

Socio-economic Conditions of Peasant Farmers: The Case of Agricultural Technologies' Sustainability in Southwest Nigeria

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Abstract: Agricultural productivity and total annual food and fibre production in Nigeria are pitifully poor much below expectation. This study examined socio-economic conditions of peasant farmers and the consequences on agricultural technologies in Southwest, Nigeria. Structured interview schedules as well as in-depth study devices were used to collect data, which were analyzed using appropriate descriptive and inferential statistics. The study revealed, though both categories of farmers had most demographic characteristics in common, sustained users were older and had larger farm size. The study further revealed that there were significant positive correlations between age and adoption pattern ($r=0.16$), age and soybean adoption level ($r = 0.15$), age and cassava adoption level ($r=0.14$), organizational membership and extension contact ($r = 0.21$), factors affecting sustained use of maize and cassava technologies ($r = 0.09$) while a negative significant correlation exists between factors affecting sustained use of maize technology and extension contact ($r = -0.15$). There were also significant positive correlations between attitude of farmers towards improved technologies and factors affecting the sustained use of maize technologies ($r = 0.44$). However, policy makers and rural development workers should be conscious of the fact that sustained users are older and therefore are likely to be more conservative to changes. It should be noted that younger people are moving away from agriculture and that both categories of farmers require constant contact with the extension services. If their current condition is to be improved substantially.

Key words: Socio-economic conditions of peasant farmers, agricultural technologies, sustainability

INTRODUCTION

In West Africa, population density decreases from the coastal and humid forests in the south towards the transition zone in the middle and it increases again in certain areas of the dry semi humid savanna in the north [1]. Most of the agricultural farms are on small-scale cultivation varying from 0.1 to 10 ha, making the farmers peasant in nature [2-5].

Generally, the road infrastructure is deficient in West Africa especially in Nigeria, bringing a major constraint to marketing of the produce where applicable. As a result, Manyong *et al.*, [6] concluded that major production centres in the south have attracted both international and national funds to maintain roads in good condition. However, the poor quality of road infrastructure increases marketing costs of inputs and hence their prices for small-scale farmers especially compared to staple food prices.

The growth rate of total food production between 1970 and 1998 as shown in Table 1 shows a decline in food production. This is due to the fact that the period 1970-1980 coincided with the oil boom era. The high demand for food was met by cheaper and higher quality imported food items, which cannot be sustained and led to rural urban migration [7]. After 1980, the problem of foreign exchange started to set in due to decline in petroleum export earnings. This however, led to some extreme policy responses. For instance, an embargo was placed on the importation of cereals and other selected food products. As imports declined, consumers were compelled to patronise local items. Farmers responded favourably to the selected demand for local food. As a result both the total and per capital food production increased substantially between 1981 and 1985 [8]. This trend continued, as total food production rose from 14.13 percent in 1986 to 26.70 percent in 1997, it dropped, but rose again to 20.16 percent in 1998 and dropped even then

Table 1: Percentage growth rates of total food production in Nigeria 1970-2000

Year	Output ('000Mt)	Annual percentage production growth rate of food
1970	30818	-14.49
1971	26352	-26.98
1972	19243	14.12
1973	21961	18.40
1974	26003	-15.42
1975	21993	-14.24
1976	18862	-5.48
1977	17828	-10.38
1978	15977	5.36
1979	15121	1.98
1980	15421	1.84
1981	15704	4.72
1982	16445	-13.40
1983	14242	7.50
1984	29552	6.93
1985	31601	2.88
1986	32512	14.13
1987	37106	26.70
1988	47015	12.25
1989	52772	6.05
1990	55964	20.76
1991	67581	11.10
1992	75085	4.80
1993	78691	3.95
1994	81802	3.04
1995	84286	4.50
1996	88080	3.11
1997	90817	5.80
*1998	96080	3.10
*1999	99054	2.31
*2000	99365	0.31

Source, C.B.N. Statistical Bulletin (1997):114. (Crop considered includes grain equivalents of maize, millet, sorghum, rice, wheat, yam, cassava, plantain, acha, coco-yam, cowpea and vegetables).

*Estimated figures

to 0.31 since 1999 (Table1). Subsequently, the high cost of production caused by high prices of fertilizers and agro-chemicals, as well as high cost of labour depressed food production [9, 10].

