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Attitude of farmers towards improved agricultural technologies in south-west Nigeria

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The study on farmers' attitude towards improved agricultural technologies was carried out to investigate the farmers' attitudes, demographic, economic, socio-cultural and environmental characteristics as well as the contribution to sustained use index of these and some other independent variables. Two hundred and eight (208) farmers/respondents consisting of 133 that adopted and sustained the use of agricultural technologies and 75 that abandoned the use of already adopted technologies were selected from 5 zones of agricultural development programmes in Oyo, Osun and Ondo States using a multi-stage random sampling procedure. Structured interview schedules as well as in-depth study devices were used to collect data, which were analyzed using appropriate descriptive and inferential statistics. Sustained users had a higher level of each of these variables. However, it was found that farmers that sustained the use of technologies were not significantly different in the adoption pattern of technology (F = 0.26), extension contact (F = 0.16), attitude towards improved technology (F = 0.21) and organizational membership (F = 1.16) across the states. Agricultural technologies developed and disseminated should meet farmers' socio-cultural, economic and environmental changing situations and technologies should be cost effective and flexible for result oriented adoption and adaptation is therefore, recommended.

Key words: Attitude, farmers, agricultural technologies.

INTRODUCTION

Agricultural development has been described as the shift from traditional methods of production to the use of modern techniques (Swanson and Claar, 1984). This has affected Nigeria as a two-way strategy at various times. First, as the transformation type, which is the creation of capital-intensive projects and secondly, the improvement approach, which is the diffusion of high pay-off agricultural inputs and improved practices, derived from research institutes by extension agents and input supply organizations to small-scale farmers. This accounts for the establishment of many research institutes as the third component of the agricultural production macro-system (Havelock, 1972).

Karanyo (2002) affirmed that, new technology in all areas has improved agricultural production, thus, its sustainability. Today's agriculture is using best management practices (BMP's), by targeting many of its applications, not broadcasting as was done in the past. New disease resistant hybrids, biological pest control,

reduced pesticide use, cultural practices that reduce the incidence of pests and diseases and better placement and reduced amounts of fertilizers are all being employed. Insect specific chemicals and biological insect controls are now being utilized, instead of broad-spectrum pesticides, which actually reduce the number of sprays needed along with costs.

Williams (1978) affirmed that, the major constraint to the performance of the agricultural sector was ineffective agricultural services characterized by lack of clear mission and indirect and weak extension-farmer linkages. Purcel (1993) further added that, the performance of Training and Visit (T&V)-based extension system has generally been weak, while Byerlee (1997) and Maunder (1972) concluded the following: returns to extension are high only if the prices are right and complementary services are available such as input supply. These conditions are often not met, especially in more difficult environments; inadequate understanding of farming

systems and of farmers' opportunities and constraints including risk aversion practices and coping strategies make recommendations inappropriate; the number of relevant messages for a difficult environment is generally limited and brings unsteady flow of new technology; the extension system is generally gender biased, as the new technologies are developed and transferred to increase yield, the complimentary relief on the male counterpart are included in the package, whereas the tasks women usually cope with are often left unaddressed. The specific needs, opportunities and constraints faced by women farmers have been neglected. More so, farmers' attitudes are not often considered in the development of agricultural technologies.

Therefore, this study attempts to assess farmers' attitude towards improved agricultural technologies as well as the contribution towards improved agricultural technologies among sustained and abandoned users in south-west Nigeria.

MATERIALS AND METHODS

The multi-stage sampling procedure was used to randomly select three states namely Oyo, Osun and Ondo, where adoption (full or partial) of cassava recommended technologies had been reported (IAR&T, 2000).

The second stage of the sampling procedure consists of purposive selection of two zones of Agricultural Development Programme (ADP) per state; however, only one zone was eventually considered fit for Ondo State for logistic reasons. This represents about 60 and 50% of the zones in the States, respectively. The zones are Saki and Ibadan/Ibarapa in Oyo State, Iwo and Ife/Ijesha in Osun State and Akure in Ondo state.

