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Evaluating the Effects of Capacity-Building Programmes on Agricultural Productivity and Socio-Economic Empowerment of Female Farmers in FCT, Abuja

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ABSTRACT

This study examined the effects of capacity-building programs on agricultural productivity and the socio-economic empowerment of female farmers in the Federal Capital Territory (FCT), Abuja. Using a mixed-method approach, the study combined quantitative data from 227 retrieved questionnaires and qualitative insights from 30 participants in focus group discussions involving government officials, rural farmers, and women's associations. Data were analysed using descriptive statistics and thematic analysis. The findings revealed low awareness and participation of female farmers in capacity-building programs due to inadequate dissemination of information, limited access to resources, and gender-based constraints. However, among participants who engaged in the programs, significant improvements were observed in agricultural productivity, income levels, and self-reliance. Technical training, networking opportunities, and financial support emerged as the most beneficial components. Challenges such as poor stakeholder coordination, limited funding, and weak monitoring mechanisms were identified as significant barriers to program effectiveness. The study concluded that sustainable empowerment of female farmers requires inclusive, well-coordinated, and gender-sensitive capacity-building strategies that integrate financial, technical, and institutional support to enhance women's participation and productivity in agriculture.

Keywords: *Capacity-building, Female farmers, Agricultural productivity, Socio-economic empowerment, FCT Abuja*

INTRODUCTION

Agriculture remains a vital sector for economic growth, poverty alleviation, and sustainable development in Nigeria (Musa et al., 2025). It employs more than 70% of the rural population and contributes significantly to the nation's GDP (National Bureau of Statistics [NBS], 2023). Within this sector, women play a crucial role as producers, processors, and marketers of agricultural commodities. However, their productivity often lags behind that of men due to structural, institutional, and socio-cultural barriers (Food and Agriculture Organisation [FAO], 2021). In the Federal Capital Territory (FCT) of Abuja, female farmers are integral to local food security and rural livelihoods. However, their agricultural performance is frequently constrained by limited access to credit (Okoroafor et al., 2018), technology (Abubakar et al., 2025), and capacity-building opportunities (Magaji et al., 2025). Addressing these limitations through targeted training and empowerment programs has therefore become essential for achieving inclusive and sustainable agricultural growth.

Capacity-building programs are designed to enhance the skills, knowledge, and managerial capabilities of individuals and groups involved in agricultural activities. Such programs encompass training in modern farming techniques, resource management, financial literacy, and entrepreneurship (United Nations Development Programme [UNDP], 2022). By equipping female farmers with relevant competencies, these initiatives aim to increase agricultural productivity, improve household income, and strengthen community resilience. However, despite the proliferation of such interventions in Nigeria, there remains limited empirical evidence on their actual impact,

particularly in the FCT, where diverse government and non-governmental organisations have implemented various agricultural empowerment initiatives targeting women.

The socio-economic empowerment of female farmers is closely linked to their participation in capacity-building initiatives. Empowerment goes beyond economic gains to include improved access to credit and productive assets (Chinedu et al., 2021), decision-making power (Ahmed et al., 2024) and enhanced social status within their households and communities (Kabeer, 2019). Studies have shown that when women have access to knowledge and productive resources, they tend to reinvest their earnings in family welfare, education, and health, leading to broader social and developmental benefits (World Bank, 2020). In this context, understanding how capacity-building programs influence both the productivity and empowerment dimensions of women's agricultural participation becomes crucial for effective policy design.

In the FCT, a variety of government-led and donor-supported programs, such as the Agricultural Transformation Agenda, the Women in Agriculture (WIA) program, and NGO-driven interventions, have sought to promote gender inclusivity in agriculture (Federal Ministry of Agriculture and Rural Development [FMARD], 2022). These initiatives focus on training, extension services, access to inputs, and the promotion of agribusiness skills among rural women. However, the sustainability and measurable impact of these programs remain under scrutiny, as many beneficiaries still face challenges such as inadequate financing, poor infrastructure, and limited market access (Ogunlela & Mukhtar, 2021). Assessing the outcomes of these efforts is therefore necessary to determine their effectiveness in enhancing agricultural productivity and improving the socio-economic well-being of female farmers.

