

AGRIPRENEURIAL ESSENTIAL INFORMATION COMPETENCY AND EFFICIENCY OF YAM FARMERS IN EKITI STATE, NIGERIA

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Abstract

The yam sector makes a significant contribution to the Nigerian economy in terms of employment, fiscal revenue, and food security. However, the self-sufficient oriented nature of the sector requires continuous improvement to enhance the sector's target. Agripreneurship, is essential for improving agribusiness management and profitability and their sustainability. descriptive statistics, Likert scale ranking, and Stochastic Frontier Production Function (SFPF) analysis, agripreneurial essential competencies and efficiency of yam farmers in Ekiti State of Nigeria were explored and analyzed. Data was collected from a cross-section of 200 paddy yam farmers drawn from the stats. The results showed that the majority of yam farmers were males (76.5%) with an average age of 43 years, and most had only primary education. The estimated mean technical efficiency was 0.72, indicating that yam farmers operated at 72% efficiency level. Major entrepreneurial needs identified included skills in financial management, value addition, marketing, record keeping, and risk management. The study concludes that improvement in entrepreneurial education and access to agricultural finance could significantly enhance yam farmers' efficiency in Ekiti State. It recommends the establishment of agripreneurial training programs tailored for the yam farmers.

Keywords: Agripreneur, yam farmers, efficiency, stochastic frontier.

1.1 Background of the Study

Among the major root crops grown in Nigeria, **yam** (*Dioscorea spp.*) plays a vital role in provision of staple food for security, income generation, and cultural practices, especially in southern Nigeria. However, yam production is largely dominated by smallholder farmers who face low productivity and inefficiency due to limited access to entrepreneurial skills and resources (Olayemi *et al.*, 2020). Entrepreneurship in agriculture, often

referred to as agripreneurship, is essential for improving agribusiness management and profitability and their sustainability especially in yam production to meet up with the sustainable millennium development goals of food security and poverty alleviation programmes among others (Ezeh & Anyanwu, 2021).

In recent years, the agricultural sector in Nigeria has witnessed a shift from subsistence-based production system toward **agripreneurship**, especially in yam

production which its demand is increasing day in day out at geometric rate. The system (agripreneurship) integrates entrepreneurship principles into farming activities to improve profitability, innovation, and competitiveness (Hisrich *et al.*, 2019). Agripreneurship emphasizes innovation, information utilization, risk management, value addition, marketing, and resource optimization to boost crop production especially at yam economy. (Ezeh & Anyanwu, 2021). For yam farmers, becoming successful agripreneurs it requires not only technical production skills but also essential information competencies that enhance decision-making, reduce inefficiencies, and improve integration into value chains (Ladipo & Adesope, 2020).

Agripreneurial Essential Information Competency (AEIC) refers to the ability of farmers to identify, access, interpret, utilize, and manage technical and business-related agricultural information. These competencies include understanding market prices, credit information, improved agronomic practices, post-harvest technologies, value addition, digital platforms, and financial literacy (Aina, 2020; Okwu & Umoru, 2019).

As agricultural production increasingly becomes **information-driven** and **market-oriented**, information competency has become an impetus influencing farm efficiency. Farmers who can interpret market trends, adopt innovative technologies, manage production risks, and

optimize resource use do attain higher productivity and profitability (Adesina & Yusuf, 2022). Consequently, evaluating the relationship between agripreneurial essential information competency and the efficiency of yam farmers is very necessary for designing interventions that will enhance productivity, increase farm income, and promote rural economic development in Ekiti State and Nigeria at large

2.0 Literature Review

2.1. Conceptual literature Review

2.1.1. Concept of Agripreneurship

Agripreneurship refers to the application of innovative, business-oriented, and opportunity-driven thinking in agricultural activities. It combines agricultural production with entrepreneurial skills such as risk-taking, resource management, innovation, and market orientation (Nuthall, 2010; Mishra & Williams, 2006).

