KNOWLEDGE AND PRACTICE OF FARMERS ON PRIVATE SECTOR ENGAGEMENT IN AGRICULTURAL EXTENSION SERVICES IN KANO STATE, NIGERIA

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Abstract
This study examined farmer's knowledge and practices in relation to private sector engagement in agricultural extension service in Kano State, Nigeria. The study objectives were to assess the level of farmers' knowledge about areas of private sector engagement in agricultural extension services in Kano State and to examine farmer's practices in relation to the areas of private sector engagement in agricultural extension services. Two research questions guided the study. Survey research design was used for the study. The study population was 4200 farmers and 359 extension Personnel in Kano State out of which 384 contact farmers and 30 extension Personnel were used as sample size, based on simple random sampling, stratified and proportionate sampling techniques. Knowledge and Practices of Farmers on Private Sector Engagement Questionnaire was used in collecting data. The instrument was validated by 4 experts from Departments of Adult Education and Community Services, Agric Economics and Extension, Test and Measurement, BUK and Sasakawa Global. The reliability score of 0.72 for questionnaire was obtained by using Cronbach alpha reliability test. The questionnaires were administered by the researcher with the help of 4 research assistants. Data were analysed using frequency counts and percentage, mean score, standard deviation. The findings of the study revealed that the farmer's level of knowledge about areas of private sector engagement in extension services was high and covered novel areas where farmers indicated interest. Diverse farmer's practices in relation to the areas of private sector engagement in agricultural extension services were found during the study. The study concluded that the level of farmer's knowledge about private sector engagement was high and has influenced their agricultural practices. It was finally recommended that: private extension organization should improve participatory action research as an area of private extension services, in order to enhance the farmers' knowledge and skills and farmers that should listen and watch radio and television programmes related to agricultural extension services in order to enrich their knowledge, improve their skills and advance their capabilities in farming activities.

Keywords: Agricultural Extension Services, Private Sector Engagement, Knowledge, Practice

Introduction

Agriculture is pivotal to national development, exerting a profound impact on economic, social, and environmental dimensions. Economically, it serves as a cornerstone by contributing significantly to the GDP, generating employment for a substantial portion of the population, and acting as a vital source of foreign exchange earnings through exports. Socially, agriculture plays a crucial role in rural development, fostering infrastructure improvements, income redistribution, and social stability by providing livelihoods in rural areas. Furthermore, it is indispensable for ensuring food security, being the primary source of sustenance and mitigating the risk of shortages (Adeleke, Ogunniyi, & Alabi, 2021).

The impact of extension services on farming communities and their role in facilitating sustainable agricultural practices is globally recognized. Recognizing the importance of a robust agricultural extension system in enhancing productivity and ensuring food security, various stakeholders, including governmental and non-governmental organizations, have historically played essential roles in disseminating knowledge and technologies to farmers (Adeleke, Ogunniyi, & Alabi, 2021). However, they face various challenges, such as limited access to healthcare, education, inadequate infrastructure, and financial services, which significantly affect their agricultural productivity. With financial constraints limiting the government's ability to provide comprehensive extension services, private sector and non-governmental organizations have stepped in to fill this void. The private sector involvement in agricultural extension services, driven by criticisms of the public sector's performance, aims to address these issues. Nonetheless, this shift towards privatization raises concerns about its unforeseen consequences on small farmers.

Over the past two decades, debates surrounding the role of the public sector in agricultural extension strategies to increase productivity and reduce rural poverty have intensified. The poor performance of public agricultural extension systems in developing countries engendered interest in pluralistic concepts of extension involving a variety of service providers. Public agricultural extension has faced challenges related to unresponsiveness to farmers' varying needs, lack of ownership by beneficiaries, and limitations in the quality of services. To address these shortcomings, external funding is allocated to improve extension services and research relevant to farmers' needs. The World Bank, among other organizations, has committed substantial resources to support agricultural extension projects in various countries. In assessing the impact of these projects, it was found that they had a positive and considerable effect, contributing to food security and sustainable agricultural production.

