, Islamic banks share similar problems of collateral and lack of accessibility in rural areas with a general lack of underutilization of Islamic debt instruments like mudarabah, musharakah, and al-Salam mode of financing to grow the agriculture sector, and also ensure a sizable amount of depositors funds is channeled to the agric-sector. Government agencies have low-interest rates on loans but inadequate funding and the lack of collateral by smallholder farmers have made accessibility of government funds through banks a challenge to financing agriculture as the case is with the Bank of Agriculture (BOA), guarantees with Nigeria Incentive Risk Sharing in Agricultural Lending (NIRSAL) and insurance coverage with Nigeria Agricultural Insurance Corporation (NAIC). The Central Bank of Nigeria's (CBN) micro/macro policies do not address redistributive financing of the agricultural sector with the Agricultural Credit Guarantee Scheme Fund (ACGSF), Agriculture. Small, Medium, Enterprises Equity Investment Scheme (AGSMEEIS), Commercial Agriculture Credit Scheme (CACS), Commercial Agriculture Development Fund (CADF), and the Anchor Borrowers Scheme funds that have little or no impact on the Gross Domestic Product (GDP) in terms of mass production for export. For instance, the 25% contribution farmers pay to benefit from the Agricultural Credit Guarantee Scheme Fund (ACGSF) program through Jaiz Bank, for example, should be transformed to reflect the musharakah mode of financing where the smallholder farmer pays who can afford to provide the stated contribution of the loan and the bank pays the balance of the 75% contribution to guarantee the farmer with the understanding that the interest rate element of the Agricultural Credit Guarantee Scheme Fund (ACGSF) is eliminated by the CBN. Mudarabah in essence means “Trust Loan” a smallholder farmer should be able to collect money from an Islamic bank based on trust without collateral, NAIC, NIRSAL IsDB, must be able to guarantee these smallholder farmers and ensure the optimal use of monitoring and evaluation to also safeguard depositors funds against outright risk defaults. In this regard, conventional banks that have more branch outlets must try to bridge the gap of inclusiveness for farmers whose financial needs rely on their norms and values of Islamic law in financial dealings. This will also boost economic activity participation in government programs channeled through conventional banks in addition to Islamic banks that will contribute to economic growth.

The World Bank and Islamic Development Bank as international financial institutions share the same structural gap that national financial institutions have to reach out financially to smallholder farmers. Unfortunately, the partnership of these financial institutions with the federal and state governments in Nigeria is not yielding any positive response in terms of the indicators of unemployment, poverty, and social inequality and so needs a paradigm shift from urban bias as Lipton argued to financing agriculture in the rural areas is important. With the lack of finance from these institutions, private funding becomes inevitable with "Asusu" an informal coping strategy for smallholder farmers to meet their financial obligations in providing their physiological needs. However, the exploitation of farmers by private companies that provide financial services and agricultural input is another challenge smallholder farmers face. At harvest time, smallholder farmers are left with little or nothing after paying back their private financiers with the bags of produce which limits their growth.

The non-debt instrument is critical to the development of the agricultural sector and relies on the heavy use of (Takaful) insurance, (Ijarah) leasing, and (Sukuk) equities. Commercial banks in partnership with NAIC and NIRSAL have not been able to cover the insurance of the funds given to lucky smallholder farmers, for instance, NAIC insurance covers farm goods but hardly insures the loan to smallholder farmers. In addition, smallholder farmers are not adequately guaranteed to access loans because of the lack of structures secondly, the amount of N100,000 Naira earmarked for smallholder farmers to access without collateral is not sufficient to make an impact on a hectare or two of farmland because of the high cost of agricultural inputs like fertilizer, pesticides and herbicides and labor cost. While the government plays a role in public funding to the agric-sector, there is a neglect of leasing on the part of the government in terms of tractorization, and equipment to the smallholder farmers to repay the cost of machinery and equipment over a long-term period, while the repayment plan due to interest rate charge may be a challenge to farmers, the government should look into the Islamic (Ijarah) leasing where rentals that are paid are derived from the income on the investment itself using these types of machinery and equipment. The IsDB (Sukuk) capital market funds investment in Nigeria is towed towards urban bias on infrastructural development rather than production in the agriculture sector. And the CBN provides public funding for electricity in Nigeria, unfortunately, the privatization of the energy sector has made electricity unavailable and expensive with the government subsidizing the lack of private sector funding in the agreement. This in addition to private financial institutions, not financing smallholder farmers 'need for alternative energy sources having an overall effect on economic and human growth, and a need for a paradigm shift through regulation of the sector is critical. The private sector funding for non-debt instruments must focus on the agricultural associations and cooperative associations to reorient themselves and strengthen social coping in the absence of finance in the agricultural sector to fund their agricultural activities emphasizing leasing and savings to move away from conflict-related issues related to lack of finance as Marx argued. In the context of this paper, the understanding of a conventional economy relies on the economic activities of demand and supply of goods and services rather than sustainable mass production. The emphasis is given to ***Capital + Labor + Interest = Profit*** not only affects the adequate supply of goods but also contributes to price increases that affect relative or absolute poverty and social inequality based on the collateral and interest nominal value attached to the business. For instance, the covid - 19 pandemic affected businesses, which affected the supply and demand for goods and income. On the other hand, the Islamic understanding of the economy relies on sustainable production supported by adequate financing to ensure an adequate supply of goods and services thereby keeping prices of goods and services low and affordable with assured employment based on ***Capital + Labor + Risk = Profit and Loss.*** Islamic sources of finance are guided by divine laws to ensure social equity and redistributive justice within the overall social system using the mode of financing in the agri-value chain which is not optimally utilized.