Furthermore, the contribution of agriculture to Gross Domestic Product (GDP) valued at 1984 factor cost was N54, 148.9m in 1970, N 96, 098.5m in 1977 which increased to N111, 070m in 1997. The capital allocation to agriculture increased tremendously from N33.9m in 1981 to N1, 682.2m in 1997. The GDP, which had declined at the rate of 2 percent per annum, registered a positive growth rate of 5 percent per annum during 1970 to 1986 only (Table 2). Also, government inconsistent import policies, its

Table 2: Contribution of agriculture to the economy and federal government agricultural finance in Nigeria 1970-2000

Year	GDP at 1984 price (N' million)	Agric GDP (N' million)	Contribution of agric to total GDP percentage	Capital allocation to agric (N' million)	Percentage annual incremental allocation to agric
1970	54,148.9	7752.3	5.00	140.05	0
1971	65,707.0	7752.3	5.00	140.05	0
1972	69,310.6	7752.3	5.00	140.05	0
1973	73,763.1	7752.3	5.00	140.05	0
1974	82,424.8	7752.3	5.00	140.05	-26.67
1975	79,988.5	6947.2	5.00	190.98	77.26
1976	88,854.3	6838.4	5.00	107.74	29.14
1977	96,098.5	7305.3	5.00	83.43	0.13
1978	89,020.9	6673.7	5.00	83.32	-54.58
1979	91,190.7	5785.0	5.00	183.46	4.48
1980	96,186.6	6071.0	5.00	175.60	417.99
1981	70,395.9	10,088.0	5.00	33.90	-0.59
1982	70,157.0	11,274.0	4.57	34.10	16.38
1983	66,389.5	12,870.0	4.41	29.30	-10.67
1984	63,006.4	16,920.0	4.72	32.80	0.31
1985	68,918.3	19,729.0	4.62	32.70	-0.61
1986	71,075.9	20,442.0	4.53	32.90	12.67
1987	70,741.4	31,314.0	3.42	29.20	-46.22
1988	77,752.5	48,679.0	2.93	54.30	-33.05
1989	83,495.2	56,577.4	3.93	81.10	-61.03
1990	90,342.1	68,416.7	3.77	208.10	71.84
1991	94,614.1	80,002.0	4.00	121.10	-25.02
1992	97,431.1	120,720.1	4.51	161.50	-84.09
1993	100,015.2	196,133.8	3.53	1,015.3	10.48
1994	101,330.0	296,966.8	3.07	919.00	-58.90
1995	103,510.0	527,470.0	3.72	2,236.00	33.00
1996	107,030.0	705,470.0	3.90	1,681.20	-0.06
1997	110,070.0	794,240.0	3.81	1,682.20	0
1998	111,060.0	798,540.0	7.19	1,682.20	0
1999	120,078.0	879,487.0	7.32	1,682.20	0
2000	122,345.0	889,589.0	7.27	1,682.20	0

Source: Federal office of statistics: Annual abstract 1997-1999, Digest of statistics 1986 and 1996. Central bank reports 1986, 1999 and 2000. FGN: Government press budget estimate of Nigeria 2000

unrealistic exchange rate and industrial policy based on imported raw materials, the rising fiscal and trade imbalances and the mounting international debt, all have had a significant negative impact on economic growth [11].

However, the overall objectives of the nation for self-sufficiency in food production have not been fully achieved as petroleum currently provides nearly 90 percent of the foreign exchange earnings and 80 percent of government revenue. In order to provide the required amount from the agricultural sector to fulfil its

roles, there had been investments on agricultural research and extension services at various times.

Research reports have indicated that smallholder farmers who constitute about seventy percent of the rural population sustain Nigerian agriculture. As a result food crops like roots, tubers and vegetables are cultivated predominantly in the rain forest zone of the south, grains and cereals are cultivated in the savanna zone of the north [12-15].

MATERIALS AND METHOD

The multi-stage sampling procedure was used to randomly select three states namely Oyo, Osun and Ondo where adoption (full or partial) of soybean recommended technologies had been reported [16].

The second stage of the sampling procedure consists of purposive selection of two zones of ADP per state; however only one zone was eventually considered fit for Ondo State for logistic reasons. This represents about 60 and 50 percent 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 percent of the selected blocks.

Lastly, stage five was the purposive random selection of three farmers' households who have sustained use of the technologies and three farmers' households that abandoned the technologies from the list of farmers that had adopted the technologies. This was derived from a preliminary survey that was carried out with the assistance of Extension staff of the ADPs. 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 three crops according to ADPs' reports.