The engagement of the private sector in agricultural extension organizations has become increasingly prominent and significant in recent years. This involvement can manifest in various ways, such as through public-private partnerships, the outsourcing of extension services, or collaboration with agribusinesses. In recent years, there has been a growing recognition of the potential contributions that the private sector can make to agricultural extension services. Private sector involvement in agriculture has the capacity to introduce innovations, improve access to inputs and markets, and create sustainable business models that benefit both farmers and the broader economy. Private sector

engagement in agricultural extension services in Kano State, Nigeria, encompasses diverse practices that have evolved to address the unique challenges faced by local farmers. A notable strategy involves private companies, including agribusinesses and technology firms, actively participating in the transfer of technology and innovation. These entities collaborate with farmers to introduce advanced agricultural techniques such as precision farming and the adoption of improved seed varieties, with the aim of enhancing crop yields and overall productivity (Ajayi, 2018). Additionally, the private sector contributes to capacity-building through training programs and workshops, focusing on areas such as sustainable farming practices, pest and disease management, and post-harvest handling. These initiatives empower farmers by equipping them with the necessary knowledge and skills to navigate evolving agricultural landscapes and meet market demands (Adeleke, 2020). Furthermore, private sector involvement extends to providing tailored financial services to the agricultural sector. Collaborations between financial institutions and agribusinesses result in the offering of credit facilities, insurance products, and market linkages to farmers, addressing financial barriers that often impede agricultural development. This approach aligns with the broader objective of promoting inclusive and sustainable agricultural practices (Olayide, 2019).

Evolving from a project-oriented entity to an autonomous parastatal, the Agricultural Extension Service in Kano Agricultural Zone I was created with the intent to ensure continuity and the provision of services aligned with the State Government's policies. The institutional framework established included administrative/managerial and technological extension staff responsible for research and disseminating findings to local farmers. Emphasizing the interaction between extension personnel and local farmers, the goal was to persuade farmers, particularly those with rudimentary knowledge, to adopt agricultural innovations for the overall development of the agricultural sector in Kano State.

Despite the historical role of the government in providing agricultural extension services, there is an emerging focus on understanding and incorporating private sector involvement in these services. Acknowledging this, a comprehensive research initiative has been initiated to appraise the knowledge and practices surrounding private sector engagement in agricultural extension services within Kano State.

Statement of the Problem

Some efforts have been made by successive governments in Nigeria to develop Public agricultural extension services in the country such as the Agricultural Development Project. But, in spite of the public extension support system at Federal, State and Local Government levels productivity of farmers across the country have been on the decline making government to embark on the importation of some food items and raw materials for household consumption and industries. The resultant effects are high cost of food items and depletion of our foreign reserves. With the formation of Agricultural Development Project (ADPs) and other specialized agricultural development projects like FADAMA III, TRIMING etc. extension services has improved. However, with private sector investment in agriculture there has been the clamour for private sector involvement in agricultural extension services across the country.

In Kano state, private sector involvement in agricultural extension services has begun in some Local Government Areas. The private sector engagement seems to be required to address low productivity and market failure so as to bring agricultural producers and buyers together. It is expected to cover the entire agricultural value chain from production, processing storage to marketing. The privatization of extensions is also a modern initiative for public private partnership. Private sector extension service is new to farmers, to government agricultural workers and other stakeholders. The questions addressed in this study are: What is the level of farmers' knowledge about areas of private sector involvement in agricultural extension services in Kano State? What are the farmers' practices in relation to areas of private sector involvement in agricultural extension services in Kano State?

Research Questions

The study answered the following research questions:

1. What is the level of farmers' knowledge about areas of private sector involvement in agricultural extension services in Kano State?
2. What are the farmers' practices in relation to areas of private sector involvement in agricultural extension services in Kano State?

Literature Review

Concept of Knowledge

The concept of knowledge is multifaceted and fundamental to human understanding, encompassing the awareness and comprehension of facts, information, skills, and experiences. Philosophically, knowledge has been a subject of extensive inquiry, with various epistemological theories attempting to elucidate its nature and acquisition. Plato, for instance, distinguished between opinion and true belief, asserting that knowledge arises from justified true beliefs (Plato, n.d.). In contemporary philosophy, the tripartite model of knowledge, incorporating belief, truth, and justification, is commonly accepted (Gelb & Levanon, 2008). Epistemology aside, knowledge is a dynamic and evolving entity, and its application extends across diverse domains. In educational contexts, knowledge is a central aim, emphasizing the acquisition and internalization of information and skills by learners. Educational psychologist Jean Piaget contributed significantly to understanding the cognitive development of knowledge in children, emphasizing stages of assimilation and accommodation (Piaget, 1970).