Accepting this unambiguous fact that norms differ between the conventional and Islamic institutions, the perception of society about these financial institutions also differ, and with a further need to understand these norms, one may argue that their lack of the degree of conformity allows farmers to cooperate with consensus or compete in conflict with financial institutions to meet financial needs for empowerment. Also one may argue that the degree of clarity of norms where financial institutions do not adhere to laid down rules and expectations of the society is also lacking. The visibility of deviance where the actions or inactions of these financial institutions and government agencies show their inability to operate in conformity to why they were established in the first place can be argued to be the cause of unemployment, poverty, and social inequality as we have it in Nigeria. The scope of areas covered by the norms where limitations will be drawn based on the framework must be adequately addressed to make similarities and understand differences that both conventional and Islamic banks can make collaborations, and the degree of reliability of sanctions where restriction or punishment is meted out on financial institutions or agents including smallholder farmers for abuse of agreements must be enforced to protect the financial institutions, smallholder farmers and the agriculture sector to ensure sustainable development. While Zakat as a pillar of Islam is neglected in its true form of it, the distribution pattern needs to be addressed to mitigate the social problem in Nigeria in such a way that the 2.5% tax on money, crop production, gold, and animals is adequately collected from the wealthy and properly distributed to the capable hand of the needy to ensure they are financially protected to contribute to economic activities to support their

families.

The focus of structural reform of financial institutions should be given to the transformation, merger, and collaboration of financial institutions to provide measures that can address these two fundamental questions why are there still existing issues for both financial systems in financing the agriculture sector for smallholder farmers in Nigeria? And what possible way can these financial systems adjust to ensure measures that provide financial inclusion for smallholder farmers in Nigeria?

3.0 Methodology

The methodology used for this research study is the quantitative method, with a closed and open-ended questionnaire as the instrument of data collection used to collect data. The expected targeted sample size is 663 (50%) and a cluster sampling technique was used to randomly distribute 39 questionnaires each across the 17 cluster groups, 562 responses were received from all other clusters except the World Bank (WB). The Expected Responses (ER) and the Actual Responses (AR) show a -17.9% sample error margin indicating a good sample size for this study because it is under the 20-80% accepted sample error Needham & Vaske (2008). This study was done on the error margin p-value of < .05 and a confidence level of 95%. Ordinary Least Square (OLS) linear regression was applied to find the causal relationship between the effects of the challenges of financing agriculture and the challenges of financing agriculture. The study also aimed at finding the causal relationship between the effects of the measures to mitigate the challenges of financing agriculture and the coping strategies adopted in financing agriculture. The (OLS) model was used to find the most effects on the relevant predictor variables of challenges and coping strategies.

4.0 Results

The Results show the background information of the socio-demographic characteristics and business activities of respondents and the result of the Ordinary Least Square (OLS) test for effects on the challenges of financing agriculture and the challenges to financing agriculture and the (OLS) results of the impact of the measures to mitigate the challenges of financing agriculture and the coping strategies adopted in financing agriculture in Nigeria.

Table 4.1

Summary of Socio-demographic Characteristics and Business Activities of Respondents in Kaduna State, Nigeria

		Frequency	Mean Score	Numbern
What is your age group?	15-24	30		
	25-34	113		
	35-44	197		
	45-54	130		
	55-64	77		
	65 above	15	3.28	562
What is your gender?	Male	437		
	Female	125	1.22	562
What is your religious faith?	Islam	341		
	Christianity	212		
	Traditional	7		
	Others	2	1.41	562
	Single	85		

		Frequency	Mean Score	Numbern
What is your marital status?	Married	451		
	Divorced	12		
	Separated	14	1.92	562
What is your nationality?	Nigerian	555		
	Dual Citizen	3		
	Resident in Nigeria	4	1.02	562
Where are your agricultural or agro activities or financial supervision domiciled within the zones in Kaduna State?	Northern Kaduna Zone 1	171		
	Central Kaduna Zone 2	178		
	Southern Kaduna Zone 3	191		
	Outside Kaduna Zone	22	2.11	562
What is your occupation?	Farmer	350		
	Agro processor	34		
	Convention Banker	36		
	Islamic Banker	41		
	Government Finance Agent	21		
	Government Regulatory Agent	22		
	Government Agricultural Agent	54		
	International Conventional Financial Agent	0		
	International Islamic Financial Agent	4	2.39	562
Which below is your place of work?	Jaiz Bank	45		
	Union Conventional Bank	44		
	Bank of Agriculture Government Financial Agency	36		
	Central Bank of Nigeria Government Regulatory Agency	15		
	Kaduna State Development Agency Government Agricultural Agency	47		
	World Bank International Conventional Financial Agency	0		

