

Perceived Characteristics of Innovation affecting the Adoption of Agricultural Technology among Farmers of Osun State, Nigeria

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Introduction

Agricultural technologies are generated by agricultural institutions for onward transmission to the farmers for their use. The agricultural technology being developed and promoted are in the area of farm machinery, new breeds of livestock, new varieties of crops, new farm chemicals and new techniques of production.

Even though extensive efforts are made to develop and transfer new and innovative technologies, not all are adopted by all the farmers. This calls for an examination of the technologies themselves apart from the transfer of technology process. Many a time it is likely that the technologies developed do not suit the individual needs of the farming communities. Hence it becomes necessary and imperative to understand the perception of technological features such as the cost, complexity, compatibility with user needs and situation. Hence the present study was undertaken with the following objective.

Objective

The main objective of the study was to determine the factors affecting the use of agricultural technology by farmers in Egbedore Local Government area of Osun State, Nigeria.

Methodology

Egbedore Local Government area in Osun State was the focal study area. It is bounded in the north and south by Orolu and Irepodun Local Government areas and in the east and west by Osogbo and Ejigbo Local

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Government area respectively. The farmers in the area are engaged in subsistence farming with the farming systems ranging from intercropping, monocropping to slash and Burn methods. They grow both arable and cash crops. The cash crops grown include, cocoa, kolanut and palm trees, while the arable crops include yam, maize, cassava, sweet potatoes, vegetables etc. There are also other non-farming activities in the area such as, weaving, tailoring, trading, carpentry, blacksmithing, civil service and hunting.

One block out of the 10 blocks in Osogbo zone was purposively selected because of the rurality of the block. The block comprises of 8 cells and from each of the cells 3 villages were randomly selected making a total of 24 villages. In each of the villages, 5 farmers each were randomly selected to make a total of 120 respondents. Primary data were collected from them by the use of a structured interview schedule.

The main dependent variable was the use of agricultural technology and it was measured by providing a score of 1 point each for each technology used. There were 21 technologies introduced to the farmers. Thus the maximum score for the use of agricultural technology was 21 points while the minimum score was 0 point. Likewise independent variables like age, sex, religion, marital status, educational level, organisation, and family size were scored. The annual income and farm size were measured in naira and acres respectively.

The data was analysed by the use of descriptive statistics like frequency counts, percentages, mean and Coefficient of correlation.

Results

1. Socio-economic Characteristics of Farmers

The data in table 1 shows the distribution of the respondents by their socio-economic characteristics. The table revealed that thirty six percent of the respondents were aged between 31-40 years, 27 percent were between 41-50 years while 23 percent were between 51-60 years. Eight percent of them are 61 years and above while 6 percent are between 21-30 years of age.

Table 1: Distribution of the Respondents by the Personal and Socio-economic Characteristics

Characteristics	Frequency	Percentage
Age (Years)		
21-30	6	6.0
31-40	36	36.0
41-50	27	27.0
51-60	23	23.0
61 above	8	8.0
Family Size		
1-3	20	20.0
4-6	25	25.0
7-9	53	53.0
Above 10	2	2.0
Sources of Credit		
Friends	1	1.0
Cooperative source	57	57.0
Agric Devt Bank	22	22.0
Commercial Bank	1	1.0
Personal savings	17	17.0
Other	2	2.0
Means of Land Acquisition		
Pledge	2	2.0
Purchase	14	14.0
Inheritance	74	74.0
Loan	7	7.0
Gift	3	3.0
Level of Education		
No education	8	8.0
Primary education	24	24.0
Secondary education	41	41.0
Post secondary education	27	27.0
Organization		
Cooperative society	72	72.0
Farmers organisation	17	17.0
Social club	6	6.0
Religious organizations	5	5.0
Farm Size		
1-2 acres	18	18.0
2.1-3.0 acres	34	34.0
3.1-4.0 acres	39	39.0
4.1 above acres	9	9.0

This implies that majority of the farmers were adults with responsibilities and the number of youth who were farmers was significantly small.

Majority (53%) of the respondents had their family size between 7-9 numbers and only 20 percent had a small family size of between 1-3 members. The reason, according to some of the respondents, is that keeping large family size enhances the family free labour force.

When farmers were interviewed about their sources of credit, cooperative source of fund ranked the highest (57%), followed by Agriculture Development Bank (22%), personal savings source (17%) and from friends and Commercial Bank (1%).

Ninety one percent of the respondents had less than 4.0 acres of land and only 9 percent had between 4.1 acres and above.

