Ife Journal of Agriculture, Vol. 18, Nos 1 & 2 1996

Factors associated with adoption of Agricultural Innovations among community leaders and non-leaders in Ede North Rural Development Project Area

Siyanbola, A.T. and Jibowo, A.A.
Department of Agricultural Extension and Rural Sociology,
Obafemi Awolowo University,
Ile–Ife, Nigeria

Abstract

The study investigated leadership and personal characteristics of Community Leaders and non-leaders that influence adoption of agricultural innovations in the study area. Analysis of data collected from 102 leaders and 78 non-leaders in 3 villages in Egbedore Local Government Area of Osun State showed that age still remains a crucial factor in Local Community Leadership as majority of the leaders were older (Mean age = 45.4 years) than the non-leaders (Mean age 38.7 years). Personal and leadership characteristics which showed significant relationship with adoption among leaders and non-leaders included years of residence (r = 0.312 for leaders and 0.284 for non-leaders); years of schooling (r = 0.197 and 0.266 respectively); cheerfulness (r = 0.296 and 0.385) and consideration (r = 0.514 and 0.531). Programmes of agricultural development involving leadership selection and training and adoption of innovations should therefore take these characteristics into consideration.

Introduction

Agricultural still remains the main factor in aggregate economic development in Nigeria. This is because agriculture employs a greater proportion of the population (65.8%, FAO, 1988) than the other economic sectors. However productivity condition in agricultural development is still constrained by, among other factors, adequate number and quantity of manpower. As a result, successive Nigerian Governments have been aware of the need to mobilise more resources in the agricultural sector. Attention was, and still is focused on improving the quality of both the material and human resources largely through the informal exploitation and harnessing of local resources. The use of Community Leaders in

extension is one of the internal forces employed to accelerate aggregate economic and social progress. It is a method of using local resources to solve local problems.

But the conception, definition and identification of leaders, like democracy, mean different things to different people. This concept varies very widely and is as multi-farious as the number of authors viewing it from diverse perspectives. Therefore, there is a need to authenticate and distinguish leaders that emerge in any leadership identification process. Hence this study is concerned with Community Leaders as well as non-leaders and attempts to identify similarities and differences between the two groups in order to enhance the use of leaders in Agricultural Extension work.

The Problem

Manpower development in Nigerian agriculture is still plaqued by several problems especially those of logistics. The industry suffers from dearth of qualified personnel in the middle and upper cadres. These should be abundantly present if the industry is to record any appreciable progress. However, because of the shortage of appropriate personnel, many Third World Countries have resorted to the use of local Community Leaders in agricultural information dissemination. Community leaders are *adopters, legitimisers* and *communicators* of agricultural innovations (Okeneye, 1984). They play vital roles in innovation diffusion and adoption. Local Leaders not only increase the effectiveness of the professional extension agent, they also contribute resources to the educational efforts to increase production. They are closer to the grassroot and are therefore better placed to treat community problems more effectively since they are participants in the process of problem creating and problem solving.

But before leaders could be put into effective use, the factors that sustain them in that capacity and enhance their general acceptability must be uncovered and studied with understanding. This is crucial to any extension programme particularly that involving innovation diffusion and adoption since leaders should be seen to be adopting innovations earlier so as to encourage other prospective adopters.

The crucial questions to ask are:

a. Is there any appreciable difference between the Leaders and their followers in terms of personal and socio-economic qualities?
b. Are Leaders not selected merely by chance, that is, do some unselected individuals not possess more leadership qualities than those selected as leaders?
c. Is there any need for selecting few individuals as group leaders rather than just dealing with a random sample?

This study therefore examines leaders and non-leaders from the perspective of innovation adoption. It is to enable attention be focused on relevant issues in leadership selection and training thereby saving much of scarce resources and achieving better results with the use of local leaders in agricultural extension.

Theoretical Framework

Leadership phenomenon is as old as humanity itself. One of the earliest studies was the "greatman theory" which believes that leaders were born. Proponents of this theory, such as Sir Francis Gatton, reported by Bonner (1959), made attempts to inquire, identify and establish physical, mental and personality traits they considered as those of leaders. Too often, the argument in favour of this relationship is pushed too far to the extent that a great discrepancy is presented between the leader and his followers and neither can play his role effectively.