Stage three consists of random selection of two blocks from the lists of blocks per zone where adoption of the technologies in question had taken place. The blocks selected were Saki, Igboho, Ido and Akinyele in Oyo State; Iwo, Ejigbo, Ijebu jesha and Atakumosa in Osun State; Ishua and Ibule in Ondo State. Stage four comprised of four cells selected randomly, representing 50% of the selected blocks.

Lastly, stage five was the purposive selection of three farm households who have sustained use of the technologies and three farm households that abandoned the technologies from the list of farmers that had adopted the technologies earlier. This was derived from a preliminary survey that was carried out with the assistance of extension staff of the Agricultural Development Programme (ADP). This helped in identifying the farmers that had adopted selected technologies within a stipulated period of time. The time frame chosen was between 1990 and 1995, this period recorded high adoption rates in the crop technologies according to ADPs' reports.

Data collection and instrument for data collection

The use of primary and secondary data was employed for this study. Secondary data were the information obtained from literature, project reports, official documents, publications and consultation and library materials among others. Primary data were collected through the use of a structured and validated questionnaires consisting of both open and closed-ended questions to elicit information from the target respondents. Trained enumerators who have the knowledge of the dialect of the clientele were used to assist in the collection of information required.

The data were first collected in 2004 and were validated in 2006. The Dependent variable of the study is sustained using an index; it was measured as not sustained / abandoned the use of adopted technology and still using / sustained the use of previously adopted agricultural technologies within a stipulated period of time. Scores were assigned as follows: abandoned use/not sustained = 1; still using/sustained use = 2.

Sustained use index was then developed from the list of cassava technologies with maximum score of 18. The data analysis was carried out using statistical package for the social sciences (SPSS). Descriptive statistics such as frequencies, percentages, means, standard deviation and ranges were used.

In-depth interviews were conducted with some experienced personnel in the community who were sustained and abandoned users to elicit information to substantiate attitude scores using five-point Likert scale.

Respondents were requested to respond on a five point Likert type scale of strongly agreed; agreed, undecided, disagreed and strongly disagreed scores were assigned as follows: 5 = strongly agreed; 4 = agreed; 3 = undecided; 2 = disagreed; 1 = strongly disagreed, for positive statements but reversed for negatively worded statements. The higher the score the more favorable the attitude.

In-depth Interviews

Ten (10) selected respondents at 5 sustained users with full utilization of the recommended practices on the crops. And 5 abandoned users with non-usage of recommended practices per state from 3 states namely Oyo, Osun and Ondo.

Questions

What types of crops do you grow on your farms?; (2) what is the source of your information?; (3) where are the sources of your inputs; (4) what is the source of your capital; (5) what are the various cost incurred on the production of one ha of maize, cassava and soybean, respectively?; (6) how do you maintain your farm?; (7) how do you sell your produce?; (8) do you keep records?; (9) how do you know the venture is profitable?; (10) any other information?

The data collected were subjected to statistical analysis with the use of statistical package for social science, using appropriate tools.

RESULTS AND DISCUSION

The selected socio-economic characteristics of the respondents in this study were age, sex, marital status, level of education, religious affiliation, family size, gender of household head and organizational membership.

Mean age of respondents was 49 years ranging from 20 to 77 years (Table 1). The modal age group was 41 to 50 years. Almost half of the respondents (48.56%) fell within the age bracket of 41 to 50 years. Those of 51 to 60 years make up only 30.29% of the respondents, while those above 60 to 70 years were 5.77% and only 0.48% was above 70 years (Table 2). In addition, some 12.50% were within 31 to 40 years age bracket, 1.92% was within 21 to 30 years of age and only 0.48% was a maximum of age 20 years old. A total of 14.90% of respondents fell

Table 1. Attitude statements on improved agricultural technologies.

