

Exploring Smallholder Farmers' Perception on the Uptake of Agricultural Innovations in Kuje Area Council, Abuja

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Abstract: This study explored smallholder farmers' perception on the uptake of agricultural innovations in Kuje area council of Abuja, FCT. The study was carried out in three communities in Kuje namely, Chukuku, Chibiri and Dafara. The study was guided basically by four objectives which were all analysed using descriptive statistics. The communities in which the study was carried out were sampled purposively and 80 smallholder farmers were in total selected from the three communities. Well structured questionnaires were used to collect primary data. However, assistance was given to a few farmers who weren't literate enough to read the contents of the questionnaire. Findings from the study were presented in frequency and percentage distribution tables. Results from the study revealed that smallholder farmers had varying perceptions about agricultural innovations ranging from good, bad to indifferent. Most of the smallholder farmers in the study area believed that agricultural innovations are good, they however insisted that agricultural innovations were sometimes difficult to understand and also there were issues with poor follow up by the introducer of innovations (mostly agricultural extension agent). Based on this, it was recommended that: agricultural innovations should meet the needs of farmers and should be at their level of understanding. Also, introducers of agricultural innovations should endeavour to improve on their follow up activities to ensure ultimate uptake of innovation by farmers.

Keywords: Smallholders, Agricultural Innovations, Extension Agents, Knowledge

1. Introduction

For a long time, the continent's agricultural sector has been characterized by small farms, low yields and limited opportunities for innovation. Industrial and innovative agriculture has the potential to drive economic development, contribute to food security and generate income for millions of rural farmers [13]. Recent years have seen a growth in digital innovations that can address the different challenges especially faced by smallholder farmers in the agricultural and food industry. However, despite innovations and viable business models, challenges persist [14]. This is due, in part, to constraints in sharing knowledge and lesson learned among countries and regions especially in Nigeria and Africa

at large. There is a serious need for sustainable and more so innovative agricultural practices that can address these issues.

Despite the enormous promise of agricultural technologies, smallholder farmers in Nigeria appear to be hesitant to adopt them [10]. According to a study conducted by on 40 initiatives in 20 African nations, agricultural innovations had benefited 10.39 million farmers and their families on around 12.75 million hectares of land by early 2010 [11]. Risk and uncertainty play a significant impact in smallholder farmers' views of agricultural innovations, according to both theoretical and empirical literature [8, 9]. Farmers can learn about an innovation's existence, how to use it, and what the results will be in terms of products, yield, potential environmental advantages, dangers, and costs. The knowledge that an individual possesses about an innovation subsequently

becomes the foundation for the individual's views and attitudes regarding the technology. Farmers' impressions of an innovation are closely linked to their level of knowledge about it. While knowledge relates to factual facts and comprehension of how the new technology works and what it can do, perceptions refer to farmers' opinions about it based on their perceived requirements and prior experiences, which may or may not be accurate [8]. The attitude toward an innovation is determined by the combination of knowledge and perceptions about it. The attitude component, according to the theory of planned behavior, includes not just attitudes toward the behavior, but also attitudes toward subjective norms and perceived behavioural control [10]. In this scenario, we anticipate that having a positive attitude toward an agricultural invention will raise the possibility of adoption, whereas having a negative attitude will decrease the likelihood of adoption. Farmer-led extension, in which farmers are the primary agents of change in their communities and help disseminate new technology to other farms, is becoming increasingly popular [5].

More educated farmers, may be better able to digest new information more effectively [4]. In addition, it has been suggested that agricultural education may have a favorable impact on farm innovation because it raises farmers' awareness of possible advances or because education is linked to technology adoption [6]. For instance, the information requirements of precision agriculture technologies are heavier than others and some studies found that the associated human capital requirements are more likely to be met by farmers with a higher level of education [5, 7, 15].

Many studies have shown that farmers are more inclined to adopt new technology if a higher revenue is guaranteed following adoption [2, 1]. Some new technologies help farmers save money by lowering their input costs (pesticides, labor, machinery, and fuel) [3, 12]. As a result, the goal of this study is to determine farmers' perspectives on agricultural innovation adoption in the Kuje Area Council of the Federal Capital Territory (FCT) of Abuja. The specific objectives of this study are to:

- i. describe the socio-economic characteristics of the respondents in the study area.
- ii. identify various sources of agricultural innovations available to the respondents in the study area.
- iii. determine the various types of agricultural innovations available to the respondents in the study area.
- iv. ascertain constraints to the effective adoption of agricultural innovations in the study area.

