Relationship between Socio-Demographic Variables and Farmers Knowledge of Private Sector Engagement in Agricultural-Extension Services in Kano State

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Abstract

This study examined the relationship between socio-demographic variables of farmers and their knowledge of private sector engagement in agricultural extension services in Kano State, Nigeria. The objectives were to determine the relationship between farmers' socio-demographic variables and their knowledge of private sector involvement. Two research hypotheses guided the study, which employed a survey research design and a sample size of 384 farmers and 30 extension personnel. The data collection instrument, a Socio-demographic Variable of Farmers and Private Sector Engagement Questionnaire (SDVFPSEQ) was validated by experts and had a reliability score of 0.68. The findings revealed a positive relationship between farmers' socio-demographic variables (farming experience, educational level, farming scale, and extension contact) and their knowledge of private agricultural extension services. The study recommended that private extension organizations consider farmers' socio-economic variables when deciding on services to offer and leverage farmers' knowledge and practices to enhance effective service delivery.

Keywords: Agricultural Extension Services, Private Sector Engagement, Knowledge, Practice, Socio-demographic variables

Introduction

Agriculture plays a crucial role in national development, significantly influencing economic, social, and environmental spheres. Economically, it contributes to GDP, generates employment, and earns foreign exchange through exports. Socially, agriculture aids rural development, enhances infrastructure, redistributes income, and provides stability by offering livelihoods in rural areas. Furthermore, it is essential for food security, serving as the primary source of sustenance and reducing the risk of food shortages (Adeleke, Ogunniyi, & Alabi, 2021).

To improve agricultural yields, adopting modern technologies such as advanced seeds, fertilizers, and cropping techniques is key. Despite advancements, farmers face challenges like low profits due to high production costs. Addressing these issues requires initiatives for value addition at the farm level and stronger industrial relations. The Nigerian government has introduced various interventions focusing on agro-based entrepreneurship and linking agricultural research with development to transfer advanced technologies to farmers. Engaging rural communities is vital for developing effective agricultural strategies, as demonstrated by advanced countries. Delivering improved and innovative technologies to farmers depends on the efficiency and capability of extension field staff.

Agricultural extension services are globally recognized for their impact on farming communities and sustainable agricultural practices. Both governmental and non-governmental organizations play essential roles in disseminating knowledge and technologies. However, challenges such as limited access to healthcare, education, infrastructure, and financial services hinder productivity. With financial constraints limiting comprehensive extension services, private sector and non-governmental organizations have stepped in. Private sector involvement aims to address these issues, though it raises concerns about the effects on small farmers.

Debates on public sector roles in agricultural extension have intensified over the past two decades, focusing on increasing productivity and reducing rural poverty. Public agricultural extension systems in developing countries have often underperformed, leading to interest in pluralistic extension concepts involving multiple service providers. Public extension services have struggled with unresponsiveness to farmers' needs, lack of beneficiary ownership, and service quality issues.

External funding, including from the World Bank, has been allocated to improve extension services, showing positive impacts on food security and sustainable production.

Private sector involvement in agricultural extension has grown, manifesting through public-private partnerships, outsourcing services, or collaboration with agribusinesses. For example, the collaboration between the International Finance Corporation (IFC) and the World Bank in India promoted digital technology for extension services, enhancing their reach and efficiency. Private sector participation offers benefits like additional resources, innovative solutions, and market-driven insights, improving agricultural extension effectiveness (Nijhoff-Savvaki, Kiranoudis & Kateris, 2016). However, proper management, regulation, accountability, and transparency are crucial to align private sector involvement with public goals and address smallholder farmers' needs.

Recognizing the potential of private sector contributions, recent efforts have focused on introducing innovations, improving access to inputs and markets, and creating sustainable business models. In Kano State, Nigeria, private companies, agribusinesses, and technology firms collaborate with farmers to transfer technology and innovation, enhancing crop yields and productivity (Ajayi, 2018). Training programs and workshops organized by private entities build farmers' capacity, while financial collaborations provide tailored services to address financial barriers, promoting inclusive and sustainable practices (Olayide, 2019).