		Frequency	Mean Score	Numbern
	Islamic Development Bank International Islamic Financial Agency	2		
	Farm	327		
	Agro-Industry	46	6.37	562
Which of the do you patronize as a farmer, agro producer or supervise farmers as an agent?	Conventional Bank	92		
	Islamic Bank	178		
	Government Financial Agency	33		
	Government Agricultural Agency	39		
	Government Regulatory Agency	13		
	International Conventional Financial Agency	3		
	International Islamic Financial Agency	1		
	None	203	4.30	562
What is your level of education?	Islamic Education	50		
	Primary Education	27		
	Secondary Education	134		
	Tertiary Education	325		
	No formal Education	9		
	Skills Training	17	3.48	562
How much income do you make from your agricultural or agro businesses or how much income does the client you supervise make approximately a year?	$1-$500 (N530-N265,000)	178		
	$501-$1000 (N265,530-N530,000)	144		
	$1001-$1500(N530,530-N795,000)	94		
	$1501-$2000(N595-530-N1,060,000)	57		
	$2001 Above (N1,060,530)	89	2.53	562
What is your family size or the average family size of the client you supervise?	1-10	378		
	11-20	138		
	21-30	29		

		Frequency	Mean Score	Numbern
	31- Above	17	1.44	562
What is your farming or agro experience or your years of experience in supervising agricultural loans?	1-10	266		
	11-20	165		
	21-30	80		
	31-40	31		
	41- Above	20	1.89	562
What is your farm size or agro production level or the farm size you supervise?	1-10 ha/ton	389		
	11-20 ha/ton	100		
	21-30 ha/ton	35		
	31-40 ha/ton	12		
	41- ha/ton above	26		
	Option 6	0	1.55	562
What segment of agricultural business do you engage in as a farmer, agro-producer, or do you supervise?	food crop production	206		
	cash crop production	71		
	animal husbandry	14		
	Poultry	47		
	Fisheries	48		
	beekeeping	37		
	agro-processing	20		
	mixed farming	119	3.79	562
What food crop/s do you grow, process, or supervise?	Maize	230		
	Sorghum	8		
	Millet	7		
	cowpea beans	4		
	Vegetables	6		
	Rice	32		
	mixed crops	201		
	none of the above	74	4.46	562
What cash crops do you grow,	Ginger	95		

		Frequency	Mean Score	Numbern
process, or supervise?	soya beans	79		
	Cotton	21		
	Groundnuts	17		
	Wheat	8		
	mixed crops	149		
	none of the above	193	4.75	562
What type of animal/s do you rear, process, or supervise?	Cows	45		
	Sheep	61		
	Goats	76		
	Camels	2		
	mixed animals	143		
	Others	46		
	none of the above	189	4.83	562
What types of bird/s do feed, process or supervise?	Turkey	17		
	Geese	10		
	Ostrich	1		
	chicken	291		
	Quill	3		
	Dove	2		
	Ducks	9		
	mixed birds	67		
	none of the above	162	5.85	562
What type of fish/seafood do you produce, process, or supervise?	Tilapia	32		
	catfish	106		
	Tuna	1		
	Prawn	4		
	Crabs	3		
	Barracuda	1		
	Mixed Fish Farming	59		

		Frequency	Mean Score	Numbern
	None of the above	356	6.31	562
What type of honey beekeeping do you produce, process, or supervise?	Bee hone medicinal	39		
	Bee honey consumption	92		
	Bee honey for export	16		
	None of the above	415	3.44	562

The median age group of respondents falls between the age group of 25-44 years with a gender ratio of 1 female to 4 males. Most of the respondents are married and of Nigerian descent and are spread across the three geographical locations in Kaduna State. The respondents are predominantly farmers who engage in food crop production with an emphasis on maize production with mixed cash crops produced. The family size of the respondents is between 1-10 people who generally have 1-10 years of farming experience and farm size and agro production level of 1-10 ha/tons.

Table 4.2.0

Ordinary Least Square (OLS) Regression for Effects of the Challenges of Financing Agriculture and the Challenges of Financing Agriculture in Kaduna State, Nigeria

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	12.315	0.707		17.420	0.000
Interest rates charged by conventional institutions and government agencies?	0.213	0.133	0.063	1.603	0.109
Distance to financial institutions or agencies and farmers?	-0.233	0.127	-0.079	-1.835	0.067
Farmers lack access to finance in rural areas.	0.172	0.185	0.037	0.925	0.355
Lack of collateral to obtain a loan?	0.820	0.153	0.220	5.357	0.000
Managerial/ Government bureaucracy in financing agriculture?	0.638	0.167	0.153	3.827	0.000
Lack of guarantees and insurance limits access to agricultural loans?	0.224	0.160	0.056	1.402	0.161
CBN's lack of micro/macro-economic plan with unstable policies?	-0.158	0.144	-0.044	-1.097	0.273
Lack of finance for agricultural mechanization and irrigation technology?	0.572	0.168	0.139	3.414	0.001
High temperatures of climate change affect agricultural production through desertification, drought, and flooding.	0.140	0.144	0.038	0.971	0.332
Lack of monitoring and evaluation of agri - loans by	0.483	0.150	0.132	3.211	0.001