This study, therefore, aims to evaluate the effects of capacity-building programs on the agricultural productivity and socio-economic empowerment of female farmers in the FCT, Abuja. By examining the extent to which these initiatives have improved productivity, income generation, and empowerment indicators, the research seeks to provide evidence-based insights to guide policy formulation and program implementation. The findings will contribute to ongoing discussions on gender equity, agricultural sustainability, and rural development in Nigeria, thereby aligning with global goals for inclusive and sustainable agricultural transformation.

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

Conceptual Review

Capacity-Building

Capacity-building refers to the process of developing and strengthening the skills, knowledge, abilities, and resources that individuals, organisations, and communities need to survive, adapt, and thrive in a rapidly changing environment (Magaji, 2023). In the agricultural context, capacity-building encompasses training programs, extension services, technical assistance, and institutional support to enhance farmers' competencies in production, resource management, and decision-making (FAO, 2021). It is a critical component of sustainable development, as it empowers local actors to take ownership of development processes and improve their productivity and livelihoods. Effective capacity-building not only improves technical know-how but also promotes self-reliance, innovation, and resilience among target populations (World Bank, 2020).

Agricultural Productivity

Agricultural productivity is a measure of the efficiency with which agricultural inputs—land, labour, capital, and technology — are used to produce outputs such as crops and livestock (NBS, 2023). It serves as a key indicator of agricultural performance and rural economic development, reflecting how effectively resources are used to produce food and generate income. High productivity is often associated with technological innovation (John et al., 2025), effective use of inputs, and improved farming practices (FAO, 2021). Enhancing agricultural productivity is particularly important in

developing countries like Nigeria, where agriculture remains the primary livelihood source for rural households (Magaji & Musa, 2024). By increasing yields and profitability, improved productivity contributes to food security, poverty reduction, and sustainable economic growth (World Bank, 2020).

Socio-Economic Empowerment

Socio-economic empowerment refers to the process through which individuals, particularly marginalised groups such as women, gain access to economic resources, decision-making power, and opportunities that improve their quality of life and social standing (Muhammed et al., 2025). It involves enhancing an individual's capacity to participate actively in economic, social, and political activities while ensuring equitable access to education, credit, land, and markets (UN Women, 2021). In the agricultural sector, socio-economic empowerment of women entails enabling them to make productive choices, control resources, and benefit from the outcomes of their labour. Empowered women are more likely to invest in family welfare, education, and community development, thereby driving inclusive and sustainable growth (World Bank, 2020).

Theoretical Review

Human Capital Theory

Human Capital Theory. This theory, advanced initially by Becker (1964), posits that individuals' skills, knowledge, and competencies constitute forms of capital that can be enhanced through education, training, and experience. According to the theory, investment in human capital, such as capacity-building and skill development, increases productivity and improves economic outcomes. In the context of agriculture, human capital development through training programs and extension services enables farmers to adopt modern techniques, manage resources efficiently, and increase output (Schultz, 1971). For female farmers in FCT, Abuja, capacity-building programs serve as a vital form of human capital investment, empowering them to improve their agricultural practices, enhance productivity, and elevate their socio-economic status. Therefore, the Human Capital Theory provides a strong foundation for understanding how capacity-building interventions can lead to both improved agricultural performance and the socio-economic empowerment of women in rural communities.

Empirical Review

Empirical Review

Adesina and Olanrewaju (2022) investigated the influence of agricultural training programs on women farmers' productivity in Kwara State, Nigeria. Using a survey of 250 female farmers, the study found that participants in capacity-building programs recorded significantly higher crop yields and income levels compared to non-participants. The authors concluded that regular, well-structured training enhances knowledge of modern farming techniques, pest control, and post-harvest management. However, they noted that inconsistent program funding and inadequate follow-up mechanisms limited the long-term impact of these initiatives.