For yam farmers, agripreneurship involves:

- Efficient input sourcing (Akhter *et al.*, 2021)
- Proper farm and financial planning (OECD, 2019)
- Market intelligence and negotiation (FAO, 2017)
- Value addition and post-harvest strategies (Akoroda & Olorunda, 2019)
- Adoption of technologies for improved production (Munyua, 2000)

Agripreneurship transforms farmers from subsistence producers to agribusiness operators, enabling them to respond to dynamic market demands and achieve higher efficiency (Kahan, 2013).

2.1.2. Concept of Essential Information Competency

Essential Information Competency (EIC) refers to the ability of farmers to effectively acquire, evaluate, process, interpret, and use agricultural and agribusiness information for decision-making (Aina, 2007; Mittal et al., 2010).

Components of Essential Information Competency

1. Information Access Competency

Ability to identify relevant agricultural information sources such as extension agents, market reports, ICT platforms, research institutes, and agro-dealers (CTA, 2019).

2. Information Processing Competency

Ability to interpret technical and economic information including input requirements, market prices, and weather updates (Meitei & Devi, 2009).

3. Information Application Competency

Ability to use information for decisions on planting, budgeting, marketing, storage, and risk management (Kisaka-Lwayo & Obi, 2012).

4. ICT Literacy Competency

Ability to use smartphones, radio, online groups, and ICT tools for knowledge acquisition (Oladele, 2006).

5. Financial Information Competency

Understanding credit terms, record keeping, cost–benefit analysis, and cash-flow management (Al-Sharafat, 2013).

Together, these competencies determine how effectively yam farmers apply knowledge to enhance productivity and efficiency.

2.1.3. Agripreneurial Information Needs of Yam Farmers

Yam farmers require several categories of information to operate efficiently (Akoroda & Olorunda, 2019; Aina, 2007):

- **Production Information:** Land preparation, seed selection, fertilization, staking, pest/disease control.
- **Market Information:** Prices, demand trends, buyer preferences, market channels.
- **Financial Information:** Credit availability, repayment schedules, input cost analysis.
- **Post-Harvest Information:** Storage, curing, value addition, transportation.
- **Technological Information:** Improved varieties, mechanization options, ICT advisory tools.

Farmers with higher information competency make more timely and profitable decisions, thereby improving efficiency (Mittal et al., 2010).

2.1.4. Concept of Efficiency in Agriculture

Efficiency describes the ability of farmers to maximize outputs with minimal resources. In agricultural economics, efficiency includes technical, allocative, and economic efficiency (Farrell, 1957; Coelli et al., 2005).

1. **Technical Efficiency**
Ability to generate maximum output from given inputs.
2. **Allocative Efficiency**
Ability to use inputs in optimal proportions given their prices.
3. **Economic Efficiency**
Combination of technical and allocative efficiency.

Agripreneurial orientation and information competency contribute significantly to achieving improved efficiency among yam farmers (Ajani & Onwubuya, 2012).

2.1.5. Relationship Between Agripreneurial Information Competency and Efficiency

Farmers with strong agripreneurial information skills enjoy:

- Improved planning and budgeting
- Better selection of cost-effective inputs
- Reduced production losses
- Efficient access to profitable markets
- Enhanced negotiation power

- Faster adoption of technologies

These factors collectively improve technical, allocative, and economic efficiency (Kisaka-Lwayo & Obi, 2012; Coelli et al., 2005).

2.2. Theoretical Literature Review

2.2.1. Human Capital Theory (Becker, 1964)

Human capital theory states that productivity depends on skills, knowledge, training, and experience (Becker, 1964).

Application to Yam Farmers

A farmer with high agripreneurial information competency has:

- Improved managerial capacity
- Enhanced risk-management skills
- Better financial decision-making
- Higher technical output

Thus, information competency functions as human capital that enhances efficiency (Psacharopoulos & Patrinos, 2018).

2.2.3. Resource-Based View (RBV) Theory (Barney, 1991)

RBV argues that competitive advantage arises from resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991).