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
financial institutions?					
Unutilized use of Islamic mode of financing in the agri - value chain of Muzarah and Musaqat using mudarabah, Musharaka al-salam, ijarah, and takaful by Islamic financial institutions?	-0.107	0.141	-0.030	-0.755	0.451
Lack of WB, IsDB structures to finance smallholder farmers on a medium and long-term basis?	0.396	0.150	0.104	2.648	0.008
Privatization of the energy sector is a major challenge to agro manufacturing and the agricultural value chain.	0.585	0.144	0.166	4.071	0.000
a. Dependent Variable: Effect					

4.2.1 Unstandardized B Analysis for coefficient slope

Regression line = Yi = 12.315 + ***(Summation Xi)*** 3.745 = 16.06

Residual Sum of Square (RSS) on b = ***(Summation Xi Squared)*** = 3.745*2 = /7.490 = 2.736

Residual Sum of Square (RSS) = ***Standard Deviation Q2*** = 2.736

Mean Score of Challenges = 2.699 + Mean Score of Effects = 2.822 = 5.521/2 = 2.760

The Average Score of Challenges and Effects = 2.760

The Standard Deviation of 2.736 is close to the Average Mean Score of 2.760

No of Observations N = 562

Degree of freedom Residuals: 562 - (1 challenge +1 effect) = 560

Degree of freedom: Df calculated ***D.f = N - K***

Where N is the Sample Size Observed Numbers

Where K is the number of Variables + 1 (K-1 = 2-1 = 1)

Df of model: K -1 = 2 -1 =1

For one unit increase in the independent variable Interest rate charges of conventional banks and government agencies on the X axis, there is an increase in change of .213 units on the effects on the Y axis. For one unit increase change X axis for distance to financial institutions and agencies and farmers, there is a decrease change of -0.233 units of the effects on the Y axis indicating a correlation relationship not causal. A one-unit increase in the X axis for farmers 'lack of access to finance in the rural areas, there is an increase in change of .172 units on the effects on the Y axis. For one unit increase change in the X axis for lack of collateral to obtain a loan, there is an increase in change of .820 units on the effects on the Y axis. For one unit increase change in the X axis for Managerial/government bureaucracy in financing agriculture, there is an increase in change of .638 units of the effects on the Y axis. For one unit increase change on the X-axis for lack of guarantees and insurance that limits access to agricultural loans, there is an increase in change of .224 units of the effects on the Y-axis. For one unit increase change on the X axis for CBN micro/macroeconomic plan with unstable policies, there is a decrease in change of -0.158 of effect on the Y axis indicating there is a correctional relationship and not a causal one. A one-unit increase in change on the X axis for the lack of finance for agricultural mechanization and irrigation technology shows an increase in change of .572 units of the effects on the Y axis. With a one-unit increase in change on the X axis for the high temperatures of climate change, there is an increase in change of .140 units of the effects on the Y axis.

For one unit increase in change in the X axis for lack of monitoring and evaluation of agri-loans by financial institutions, there is an increase in change of .483 units of effects on the Y axis. For a one unit increase in change on the X-axis for of un-utilized use of the Islamic mode of financing agriculture using mudarabah, musharakah, ijarah, and takaful, there is a decrease in change of -.107 units of the effects on the Y-axis thus, indicating a correlational relationship and not a causal one. A one-unit increase in change on the X axis for the lack of WB and IsDB structures to finance smallholder farmers on a medium and long-term basis there is an

increase in change of .396 units of the effects on the Y axis and a one-unit increase in change on the X axis for privatization of the energy sector as a major challenge to agro manufacturing and the agricultural value chain, there is an increase in change of .586 units of the effects on the Y axis.

The lack of collateral to obtain a loan shows the inability of financial institutions, government agencies, and international financial institutions to effectively transform agriculture through financial accessibility.

4.2.2 Unstandardized Coefficient for Standard Error Analysis of Variables of challenges and Effects for OLS Data Set

SE_B = The sum total of the standard error **(.133 + .127 + .185 + .153* + .167* +.160 + .144 + .168* + .144 + .150* + .141 + .150* + .144*) = 1.948**. However, the standard error with p- a value of <.05 will be considered for the high impact of the dependent variable on the independent variable. **(.153 + .167 + .168 + .150 + 150 + .144) = 0.932**

Using the formula to calculate Standard Error Correlation: ***SD/ Summation (xi - X) Squared***

SE = 2.736/0.932 = 2.935 Squared = 1.713

According to Durbin-Watson standard error margin score of between 0 and, 2 indicates a positive autocorrelation between the variables of challenges and effects. The standard error margin for this data set is 1.713 against DW's calculated score of 1.750 which is lower than 2.000. This indicates a positive correlation between 1.50 - 2.50 of the variables.