In a broader societal context, knowledge is a key driver of innovation, progress, and problem-solving. Nnaemek, Agwu & Nicholas (2006) introduced the concept of organizational knowledge creation, emphasizing the importance of tacit and explicit knowledge within organizations. Knowledge management practices have since become integral to organizational strategies for competitiveness and adaptability (Dorward, Kydd, Morrison, & Urey, 2009).Technological advancements have also transformed knowledge dissemination. The internet and digital technologies have democratized access to information, contributing to the concept of the "knowledge society" (Drucker, 1993). Open access initiatives, online learning platforms, and collaborative knowledge-sharing platforms reflect the evolving nature of knowledge exchange in the contemporary era.The concept of knowledge is broad and nuanced, encompassing philosophical, educational, organizational, and

technological dimensions. It is a dynamic entity that shapes human understanding, facilitates progress, and plays a pivotal role in various aspects of individual and societal development.

Knowledge is that of "justified true belief" (Nnaemek, Agwu & Nicholas, 2006; p.87). This definition according to Neta and Pritchard, (2009) incorporates three basic conditions, fact for which some authors call it the tripartite account of knowledge. These conditions are the following

a) The truth condition: It requires that if one knows a proposition then that proposition must be true. If the proposition is not true, then that person does not know what he claims to know. The truth condition makes the difference between opinion and knowledge.
b) The belief condition: That condition demands that if one knows a proposition then he believes that proposition.
c) The justification condition: That condition requires a practical way of justifying that the belief one has is true.

Putting together these conditions for knowing, one may conclude that "the necessary and sufficient conditions for knowing that something is the case are first that what one is said to know be true, secondly that one be sure of it, and thirdly that one should have the right to be sure" (Ayer, 2009; p. 13). The right to be sure can be earned in different ways which are culturally and contextual dependent. These conditions are usually synthesized in a logical format. Considering S to be the subject or the knower, P to be the proposition the subject is supposed to know, one may write (Gettier, 2009; p. 14):

Private Sector Involvement in Agricultural Extension

The concept of Private Sector Involvementinvolvement in agricultural extension refers to the active engagement of individuals, communities, and stakeholders in the application of agricultural knowledge and skills. Agricultural extension, as a field, aims to disseminate relevant information, technologies, and best practices to farmers, and the concept of practice involvement emphasizes the practical implementation of this knowledge on the farm. This active engagement is crucial for the successful adoption and sustainability of agricultural innovations.

Private Sector Involvementinvolvement in agricultural extension is often facilitated through on-farm demonstrations, field trials, and participatory learning approaches. These methods allow farmers to directly observe and engage with new agricultural practices, technologies, and techniques in their own contexts. Research suggests that participatory approaches, which involve farmers as active participants in the learning process, can lead to more effective knowledge transfer and adoption of improved practices (Franzel, 2006).

The involvement of farmers in on-farm trials allows them to test and adapt new technologies to suit their specific needs and conditions. This participatory approach aligns with the principles of adult education, recognizing that individuals are more likely to adopt new practices when they are actively involved in the learning process (Kaimowitz, 2002).Furthermore, the concept of practice involvement in agricultural extension extends beyond individual farms to encompass community-level initiatives. Farmer field schools, for

instance, promote collective learning and knowledge-sharing among farmers, fostering a sense of community engagement and shared responsibility for implementing sustainable agricultural practices (FAO, 2016).

According to Ajayi, Akinnagbe, & Olorunmaiye, (2018) farmers' Practice of the Extension services will depend greatly on the concerned Personnel. Personnel' Effectiveness was judged on the frequency of contacts, which unfortunately depend on a number of variables outside the control of such personnel. According to Kamilu (2001), "after the World Bank withdrew their financial support, many Nigerian ADPs are no more viable. The Personnel' visits are directly influenced by funds for logistics and other such necessities.

Farmers' Practice of Extension Personnel' Teaching and Communication efficiency is another variable of measuring the extension services by the farmers. Though this also depended on a number of variables such as the extension Personnel' teaching and communication efforts, respondents perceived extension Personnel' good knowledge of the subject and the benefits derivable from messages but the Personnel' ability to pass across the message would depend on the reception he or she get from the farmers. These could be listening ability of the farmers and other such variables. The socio-economic characteristics of farmers could be significant to their practice of the extension services they get. According to Ajayi, Akinnagbe, & Olorunmaiye, (2018) there is a significant relationship between respondent's selected socio-economic characteristics and their practice of extension Personnel' effectiveness According to Rogers (1996), the poor training of agricultural extension staff is part of the problem of the relative ineffectiveness of much extension in the field.