The proposed sample size amounted to a total of 240 households for both sustained users and abandoned users of technology. However, a sample size of 208 farmers' households was eventually considered for the survey, being the group having adequate information required for the survey. The distribution of the sample in the five zones is shown in Table 3.

Table 3: Distribution of respondents according to their social status and religious affiliation

Group	Sustained user		Abandoned		All respondents	
	Freq	%	Freq	%	Freq	%
Group social status	N= 96		N=55		N=151	
Village head	8	8.33		7.27	12	7.95
Chieftaincy title	15	15.63	4	7.28	19	12.58
Household head	72	75.00	45	81.82	117	77.48
Others	1	1.04	2	3.64	3	1.99
Religious denomination	N=133		N=75		N=208	
Christianity	74	55.64	50	66.67	124	59.62
Islam	57	42.86	23	30.67	80	38.46
Traditional worshipers	2	1.50	2	2.67	4	1.92

Source: Ogunsumi, 2004

In-depth interviews were conducted with some experienced personnel in the community who were sustained and abandoned users to elicit information to substantiate other findings.

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 questionnaire consisting of both open and closed-ended questions to elicit information from the target respondents.

RESULTS AND DISCUSSION

Social status: The majority of the respondents being household heads denotes that major decision on agriculture activities are influenced by the respondents. It also affirms that the respondents were responsible as others belong to one form of social status or the other. (Table 3).

Iwueke [17] found out that social participation was one of the variables that positively related to the farmers' decision to adopt new practices and that the adoption of small scale farmers could not be predicted on the basis of family size and farming experience but by peer-group's decisions. This study however agrees with his findings as 77.48 percent of the respondents were household heads (Table 3).

The most popular religions among respondents were Christianity and Islam. As presented in Table 3 which implies that farmers in the study area were religious and were committed to serve God.

Table 4: Distribution of respondents according to types of organisation and position held

	N = 133 Sustained user		N = 75 Abandoned user		N = 208 All respondents	
	Freq	%	Freq	%	Freq	%
Co-operative						
No involvement	5	3.76	-	-	5	2.40
Member	118	88.72	65	86.67	183	87.98
Officer	10	7.52	10	13.33	20	9.61
Age group						
No involvement	122	91.73	71	94.67	193	92.79
Member	11	8.27	4	5.33	15	7.21
Officer	-	-	-	-	-	-
Village council						
No involvement	34	25.56	26	34.67	60	28.45
Member	96	72.18	49	65.33	145	69.71
Officer	3	2.26	-	-	3	1.44
Agric, Ext Committee						
No involvement	12	9.02	6	8	18	8.65
Member	121	91.98	69	92	190	91.35
Officer	-	-	-	-	-	-
Women in agriculture						
No involvement	128	96.24	72	96	200	96.15
Member	5	3.76	3	4	8	3.85
Officer	-	-	-	-	-	-
Farm leadership						
No involvement	17	12.78	8	10.67	25	12.02
Member	115	86.47	65	86.67	180	86.5
Officer	1	0.75	2	2.67	3	1.44
Social clubs						
No involvement	91	68.42	54	72	145	69.71
Member	38	28.57	19	25.33	57	27.4
Officer	4	3.01	2	2.67	6	2.88
Religious society						
No involvement	38	28.57	19	25.33	57	27.4
Member	30	22.57	25	33.33	55	26.44
Officer	65	48.87	31	41.33	96	46.15
Other organisation						
No involvement	129	96.99	74	98.67	203	97.59
Member	3	2.26	1	1.33	4	1.92
Officer	1	0.75	-	-	1	0.48

Source: Ogunsumi and Ewuola, 2005

Investigation on respondents' involvement in different organisation gave an insight into their involvement in the different organisational groups. Majority of farmers were members of cooperative society. Farmers belong to more than one organisational group. Majority of them also play roles of holding one office or the other.