S/N	Attitude statements	SA	A	UD	D	SD
1	I prefer local variety to the improved variety					
2	Improved technologies are only for the educated					
3	It is usually for the rich farmers only					
4	They are too complex for my liking					
5	They require regular contact with extension workers					
6	Better quality than local variety					
7	Better yield than local variety					
8	They have good storage quality					
9	More expensive than local variety					
10	Have high labour requirement					
11	Easier to market than local variety					
12	Better in taste than local variety					
13	They are not culturally suitable					
14	They damage my environment					
15	They do not conform with land tenure system					
16	Makes one feel socially relevant					
17	No much difference between improved and local variety					
18	They are usually more time consuming					
19	Inputs are usually unavailable					
20	It requires more capital outlay					

S/N, Serial number; SA, strongly agreed; A, agreed; UD, undecided; D, disagreed; SD, strongly disagreed.

Table 2. Distribution of respondents according age.

Variable	Sustained users (N = 133)		Abandoned users (N = 75)		All respondent (N = 208)	
	Frequency	%	Frequency	%	Frequency	%
Age group						
≤20 years	1	0.75	-	-	1	0.48
21-30	1	0.75	3	4.00	4	1.92
31- 40	16	12.03	10	13.38	26	12.50
41-50	62	46.62	39	52.00	101	48.56
51-60	43	32.33	20	26.67	63	30.29
61-70	9	6.77	3	4.00	12	5.77
Above 70	1	0.75	-	-	1	0.48
Mean	49.71		47.07		49.00	
Range	30 - 77yrs		20 - 65yrs		20 - 77yrs	
Standard deviation	8.28		8.72		8.76	

%, Percentage. Source: Adapted from Ogunsumi (2010).

below the modal age group, while a total of 36.54% rose above it. A large proportion of 78.85% were within the 41 to 60-age range (Table 2). Respondents got engaged in various types of occupation both primary and secondary.

Primary occupation: Majority of the farmers (86.54%) were crop farmers, while 1.92% were livestock farmers (Table 4). Other primary occupations engaged by the respondents include trading (2.40%), hunting (0.96%), civil service (5.77%), gathering and selling of non-timber forest products (1.42%) and 0.96% did not indicate their specific primary occupation. A total of 87.46% of respondents were farmers, while 12.54% got engaged in other activities as their main occupation.

Secondary occupation: The respondents that had crop farming as their secondary occupation were 8.65%. Similarly, 8.65% of the respondents did not indicate their

Table 3. Distribution of respondents by their main and secondary occupation.

Occupation	Primary						Secondary					
	Sustained		Abandoned		All respondent		Sustained		Abandoned		All respondent	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Crop farming	115	86.47	65	86.67	180	86.54	10	7.52	8	10.67	18	8.65
Livestock	2	1.50	2	2.67	4	1.92	15	11.28	7	9.33	22	10.58
Trading	5	3.76	-	-	5	2.40	43	32.23	30	40.00	73	35.10
Hunting	2	1.50	-	-	2	0.96	30	22.56	19	25.33	49	23.56
Civil service	6	4.51	6	8.00	12	5.77	-	-	-	-	-	-
Gathering & selling non-timber forest products	1	0.75	2	2.67	3	1.42	18	13.53	6	8.00	24	11.54
Graft	-	-	-	-	-	-	2	1.50	2	2.67	4	1.92
No indication	2	1.50			2	0.96	15	11.28	3	4.00	18	8.65

Source: Adapted from Ogunsumi (2010).

secondary occupation when they were asked. Only 10.58% of the respondents had livestock farming as secondary occupation. However, a large proportion (35.10%) had trading as secondary occupation, while 23.56% were hunters by their secondary occupation and 11.54% engaged in gathering of non-timber forest product. The rest 1.92% engaged in crafts work as secondary occupation (Table 3).