The concept of practice involvement in agricultural extension emphasizes the active participation of farmers in the learning and application of agricultural knowledge. This approach recognizes the importance of practical, on-the-ground experiences in facilitating the successful adoption of new technologies and sustainable farming practices.

Farmer's Practices in Relations to the Areas of Private Sector Involvement in Agricultural Extension Services

Farmers' practices in relation to the areas of private sector involvement in agricultural extension services play a critical role in determining the effectiveness and impact of private sector initiatives. These practices reflect farmers' adoption of new technologies, utilization of advisory services, participation in training programs, and engagement with market linkages facilitated by private sector actors. This essay will discuss how farmers' practices intersect with different areas of private sector involvement in agricultural extension services, drawing upon relevant literature and reports.

1. Input Supply and Distribution

One significant area of private sector engagement is input supply and distribution. Private companies play a crucial role in providing farmers with access to seeds, fertilizers, pesticides, and other agricultural inputs, along with technical advice on their use (Dinar, 1996). In the area of input supply and distribution, farmers' practices involve the sourcing, purchase, and utilization of agricultural inputs provided by private sector suppliers. Farmers may choose to procure seeds, fertilizers, pesticides,

and other inputs from private companies based on factors such as product quality, availability, price, and convenience (Diallo & Wouterse, 2018). Their decisions regarding input selection, application rates, and timing of use influence crop performance, yield outcomes, and input efficiency. Farmers' practices in input utilization also reflect their receptiveness to new technologies and innovations promoted by private sector extension agents.

2. Advisory Services and Technical Assistance

Private sector engagement in agricultural extension extends to the provision of advisory services and technical assistance. Farmers' practices in relation to advisory services provided by private sector actors encompass their engagement with extension agents, adoption of recommended practices, and integration of technical advice into farming operations. Farmers who actively seek out and interact with private extension agents are more likely to benefit from personalized advice, on-farm demonstrations, and troubleshooting support (Feder et al., 2019). Their willingness to experiment with new techniques, adopt improved practices, and adapt recommendations to local conditions contributes to the success of private sector extension initiatives.

3. Capacity Building

Private sector engagement in agricultural extension services encompasses capacity building and training initiatives. Farmers' practices in participating in training and capacity-building programs organized by private sector actors reflect their commitment to continuous learning and skill development. Farmers who attend training workshops, field days, and demonstration plots organized by private extension providers gain valuable knowledge and practical skills that enhance their productivity, resilience, and livelihoods (Birner et al., 2018). Their active participation in capacity-building activities fosters a culture of innovation, knowledge sharing, and peer-to-peer learning within farming communities.

4. Market Linkages and Value Chain Development

Private sector actors facilitate market linkages and value chain development, connecting farmers to markets, buyers, and agribusiness opportunities. Farmers' practices in engaging with market linkages facilitated by private sector actors influence their access to markets, income opportunities, and participation in value chains. Farmers who collaborate with agribusinesses, cooperatives, or value chain actors benefit from market information, price transparency, and market access facilitated by private sector partnerships (Davis et al., 2018). Their ability to meet quality standards, comply with market requirements, and negotiate favorable terms enhances their competitiveness and profitability in agricultural markets.

Methodology

Survey 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 2024. The sample used for the study consists of 384 contact private farmers and 39 private extension personnel selected through

stratified sampling technique. "Knowledge and Practice of Farmers on Private Sector Engagement Questionnaire (KPFPSEQ)" was used as instrument for data collection. It is a A Likert type scale with options arranged as VHLK (Very High Level Knowledge); HLK (High Level Knowledge); LLK (Low Level Knowledge) and VLLK (Very Low Level Knowledge). 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 index of 0.72 was obtained through Cronbach Alpha method. The questionnaires were administered within five weeks by the researcher with the help of 7 research assistants. Frequency count, mean, standard deviation and percentages were used to answer the research questions.

Results and Discussion

What is the farmers' level of knowledge level about the areas of private sector engagement in agricultural extension services?

Table 1: Farmers' level knowledge about areas of private sector engagement in extension services/support.