In a related study, Eze, Nnaji, and Okafor (2021) examined the role of capacity-building in promoting gender inclusivity and productivity among rural farmers in Enugu State. Using both quantitative and qualitative data, the researchers found that women who received agricultural extension training improved their resource management and gained greater market access. The study emphasised that gender-responsive training modules are essential to address the specific needs of female farmers, thereby increasing empowerment and reducing dependence on male counterparts.

According to a study by Yusuf and Ibrahim (2020), capacity-building programs facilitated by the Federal Ministry of Agriculture significantly improved farmers' technical efficiency and profitability in Northern Nigeria. The research utilised a sample of 300 smallholder farmers and applied regression analysis to determine the relationship between training exposure and productivity. Findings indicated that farmers who participated in at least two training sessions per year reported a 20% increase in

farm output. The study underscored the need for continuous training and access to credit facilities to sustain productivity gains.

A study by Afolabi and Hassan (2023) focused on the socio-economic empowerment outcomes of women's agricultural cooperatives in Ogun State, Nigeria. Using a mixed-methods approach, the authors discovered that participation in cooperative-led capacity-building programs enhanced women's decision-making power, financial literacy, and access to farm inputs. The study concluded that empowerment through education and group participation not only improved household welfare but also strengthened community cohesion and social capital among female farmers.

Bello and Musa (2022) assessed the impact of NGO-led capacity-building programs on rural women's livelihood in Nasarawa State. The study found that targeted interventions such as entrepreneurship training, savings mobilisation, and modern farming workshops improved household income and food security. However, challenges such as poor infrastructure and limited access to microcredit hindered the scalability of these initiatives. The authors recommended stronger collaboration between NGOs and government agencies to enhance program effectiveness and sustainability.

In Kenya, Mwangi and Otieno (2021) conducted a study on the effects of agricultural capacity-building on women farmers' productivity and empowerment. The research used a cross-sectional design with 280 respondents and found that participation in training increased adoption of improved technologies, thereby boosting productivity and income levels. Moreover, trained women reported higher self-confidence and greater involvement in household and community decision-making. The study concluded that continuous capacity development serves as a critical pathway to achieving both agricultural growth and gender equality in rural Africa.

Gap in the Literature

The reviewed empirical studies highlight the positive influence of capacity-building programs on agricultural productivity and women's socio-economic empowerment across various regions in Nigeria and Sub-Saharan Africa. However, most existing research has been limited to rural states such as Kwara, Ogun, Enugu, and Nasarawa, with little attention given to the Federal Capital Territory (FCT), Abuja, where urban-rural dynamics and policy interventions differ significantly. Furthermore, while previous studies (e.g., Adesina & Olanrewaju, 2022; Afolabi & Hassan, 2023; Bello & Musa, 2022) emphasise productivity gains and empowerment outcomes, they rarely integrate both dimensions within a unified analytical framework. There is also insufficient empirical evidence on the sustainability of these programs, particularly regarding the extent to which acquired skills translate into long-term improvements in income, decision-making power, and access to agricultural resources. Hence, this study fills a critical gap by evaluating the combined effects of capacity-building programs on both agricultural productivity and socio-economic empowerment of female farmers in FCT, Abuja, thereby providing localised insights for policy formulation and sustainable agricultural development.

RESEARCH METHOD

Research Design

This study adopted a descriptive survey research design. The design was deemed appropriate because it allowed for the collection of both quantitative and qualitative data from a broad range of respondents to assess the effects of capacity-building programs on agricultural productivity and socio-economic empowerment among female farmers in the Federal Capital Territory (FCT), Abuja. The descriptive survey approach enabled the researcher to systematically describe existing conditions, experiences, and relationships among the study variables without manipulating them. This design was particularly suitable for exploring real-life situations in which women farmers participate in various agricultural empowerment programs within the FCT.