Only 1.44% of the respondents had no male member in the household, 44.23% had only one male member in each of the households (Table 4). About 29.00% had 2 male members each and 12.98% had 3 male members in each of the households. The respondents with 3 and 4 male members were 7.21 and 4.32%, respectively. The mean of the male members among the respondents' households was 1.95 males with a range of 0 to 6 persons, while the modal male number was 1 (Table 4).

Similarly, the female members in the households of the respondents followed the same trend. Only 1.44% of the respondents had no female member in their households, while 25.48% had only one female member. About 36.00% had 2 female members in the household, while 15.38% had 3 female members in their household set up. The respondents with 4 females in the household were 12.50%, while 4.81% had 5 female members in the household and the remaining 0.96% had 9 female members in the household. The mean of the female member in the household set up was 2.52 females among the respondents with a range of 0 to 9 and the modal being 2 females (Table 4.).

Number of children in the household varied from 0 to 35 children with a mean of 4.49 and modal group of 3 and 4 children. Only 3.85% of

respondents did not have any child in the family. Those ages considered as children were any individuals with age less than 18 years. About 10.00% had only one child, while 16.83% had two children. Those with three and four children in the households were 17.79% each. Only 1.44% had five children and about 11.00% had six children, while 13.90% had nine and above members of household (Table 4).

The mean attitude score of the respondents was 64 with a range of 63 to 67 scores. The respondents that showed negative attitude towards improved technology were about 54%, while the rest 46% had positive attitude. The trend was the same in the two groups of respondents interviewed; the sustained users that had negative attitude towards improved technologies were about 56% as against 52% for the abandoned users. However, about 44% of sustained users

Table 4. Distribution of household membership by sex.

Household membership	Sustained users (N= 133)		Abandoned users (N= 75)		All respondent (N= 208)	
	Frequency	%	Frequency	%	Frequency	%
Male number in household						
0	1	0.75	2	2.67	3	1.44
1	66	49.62	26	34.67	92	44.23
2	36	27.07	25	33.33	61	29.33
3	15	11.28	12	16.00	97	12.98
4	9	6.67	6	8.00	15	7.21
5	5	3.76	4	5.33	9	4.32
Above 5	1	0.75	-	-	1	0.48
Mean	1.88		2.08		1.95	
Range	0 to 6		0 to 5		0 to 6	
Standard deviation	1.17		1.19		1.18s	
Female number in household						
0	1	0.75	2	2.67	3	1.44
1	39	29.32	14	18.67	53	25.48
2	43	32.33	31	41.33	74	35.58
3	20	15.04	12	16.00	32	15.38
4	18	13.53	8	10.67	26	12.50
5	6	4.51	4	5.33	10	4.81
6	3	2.26	2	2.67	5	2.40
7	1	0.75	2	2.67	3	1.44
8	-	-	-	-	-	
9	2	1.15	-	-	2	
Above 9	-	-				
Mean	2.48		2.59		2.52	
Range	0 to 9		0 to 9		0 o 9	
Standard deviation	1.58		1.68		1.61	
Children number in household						
0	8	6.02	-	-	8	3.85
1	13	9.77	7	9.33	20	9.62
2	24	18.05	11	14.67	35	16.83
3	22	16.54	15	20.00	37	17.79
4	23	17.29	14	18.67	37	17.79
5	3	2.26	-	-	3	1.44
6	9	6.77	13	17.33	22	10.58
7	3	2.26	2	2.67	5	2.40
8	6	4.51	1	1.33	7	3.37
9	2	1.50	3	4.00	5	2.40
Above 9	20	15.04	9	12.00	29	13.9
Mean	4.81		3.92		4.49	
Range	0 to 35		0 to 17		0 to 35	
Standard deviation	4.61		3.79		4.35	

Source: Adapted from Ogunsumi (2010).

had favorable attitude as against 48% of the abandoned users (Figure 1). In addition, the respondents either had positive or negative attitude, no individual had neutral attitude towards the use of technologies in the study area. However, majority of the respondents had negative attitude.