Private extension services appear timely and appropriate for farmers' needs, supporting arguments for privatization to improve efficiency, public finance, and competition. However, challenges like poor infrastructure, inadequate finance, and low educational status of farmers affect these services. In Nigeria, private extension services involve increased private sector participation rather than state asset transfer, lacking regulatory guidelines. Globalization, driven by communication and technological innovations, further influences agricultural extension dynamics (Agwu & Chukwuone, 2005).

The Kano State government has provided agricultural extension services since 1982, initially funded by the Federal Government, the International Bank for Reconstruction and Development (IBRD), and the Kano State Government. Evolving from a project-oriented entity to an

autonomous parastatal, the Agricultural Extension Service aimed to ensure service continuity and alignment with state policies, emphasizing interaction between extension personnel and farmers to adopt innovations.

The concept of knowledge is complex and fundamental to human understanding, encompassing facts, information, skills, and experiences. Philosophically, knowledge has been extensively examined, with theories like Plato's distinction between opinion and true belief and the contemporary tripartite model, which includes belief, truth, and justification. This model suggests that knowledge consists of justified true beliefs. In education, knowledge emphasizes the internalization of information and skills, with significant contributions from theorists like Jean Piaget, who explored cognitive development stages in children (Gelb & Levanon, 2008).

In society, knowledge drives innovation, progress, and problem-solving. The concept of organizational knowledge creation highlights the importance of both tacit and explicit knowledge within organizations, essential for competitiveness and adaptability. Technological advancements, particularly the internet, have transformed knowledge dissemination, democratizing access to information and fostering the concept of the "knowledge society." Initiatives like open access and online learning platforms illustrate the evolving nature of knowledge exchange today (Drucker, 1993).

In the view of Neta and Pritchard (2009), knowledge is thus a dynamic entity that influences human understanding and progress across various domains. It involves philosophical, educational, organizational, and technological dimensions, each playing a crucial role in shaping individual and societal development. The tripartite model of knowledge, requiring belief, truth, and justification, remains central to understanding its nature. In addition, knowledge management practices and technological advancements continue to evolve, enhancing how information is created, shared, and applied.

According to Idris (2011), farmers' socio-demographic variables significantly affect their knowledge and participation in agricultural extension services. Socio-economic factors like age, family size, and education impact their engagement, with older farmers often more likely to participate in agricultural production due to increased consciousness of its importance. Education

positively influences farmers' participation intensity, and larger households typically have higher participation probabilities due to greater food security needs. Occupational status also plays a role, with those from farming backgrounds more likely to engage in agriculture.

Socio-cultural factors, including preferences, beliefs, and social networks, shape farmers' attitudes towards private sector extension providers and their willingness to adopt new practices. Building relationships and understanding local contexts are essential for gaining acceptance and integrating indigenous knowledge. Information and technological factors, such as the credibility and usefulness of information sources, also determine farmers' participatory behavior. Farmers often rely on fellow farmers and friends for information, with limited access to agricultural researchers or university personnel (Nnadi & Akwiwu, 2008).

Farmers' practices in relation to private sector involvement in agricultural extension services are critical for the effectiveness and impact of these initiatives. In input supply and distribution, farmers' decisions on sourcing and utilizing inputs from private companies affect crop performance and yield outcomes. Engagement with advisory services and technical assistance reflects their adoption of recommended practices and receptiveness to new technologies. Participation in capacity-building programs organized by private sector actors enhances their skills and productivity, fostering a culture of innovation and peer-to-peer learning.

According to Davis et al. (2018), private sector actors also facilitate market linkages and value chain development, connecting farmers to markets and agribusiness opportunities. Farmers' engagement with these market linkages influences their access to markets, income opportunities, and participation in value chains. Their ability to meet market requirements and negotiate favorable terms enhances their competitiveness and profitability. Thus, farmers' practices intersect with private sector involvement in various ways, impacting their adoption of new technologies, utilization of advisory services, participation in training programs, and engagement with market opportunities. The purpose of the study was to determine the relationship between socio-demographic variables of famers and their knowledge of areas of private sector engagement in Kano State as well as the relationship between knowledge about private sector engagement in Agricultural Extension services and practices of farmers on private sector engagement in agricultural extension services in Kano State.