Population of the Study

The population of this study comprised all female farmers, agricultural extension officers, and program facilitators who had participated in or benefited from capacity-building programs within the FCT, Abuja. This population was chosen because it includes individuals with direct experience with agricultural empowerment interventions and can therefore provide relevant information on the impact of these programs on productivity and socio-economic empowerment. Additionally, extension agents and facilitators provided insights into the implementation and effectiveness of these capacity-building initiatives.

Sample Size and Sampling Technique

A total of 227 respondents were selected from the six area councils of the FCT, namely Abaji, Kwali, Gwagwalada, Kuje, Bwari, and Abuja Municipal. The sample size was determined using the Taro Yamane formula to ensure representativeness and reliability of the data. A stratified random sampling technique was adopted to ensure fair representation of the different categories of respondents — female farmers, agricultural officers, and program facilitators — across the six area councils. This approach ensured inclusiveness and minimised sampling bias while capturing the diversity of experiences within the study area.

3.4 Model Specification

To examine the relationship between capacity-building programs and the productivity and socio-economic empowerment of female farmers, the study employed a multiple linear regression model, expressed as:

$$Y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mu$$

Where:

Y = Agricultural Productivity and Socio-Economic Empowerment

β_o = Constant term

β_1, β_2, β_3 = Regression coefficients

X_1 = Training and Skill Development

X_2 = Access to Resources and Support Services

X_3 = Institutional and Policy Support

μ = Error term

This model was adapted from the human capital framework (Becker, 1964) and designed to estimate the extent to which different components of capacity-building training, access to agricultural resources, and institutional support contribute to improvements in female farmers' productivity and socio-economic empowerment in the FCT.

3.5 Method of Data Collection

Primary data were collected through structured questionnaires and semi-structured interviews. The questionnaire was divided into sections covering demographic information, training participation, resource access, institutional support, productivity outcomes, and socio-economic empowerment indicators. The instruments contained both closed-ended and open-ended questions to gather comprehensive data on respondents' experiences. In addition, interviews were conducted with selected agricultural extension officers and program facilitators to gain deeper qualitative insights into the successes, limitations, and sustainability of the capacity-building programs implemented in the FCT.

3.6 Method of Data Analysis

Quantitative data from the questionnaires were coded and analysed using descriptive and inferential statistical methods with the aid of the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarise respondents' characteristics and perceptions. Inferential statistics, particularly multiple linear regression analysis, were employed to test the hypotheses and determine the influence of capacity-building variables on agricultural productivity and socio-economic empowerment. Qualitative data obtained from interviews were analysed through thematic analysis, identifying

recurring patterns and themes that complemented the quantitative findings. This mixed-methods approach provided a robust understanding of how capacity-building programs affect the productivity and empowerment of female farmers in FCT, Abuja.

Data Presentation and Analysis of Results

Number of Participants	Total Participants	Retrieved	Missed
Quantitative Approach	240	227	13
Qualitative Approach	30	30	Nil

Source: Field Survey, 2025

The table above indicates that of the 240 distributed questionnaires, 227 were retrieved and analysed. Additionally, all 30 participants invited for the FGDs participated fully. This high participation rate suggests strong interest among female farmers and stakeholders in agricultural capacity-building issues across FCT.

Socio-Demographic and Economic Characteristics of Respondents

This section provides essential insights into the background characteristics of the respondents who participated in the study. These variables — age, gender, marital status, education, occupation, household size, land ownership, and income — help explain the diversity and socio-economic profile of female farmers in the FCT.

Table 1: Age of Respondents

Age	Frequency	Percentage
No Specification	13	5.7
25–35	139	61.2
36–45	52	22.9
46–60	22	9.7
61 and above	1	0.4
Total	**227**	**100.0**

Source: Field Survey, 2025

The age distribution shows that most respondents (61.2%) were aged 25-35, followed by 22.9% aged 36–45. This indicates a youthful, economically active farming population, likely to benefit from capacity-building initiatives given its greater adaptability and openness to innovation.