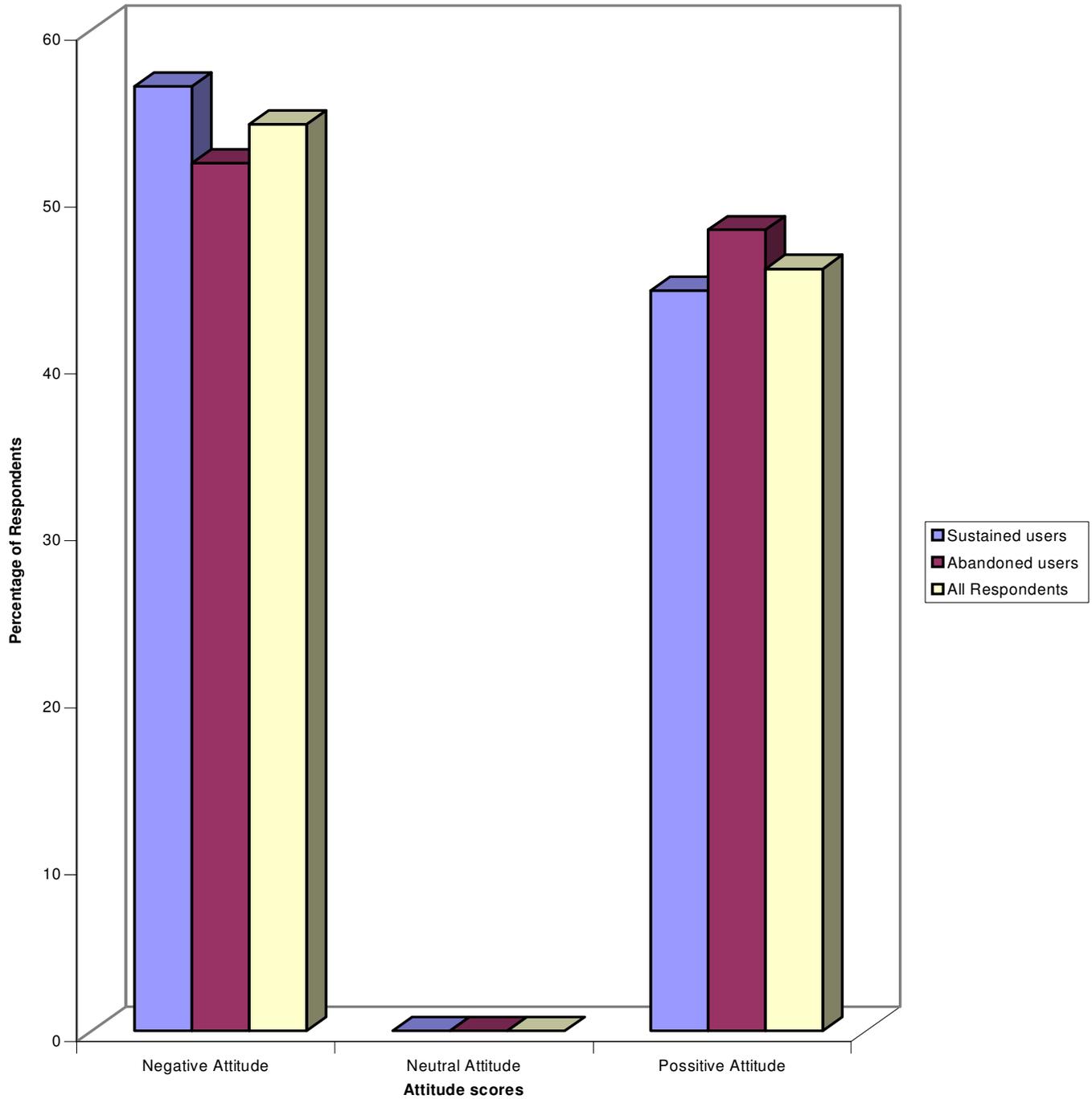There was no significant relationship (p>0.05) between the farmers that sustained the use of