Research Hypotheses

The following research hypotheses were formulated to guide this study:

Ho1: There is no significant relationship between socio-demographic variables of farmers and their knowledge of area of Private sector involvement of Agricultural Extension services.

Ho2: There is no significant relationship between knowledge about private sector engagement in Agricultural Extension services and practice of farmers in relation to private sector involvement in agricultural extension services in Kano State.

Methodology

Correlational research design was adopted for the study. The population of the study comprises all contact farmers and personnel of private organizations involved in Agricultural extension services/support in Rano Agricultural zone of Kano State. The Zone has approximately 4,200 contact farmers that were receiving extension services from private agricultural extension agencies, along with 359 private agricultural extension personnel as of 2021. The sample used for the study consists of 384 contact private farmers and 39 private extension personnel selected through stratified sampling technique. Socio-Demographic Variables of Farmers and Private Sector Engagement Questionnaire (SDVFPSEQ)" was used as instrument for data collection. The instrument has two sections i.e. A and B, section A was on socio-demographic information of the respondent and section B was on socio-economic factors and farmers' knowledge of private sector involvement in agricultural extension services. However, the instrument was open ended types. The instrument was validated by three experts in Department of Adult Education and Community Services, Agricultural Extension and Economics, Test and Measurement, Bayero University, Kano and one practitioner from Sassakawa Global and reliability coefficient of 0.68 was obtained through test-re-test method. The questionnaire was administered within five weeks by the researcher with the help of 7 research assistants. Pearson Product Moment Correlation was used to establish relationship between the variables because of the interval measurement while multinomial logistic regression was used to determine the relationship between socio-economic characteristics of the farmers with their knowledge and expressed practice of Private Agricultural Extension services. All the tests were carried out at the fixed alpha of 0.05 level of significance.

Results

Research Hypotheses Testing

Ho1: There is no significant relationship between socio-demographic variables of farmers and their knowledge of Private Agricultural Extension Personnel' services.

The hypothesis was tested and result presented in Table 1.

Table 1: Analysis of socio-demographic variables of farmers on their knowledge of Private Agricultural Extension Personnel' services

	Unstandardized Coefficients		Standardized Coefficients		
Independent variables	**B**	**Std. Error**	**Beta**	**T**	**Sig.**
(Constant)	1.908	.035		53.954	.000
Age group	.013	.005	.051	2.367	.018
Educational level	.024	.007	.071	3.285	.001
Farming experience	.195	.019	.486	10.113	.000
Farming scale	.042	.017	.124	2.460	.014
Extension contact	.176	.022	.338	7.878	.000

The provided analysis employs multiple regression to explore the relationship between several independent variables and an unspecified dependent variable. The "Constant" in the analysis represents the expected value of the dependent variable when all other independent variables are set to zero and is highly statistically significant, indicating that the model fits the data well. Moving to the specific variables, "Farming experience" emerges as a dominant factor with a substantial unstandardized coefficient of 0.195 and a high Beta value of 0.486, indicating that as farming experience increases, the dependent variable tends to increase significantly. Similarly, "Extension contact" is a strong predictor with a high unstandardized coefficient of 0.176 and a Beta value of 0.338, demonstrating that having more contact with agricultural extension services positively influences the dependent variable. "Educational level" also plays a significant role, with a coefficient of 0.024 and a Beta of 0.071, implying that higher educational attainment is associated with an increase in the dependent variable. "Farming scale" and "Age group" have smaller but still statistically significant effects, indicating that larger farming scale and older age groups have a relatively modest positive impact on the dependent variable. These findings provide valuable

insights for stakeholders as they suggest which factors are influential in explaining variations in the dependent variable, which may inform strategies for targeted interventions or support.

Ho2: There is no significant relationship between knowledge about private sector engagement in Agricultural Extension services and practice of farmers about private sector involvement in agricultural extension services in Kano State.