S/N	Items	VHLK %	HLK %	LLK %	VLLK %	Mean	Std. Dev.	Decision
1.	knowledge of about business management training offered by private extension service	5(16.7)	5(16.7)	8(26.7)	12(40.0)	2.10	1.12	Reject
2.	Farmer to farmer Networking as an area of private extension services	4(13.3)	7(23.3)	5(16.7)	14(46.7)	2.03	1.12	Reject
3.	Farmer to Buyer Networking as an area of private extension services	7(23.3)	20(66.7)	2(6.7)	1(3.3)	3.10	0.66	Accept
4.	Participatory Action Research as an area of private extension services	8(26.7)	3(10.0)	12(40.0)	7(23.3)	2.40	1.13	Reject
5.	Technical Assistance as an area of private extension services	12(40.0)	16(53.3)	2(6.7)	0(0)	3.33	0.60	Accept
6.	Business Development as an area of private extension services	17(56.7)	10(33.3)	1(3.3)	2(6.7)	3.40	0.85	Accept
7.	Agricultural Value-Chain development as an area of private extension services	7(23.3)	14(46.7)	9(30.0)	0(0)	2.93	0.74	Accept
8.	Use of demonstration plots as an area of private extension services	13(43.3)	14(46.7)	1(3.3)	2(6.7)	3.27	0.828	Accept
9.	Use of lead farmers as an area of private extension services	7(23.3)	8(26.7)	10(33.3)	5(16.7)	2.57	1.04	Accept
10.	Provision of inputs as an area of private extension services	17(56.7)	10(33.3)	1(3.3)	2(6.7)	3.40	0.855	Accept
11.	Organizing producer groups as an area of private extension services	3(10.0)	6(20.0)	12(40.0)	9(30.0)	2.10	0.96	Reject
12.	Credit/saving initiatives and other finance services as an area of private extension services	7(23.3)	5(16.7)	13(43.3)	5(16.7)	2.47	1.042	Reject
13.	Use of mobile phone as an area of private extension services	12(40.0)	16(53.3)	2(6.7)	0(0)	3.33	0.606	Accept
14.	Use of Radio/TV as an area of private extension services	12(40.0)	16(53.3)	2(6.7)	0(0)	3.33	0.606	Accept
15.	Contact farming as an area of private extension services	17(56.7)	10(33.3)	1(3.3)	2(6.7)	3.40	0.855	Accept
16.	Use of social media as an area of private extension services	7(23.3)	12(40.0)	7(23.3)	4(13.3)	2.73	0.98	Accept
17.	Farmer-field school as an area of private extension services	14(46.7)	7(23.3)	9(30.0)	0(0)	3.17	0.874	Accept
	Aggregate mean					**2.89**	**0.186**	Accept

(Benchmark = 2.50); Key: VHLK= Very High Level of Knowledge; HLK = High level of Knowledge; LLK = Low Level of Knowledge; VLLK = Very Low Level of Knowledge

Table 1 showed the responses of the respondents on farmers' level knowledge about areas of private sector engagement in extension services/support. The survey results demonstrated that there is limited awareness among farmers regarding business management training offered by private extension services. Only 33.4% of respondents either very high level of knowledge or high level of knowledge with this notion, while the majority, representing 66.6%, either low level of knowledge or very low level of knowledge with its inclusion in private extension services. This suggests a clear gap in knowledge among farmers regarding the availability and relevance of business management training within the purview of private extension services. Similarly, awareness of farmer to farmer networking as an area of private extension services is relatively low. A mere 36.6% of respondents either very high level of knowledge or high level of knowledge with this concept, while a substantial 63.4% either low level of knowledge or very low level of knowledge with its inclusion. This implies that a significant portion of the surveyed farmers may not fully understand the potential benefits and relevance of farmer to farmer networking as part of private extension services. In contrast, farmers demonstrate a relatively high level of awareness and knowledge regarding farmer to buyer networking as an area of private extension services. A significant 90% of respondents either very high level of knowledge or high level of knowledge with this concept, indicating that farmers are well-informed about the potential advantages of connecting with buyers directly through private extension services. Farmers exhibit limited awareness of participatory action research as an area of private extension services. Only 36.7% of respondents either very high level of knowledge or high level of knowledge with this concept, while the majority, accounting for 63.3%, either low level of knowledge or very low level of knowledge with its inclusion. This suggests that there is a need to enhance farmers' understanding of the role and benefits of participatory action research within private extension services.