Relevance to Yam Farmers

Agripreneurial information competency helps farmers:

- Access better markets
- Use superior production techniques
- Reduce costs

- Optimize resource use

Hence, superior information resources enhance efficiency (Grant, 1996).

2.2.4. Information Asymmetry Theory (Akerlof, 1970)

The theory emphasizes the adverse effects of unequal access to information among market participants (Akerlof, 1970).

Relevance to Yam Farmers

- Low information competency increases vulnerability to exploitation.
- Farmers may sell produce at lower prices or buy inputs at high prices.
- High information competency reduces inefficiencies and improves bargaining power (Stiglitz, 2000).

2.2.5. Efficiency Theory (Farrell, 1957)

Efficiency theory offers the framework for measuring technical,

allocative, and economic efficiency using frontier models such as SFA and DEA.

Application

In yam farming studies:

- Efficiency is measured relative to a best-practice frontier.
- Information competency is considered a determinant of inefficiency.

This theory allows quantifying how agripreneurial information affects efficiency (Coelli et al., 2005).

3. Methodology

3.1 Area of study

The research was conducted in **Ekiti State**, located between latitudes 7°15' and 8°5' N and longitudes 4°5' and 5°45' E in southwestern part of Nigeria, and known for its yam production. The area experiences a tropical climate favorable for tuber crops production.