Attention later turned to the study of situations and that leaders are actually products of given situations. A leader, from this point of view can emerge only if the times are such as to permit him to use whatever skills and ambitions he might possess. That is, leadership is premised on the situation from which the leader emerges and in which he operates. Koontz and O'Donnell (1976) emphasised that there exists an interraction between the leader and the group.

One factor however stands out from the theories considered. That is, leadership occurs in a group situation. In many groups, particularly rural communities, certain individuals have authority over designated others. Members of the Community who accept the leader's authority structure as legitimate feel that he can properly tell them what to do. It has been frequently observed that when people interact with one another over an extended period, there tends to emerge a system of interpersonal obligations. This feeling of obligation arises when members commonly hold a value which has been referred to as the "norm of reciprocity".

The focus of this study therefore was to examine the innovation adoption by community leaders along side that of the non-leaders with a view to bringing out influence of one on the other.

Objectives of the Study

Essentially, the main aim of this study is to identify those factors that are related to adoption of agricultural innovations by leaders and non-leaders in Egbedore Local Government Area of Osun State.

The specific objectives are as follows:

1. To examine the personal, socio-economic and leadership characteristics of the leaders and non-leaders in order to determine

whether or not significant differences exist, that is, to find out whether or not community leaders possess more of these characteristics than ordinary community members.
2. To determine stages of adoption of some agricultural innovations among leaders and non-leaders.
3. To determine the relationship between characteristics of the leaders and non-leaders and their adoption of innovations.
4. To establish the differences and similaries that exist between adoption of innovations by leaders and non-leaders in the study area.

Hypotheses of the Study

The following null hypotheses were tested in the study:
1. There is no significant difference in the personal, socio-economic and leadership characteristics of leaders and non-leaders.
2. There is no significant relationship between adoption of innovations and the characteristics of leaders and non-leaders.
3. There is no significant difference in the adoption of innovations by leaders and non-leaders
4. There is no significant difference in the stages of adoption of agricultural innovations by leaders and non-leaders.

The study is significant in making its own contributions to research work in identification, selection and use of community leaders in programmes of rural and agricultural development. It hopes to throw more light on the relative differences in the qualities possessed by leaders and non-leaders, thus streamlining leadership selection and training programmes with those individuals possessing characteristics relevant to adoption of innovations.

Methodology

Three rural communities (Ojo, Aro and Awo) with an abundance of local leadership resource in Egbedore Local Government Area of Osun State were selected for this study. The villages fall within the Ede North Rural Development Project Area under the auspices of the Department of Agricultural Extension and Rural Sociology, Obafemi Awolowo University, Ile-Ife.

A combination of positional and reputational approaches were used in identifying the leaders interviewed. Positional approach involved interviewing positional incumbents such as village head (Baale), extension officers and headmasters of schools. Reputational approach involved fifty-three (53) randomly selected community members who were asked

to name their leaders. Individuals who scored three or more nominations were taken as authentic community leaders. A total of one hundred and two (102) leaders representing 57.3% of all those nominated and seventy-eight (78) randomly selected non-leaders were interviewed in the months of January and February, 1991 (See Table 1). Between 4 – 5% of the total population in each case was interviewed for leaders and non-leaders.

The data were collected through interview schedules pretested at Inisa – a village about 5 kilometres to Ojo. A reliability test using the test-retest technique carried out at the same place yielded a correlation coefficient of 0.625. This showed that the instrument used was reliable.

Measurement of Variables

The dependent variables for the study were measured in terms of adoption of some agricultural innovations introduced through the Department of Agricultural Extension and Rural Sociology, Obafemi Awolowo University, Ile-Ife. These include:

i. Hybrid maize involving four new practices:
   a. Planting the seed.
   b. Use of pre-emergent herbicides (Atracine, Lasso atracine and Premetrax).
   c. Use of fertilizers (N.P.K. 15, 15, 15).
   d. Construction of modern maize crib using locally available materials e.g. bamboo and wood.

ii. Improved cassava varieties (IITA 30572, 20595, and 4(2)· 1425) also involving two new practices:
   a. Planting the new varieties.
   b. Use of post-emergence herbicide (Grammozone).

iii. Improved management of the West African Dwarf goat and sheep involving the use of unconventional feeding stuff for the animals, namely:
   a. Browse for goat *Gliricidia sepium* and *Leucaena leucocephala;* and
   b. Feeding sheep on *Gliricidia sepium* and cassava silage.