The involvement of the respondents in all the categories of organisation investigated into in this study shows a form of social participation. Daane and Mangbo

Table 5: Analysis of Variance (ANOVA) results

		Sum of	Mean	F	Sig.	
		squares	Df square			
Orgmemb	Between groups	4.832	2	2.42	1.16	.32
	Within groups	427.548	205	2.09		
	Total	432.380	207			
Resource Use	Between groups	.192	2	9.589E-02	.16	.86
	Within groups	126.558	205	.617		
	Total	126.750	207			
Facmaiz	Between groups	17.589	2	8.80	.37	.69
	Within groups	4923.931	205	24.02		
	Total	4941.519	207			
Faccass	Between groups	53.538	2	26.77	.32	.73
	within groups	17091.880	205	83.38		
	Total	17145.418	207			
Facsoy	Between groups	33.090	2	16.55	.34	.71
	Within groups	10022.290	205	48.889		
	Total	10055.380	207			
ATTT	Between groups	.616	2	.308	.21	.818
	Within groups	296.903	205	1.448		
	Total	297.519	207			
OUTPUT	Between groups	22.724	2	11.362	.26	.774
	Within groups	9092.540	205	44.354		
	Total	9115.264	207			
STOT	Between groups	28.107	2	14.053	2.31	.101
	Within groups	1244.850	205	6.072		
	Total	1272.957	207			
CTOT	Between groups	9.229	2	4.615	.75	.473
	Within groups	1260.002	205	6.146		
	Total	1269.231	207			
MTOT	Between groups	9.229	2	4.615	.75	.473
	Within groups	1260.002	205	6.146		
	Total	1269.231	207			

Source: FieldSurveydata, 2002

Age = age of respondents; ORGAMEMB= Respondents' membership into organization

EXTCONT= Farmers contact with extension agents; FACMAIZ=Factors affecting maize technology sustainability

FACCASS=Factors affecting cassava technology sustainability;

FACSOY=Factors affecting soybean technology sustainability

ATT= Farmers' attitude towards improved technology; SCMTOT= Total adoption index for the selected technologies

STOT= Soybean adoption index; CTOT= Cassava adoption index

MTOT= Maize adoption scores; NS.aTp value, 0.05; *=sig at p<0.05 level

Table 6: Correlation matrix showing relationships among selected variables

	AGE	ORGAMEMB	EXTCONT	FACMAIZ	FACTCASS	FACSOY	ATT	SCMTOT	STOT	CTOT	MTOT
AGE		-0.03	0.06	-0.08	0.04	-0.91	0.04	0.16**	0.15*	0.14*	0.13
ORGAMEMB	-0.30		0.21**	0.01	0.06	0.02	0.03	-0.02	-0.08	0.03	-0.01
EXTCONT	0.06	0.21**		-0.15*	-0.03	-0.02	-0.10	0.06	0.01	0.09	0.06
FACMAIZ	-0.08	0.01	-0.15*		0.09**	0.88**	0.44**	-0.11	-0.09	-0.08	-0.12
FACCASS	0.00	0.06	-0.03	0.90**		0.84**	0.34**	-0.09	-0.08	-0.08	-0.09
FACSOY	-0.9	0.02	-0.02	0.89**	0.84**		0.33**	-0.12	-0.09	-0.09	-0.13
ATT	0.04	0.03	-0.10	0.44**	0.34**	0.33		-0.09	-0.07	-0.09	-0.07
SCMTOT	0.16*	-0.02	0.06	-0.11	-0.09	-0.12	-0.09		0.88**	0.88**	0.93**
STOT	0.15*	-0.08	0.01	-0.09	-0.08	-0.09	-0.07	0.88**		0.60**	0.74**
CTOT	0.14*	0.03	0.09	-0.08	-0.08	-0.09	-0.09	0.88**	0.60**		0.74**
MTOT	0.13	-0.01	0.06	-0.12	-0.09	-0.13	-0.07	0.93**	0.74**	0.74**	1.00

Source: Ogunsumi and Ewuola, 2005

Key:

Age = age of respondents; ORGAMEMB= Respondents' membership into organization

EXTCONT= Farmers contact with extension agents; FACMAIZ=Factors affecting maize technology sustainability

FACCASS=Factors affecting cassava technology sustainability; FACSOY=Factors affecting soybean technology sustainability

ATT= Farmers' attitude towards improved technology; SCMTOT= Total adoption index for the selected technologies

STOT= Soybean adoption index; CTOT= Cassava adoption index

MTOT= Maize adoption scores;; NS.at Value>0.05; *=sig at pf 0.05

[18] in their study asserted that group participation, a framework by which farmers defend and negotiate their interest. Iwueke [17] further reported that social participation was one of the variables positively related to farmers' decision to adopt new practices but that the adoption of small-scale farmers could not be predicted on the basis of their farm size and experience.