Majority (74%) inherited their land, 14 percent had purchased the land, 7 percent got them through loan, 3 percent as a gift and 2 percent from pledge. Ninety two percent of the farmers had some form of formal education while 8 percent had no formal education at all.

Majority (72%) of the respondents were members of cooperative society, 17 percent were with farmers' organisation and 6 percent with social clubs. The remaining 5 percent were with religious organizations

2. Agricultural technology adoption by the farmers

The data in Table 2 shows that majority (97%) of the respondents adopted improved maize seedlings, 96 percent adopted fertilizer application in maize, 93 percent used herbicide for clearing, 87 percent of the respondents have adopted improved cassava stem, 60 percent adopted ridomine chemical fungicide, 46 percent each adopted tractor for clearing and improved cocoa seedlings respectively. About 48 percent used improved cowpea seedlings, 37 percent have adopted improved banana suckers, 30 percent have adopted improved okra seedlings, and 20 percent have adopted seed rate and optimum rice. Twenty two percent adopted vaccination programme, 21 percent adopted

new formulation of feed and feeding in poultry, 26 percent adopted weed control, 16 percent adopted the use of new varieties, 20 percent adopted efficiency in cropping and harvesting, 16 percent each also adopted management practices and control of disease and parasites respectively, and lastly 13 percent adopted improved cashew seedlings.

Table 2: Adoption of Agricultural Technology by the farmers

Technology Packages Used	Frequency	Percentage
Improved maize seedling	97	97.0
Fertilizer application in maize	96	96.0
Use of herbicide	93	93.0
Improved cassava stem	87	87.0
Ridonine chemical in cocoa	60	60.0
Improved cowpea	48	48.0
Improved cocoa seedling	46	46.0
Improved plantation and banana suckers	37	37.0
Improved okra seedlings	30	30.0
Fertilizer application	28	28.0
Weed control	26	26.0
Vaccination programme	22	22.0
Feeds and feeding	21	21.0
Efficiency in cropping and harvesting	20	20.0
Seed rate and optimum rice	20	20.0
Pond stocking in fishery	16	16.0
Control of disease and parasites	16	16.0
Use of new varieties	16	16.0

(Multiple responses)

3. Technology Related Factors affecting the use of the technology

Table 3 reveals that 100 percent of the respondents acknowledged that both divisibility and simplicity are technology related factors affecting their use of the technology while 98 and 91 percent of them considered cost and complexity as related factors. Only 72 percent agreed about relative advantage of the

Table 3: Distribution of Farmers by Technology Related Factors

Technology Factors	Frequency	Percentage
Cost	98	98.0
Complexity	91	91.0
Relative advantage	72	72.0
Divisibility	100	100.0
Simplicity	100	100.0
Compatibility	60	60.0

technology being a determining factor for the use of technology while 60 percent of the farmers take its compatibility as a factor.

4. Relationship of technology characteristics with its usage

The data in table 4 shows that cost, divisibility and complexity have a significant but negative relationship with the use of technology. It implies that high cost of technology and complexity will reduce or hinder the use of such technology while the extent to which the technology can be used in part also

Table 4: Relationship of the Technology Characteristics and the Use of the Technology

Technology Characteristics	R (Coefficient of Correlation)
Cost	-0.316**
Complexity	-0.298**
Relative advantage	0.365
Divisibility	-0.338**
Simplicity	0.460**
Compatibility	0.124

influences the adoption of the technology. Simplicity has a positive and significant relationship with the use of technology, likewise its relative advantage and compatibility but with non-significant relationship. Thus the more simple, better and compatible a technology is, the higher is its level of adoption.

Therefore, there is significant relationship between the use of agricultural technology and the technology characteristics.

Conclusion and Recommendations

The study has examined some factors affecting the use of agricultural technology in Egbedore Local Government Area. Information was obtained from 100 respondents randomly from 24 villages of the local government. The findings revealed among others that majority (74%) of the respondents inherit their land, 92 percent had one form of education or the other and 72 percent were identified with cooperative society. Different forms of agricultural technology were adopted ranging from use of improved maize and cocoa seedling to vaccination programme. Cost, complexity, relative advantage, divisibility, simplicity and compatibility are identified as technology related factors affecting the use of technology itself.

Government and Non-Governmental Organisations (NGOs) should organise seminars on the importance of the use of agricultural technology for increase in food production. Research institutes should be encouraged and assisted to produce technology that has greater relative advantage over and above the existing practice of the farmers. Likewise such technology should be subsidized to make it affordable.