Adoption score for each respondent was calculated by assigning scores from 1 to 5 to the 5 steps involved in adoption for each of the specific practices listed above. A respondent who was aware of any of the practices was scored 1, 2 for interest, 3 for evaluation, 4 for trial and 5 for adoption of each practice. Since there were a total of eight practices, a maximum score of 40 was obtainable by each respondent. (Savile, 1965; Onu, 1988; Onweagba, 1988).

This method was preferred because it gave a more complete picture of adoption as a process involving some decision-making stages and not just a matter of adopting or not adopting.

The independent variables considered for the study were the following:

i. Personal characteristics of leaders and non-leaders including age, number of wives, number of children, year of residence.
ii. Socio-economic characteristics including income and years of schooling.
iii. Leadership characteristics: The leadership characteristics considered were measured by creating hypothetical social situations to which the respondents were required to react (Jibowo, 1979). For example, empathy, (ability to respond to emotional needs of other people) was measured by asking what respondents would do if market women marched on them to protest high cost of living. Responses were categorised from the least emphatic to the most emphatic in a definite rank – order in a 5 – response frame as follows:
    a. Eject them instantly – 1 point
    b. Ask the police to teargas them away – 2 points
    c. Direct them to the Kabiyesi – 3 points
    d. Persuade them to go back to the market – 4 points
    e. Contact the Local Authorities on the issue – 5 points

Responsdents were thus assigned scores according to response expressed.

Other leadership characteristics were similarly measured and scored e.g.

- Alertness (degree of watchfulness of wakefulness possessed) was measured by asking the reaction of respondents to hearing a gun-shot suddently near the venue of a meeting.
- Consideration – measured by the number of community members that the respondents had rendered practical assistance to within a period of two years. This was later cross-checked by asking some of the members mentioned to verify the leader's claim. All claims were corroborated.
- Emotional stability (ability to carry on during good and bad times) was measured by asking for reactions to an insult from a junior member in a meeting.

Results and Discussions

Personal socio-economic and leadership characteristics of leaders and non-leaders

Summary of data in Table 2 shows the mean score and standard deviations obtained for each of the tested personal, socio-economic

and leadership characteristics of the leaders and non-leaders and the fisher's F–value of differences between the pairs of mean scores.

The results show that there were significant differences at 0.05 level, in age (F = 14.03); number of wives (F = 8.45); number of children (F = 6.75); years of residence (F = 12.48); empathy (F = 6.15) and consideration (F = 5.50) of leaders and non-leaders. Leaders, by this result, possessed these factors more than the non-leaders. They could therefore be considered as factors associated with leadership and important in occupancy of that position. Individuals in the community who may aspire to leadership position would have to possess these characteristics more than the ordinary community members in the study area.

The relationship between age and occupancy of leadership position is strongly a rural community phenomenon where leadership is more frequently an ascribed status (Jibowo, 1979). Age still remains one of the strongest personality factors in rural areas. There is no person more important in a vast system of interpersonal relations than the older, normal person. In the study area, leaders were older (Mean age = 45.4 years) than the non-leaders (Mean age = 38.7 years).

The significant difference observed in number of wives and children of leaders and non-leaders is an expected development. Detailed analysis showed that leaders had bigger family sizes than non-leaders ostensibly to take advantage of the economy of size in production since family members offer free and regular labout for the farmer leaders who may invariably possess large size farms too.

Awareness and ability to be conversant with and abreast of community problem are directly proportional to the length of stay of an individual, in a community. This is a possible explanation for the significant difference observed in the lengths of residence of leaders and non-leaders. The individual who is more likely to emerge as a community leader is one who has stayed long enough in that community and has proved his worth in solving previous community problems.

The only disturbing observation was the lack of significant difference in the income of leaders and non-leaders. This was unexpected. It was possible however, that leaders' large family consumption might account for a large proportion of their production leaving very little, if any at all, for disposal by sales.

Five leadership characteristics were tested. Only two, namely, empathy and consideration showed significant differences between leaders and non-leaders. This means that apart from these two, all the other leadership qualities considered in the study were not significant.

This study has therefore revealed a different position to a genetic definition of leadership. The emphasis therefore should be on the different

types of leaders rather than an attempt to find what are the common traits of leadership The leader should not be seen as one who is more cheerful, but one who is a functional member of the group as a product of a complex give-and-take relationship among group members. This tends to underscore the fact that selection of group leaders is better left to the situation so that the individual whose traits match the test at hand emerges as the leader. He may cease to be one in another situation which calls for other traits which he does not possess.