About 57 percent sustained users were members of co-operative society while 4.80 percent held one or the other office in the co-operative society and 2.40 percent of the sustained users had no involvement in co-operative group. Thirty-one percent of the abandoned users were members of co-operative group while 4.80 percent were officers.

As for the age group only 5.29 percent of the sustained users were members against 1.92 percent for abandoned users. A large proportion of the respondents that were not involved in the age group might imply that age group is not popular organisation in the study area. However, 46.15 percent of the sustained users were members and 1.44 percent held offices while 16.35 were not involved. For the abandoned users, 12.50 percent were not involved while 19.20 percent were involved in village council membership. About 58.00 percent of the sustained users were members of agricultural extension committee, none of them held any office while only 33.17 percent of the abandoned users were members. 8.65 percent of the respondents were not involved.

About 55 percent of the sustained users were members of farm leadership council while only 31.25 percent of abandoned users were members were not involved and 1.4 percent was officers in all.About 40 percent of sustained users were not involved in social clubs membership as against 25.96 percent of abandoned users. Generally about 27 percent of the respondents were not involved in any religious society membership while 14.42 percent were members and 31.25 percent were officers from only 12.02 percent and 14 percent were abandoned users that were members and officers respectively (Table 4).

Differences between sustained users and abandoned users: A significant relationship was found to exist between age, farm size, cassava output and sustained used using t-test Analysis. Similarly contact with Extension services, maize adoption pattern, cassava adoption pattern, factors affecting sustained use of maize were found to be significant probit analysis was used [19].

There was no significant difference in the adoption pattern of technology use, factors affecting sustained use, pattern of resource use, organizational membership, extension contact, attitude of farmers towards improved technology, output and income among farmers in the three states when ANOVA was used. There were significant relationships with some selected variables such as age with adoption pattern, factors affecting

sustained use of technologies with extension contact and attitude when Pearson Product Moment Correlation (PPMC) was used. 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 adoption pattern of technology ($F = 0.26$), extension contact ($F = 0.0.16$), attitude towards improved technology ($F = 0.21$) and organizational membership ($F = 1.16$), (Table 5).

The study revealed that there were significant positive correlations between age and adoption pattern ($r = 0.16$), age and soybean adoption level ($r = 0.15$), age and cassava adoption level ($r = 0.14$), organizational membership and extension contact ($r = 0.21$), factors affecting sustained use of maize and cassava technologies ($r = 0.09$) while a negative significant correlation exists between factors affecting sustained use of maize technology and extension contact ($r = -0.15$). There were also significant positive correlations between attitude of farmers towards improved technologies and factors affecting the sustained use of maize technologies ($r = 0.44$), (Table 6).

CONCLUSION AND RECOMMENDATION

As revealed from this study, though both categories of farmers had most demographic characteristics in common, sustained users were older and had larger farm size. This implies that sustained users and abandoned users in most cases shared common background and as such programmes aimed at improving the living conditions of rural farmers need not be dichotomized on the basis of these characteristics. However, policy makers and rural development workers should be conscious of the fact that sustained users are older and therefore are likely to be more conservative to changes. It should be noted that younger people are moving away from agriculture. It should also be noted that both categories of farmers require constant contact with the extension services. If their current condition is done it may be improved substantially.

As regards adoption characteristics, the study found that with demographic characteristics it is a fact that both sustained users and abandoned users cultivated similar crops in most cases, used family land and inherited land they heavily relied on family and hired labour as source of farm labour resource. Whole package of recommendations of the three crops studied were not fully adopted by the two categories of farmers, only partial adoption took place among the farmers. The expected output from research

reports could not be attained since the whole package was not adopted. This allowed the ease of abandoning of the initially adopted technologies by 36.04 percent of the farmers.

Consequent upon the above, farmers generally should be made to adopt whole package and sustain them to improve their productivity. In this regard, workable policies should be formulated such that all stake holders involved in rural development, including agricultural extension services work with sustained users of technologies and encourage adoption of total package by delimiting existing constraints. Therefore, it is suggested that all agricultural development schemes and interventions in the study area should give a focus on sustaining the use of agricultural technologies. Spelling out total adoption may help to actualize research findings on farmers' fields. Once farmers are aware of concise efforts geared towards total adoption and sustaining adopted technologies, they would gear up and organize themselves so as to benefit from such programs, in order to improve their wellbeing.

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