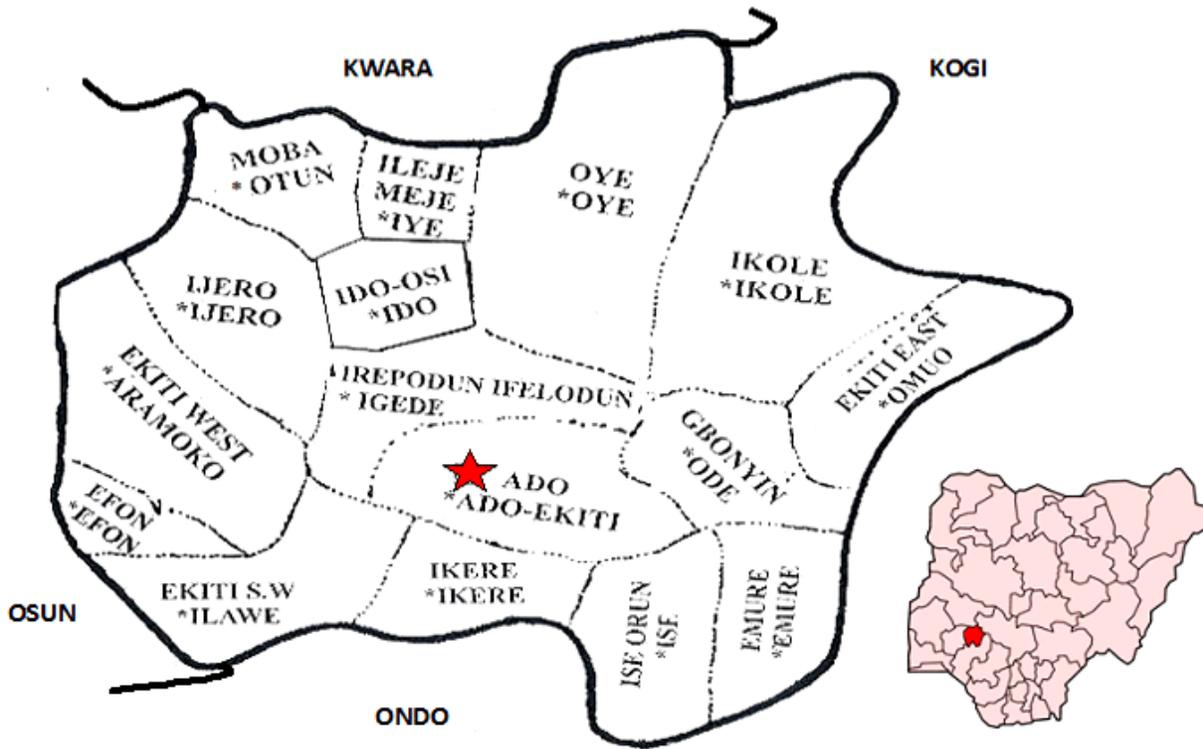


Figure 1: Map of Ekiti State

3.2 Sampling Procedure and Sample Size

A multi-stage sampling technique was adopted to arrive in the selection of respondents for the research. Five Local Government Areas (LGAs) were purposively selected for their prominence in yam farming. These LGAs includes Ikole, Oye, Ekiti East, Ekiti West, and Moba. From each LGA, 40 farmers were randomly selected, giving a total of 200 respondents justified using probability proportional size (p p s). It is defined as the ratio of the population size to the sample size (Tewodros 2017)

$$Nh = \frac{nNh}{N} \tag{1}$$

Where;

- nh = the sample size to be determined
- n = the number of the targeted respondents
- Nh = total number of the population size
- N = targeted population

3.3 Data Collection and Analysis

This research utilized primary data as well as secondary data too. Primary data were obtained through structured questionnaires covering demographic characteristics, entrepreneurial skills, and production data while secondary data were obtained from internet to help contextualize the study, complement primary data, support analysis, guide model specification, and strengthen policy relevance. Descriptive statistics was used to analyze objectives 1,

Likert scale analysis was used for objective 2 while Stochastic Frontier Production Function (SFPF) analysis was also used for attainment of objective 3

3.4 Validity of the Instrument

Experts in agricultural economics and agriprenurship reviewed the questionnaire to confirm that all items adequately covered constructs such as information access, processing competency, application ability, agriprenurial practices, and efficiency indicators. Each section of the instrument was aligned with established theoretical frameworks such as Human Capital Theory, Diffusion of Innovation Theory, and Efficiency Theory to ensure that the items truly represented the

underlying concepts. The questionnaire was pretested with a small group of yam farmers having characteristics similar to the target population to ensure clarity, relevance, and appropriateness of the items

3.5 Model Specification for efficiency analysis is as follow:

$$Y_i = \beta_0 + \sum_{j=1}^n \beta_j X_{ij} + (V_i - U_i) Y_i = \beta_0 + \sum_{j=1}^n \beta_j X_{ij} + (V_i - U_i)$$

Where:

Y_i = Output of yam (kg),

X_{ij} = Input variables (land, labor, fertilizer, capital),

V_i = Random error,

U_i = Technical inefficiency term.

4. Results and Discussion

Table 1 Socio-economic Characteristics

Variable	Frequency	Percentage
Male	153	76.5
Female	47	23.5
Age (Mean)	48 years	-
Education (Primary)	.	42
Experience (>10years)		58

Source: Field Survey Data, 2025

4.1 Socio-economic Characteristics

The results in table Table 1 showed that most of the respondents (yam farmers) were middle-aged (48 years) and males (76.5) which may not be unconnected to the drudgery attached to yam production in the

study area. The respondents are moderate education (42%), and indicating experience (>10years) but limited exposure to modern entrepreneurial practices.

Table 2 Agripreneurial Needs

Agripreneurial Skill	Mean Score	Rank
Financial management	4.70	1 st
Marketing and value addition	4.52	2 nd
Record keeping	4.48	3 rd
Risk management	4.36	4 th
Innovation and ICT	4.10	5 th

Source: Field Survey Data, 2025

4.2 Agripreneurial Needs

Farmers expressed a strong need for financial literacy. This might not be unconnected to Limited Understanding of Cost–Benefit and Profitability analysis and exposure to Digital Financial Services (Mobile Money, POS, and Banking Apps) among others. A well developed and managed financial farm can support innovations, allowing farms to adopt new technologies and seize new opportunities which in turn can lead to both increase capacity and competitiveness. The table also showed that marketing skills is an essential factor for agribusiness sustainability in Table 2 above. Other entrepreneurial needs of the yam farmers included record keeping, risk management, and innovation and ICT.