Characteristics of leaders and non-leaders and adoption of innovations

Table 3 is a summary of data on testing of hypothesis relating personal, socio-economic and leadership characteristics of leaders and non-leaders to their adoption of some agricultural innovations. Data in the table show a striking similarity between the two categories of respondents in respect of the variable tested which consisted of six personal and socio-economic variables and five leadership characteristics.

Analysis of adoption scores with all personal characteristics considered together for leaders and non-leaders gave multiple correlation (r) values of 0.438 and 0.491 respectively. The F-ratios (3.75 in both cases) were significant at 0.05 level. These shows that there was significant relationship between adoption of agricultural innovations and the personal characteristics of leaders and non-leaders.

Similarly, analysis of adoption scores with the leadership characteristics of the leaders and non leaders also gave multiple correlation (r) values of 0.549 and 0.615 respectively. The calculated F - ratios (8.281 and 8.750 respectively too) were also significant at the 0.05 level showing that adoption of agricultural innovations also have significant relationship with leadership characteristics of leaders and non-leaders.

However, when these variables were tested separately with adoption scores of the leaders and non-leaders it was only age which showed a significant relationship with adoption among the leaders (r = 0.213) and not the non-leaders (r = 0.133). All the other variables that were significant did so for both leaders and non-leaders at the same level. These were years of residence (r = 0.312 for leaders and r = 0.284 for non-leaders); years of schooling (r = 0.197 and 0.266 respectively); cheefulness (r = 0.296 and 0.385); and consideration (r = 0.514 and 0.531).

This position is a further testimony to the fact that age is of the crucial factors in community leadership in most traditional African Societies where the older normal person commands more respect and is treated with difference. This result has again shown that an older, normal person holding leadership position, may adopt more innovations

than others. Franscis (1974), Alao (1979) and Jibowo (1980) similarly found positive and significant associations between age and adoption in their different studies. With age comes experience. The older person is more likely to have been involved with more innovations in the past than the younger ones and be better informed about adoption processes and consequencies.

The peculiarity observed in the relationship between adoption and the characteristics of leadership and non-leaders is a further testimony of the situational theory of leadership which holds that leaders are actually products of given situations rather than being born with certain genetic traits.

Adoption of innovations by leaders and non-leaders

The calculated mean adoption score was 20.41 for leaders and 15.82 for non-leaders. Further statistical analysis showed a significant difference in the adoption of innovations by leaders and non leaders with a calculated F-values of 6.73 at 0.05 level of significance. This means that leaders were at higher adoption levels than non-leaders. It may therefore indicate that leaders adopt more innovations than non-leaders. Hence, leaders in a community must be the most sought-after when adoption of innovation is the task.

Conclusions and Discussions

Age, *inter alia,* still remains a very crucial factor of leadership in local communities. The older person still enjoys the respect and confidence of the younger generation to lead them.

Although leaders adopt more innovations than non-leaders, adoption is better among the two categories when they are educated, have spent fairly long time in the community, when they are cheeful and considerate in their relationship with other members of the community.

It may not be enough though, to identify leaders based mainly on any set of distinguishing qualities or characteristics. An examination of a combination of other factors (personal, socio-economic, leadership etc) may assist the agent of change in identifying more authentic and distinguished community leaders.

Table 1: **Distribution of respondents by categories and location**

Village	Estimated Population	No. of Leaders Identified	% of Population	No. of Leaders Interviewed	No. of Non-Leaders Interviewed	Total Interviewed
Aro	800	74	9.25	46	35	81
Ojo	550	55	10.00	36	21	57
Awo	460	49	10.65	20	22	42
Total	1,810	178	9.83	102	78	180

Table 2: **Mean Scores and Standard Deviations for Personal, Socio Economic and Leadership Characteristics of Leaders and Non-Leaders and F-Values for Differences Between Pairs of Mean Scores**