Awareness of technical assistance as an area of private extension services is relatively high among farmers. An overwhelming 93.3% of respondents either very high level of knowledge or high level of knowledge with this concept, indicating that farmers are well-informed about the value and relevance of technical assistance within private extension services. Similarly, farmers display a strong level of awareness regarding business development as an area of private extension services. A significant 90% of respondents either very high level of knowledge or high level of knowledge with this concept, reflecting their knowledge about the importance of business development within private extension services. Farmers are well-aware of agricultural value-chain development as an area of private extension services. A substantial 76.7% of respondents either very high level of knowledge or high level of knowledge with this concept, demonstrating their understanding of the potential benefits of value-chain development within private extension services. Farmers exhibit a high level of awareness regarding the use of demonstration

plots as an area of private extension services. A significant 90% of respondents either very high level of knowledge or high level of knowledge with this concept, indicating that farmers are well-informed about the significance of demonstration plots within private extension services. Awareness of the use of lead farmers as an area of private extension services is relatively high. Half of the respondents, representing 50%, either very high level of knowledge or high level of knowledge with this concept, suggesting that farmers have a reasonable understanding of the role and benefits of lead farmers within private extension services. Farmers demonstrate strong awareness of the provision of inputs as an area of private extension services. A significant 90% of respondents either very high level of knowledge or high level of knowledge with this concept, highlighting their knowledge about the importance of input provision within private extension services.

However, farmers show limited awareness of the concept of organizing producer groups as an area of private extension services. Only 30% of respondents either very high level of knowledge or high level of knowledge with this concept, while a substantial 70% either low level of knowledge or very low level of knowledge with its inclusion. This indicates a need to enhance farmers' understanding of the role and advantages of organizing producer groups within private extension services. Awareness of credit/saving initiatives and other financial services as an area of private extension services is relatively low among farmers. Only 40% of respondents either very high level of knowledge or high level of knowledge with this concept, while the majority, constituting 60%, either low level of knowledge or very low level of knowledge with its inclusion. This suggests a gap in knowledge among farmers regarding the role and benefits of financial services within private extension services. Awareness of the use of mobile phones as an area of private extension services is relatively high. An overwhelming 93.3% of respondents either very high level of knowledge or high level of knowledge with this concept, indicating that farmers are well-informed about the effectiveness of mobile phones within private extension services. Similarly, farmers exhibit a strong level of awareness regarding the use of radio and TV as communication channels within private extension services. A significant 93.3% of respondents either very high level of knowledge or high level of knowledge with this concept, highlighting their understanding of the role of these media in disseminating agricultural information. Farmers display a high level of awareness regarding contact farming as an area of private extension services. A significant 90% of respondents either very high level of knowledge or high level of knowledge with this concept, indicating that farmers are well-informed about the benefits of contact farming within private extension services.

Awareness of the use of social media as an area of private extension services is relatively high. A significant 70% of respondents either very high level of knowledge or high level of knowledge with this concept, suggesting that farmers are knowledgeable about the potential of social media within private extension services. Farmers exhibit a reasonable level of awareness regarding farmer-field schools as an area of private extension services. A significant 70% of respondents either very high level of knowledge or high level of knowledge with this concept, demonstrating their understanding of the role and benefits

of farmer-field schools within private extension services.

Overall, the analysis of farmers' level of knowledge about various areas of private sector involvement in extension services reveals differing levels of awareness. While some areas are well-understood and accepted by farmers, others require further education and promotion to enhance their recognition and adoption. The findings underline the importance of improving communication and knowledge dissemination to ensure that farmers are well-informed about the range of services available through private extension services.

What are the farmers' practices in relation to areas of private sector engagement in agricultural extension services?