4.3 Technical Efficiency Estimates

The technical efficiency of yam farmers in study area was estimated using the Stochastic Frontier Production Function (SFPF) model. The model estimated the relationship between output and key production inputs such as farm size, labor,

fertilizer, planting materials, and capital by fitting a stochastic frontier production function using maximum likelihood estimation, separating random shocks from farmers' inefficiency, and computing efficiency scores as the exponential of the negative inefficiency term.

The coefficients of all major inputs were **positive and significant**, implying that increases in farm size, labor, fertilizer, planting materials, and capital lead to higher yam output.

The **farm size coefficient (0.368)** shows that a 1% increase in cultivated land leads to a 0.37% increase in output, indicating the strong influence of land utilization. The result also showed that the coefficient value of 0.214 for labour indicated that a 1% increase in labour use in yam production in the study will lead to 0.21% in yam production in the study area. Other inputs used and their coefficients include fertilizer (0.095), Yam set (0.143), and Capital input (0.082) and explaining that

a 1% increase in all of will lead to 0.95%, 0.14%, 0.82% increment in the output of yam production in the study area respectively.

The gamma (γ) value of 0.713 indicates that 71.3% of the variation in yam output is due to differences in yam farmers' efficiency in the study area rather than

random shocks that might have cause the differences in yam output in the study area. This means inefficiency effects are substantial and can be addressed through better training and agripreneurship programs to help boost yam production at its peak in the study area which in turn can help fight food insecurity presently travail in Nigeria.

Table 3: Maximum Likelihood Estimates of the Stochastic Frontier Production Function

Variable	Coefficient	Standard Error	t-Ratio	Significance
Constant (β_0)	1.245	0.172	7.24	***
Farm size (ha)	0.368	0.081	4.54	***
Labor (man-days)	0.214	0.074	2.89	**
Fertilizer (kg)	0.095	0.045	2.11	**
Yam set (kg)	0.143	0.053	2.70	**
Capital input (₦)	0.082	0.040	2.05	**
Sigma-squared (σ^2)	0.245	0.029	8.45	***

Source: Field Survey Data analysis, 2025.

*** Significant at 1%; ** at 5%.

4.4 Technical Efficiency Scores among Yam Farmers

The mean technical efficiency (TE) of 0.72 in table 3 implies that yam farmers in Ekiti State are producing about 72% of their potential output, given their available resources and technology. In other words, they could increase output by 28% through improved efficiency—particularly through better agripreneurial management and resource allocation. This result is in line

with the findings of Okoye *et al.* (2020) found a slightly higher mean efficiency of **0.75** among yam producers in Anambra State. This comparison indicates that Ekiti yam farmers perform moderately well but still lag behind the most efficient producers due to gaps in agripreneurial capacity and access to production resources.

The wide range of efficiency scores (0.30 to 0.95) indicates that while some

farmers operate near the production frontier, others are significantly inefficient. This disparity may not be unconnected to the s

differences in agripreneurial managerial ability, access to inputs, financial literacy, and market participation.

Table 4: Distribution of Technical Efficiency Scores among Yam Farmers

Efficiency Range	Frequency	Percentage (%)
0.30 – 0.49	20	10.0
0.50 – 0.59	26	13.0
0.60 – 0.69	39	19.5
0.70 – 0.79	55	27.5
0.80 – 0.89	42	21.0
0.90 – 1.00	18	9.0
Total	200	100
Mean Efficiency	0.72	

Source: Field Survey Data analysis, 2025.

4.5 Determinants of Technical Efficiency

The inefficiency effects model (second part of the stochastic frontier estimation) identifies factors influencing

farmers’ efficiency levels. These include socio-economic and entrepreneurial characteristics such as age, education, credit access, extension contact, and experience.