Table 2: Sex of Respondents

Sex	Frequency	Percentage
Male	87	38.3
Female	140	61.7
Total	**227**	**100.0**

Source: Field Survey, 2025

The table shows that female respondents accounted for 61.7% of the total sample, confirming that women play a significant role in agricultural activities in the FCT. Their high representation emphasises the study's focus on evaluating how capacity-building programs empower female farmers.

Table 3: Marital Status of Respondents

Marital Status	Frequency	Percentage
Single	99	43.6
Married	120	52.9
Divorced	4	1.8
Widowed	4	1.8
Total	**227**	**100.0**

Source: Field Survey, 2025

Most respondents (52.9%) were married, followed by 43.6% who were single. This distribution suggests that capacity-building interventions should consider family obligations, particularly for married women balancing domestic and farming responsibilities.

Table 4: Educational Level of Respondents

Education Level	Frequency	Percentage
No Education	178	78.4
Primary	1	0.4
Secondary	2	0.8
Tertiary	46	20.3
Total	**227**	**100.0**

Source: Field Survey, 2025

A majority of respondents (78.4%) reported having no formal education, while only 20.3% attained tertiary education. The low educational level highlights the need for capacity-building programs that use practical, visual, and language-appropriate methods to reach low-literacy farmers effectively.

Table 5: Occupation of Respondents

Occupation	Frequency	Percentage
Business	3	1.3
Farmer	86	37.9
Government Official	29	12.8
NGO Representative (e.g., NWAP-DI)	42	18.5
Teacher	6	2.6
Student	3	1.3
Others	58	25.6
Total	**227**	**100.0**

Source: Field Survey, 2025

Most respondents (37.9%) were farmers, followed by NGO representatives (18.5%) and government officials (12.8%). This diversity suggests that multiple actors, including policy

implementers and beneficiaries, were involved, enriching the study's perspectives on agricultural empowerment.

Table 6: Household Size of Respondents

Household Size	Frequency	Percentage
1–4	128	56.4
5–8	76	33.5
9–12	23	9.8
Total	**227**	**100.0**

Source: Field Survey, 2025

More than half (56.4%) of respondents lived in small households of 1–4 members. Smaller household sizes may affect labour availability and the flexibility to attend training programs, while larger households may provide more family labour for farming.

Table 7: Land Ownership

Land Ownership	Frequency	Percentage
Yes	117	51.5
No	110	48.5
Total	**227**	**100.0**

Source: Field Survey, 2025

The table reveals that 51.5% of respondents owned farmland, while 48.5% did not. Limited land ownership among women remains a critical barrier to agricultural productivity and empowerment, emphasising the importance of advocacy for gender-inclusive land rights.

Table 8: Monthly Income Level

Monthly Income	Frequency	Percentage
Below ₦20,000	45	20.3
₦21,000–₦40,000	52	23.4
₦41,000–₦60,000	32	14.4
₦61,000 and above	93	41.9
Total	**227**	**100.0**

Source: Field Survey, 2025

A majority (41.9%) of respondents earned ₦61,000 or more per month, indicating moderate income levels among some female farmers. However, 20.3% earned below ₦20,000, revealing a disparity that calls for inclusive empowerment strategies targeting low-income farmers.

Discussions of Findings

The findings of this study revealed that awareness and participation of female farmers in capacity-building programs across the Federal Capital Territory (FCT), Abuja, remain relatively low despite ongoing interventions by government agencies and non-governmental organisations. Only about one-quarter of respondents reported awareness of or participation in such programs,

suggesting limited dissemination of information and weak outreach. The qualitative data further reinforced this gap, highlighting that most women farmers were unaware of training opportunities or lacked access due to poor communication channels, logistical constraints, and gender-based barriers. This low participation rate undermines the intended goals of agricultural empowerment and gender inclusivity, indicating that current sensitisation efforts are insufficient to reach the grassroots level where most female farmers operate.