2. Materials and Methods

This study was conducted in Kuje Area council of the FCT, North Central Nigeria, West Africa. Three villages in Kuje namely Chukuku, Chibiri and Dafara were purposively selected for the study due to the fact that they had an impressive number of smallholder farmers who are still very active in their farming activities and also for proximity to the researcher. The major agricultural activity engaged in by the farmers in the study area is crop farming and production. A

few of them also engage in livestock production alongside crop production. Among the major crops cultivated include yam, cassava, maize and groundnut. They also reared livestock such as poultry, goat and sheep. All on a small scale.

2.1. Population of the Study and Research Design

The study was conducted on three small-scale farmer groups in Chukuku, Chibiri and Dafara. All three villages have same socio-economic and agro-climatic characteristics and are all located within a 5sq.km radius. All the communities have access to extension agents. Descriptive research design was used to analyse the results in order to get deeper insights into the information related to smallholder farmers' perception on the uptake of agricultural innovations in their day-to-day life and activities.

2.2. Sampling Technique

Federal Capital Territory (FCT), Abuja has 6 area councils which all have equal chances of being selected, however, Kuje area council was randomly selected within which three communities; Chukuku, Chibiri and Dafara were purposively sampled due to the fact that they were located relatively close to each other and the communities contained a good number of farmers suitable for the study.

2.3. Sample Size

The sample size for the study was 80 smallholder farmers. 25 farmers from Chukuku, 30 farmers from Chibiri and another 25 farmers were selected from Dafara. Going by this sample frame, only individuals who showed interest in participating in the survey and answering the research questions were selected.

2.4. Data Collection

Primary data was collected with the use of structured questionnaires which were administered to each of the respondents. However, some of the respondents who weren't literate enough to comprehend the contents of the questionnaire were assisted and the contents were verbally explained to them to get their responses. Key focus of the study was on socio-economic characteristics of small holder farmers in the study area, the sources of agricultural innovations available to the respondents, as well as benefits of agricultural innovations on their farming activities to mention but a few. Data collection was facilitated by the principal researcher and two Village Extension Agents (VEAs) who were situated in the study areas.

2.5. Data Analysis

Descriptive statistics such as frequency and percentages were used to analyse all the data retrieved from the study. Coded results were first imputed on an Excel spreadsheet which was further transferred to the Statistical Packages for Social Sciences (SPSS) for analysis and all results were presented with the aid of frequency and percentage

distribution tables.

3. Results and Discussion

Table 1 below shows the socio-economic characteristics of respondents in the study area. The result reveals that majority of the respondents interviewed were males (70.0%) while the females made up 30.0% of the sample size. Most of the respondents were between the age range of 20-40 (90.0%) with 10.0% of them being in the age range of 41-50. This illustrates that young males within the ages of 20-40 are more dominant than females in the study area. Table 1 further reveals that 86.3% of the respondents in the study area are married while 7.50% of them are single with 56.3% and 43.8% of them being in a household size of 1-5 and 6-10 respectively. When asked whether they were natives of Kuje town or not, 85.0% of the sample size answered in the affirmative while only 15.0% were only immigrants. Progressively, the table reveals that 72.5% of the small holder farmers which made up the sample size have crop production as their major agricultural activity, 20% were into both crop and livestock farming while 7.5% were into livestock farming with 80.0% of them having farming experience of about 1-10 years. This means that crop production was the dominant agricultural activity in the study area with most of the farmers having up to 10 years of farming experience.

Table 1. Socio-economic Characteristics of Respondents in the study area.

Variables	Frequency	Percent
GENDER		
Males	56	70.0
Females	24	30.0
AGE		
20- 30	36	45.0
31- 40	36	45.0
41- 50	8	10.0
MARITAL STATUS		
Single	6	7.50
Married	69	86.3
Widowed	5	6.3
H/HOLD SIZE		
1-5	45	56.3
6-10	35	43.8
YEARS OF FARMING EXPR.		
0- 10	64	80.0
11- 20	14	17.5
21- 30	2	2.5
NATIVE OF KUJE TOWN		
YES	68	85.0
NO	12	15.0
LEVEL OF EDUCATION		
None	7	8.8
Primary	36	45.0
Secondary	29	36.2
Tertiary	8	10.0
AGRICULTURAL ACTIVITY		
Crop Production	58	72.5
Animal Husbandry	6	7.50
Crop & Livestock farming	16	20.0

Source: Field Survey, 2021.

Table 2 below shows the perception of respondents towards agricultural innovations as well as the various sources of

agricultural innovations available to the respondents in the study area. All the respondents confirmed that they have heard about and have benefitted from using agricultural innovations before. This tallies with the assessments carried out by [11]. 87.5% of the respondents agreed that agricultural innovations are good however, 2.50% believes that they are bad while 10.0% of the sample size feel indifferent about agricultural innovations. When asked about sources from which they got information about agricultural innovations from, the most responses recorded were through extension agents (100.0%), television had the second highest response (80.0%) while 63.7% got informed by their various cooperative societies. This means that agricultural extension agents have actually done a good job in delivering information about agricultural innovations to the farmers and making sure they had the right perception about these innovations.