Table 5: Determinants of Technical Efficiency among Yam Farmers

Variable	Coefficient	Standard Error	t-Ratio	Significance
Constant (δ_0)	0.987	0.102	9.68	***
Age (years)	-0.024	0.011	-2.18	**
Education (years of schooling)	-0.073	0.025	-2.92	***
Household size	0.014	0.009	1.56	NS
Farming experience (years)	-0.052	0.018	-2.89	**
Access to credit (dummy: 1=yes)	-0.118	0.048	-2.46	**
Extension contact (number/year)	-0.067	0.026	-2.58	**
Entrepreneurial training (dummy: 1=yes)	-0.124	0.041	-3.02	***

Source: Field Survey Data analysis, 2025.

*** Significant at 1%; ** at 5%; NS = Not Significant.

4.6 Determinants of Technical Efficiency among Yam Farmers

Table 5 shows that the coefficient value of age is -0.024 indicates that efficiency increase slightly with age. Age moves along with experience, so therefore farmers that grow into farming with age tend to be more adaptable to modern practices and technologies.

Education (-0.073): Education significantly reduces inefficiency, confirming that more educated farmers are better decision-makers and more efficient resource users. This finding is in line with the study carried out by Okoye *et al.* (2020) who found that education, credit access, and extension contact were significant in explaining efficiency among yam farmers in southeastern Nigeria.

Experience (-0.052): Experienced farmers show greater efficiency through accumulated knowledge in production and marketing.

Access to Credit (-0.118): Credit availability reduces inefficiency by allowing farmers to invest in better inputs, mechanization, and storage.

Extension Contact (-0.067): Regular visits by extension officers improve farmers' knowledge of agronomic and entrepreneurial practices. This finding is in line with the findings of Olayemi *et al.* (2020) who concluded that extension services and

experience were positively associated with technical efficiency in yam production.

Entrepreneurial Training (-0.124): This is the most significant factor, indicating that farmers who received business training are much more efficient than those without the training. This finding concurred with the findings of Adesina & Yusuf (2022) who reported in their work that entrepreneurial training and access to finance significantly improved farm-level efficiency among rice farmers in Ogun State. Thus, the Ekiti State findings are consistent with broader Nigerian evidence: Farmers with better agripreneurial and managerial exposure perform more efficiently.

5. Conclusion and Recommendation

5.1 Conclusion

The relationship between agripreneurial information competency and efficiency is not only complementary but also mutually reinforcing. For yam farmers to achieve sustained growth and competitiveness in today's agribusiness environment, building their essential information skills is necessary. Strengthening extension services, improving ICT access, promoting agricultural training, and enhancing farmers' business literacy will further empower yam farmers to operate more efficiently and position themselves as successful agripreneurs in the yam production business in the study area.

5.2 Recommendations

The relatively high inefficiency (28%) observed indicates substantial potential for improvement. Therefore government should create a programs that will emphasize agripreneurship, financial literacy, and credit accessibility which might likely yield high returns in productivity.

Training yam farmers in business planning, value addition, and cooperative marketing by extension agent can help close the efficiency gap. And also farmer that operates close to frontier should help those far away from it on how to improve their efficiency in yam production in the study area

References

- Adesina, O. & Yusuf, T. (2022). Entrepreneurship training and smallholder farmers' performance in Nigeria. *African Journal of Development Studies*, 14(2), 120–134.
- Aina, L. O. (2020). *Information and knowledge needs of smallholder farmers in Africa. Agricultural Information Review*, 32(1), 14–26
- Aina, L. O. (2007). *Information provision to farmers in Africa: The library–extension service linkage*. World Library and Information Congress.
- Ajani, E. N., & Onwubuya, E. A. (2012). Information and communication technology needs of small-scale farmers in Anambra State. *Journal of Agricultural Extension*, 16(2), 1–12.
- Akerlof, G. A. (1970). The market for “lemons”: Quality uncertainty and the market mechanism. *Quarterly Journal of Economics*, 84(3), 488–500.
- Akhter, S., Cheng, G., Chaudhary, S., & Liu, J. (2021). Agripreneurship development: A pathway to sustainable agricultural growth. *Agriculture*, 11(3), 243.
- Akoroda, M. O., & Olorunda, A. O. (2019). Yam production and postharvest management in West Africa. *International Institute of Tropical Agriculture*.
- Al-Sharafat, A. (2013). Farm financial management information needs and sources for small-scale farmers in Jordan. *International Journal of Agricultural Management*, 2(1), 31–39
- Amugwo, S. C., Egwue, O. L. & Adebayo, T. (2025). Economic Evaluation of Yam Production in Ekiti State, Nigeria. *Journal of Agricultural Economics, Environment and Social Science* 11 (2) 22-29.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120.
- Becker, G. S. (1964). *Human capital: A theoretical and empirical*