4.3.3 Standardized Coefficients for Beta Analysis of OLS Data Set for Challenges and Effects of Financing Agriculture

The beta analysis contributes to the effects on the challenges with 22.0% of the effects on the challenge of the lack of collateral to obtain a loan followed by the effect on the privatization of the energy sector which is a major challenge to agro manufacturing. with 16.6%. Other results of the effects of the challenges include; managerial/government bureaucracy in financing agriculture with 15.3%, Lack of finance for agricultural mechanization and irrigation technology with 13.9%, and lack of monitoring and evaluation of Agri loans by financial institutions with 13.2%. The lack of WB and IsDB structures to finance smallholder farmers on a medium long-term basis affects the challenges with 10.4% while the distance from the financial institution and government agencies and farmers has a 7.9% effect on financing agriculture. The interest rates of conventional and government agencies have a 6.3% effect, the lack of guarantees and insurance limits access to agricultural loans have a 5.6% effect, and CBN's lack of micro/macroeconomic plans with unstable poles has a 4.4% effect. High temperatures of climate change affect agricultural production through desertification, drought and flooding have a 3.8% effect on the challenges, farmers 'lack of access to finance in the rural areas has a 3.7% effect and the un-utilized use of Islamic mode of financing in the Agri value chain has 3.0% effect of the challenges.

4.2.4 T-Value Analysis of OLS Data Set for Challenges and Effects of Financing Agriculture in Nigeria.

The difference in mean scores of challenges and effects divided by the standard error variation is the t-value. Based on the formula ***t = b/ SEb*** the t value is arranged in descending order of high to low scores.

The challenge of the lack of collateral to obtain a loan has Beta and Standard Error of
.820/.153 = **t value 5.359.** Privatization of the energy sector which is a major challenge to agro manufacturing has a Beta and Standard Error of .585/.144 = **t value 4.062**. Managerial/government bureaucracy in financing agriculture has a Beta and Standard Error of .638/.167 = **t value 3.820**. Lack of finance for agricultural mechanization and irrigation technology has a Beta and Standard Error of .572/.168 = **t value 3.404.** Lack of monitoring and evaluation of Agri loans by financial institutions has a Beta and Standard Error of .483/.150 = **t value 3.220**. The lack of WB and IsDB structures to finance smallholder farmers on a medium long-term basis has a Beta and Standard Error of ..396/.150 = **t value 2.640.** Distance from financial institutions, government agencies, and farmers has a Beta and Standard Error of -0.233/.127 = **t value -1.834**. Interest rates of conventional and government agencies have Beta and Standard Errors of
.213/.133 = **t value 1.601.** Lack of guarantees and insurance limits access to agricultural loans and has a Beta and Standard Error of .224/.160 = **t value 1.400**. CBN's lack of micro/macroeconomic plans with unstable policies has a Beta and Standard Error of -0.158/.144 = **t value -1.097**. High temperatures of climate change affect agricultural production through desertification, drought, and flooding and have a Beta and Standard Error of .140/.144 = **t value 0.972**. Farmers 'lack of access to finance in rural areas has a Beta and standard Error of
.172/.185 = **t value 0.929.** Un-utilized use of the Islamic mode of financing in the Agri value chain using mudarabah, musharakah, al-salam, ijarah, and takaful by Islamic financial institutions has a Beta and Standard Error of -.107/.141 = **t value -0.758.**

Summation b=3.745/ Summation SEb= 1.948= Summation t value 1.922

Summation of t value = 23.742/13 = 1.826

4.2.5

The study was conducted at Error Margin @.05 and the results were presented in ascending order with -
Lack of collateral to obtain a loan. Sig. p-value 0.000
Privatization of the energy sector is a major challenge to agro manufacturing. Sig. p-value 0.000

Managerial/government bureaucracy in financing agriculture. Sig. p-value 0.000
Lack of finance for agricultural mechanization and irrigation technology. Sig. p-value 0.001
Lack of monitoring and evaluation of Agri loans by financial institutions. Sig. p-value 0.001
The lack of WB and IsDB structures to finance smallholder farmers on a medium long-term basis. Sig. p-value 0.008
Distance from the financial institution and government agencies and farmers. Sig. p-value 0.067
Interest rates of conventional and government agencies. Sig. p-value 0.109
Lack of guarantees and insurance limits access to agricultural loans. Sig. p-value 0.161
CBN's lack of micro/macro-economic plans with unstable policies. Sig. p-value 0.273
High temperatures of climate change affect agricultural production through desertification, drought, and flooding. Sig. p-value 0.332
Farmers 'lack of access to finance in rural areas. Sig. p-value 0.355
Un-utilized use of Islamic mode of financing in the Agri value chain. Sig. p-value 0.451

4.3.0 Ordinary Least Square OLS Test for Impact of the Measures to Mitigate the Challenges of Financing Agriculture on the Coping Strategy Adopted in Financing Agriculture in Kaduna State, Nigeria
Table 4.3