Figure 1. Distribution of respondents according to attitude.

technologies and those that did not with respect to selected dependent variables (adoption pattern, factor affecting adoption of technology, pattern of resource use, attitude towards improved technology and output) (Table 4). Attitude of respondents towards improved technology was significant (P < 0.05) with the factors affecting sustained use of maize and cassava technology and their correlation analysis gave 0.44 and 0.34,

respectively (Table 5).

There was no significant difference (p>0.05) in the sustained use of technology among the three selected states with regards to selected dependent variables (adoption pattern of technology, pattern of resource use, attitude towards improved technology and output. There was no significant difference (p>0.05) among the three selected states namely Oyo, Osun and Ondo states with

Table 5. Analysis of variance (ANOVA) results.

Parameter	Category	Sum of squares	Df	Mean square	F	Sig.
ORGMEMB	Between groups	4.832	2	2.42	1.16	0.32
	Within groups	427.548	205	2.09		
	Total	432.380	207			
RESOURCE USE	Between groups	.192	2	9.589E-02	0.16	0.86
	Within groups	126.558	205	0.617		
	Total	126.750	207			
FACMAIZ	Between groups	17.589	2	8.80	0.37	0.69
	Within groups	4923.931	205	24.02		
	Total	4941.519	207			
FACCASS	Between groups	53.538	2	26.77	0.32	0.73
	Within groups	17091.880	205	83.38		
	Total	17145.418	207			
FACSOY	Between groups	33.090	2	16.55	0.34	0.71
	Within groups	10022.290	205	48.889		
	Total	10055.380	207			
ATTT	Between groups	0.616	2	0.308	0.21	0.818
	Within groups	296.903	205	1.448		
	Total	297.519	207			
OUTPUT	Between groups	22.724	2	11.362	0.26	0.774
	Within groups	9092.540	205	44.354		
	Total	9115.264	207			
STOT	Between groups	28.107	2	14.053	2.31	0.101
	Within groups	1244.850	205	6.072		
	Total	1272.957	207			
CTOT	Between groups	9.229	2	4.615	0.75	0.473
	Within groups	1260.002	205	6.146		
	Total	1269.231	207			
MTOT	Between groups	9.229	2	4.615	0.75	0.473
	Within groups	1260.002	205	6.146		
	Total	1269.231	207			

Age , Age of respondents; ORGAMEMB, respondents' membership into organization; EX FACMAIZ, factors affecting maize technology sustainability; FACCASS, factors affecting cassava technology sustainability; FACSOY, factors affecting soybean technology sustainability; ATTT, farmers' attitude towards improved technology; DF, degree of freedom; F, frequency; NS, non significant at p > 0.05; sig., significance at p ≤ 0.05 level. Source: Ogunsumi (2004).

sustained and should be encouraged. This will further encourage specialization in agricultural production in which an area will produce the crops which it has comparative advantage over others and that, the three states might have the same socio-cultural, vegetation and environment. No wonder the three states are grouped together under the same agricultural and geo-political zones. The implication is that, levels of sustained use of

technologies among the states were the same.

Conclusion

The evidence from the study showed that, sustained users have not maximized their capability as they have larger room for expansion and higher productivity than abandoned users. It is therefore concluded that, sustained user of technology in the three states (Oyo, Osun and Ondo) were significantly different in most dependent variables studied except in few cases. Majority of the respondents' positive attitude towards the selected technologies is an indication of the importance of improved agricultural technologies in the study area. The farmers in the study area adopted the technologies at varying times, the level of adoption as well as positive attitude are higher among the sustained users than abandoned users.

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