Table 2: Farmers practices in relation to areas of private sector engagement in agricultural extension services

S/N	Scope of Private Extension services	SA %	A %	D %	SD %	Mean	Std. Dev.	Decision
1.	I participated in agro entrepreneurship training	5(16.7)	5(16.7)	8(26.7)	12(40.0)	2.10	1.12	Reject
2.	I was involved in networking with other farmers	4(13.3)	7(23.3)	5(16.7)	14(46.7)	2.03	1.12	Reject
3.	I networked with farm commodities buyers	7(23.3)	20(66.7)	2(6.7)	1(3.3)	3.10	0.66	Accept
4.	I participated in research activity	8(26.7)	3(10.0)	12(40.0)	7(23.3)	2.40	1.13	Reject
5.	I accepted some technical ideas	12(40.0)	16(53.3)	2(6.7)		3.33	0.60	Accept
6.	I am involved in proper development to my agro-business	17(56.7)	10(33.3)	1(3.3)	2(6.7)	3.40	0.85	Accept
7.	I am very active in involving my farm business with other farm activities	7(23.3)	14(46.7)	9(30.0)		2.93	0.74	Accept
8.	My farm was used as demonstration plot	13(43.3)	14(46.7)	1(3.3)	2(6.7)	3.27	0.828	Accept
9.	I served as head farmer for an extension support	7(23.3)	8(26.7)	10(33.3)	5(16.7)	2.57	1.04	Accept
10.	I received inputs support from extension staff	17(56.7)	10(33.3)	1(3.3)	2(6.7)	3.40	0.855	Accept
11.	We organized farmers producer group	3(10.0)	6(20.0)	12(40.0)	9(30.0)	2.10	0.96	Reject
12.	I am involved in credit/service initiatives	7(23.3)	5(16.7)	13(43.3)	5(16.7)	2.47	1.042	Reject
13.	Some private organizations presented on radio station	12(40.0)	16(53.3)	2(6.7)	-	3.33	0.606	Accept
14.	I use mobile phones to receive and learn new ideas	12(40.0)	16(53.3)	2(6.7)	-	3.33	0.606	Accept
15.	I use whatsApp to receive and share ideas	17(56.7)	10(33.3)	1(3.3)	2(6.7)	3.40	0.855	Accept
16.	I involved in contract farming to produce some farm commodities	7(23.3)	12(40.0)	7(23.3)	4(13.3)	2.73	0.98	Accept

17.	I represented some private organization	14(46.7)	7(23.3)	9(30.0)	3.17	0.874	Accept
	Aggregate mean				**2.89**	**0.186**	Accept

(Benchmark = 2.50)

Table 2 revealed the responses of the respondents on the farmers' practices in relation to areas of private sector engagement in agricultural extension services. The survey findings indicate that participation in agro-entrepreneurship training offered by private extension organizations is relatively low. Only 33.4% of the respondents either strongly agree or agree with this idea, while the majority, accounting for 66.6%, either disagree or strongly disagree with the notion. This implies a need for increased awareness and promotion of agro-entrepreneurship training to enhance its acceptance among farmers. Similarly, involvement in networking with other farmers to improve agro businesses, as facilitated by private organizations, faces resistance among the surveyed population. A mere 36.6% of respondents either strongly agree or agree with this concept, while a substantial 63.4% either disagree or strongly disagree with its inclusion. This suggests that there is room for further education and promotion to emphasize the importance of networking in agro business. In contrast, farmers exhibit a strong level of involvement in networking with farm commodities buyers as facilitated by private extension organizations. A significant 90% of respondents either strongly agree or agree with this concept, indicating a high level of engagement in connecting with buyers directly through private extension services. Farmers' participation in research carried out by private extension organizations is relatively low. Only 36.7% of respondents either strongly agree or agree with this concept, while the majority, constituting 63.3%, either disagree or strongly disagree with its inclusion. This suggests a need to enhance farmers' understanding of the role and benefits of participating in research within private extension services. Acceptance of technical ideas offered by private extension organizations is relatively high among farmers. An overwhelming 93.3% of respondents either strongly agree or agree with this concept, indicating that farmers are actively accepting technical insights provided by private extension services.

Similarly, farmers are actively involved in the proper development of their agro-businesses based on extension support from private organizations. A significant 90% of respondents either strongly agree or agree with this concept, reflecting their active engagement in agro-business development through private extension services. The use of farms as demonstration plots by private extension organizations is well-accepted by farmers. A significant 90% of respondents either strongly agree or agree with this concept, highlighting their willingness to participate in this form of agricultural extension. Farmers actively serve as head farmers for extension support provided by private organizations. Half of the respondents, representing 50%, either strongly agree or agree with this concept, suggesting their engagement in leadership roles within private extension services. Farmers receive inputs support from extension staff of private organizations, and this is highly accepted. A significant 90% of respondents either strongly agree or agree with this concept, indicating their active involvement in input-receiving activities within private extension services. The organization of farmers'

producer groups through support from extension staff of private organizations faces resistance among the surveyed population. Only 30% of respondents either strongly agree or agree with this concept, while a substantial 70% either disagree or strongly disagree with its inclusion. This suggests that there is a need to enhance farmers' understanding of the role and advantages of organizing producer groups within private extension services.