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	17.666	1.214		14.553	0.000
	Do you think benevolence loans from banks?	-0.031	0.223	-0.007	-0.138	0.890
	Bank overdraft / Mudarabah or Musharakah	0.213	0.227	0.045	0.939	0.348
	Loans provided through guarantor and group guarantees?	-0.442	0.216	-0.088	-2.044	0.041
	Other jobs?	0.501	0.319	0.068	1.570	0.117
	Sales of other stocks like crops?	0.912	0.309	0.127	2.950	0.003
	Zakat	1.697	0.228	0.306	7.455	0.000
	Contribution from family members /friends	0.912	0.282	0.138	3.233	0.001
	Personal or group "Asusu"?	0.529	0.308	0.070	1.715	0.087
a. Dependent Variable: Measures						

4.3.1 Unstandardized B Analysis for coefficient slope
Regression line = Yi = 17.666 + ***(Summation Xi)*** 4.291 = 21.957
Residual Sum of Square (RSS) on b = ***(Summation Xi Squared)*** = 4.291*2 = /8.582 = 2.929
Residual Sum of Square (RSS) = ***Standard Deviation Q2*** = 2.929
Mean Score of Coping Strategy = 2.568 + Mean Score of Measures = 2.640 = 5.208/2 = 2.604
The Average Score of Coping Strategy and Measures = 2.604
The Standard Deviation of 2.929 varies 3 times close to the Average Mean Score of 2.604

No of Observations N = 562
Degree of freedom Residuals: 562 - (1 coping strategy +1 measure) = 560
Degree of freedom: Df calculated ***D.f = N - K***
Where N is the Sample Size Observed Numbers
Where K is the number of Variables + 1 (K-1 = 2-1 = 1)
Df of model: K -1 = 2 -1 =1
For one unit increase in change on the X axis for benevolence loans from banks as a coping strategy there is a decrease of -.031 units change of measures on the Y axis. For a one-unit increase change in coping strategy on the X axis for bank overdraft/ Mudarabah or Musharakah there is an increase in change of .213 units of measures on the Y axis. For a one-unit increase of coping strategy on the X axis for loans provided through guarantors and group guarantees there is a -0.442 units change of measures on the Y axis. For one unit increase change for other jobs on the X axis, there is an increase in change of .501 units of the (measures) on the Y axis. For a one-unit increase change of coping strategy on the X axis for sales of other stocks like crops, there is an increase in change of .912 units of the measures on the Y axis. For a one-unit increase change on the X axis for Zakat, there is an increase of 1.697 units change of the measures on the Y axis. For one unit increase change on the X axis for contribution from family members/friends as a coping strategy, there is an increase in change of .912 units of the measures on the Y axis, while for a one unit increase change on the X axis for personal or group "Asusu" as a coping strategy there is an increase in change of .529 units of the measures on the Y axis.

Zakat shows it's a strong coping strategy in the fight against the social problem and can provide funding to smallholder farmers and improve income through agricultural production.

4.3.2 Unstandardized Coefficient for Standard Error Analysis of Variables for Coping Strategy and Measures for OLS Data Set

SE_B = The sum of the standard error for the data set **(.223 + .227 + .216* + .319 + .309* + .228* + . 282* + .308) = 2.112.** However, the standard error with a p-value of <.05 will be considered for the high impact of the dependent variables on the independent variables **(.216 + .309 + .228 + .282) = 1.035**
Using the formula to calculate Standard Error Correlation: ***SD/ Summation (xi - X) Squared***
SE = 2.929/1.035 = /2.829 Squared = 1.681
Based on Durbin Watson's standard error margin score there is a positive autocorrelation. The DW's score of 1.681 is below 2.0 and falls between the DW test statistic values in the range of 1.5 to 2.5 which are relatively normal. The calculated error margin based on Durbin Watson is 1.625, below 2.000, and signifies a positive autocorrelation.

4.3.3 Standardized Coefficients for Beta Analysis of OLS Data Set for Coping Strategy and Measures in Financing Agriculture in Nigeria

Based on the Beta scores the results presented are in percentage descending order. Zakat as a coping strategy has a 30.6% contribution to the measures to mitigate financing agriculture in Nigeria. The contribution of friends/family as a coping strategy has a 13.8% contribution of the measures, while the impact of the measure on sales of stock like crops as a coping strategy has a 12.7% contribution. The coping strategy of loans provided through guarantors and group guarantees indicates that there is a negative 8.8% contribution to the measures of financing agriculture. Asusu on the other hand has a 7% impact on the measures while the impact of measures on other jobs as a coping strategy has a contribution of 6.8%. Bank overdraft/ Mudarabah and Musharakah as a coping strategy have an impact of 4.5% of the measures and benevolence loan from banks as a coping strategy has a negative impact of .7% of the measures.