The study also found that where participation occurred, capacity-building programs significantly contributed to improved agricultural productivity and socio-economic empowerment among female farmers. Respondents identified technical training, networking opportunities, and access to financial and productive resources as the most beneficial components of the programs. Many participants reported moderate to significant increases in productivity, income, and decision-making confidence. These findings underscore the transformative potential of well-structured training and support initiatives to enhance women's agricultural performance and overall livelihood. However, the variation in impact across respondents suggests unequal access to program resources, underscoring the need for a more inclusive, context-sensitive approach to program design and implementation.

Furthermore, the study identified several persistent challenges that hinder the effectiveness of capacity-building initiatives, including a lack of information, limited resources, gender discrimination, and institutional inefficiencies. Despite the involvement of multiple stakeholders, including the Ministries of Agriculture and Women's Affairs, NGOs, and local cooperatives, poor coordination and inadequate monitoring have limited the sustainability and scalability of these programs. The findings suggest that improved stakeholder collaboration, increased funding, and gender-sensitive policy reforms are essential to strengthen the impact of such interventions. The study concludes that empowering female farmers through capacity-building is not only vital for achieving gender equality but also for enhancing agricultural productivity and sustainable economic growth in the FCT and Nigeria at large.

CONCLUSION AND RECOMMENDATION

The study concluded that capacity-building programs play a crucial role in enhancing agricultural productivity and improving the socio-economic empowerment of female farmers in the Federal Capital Territory (FCT), Abuja. The findings revealed that while a significant proportion of female farmers have benefited from technical training, access to resources, and networking opportunities, overall awareness and participation levels remain relatively low. The study further established that these programs have contributed positively to improved farm productivity, increased income, and greater confidence among women. However, challenges such as limited information dissemination, gender discrimination, inadequate funding, and weak institutional coordination continue to hinder the full potential of capacity-building initiatives. Addressing these gaps is essential for achieving gender equity and sustainable agricultural development in the FCT.

Based on the findings, the study recommends that government agencies, non-governmental organisations, and private-sector actors strengthen the design and implementation of capacity-building programs by adopting more inclusive, gender-responsive, and community-based approaches. There is a need to expand awareness campaigns, enhance access to agricultural information, and promote digital literacy among rural women to increase participation. Furthermore, providing financial assistance, improving extension services, and ensuring equitable access to land and productive resources will significantly enhance the impact of such programs. Finally, robust monitoring and evaluation frameworks should be established to ensure transparency, accountability, and long-term sustainability of capacity-building initiatives targeting female farmers in the FCT, Abuja.

REFERENCES

Abubakar, A., Magaji, S. & Ismail, Y. (2025). Climate Crunch: Coping with Climate Change in Irrigated Agriculture in Dutse, Jigawa, Nigeria. *International Journal of Innovative Science and Research Technology.* (10)8, 651–660. https://doi.org/10.38124/ijisrt/25aug263

Adesina, K. T., & Olanrewaju, O. A. (2022). Agricultural training programs and productivity among women farmers in Kwara State, Nigeria. *African Journal of Agricultural Economics and Development*, 9(2), 44–58.

Afolabi, T. O., & Hassan, M. I. (2023). Women's cooperatives and socio-economic empowerment in Ogun State, Nigeria. *Journal of Gender and Rural Development Studies*, 11(1), 67–82.

Ahmed, S. O., Magaji, S., Ahmad, A. I. & Yunusa, A. A. (2024). From savings to empowerment: How women leverage SMEs in Oyo state, Nigeria. *International Journal of Innovative Science and Research Technology, 9(3). https://doi.org/10.38124/IJISRT24MAR16110*

Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.

Bello, A. M., & Musa, H. U. (2022). Impact of NGO-led capacity-building on women's agricultural livelihood in Nasarawa State. *Nigerian Journal of Development Studies*, 15(3), 103–120.