Table 2: Correlation between socio-economic factors and farmers' knowledge of private sector involvement in agricultural extension services

Variables	N	Mean	Std. Dev.	r-calc.	Df	p-value
Knowledge	384	2.89	0.298	-0.125	382	0.014
Socio-economic factors	384	2.46	0.472			

(r-critical = 0.098, $p < 0.05$)

The result revealed a significant and inverse relationship between the two variables. The observed correlation co-efficient (-0.125) for the test is higher than the critical value of 0.098) at the 382 degree of freedom. The observed significant level for the test is 0.014 ($P < 0.05$). These observations provide enough evidence for rejecting the null hypothesis. The null hypothesis shows that there is no significant relationship between socio-economic factors and farmers' knowledge of private sector involvement in agricultural extension services in Rano Agricultural Zone of Kano state is therefore rejected.

Discussion of Findings

The relationship between socio-demographic variables and farmers' knowledge of private agricultural extension services is well-documented in agricultural research. Several scholars have supported the notion that factors such as farming experience, educational level, farming scale, and extension contact are positively related to farmers' knowledge of private extension services. For instance, Adeleke, Ogunniyi, and Alabi (2021) highlight that farmers with extensive experience and higher educational levels are more likely to engage with and understand advanced agricultural practices and services offered by private extension personnel. Similarly, Idris (2011) emphasizes that education significantly influences farmers' participation in extension activities, enhancing their capacity to absorb and implement new agricultural technologies.

Further supporting this, Nnadi and Akwiwu (2008) found that farmers with more years of farming experience tend to have a deeper understanding of the agricultural ecosystem, making them more

receptive to information from private extension services. The scale of farming also plays a crucial role, as larger farming operations typically have better access to resources and information, facilitating greater interaction with extension services. Extension contact, or the frequency of interactions between farmers and extension personnel, is crucial for the dissemination of knowledge. Regular contact ensures that farmers stay informed about the latest practices and innovations, which is corroborated by studies such as those by Agwu and Chukwuone (2005), who note the importance of continuous engagement in improving agricultural outcomes.

Contrarily, the relationship between farmers' knowledge of private sector involvement in agricultural extension services and their actual practices appears to be more complex and somewhat contradictory. The study findings indicate a significant and inverse relationship between the two, suggesting that increased knowledge does not necessarily translate into the adoption of these services. This inverse relationship is highlighted by the observed correlation coefficient, which exceeds the critical value at the given degree of freedom, indicating a statistically significant inverse correlation.

Neta and Pritchard (2009) provide insights into this phenomenon, suggesting that despite having knowledge, farmers may face barriers such as financial constraints, lack of access to inputs, or skepticism about the effectiveness of private sector services. These barriers can prevent them from integrating their knowledge into practice. Similarly, Davis et al. (2018) argue that while private sector actors can provide valuable market linkages and technical assistance, farmers often remain cautious due to previous negative experiences or mistrust towards private entities.

Moreover, Olayide (2019) points out that socio-cultural factors and local contexts significantly influence farmers' attitudes and practices. Even with adequate knowledge, farmers may prioritize traditional practices or rely on local networks over private sector advice. This is further complicated by the lack of regulatory frameworks and guidelines for private extension services in Nigeria, as noted by Agwu and Chukwuone (2005). Without proper regulation, the quality and reliability of private extension services can vary significantly, leading to inconsistent adoption among farmers.

While socio-demographic variables positively influence farmers' knowledge of private agricultural extension services, translating this knowledge into practice is hindered by various factors. These include financial and socio-cultural barriers, as well as the lack of a robust regulatory framework to ensure the consistency and reliability of private extension services. This underscores the need for a multifaceted approach that not only educates farmers but also addresses the broader systemic issues that impact their ability to implement new agricultural practices.

Conclusion

The study revealed a positive relationship between socio-demographic variables, such as farming experience, educational level, farming scale, and extension contact, and farmers' knowledge of private agricultural extension personnel's services. These variables play a significant role in shaping farmers' understanding of private sector involvement in agricultural extension services.Finally, the correlation analysis showed an intriguing finding - there is a significant and inverse relationship between farmers' knowledge about private sector involvement in agricultural extension services and their practices in this regard. As farmers' knowledge increases, their practices related to private sector involvement in agricultural extension services tend to decrease. This finding warrants further exploration to understand the underlying reasons and implications fully.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Private extension organization should consider socio-economic variables in taking informed decision about private extension services to offer to farmers
2. Private extension organisations should leverage on the farmers knowledge and existing practices to enhance effective service delivery.

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