4.3.4 T-Value Analysis of OLS Data Set for Coping Strategies and Measures of Financing Agriculture in Nigeria.

The difference in mean scores of challenges and effects divided by the standard error variation is the t-value. Based on the formula t = ***b/ SEb*** the t value is arranged in descending order of high to low scores. Zakat has a Beta and Standard Error of 1.697/0.228 = **t value 7.442**. The contribution from family/friends has a Beta and Stand Error of 0.912/0.282 = **t value 3.234**. The sales of other stocks like crops have a Beta and Standard Error of 0.912/0.309 = **t value 2.951**. Loans provided through guarantor/ group guarantees have a Beta and Standard Error of -0.442/0.216 = **t value 2.046**. Personal or group Asusu has a beta and Standard Error of 0.529/0.308 = **t value 1.717**. Other jobs have a Beta and Standard Error of 0.501/0.319 = **t value 1.570**. The Beta and Standard Error of Bank overdraft/Mudarabah or Musharakah is 0.213/0.227 = **t value 0.938** and Benevolence loan from banks has a Beta and Standard Error of -0.031/0.223 = **t value -0.139**.
Summation b=4.291/ Summation SEb= 2.112 = Summation t value 2.031
Summation of t value = 15.68/8 = 1.960

4.3.5 P-Value Description

The study was conducted at Error Margin @.05 and the results were presented in ascending order with -
Zakat Sig. p-value 0.000
Contribution from family members/friends Sig. p-value 0.001

Sales of other stocks like crops Sig. p-value 0.003
Loans provided through guarantors and group guarantees Sig. p-value 0.041
Personal or group "Asusu" Sig. p-value 0.087
Other jobs Sig. p-value 0.117
Bank overdraft/ Mudarabah or Musharakah Sig. p-value 0.348
Benevolence loan from banks Sig. p-value 0.890
The expected responses = 663
The observed responses = 562
The sample size error margin = 562-663/562*100 = -17.97%
n = 562 is accepted because the sample size error margin is less than 20%.

5.0 Discussion

From the results of this study, the effects of the challenges of financing agriculture have shown that there is a profound effect on the lack of collateral to obtain a loan as a challenge which explains why smallholder farmers find it difficult to access loans in private financial institutions and public government agencies as shown by Oyaniran & Omomia (2022) and Isa & Terengwa (2011) who argued that financial institutions and government agencies avoid extending loans to the agriculture sector because of the high-risks involved in safeguarding depositors funds without collateral. In addition, the paradigm shift from agriculture to oil and gas in Nigeria also explains the decline of agriculture as argued by Emediegwu & Okeke (2017). The result also shows that privatization of the energy sector is a major challenge to agro-manufacturing and economic growth because of the inability of the government and the private sector to provide sustainable electricity to contribute to agro-manufacturing and local content production of mechanization to sustain the agricultural value chain. The sustainable power supply propels business activities the study by Emmanuel, Bawa, & Abdullahi (2022) has indicated that mechanization technology affects yield output and without a stable power supply, high yield loss due to lack of mechanization technology will increase which will also affect the sustainability of the agricultural value chain due to lack of agro manufacturing industries. A causal relationship between the effects of the challenges and the managerial/government bureaucracy in financing agriculture indicates that there is a need to improve the process of disbursement of funds to smallholder farmers and for smallholder farmers to effectively utilize funds disbursed to them and repay as Abdullahi & Gupta (2022) indicated. The lack of interest by the federal, state, and local governments including international financial institutions to invest in the agriculture sector due to bureaucratic bottlenecks and lack of structure formation clearly shows that partnering with the government to disburse funds in government agencies and private and international financial institutions are still challenging as attested by Bezemer & Headey (2007). This can also be argued to account for the exclusion of smallholder farmers elaborated by the world bank and Islamic development bank as explained by OECD, (2020). Furthermore, the effects of the challenges of the lack of finance for agricultural mechanization and irrigation technology explain the effects on yield output and income of smallholder farmers as Emmanuel, Bawa, & Abdullahi (2022) and also Shakya, Bain, & Badal (2015) attested to. The lack of monitoring and evaluation of Agri loans by financial institutions have shown that government agencies and private financial institutions do not have indicators to measure the performance of funds disbursed from private financial institutions and public agencies and their impact on the physiological needs of smallholder farmers and the contribution of agricultural development to the GDP and GNP respectively as Mubaraq (2021) argued, and with the importation of food, for instance, there is a clear testimony that government funds like ACGSF, NIRSAL, BOA, CADF, CACS are not monitored to due to lack of management of resources to achieve the desired goals in the agriculture sector as indicated by Oyaniran & Omomia (2022). The challenge of lack of WB and IsDB structures to finance smallholder farmers on a medium long-term basis has shown the significance of these structures in supporting financing agriculture away from the status quo partnership with federal and state governments to achieve financial inclusion of smallholder farmers as reported by OECD, (2020). The result also shows that the distance between the financial institution and government agencies and farmers as a challenge in financing agriculture is correlational and not causal, therefore this explains the decrease of the effects arguably because of the coping strategies adopted by smallholder farmers in the rural areas. The result shows that Interest rates of conventional and government agencies as a challenge explain why the level of participation in Islamic banks is higher than in conventional banks can be related to the norms and values to adhere to the jurisprudence of Islamic finance in the use of "usury" interest for a sizable Muslim population. The lack of guarantees and insurance limits access to agricultural loans explains the inability of NAIC, NIRSAL, and private insurance companies to provide insurance coverage and guarantee smallholder farmers making their exclusion from financial institutions inevitable. The CBN's lack of micro/macroeconomic plans with unstable policies has a correlational effect and is not causal and this can be argued to show that other coping strategies to reduce the challenges of lack of participation in government agricultural programs as argued by Li (2018) and Gerhardt (1979). High temperatures of climate change affect agricultural production through desertification, drought, and flooding as