- analysis*. University of Chicago Press.
- Coelli, T., Rao, D. S. P., O'Donnell, C., & Battese, G. (2005). *An introduction to efficiency and productivity analysis*. Springer.
- CTA. (2019). *The digitalisation of African agriculture report*. Technical Centre for Agricultural and Rural Cooperation.
- Ezeh, C. & Anyanwu, C. (2021). Agripreneurship and rural development: A review. *Nigerian Journal of Agribusiness*, 5(1), 33–48.
- FAO. (2017). *Market information systems: A guide to improving agricultural marketing*. Food and Agriculture Organization of the United Nations.
- Farrell, M. J. (1957). The measurement of productive efficiency. *Journal of the Royal Statistical Society Series A*, 120(3), 253–290.
- Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, 17(S2), 109–122.
- Hisrich, R.D., Peters, M.P., & Shepherd, D.A. (2019). *Entrepreneurship*. McGraw Hill Education.
- Kahan, D. (2013). *Entrepreneurship in farming*. FAO Agricultural Services Bulletin.
- Kisaka-Lwayo, M., & Obi, A. (2012). Market information needs of smallholder farmers in the Eastern Cape. *African Journal of Agricultural Research*, 7(41), 5636–5641.
- Ladipo, D.O. & Adesope, O.M. (2020). Entrepreneurial skill acquisition among Nigerian farmers. *Journal of Extension Systems*, 36(2), 17–28.
- Meitei, L. S., & Devi, T. (2009). Farmers' information needs in rural Manipur. *Annals of Library and Information Studies*, 56(1), 35–40.
- Mishra, A. K., & Williams, R. (2006). Risk and entrepreneurship in agriculture. *Agricultural Finance Review*, 66(2), 231–243
- Mittal, S., Gandhi, S., & Tripathi, G. (2010). *Socio-economic impact of mobile phones on Indian agriculture*. ICRIER Working Paper.
- Munyua, H. (2000). Application of ICTs in Africa's agricultural sector. *AAASA Conference Proceedings*.
- Nuthall, P. (2010). *Farm business management: The human factor*. CABI.
- OECD. (2019). *Digital opportunities for better agricultural policies*. Organisation for Economic Cooperation and Development.
- Okoye, B.C., Ezeh, C.I., & Ukoha, O.O. (2020). Determinants of yam production efficiency in Nigeria. *Tropical Agriculture Journal*, 9(4), 60–72.
- Okwu, O. J., & Umoru, B. I. (2019). *Information needs and utilization among agripreneurs in Nigeria*.

- Journal of Agricultural Information Management*, 25(1), 1–12
- Oladele, O. I. (2006). Multilinguality of farm broadcast and agricultural information access in Nigeria. *Nordic Journal of African Studies*, 15(2), 199–205.
- Olayemi, J.K., Adebayo, K., & Ogunyemi, A. (2020). Efficiency and resource use among yam farmers in Nigeria. *Nigerian Agricultural Research Journal*, 8(1), 15–26.
- Psacharopoulos, G., & Patrinos, H. (2018). *Returns to investment in education*. World Bank Policy Research Working Paper.
- Stiglitz, J. E. (2000). The contributions of the economics of information to twentieth-century economics. *Quarterly Journal of Economics*, 115(4), 1441–1478.
- Tewodros, B.A. (2017). Assessment of factors affecting performance of Agricultural cooperative on wheat marketed in Ethiopia. *Academic Journals* 11(16)393-414.