Table 2. Perception and Source of Agricultural innovation available to Respondents.

Variables	Frequency	Percent
I have heard about an agricultural innovation	80	100.0
I have never heard about agricultural innovation	0	0.00
I have benefitted from using agricultural innovations	80	100.0
I have never benefitted from using agric. Innovations	0	0.00
Agricultural Innovations are good	70	87.5
Agricultural Innovations are bad	2	2.50
I am indifferent about them	8	10.0
SOURCES OF INNOVATIONS		
Extension agents	80	100.0
Cooperative societies	51	63.7
Village Chief	17	21.3
Colleagues	29	36.3
Television	64	80.0
Radio	46	57.5
Print media	23	28.7

Source: Field Survey, 2021.

Multiple responses recorded.

Table 3 below shows the various agricultural innovations available to respondents in the study area as well as benefits derived from them. The agricultural innovations available include improved crop varieties (92.5%), improved seeds (85.0%), knowledge on use of farm machinery (56.3%), knowledge on mixed cropping/ crop rotation (55.0%), appropriate fertilizer application technique (52.5%), appropriate plant spacing technique (46.3%), appropriate herbicide/ pesticide application technique (45.0%) and optimum soil preparations prior to planting was 27.5%. When asked about benefits derived from using agricultural innovations, in conformation with the works and the findings from [1, 2], 93.8% of the respondents affirmed that it has helped them have an increased income, 90.0% affirmed that it has helped them realise significant increase in farm yield, for 82.5% of the respondents, agricultural innovations have helped them benefit significant reduction of pest infestation on crops, 78.8% of them have reduced post-harvest losses while 71.3% have had improvements in their soil quality.

Table 3. Types of Agricultural innovations available to respondents and Benefits derived from them.

Variables	Frequency	Percent
TYPES		
Improved crop varieties	74	92.5
Improved seeds	68	85.0
Knowledge on use of Farm Machineries	45	56.3
Optimum soil preparations prior to planting	22	27.5
Appropriate plant spacing technique	37	46.3
Appropriate fertilizer application technique	42	52.5
Herbicide/ Pesticide application technique	36	45.0
Knowledge on Mixed cropping/ Crop rotation	44	55.0
BENEFITS		
Reduced Post-harvest losses	63	78.8
Reduced pest infestation on crops	66	82.5
Improved soil quality	57	71.3
Increased farm yield	72	90.0
Increased income	75	93.8

Source: Field Survey, 2021.

****Multiple responses recorded.

Table 4 shows the constraints to effective adoption of agricultural innovation by the respondents in the study area. The results show that most of the respondents (72.5%) agreed that the technology introduced was usually quite difficult for them to understand. 66.3% responded that the poor follow up exhibited by the introducer of innovation has led to a decline in the rate at which they are willing to adopt innovations. Other notable constraints which hindered the respondents from fully adopting innovations include but not limited to declined interest after the innovation has been introduced (47.5%), innovation not being suitable for them (43.8%) as well as them admitting that their current practices were much better than the innovation (38.8%). These results agree with the works of [10].

Table 4. Constraints to effective adoption of innovation by respondents.

Variables	Frequency	Percentage
Technology is too difficult to understand	58	72.5
Current practice is much better than the innovation	31	38.8
Poor follow up from the introducer of innovation	53	66.3
Declined interest after the innovation has been introduced	38	47.5
Innovation is not suitable	35	43.8

****Multiple responses recorded.

4. Conclusion

This study was conducted to further look into the perceptions smallholder farmers had with respect to uptake of agricultural innovations in Kuje area council of Abuja, Nigeria. The study had revealed the perceptions of smallholder farmers concerning agricultural innovations. At the end of this thorough study, it was discovered that smallholder farmers had varying perceptions about agricultural innovations which ranged from good, bad to indifferent. Although many of the smallholder farmers in the study area believe that agricultural innovations are good, they stood by the fact that these agricultural innovations were sometimes difficult to understand, coupled with cases of poor

follow up by the introducer of innovations, which in this case is usually the agricultural extension agent.

5. Recommendations

Going by the outcomes from this study, it can be recommended that;

1. Agricultural innovations should be tailored to the need of the farmers and well broken down to their level of understanding.
2. The introducers of agricultural innovations should endeavor to improve on their follow up activities to ensure ultimate uptake of innovation by farmers.
3. Farmers should be more educated and trained regularly in order for them to better grasp the concept of the innovation being introduced which will ultimately result in uptake of agricultural innovation by farmers.

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