Abdullahi & Gupta (2022) argued with high loss of farm produce every year. The effect of farmers 'lack of access to finance in rural areas as a challenge can be argued to be a result of high-risk defaults and the lack of structures as indicated also by Abdullahi & Gupta (2022), while the un-utilized use of the Islamic mode of financing in the Agri value chain has a correlational effect indicating other possible coping strategies to financing agriculture by smallholder farmers amid challenges of agricultural finance from Islamic financial institutions as argued by OECD, (2020).

The results of the measures on the coping strategies indicate that Zakat as a coping strategy has a high impact on the measures indicating that providing a central zakat fund will go a long way in mitigating the problem of financing agriculture as indicated by OECD, (2020). The contribution from friends/family as a coping strategy indicates that there is a need to provide mitigation that will have an impact on financing agriculture through administrative and political coping as argued by Li (2018), while sales of stock-like crops as a coping strategy to address smallholder farmers psycho- physiological financing needs will provide measures that can mitigate financing and reduce conflicts in society as indicated by Gerhardt (1979). While the loans provided through guarantors and group guarantees as a coping strategy indicate a correlational relationship not causal, financial institutions and government agencies like NAIC, and NIRSAL must make efforts towards financing agriculture through the non-debt financial instruments to address smallholder farmers 'problems of financing agriculture. This, however, shows that other coping strategies are applied to guarantee smallholder farmers as Abdullahi & Gupta (2022) argued. Personal or Group Asusu can as a coping strategy has an impact on the measures to provide smallholder farmers in terms of savings to address the lack of guarantor and group guarantees from financial institutions and agencies, while other jobs also serve as a coping strategy as presented by Bhata & Miyeki (2021). Bank overdraft/ Mudarabah and Musharakah as coping strategies have a positive effect on the measures indicating that transforming conventional banks to operate Islamic windows will provide financial inclusion and Islamic financial institutions takeover of conventional financial institutions will provide financial stability in medium long-term agriculture financing as reported by OECD, (2020). Benevolence loans from banks as a coping strategy have a correlational relationship and are not causal with the measures. This indicates also that banks rarely provide smallholder farmers with benevolence loans most especially in Islamic banks and as such farmers rely on other coping strategies like personal or group Asusu to finance their agricultural activities as argued by Abdullahi & Gupta (2022).

6.0 Conclusion

This study highlights the challenges with high effects of the challenges of conventional and Islamic sources of financing agriculture. The lack of collateral to obtain a loan from financial institutions and agencies must be restructured to engage smallholder farmers in accessing agricultural loans on a medium long-term basis. The privatization of the energy sector is a challenge to agro manufacturing and without smallholder funding for alternative energy sources and a sustainable electricity supply, the agro-manufacturing industries will not support economic growth within the agricultural value chain. The managerial and government bureaucratic bottleneck in financing agriculture limits access to finance for smallholder farmers and the process must be improved for financing agriculture to be efficient and effective. The lack of finance for mechanization and irrigation technology is a challenge to financing agriculture that contributes to the low-yield output and financing local content production must enhance to achieve high-yield output. In addition, the lack of monitoring and evaluation of agri loans contributes to the behavior of smallholder farmers' non-repayment attitude and institutional agents' exclusion of actively targeted smallholder farmers, including the diversion of agricultural funds. The lack of WB and IsDB structures to reach out to smallholder farmers affects the financial exclusion of smallholder farmers in financing agriculture and reorganizing the partnership between the WB and IsDB and the federal and state government will go a long way in providing smallholder farmers accessibility in the rural areas.

The impact of measures on the coping strategies provides insight into a meta-analysis to provide solutions through a process model. Zakat as a coping strategy has a high effect on the measures, and establishing a central Zakat fund will contribute to new knowledge on how to provide a measure to mitigate the challenges of financing agriculture because it does not require any collateral from farmers to access the zakat fund. The contribution from family members and friends, sales of other stocks like crops, personal or group asusu, other jobs, and bank overdraft/ mudarabah and musharakah as coping strategies have a positive effect or impact on the measures and suggest that Islamic banks' takeover of conventional banks and conventional banks transformation of their operations to include Islamic mode of financing agriculture to provide financial inclusion of smallholder farmers and stability in medium and long term finance for agriculture. This will ensure the elimination of interest rates in conventional banks and collateral for both conventional and Islamic sources of financing agriculture. These problems and coping strategies are associated with structural-functional issues in conventional and Islamic financial institutions, government agencies, and international financial institutions. In mitigating challenges and coping strategies, reorganization and reorientation in the structure and process of financial institutions and government agencies must be achieved to improve financing agriculture and agricultural development.

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