Chinedu, C. J., Magaji, S. & Musa, I. (2021). Empirical analysis of the role of Money Market Instruments on Economic Growth in Nigeria:1994-2018. *Lapai Journal of Economics*, 5 (2), 24-37

Eze, V. N., Nnaji, P. U., & Okafor, C. A. (2021). Capacity-building and gender inclusivity in rural farming: Evidence from Enugu State, Nigeria. *Journal of Sustainable Agriculture and Rural Development*, 8(4), 55–69.

Federal Ministry of Agriculture and Rural Development. (2022). *Annual agricultural performance survey report*. Government of Nigeria Press.

Food and Agriculture Organisation. (2021). *The state of food and agriculture 2021: Making agri-food systems more resilient to shocks and stresses*. FAO.

John, O. A., Magaji, S., & Ismail, Y. (2025). "Assessing Digital Innovations in Improving Transparency and Traceability in Nigeria's Agricultural Supply Chains". International Journal of Research In Engineering & Science (Ijres) {Issn- (Print) 2572–4274 (Online) 2572–4304}, vol. 9, no. 4, 2025, pp. 207–220. DOI: h ps://dx.doi.org/10.5281/zenodo.16946137

Kabeer, N. (2019). *Gender, livelihood capabilities and women's economic empowerment: Reviewing evidence over the last decade*. United Nations Research Institute for Social Development.

Magaji, S. & Musa, I. (2024). Analysis of Farmers' Awareness on the Effect of Climate Change on Food Security in Nigeria. *International Journal of Humanities, Social Science and Management*. 4(3),439-454

Magaji, S. (2023). Faculty Strategies for Sustainable Human Capital and Achieving High University Rank. *Journal of Learning and Educational Policy (JLEP) ISSN: 2799-1121 3 (02), 25-36*

Magaji, S., Ismail, Y. & Musa, I. (2025). Impact of Institutional Quality on Human Capital Development in Nigeria. *MSI Journal of Economics and Business Management.* 2(2), 21-26. DOI: -10.5281/zenodo.14936039

Muhammed, A. A., Magaji, S., & Ismail, Y. (2025). Assessment of the Factors Affecting the Empowerment of Women Entrepreneurs in Nigeria. *International Journal Of Research And Innovation In Social Science (IJRIS).* 9(4), 5507–5523, DOI: https://dx.doi.org/10.47772/IJRISS.2025.90400392

Musa, I., Ismail, Y. & Magaji, S., (2025). Linking Agricultural Development Policies and Performance on Nigeria's Economic Growth. *Loka Journal of Environmental Sciences*. 2 (1), 169-191

Mwangi, J., & Otieno, P. (2021). Effects of agricultural capacity-building on productivity and empowerment of women farmers in Kenya. *East African Journal of Social Sciences*, 6(2), 91–106.

National Bureau of Statistics. (2023). *Agricultural performance and economic indicators report*. NBS.

Ogunlela, Y. I., & Mukhtar, A. A. (2021). Gender issues in agriculture and rural development in Nigeria: The role of women. *Journal of Rural and Community Development*, 16(2), 45–59.

Okoroafor, O.K., Magaji, S. & Eze, J.U. (2018). The Impact of Deposit Money Banks on Capital Formation in Nigeria: 1980-2015. *International Journal of Current Research in Life Sciences,* 7 (8), 2570-2577

Schultz, T. W. (1971). *Investment in human capital: The role of education and research*. Free Press.

United Nations Development Programme. (2022). *Empowering women farmers through capacity-building initiatives in Sub-Saharan Africa*. UNDP.

United Nations Women. (2021). *Women's economic empowerment in the changing world of work*. UN Women.

World Bank. (2020). *Women, agriculture, and development in Africa: Unlocking growth potential*. World Bank Publications.

Yusuf, A. S., & Ibrahim, L. A. (2020). Capacity-building and agricultural productivity among smallholder farmers in Northern Nigeria. *International Journal of Agricultural Research and Innovation*, 5(3), 72–88.