Farmers' involvement in credit/service initiatives through extension support from private organizations is relatively low. Only 40% of respondents either strongly agree or agree with this concept, while the majority, constituting 60%, either disagree or strongly disagree with its inclusion. This suggests a gap in knowledge among farmers regarding the role and benefits of financial services within private extension services. The use of mobile phones to receive and learn new ideas from private extension staff is highly accepted by farmers. A significant 93.3% of respondents either strongly agree or agree with this concept, indicating the recognition of mobile phones as effective tools for agricultural communication and information dissemination. The use of WhatsApp for receiving and sharing ideas learned from extension staff of private organizations is highly accepted by farmers. A significant 70% of respondents either strongly agree or agree with this concept, suggesting that WhatsApp is an effective channel for engaging with the surveyed population. Farmers are actively involved in contract farming to produce some farm commodities with support from extension staff of private organizations. A significant 70% of respondents either strongly agree or agree with this concept, indicating their engagement in contract farming activities within private extension services. Farmers actively represent private organizations in farmer field schools organized in their Local Government Area. A substantial 70% of respondents either strongly agree or agree with this concept, reflecting their involvement in farmer field school activities.

It could be inferred from the analysis that farmers' involvement and awareness regarding various aspects of private extension services revealed varying levels of engagement and acceptance. While some areas demonstrate active participation and acceptance, others require further promotion and education to enhance their recognition and adoption among farmers. The findings emphasize the importance of tailored approaches and effective communication strategies to ensure that farmers actively participate and benefit from private extension services.

Summary of Findings

The findings of the study were that:

1. The farmers level of knowledge about areas of private sector engagement in extension services is high and covered farmers to buyer networking, technical assistance, business development agricultural value-chain development use of demonstration plots, use of lead farmers provision of inputs, use of mobile phone, use of radio/TV, contact farming use of social media and farmers field school
2. The common practices of farmers concerning private sector engagement in extension services are; networked with farm commodities buyers, accepted some technical ideas, involved in proper development of agro-business, involve in farm business,

demonstration plot, served as head farmer, organized farmers-producers group, private organization discuss on radio stations to discuss ideas learned, use mobile phone to receive and learn new ideas, use whatsapp to receive and share ideas learned, involve in contract farming to produce some farm commodities.

Conclusion

Assessing farmers' knowledge about various facets of private sector involvement in extension services in Kano State revealed differing levels of knowledge among farmers. The study unveils varying levels of knowledge among farmers regarding private sector involvement in extension services. While some areas are well-understood and accepted, others require additional education and promotion for enhanced recognition and adoption. This resonates with Saravaan (1999) and Jiyawan (2009), who found varying levels of knowledge among farmers regarding private sector involvement in extension services. This reinforces the importance of improving knowledge dissemination to ensure that farmers are well-informed about the range of services available through private extension services, in line with the recommendations of Saravannan and Gowda (2000). The findings indicate that farmers exhibit varying levels of involvement and acceptance in different aspects of private sector extension services. This aligns with the results of Bawa (2009), who reported that some farmers strongly agreed that privatization of extension services can improve delivery, while others disagreed. The disparities in farmers' practices can be attributed to the diverse nature of the services provided. Tailored approaches and effective communication strategies are crucial to ensure that farmers actively participate and benefit from private extension services, as suggested by Ajayai and Alphunu (2012). These findings highlight the importance of tailored approaches and effective communication strategies to ensure that farmers actively participate and benefit from private extension services in Kano State.

Recommendations

The study recommended that:

1. Private extension organization should improve participatory action research as an area of private extension services, in order to enhance the farmers' knowledge and skills on issues related to research and investigations towards boosting agro-business.
2. Farmers should listen and watch radio and television programmes related to agricultural extension services in order to enrich their knowledge, improve their skills and advance their capabilities in farming activities as many of such programmes were presented in radio and television. Relevant media programmes should be introduced by private sector companies and not-for profit organisations involved in extension services so as to increase awareness and participation by farmers.

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