Characteristics	Mean	S.D.	N	F-Value	d.f
1. Age: Leaders	45.42	12.1	102	14.03+	1 and 178
Non-Leaders	38.70	14.7	78		
2. No. of Wives:Leaders	1.63	0.89	79	8.45+	1 and 130
Non-Leaders	1.73	0.74	53		
3. No. of Children: Leaders	5.30	3.42	102	6.72+	1 and 178
Non-Leaders	3.98	2.70	78		
4. Years of Residence: Leaders	27.51	23.35	102	12.48+	1 and 178
Non-Leaders	16.33	17.63	78		
5. Income: Leaders	1,753.60	2,425.87	102	0.30	1 and 178
Non-Leaders	2,960.71	2,660.31	78		
6. Years of Schooling: Leaders	5.70	3.84	102	0.02	1 and 178
Non-Leaders	5.61	3.46	78		
7. Empathy: Leaders	3.77	0.63	102	6.15+	1 and 178
Non-Leaders	3.53	0.72	78		
8. Cheefulness: Leaders	4.08	0.70	102	1.66	1 and 178
Non-Leaders	3.94	0.78	78		
9. Alertness: Leaders	2.87	0.68	102	0.42	1 and 178
Non-Leaders	2.94	0.61	78		
10. Consideration:Leaders	9.23	7.25	102	5.50+	1 and 178
Non-Leaders	2.94	7.35	78		
11. Emotional Stability: Leaders	3.22	0.41	102	1.03	1 and 178
Non-Leaders	3.14	0.57	78		

S.D. = Standard deviation
N = Sample Size
d.f = degree of freedom
\+ = significant at 0.05 level

Table 3 **Summary of linear correlation and regression analysis of adoption scores of leaders and non-leaders with their personal, socio-economic and leadership characteristics**

	Indepdent Variable	LEADERS			NON LEADERS		
		Correlation Coefficient (r)	Regression Coefficient (b)	Coefficient of Determination (r^2)	Correlation Coefficient (r)	Regression Coefficient (b)	Coefficient of Determination (r^2)
1.	Age	0.213+	0.163	0.045	0.133	0.177	0.018
2.	No. of Wives	–0.164	–0.104	0.027	–0.153	0.303	0.023
3.	No. of Children	0.068	–0.267	0.005	–0.240	–1.206	0.058
4.	Years of Residence	0.312+	0.148	0.097	0.284	0.177	0.080
5.	Total Annual Income	0.028	–2.858	0.0008	–0.293	–4.744	0.086
6.	Years of Schooling	0.019+	0.836	0.039	0.266+	0.718	0.071
7.	Empathy	0.019	0.304	0.0004	0.042	–0.368	0.002
8.	Cheerfulness	0.296+	2.272	0.088	0.385+	3.816	0.148
9.	Alertness	–0.006	1.759	0.0004	0.158	1.875	0.250
10.	Consideration	0.514+	0.762	0.264	0.1521+	0.738	0.271
11.	Emotional Stability	–0.083	–2.633	0.007	–0.246	–3.864	0.061

No. of Independent Variables = 11

No. of Respondents: Leaders = 102
Non-Leaders = 78

Degrees of Freedom = 100; 76

Level of Significance = 0.05

+Significant at 0.05 level

References

Alao, J.A. (1979): "A Review of Traditional authority and its Impact on the Acceptance of Agricultural Innovations in Western Nigeria." *Ife Journal of Agriculture.* 1(2):276–290.

Bonner, H. (1959): *Group dynamics: Principles and applications.* The Ronal Press Coy. New York. P. 165

Brown, J.D. (1973): *The Human Nature of Organisations* American Management Association pp. 19–29.

Franscis, D.G. (1974): "Population Characteristics and Responses to Rural Development Activities in Togo." *Niger. Agric. J.* 2(1): 31–40

FAO (1988): *Production Year Book.* FAO Statistics Series No. 63 p. 72.

Gouldher, A.W. (Ed) (1950): *Studies in Leadership.* New York Harper and Brothers, pp. 21 – 404.

Jibowo, A.A. (1979): "A Comparative Analysis of the Characteristics Urban and Rural Community Leaders Among the Yoruba." *Ife Social Science Review.* 2(2): 33–40.

Jibowo, A.A. (1980): "Adoption of OS 6 Variety of Rice in Ife Division of Oyo State of Nigeria." *Ife Journal of Agriculture.* 2(2): 113–127.

Koontz, M. and O'Donnell, C. (1976) *Management: A System and Contingency analysis of managerial functions.* McGraw Hill. Kogarusha Ltd. 6th ed. pp. 587–588.

Okuneye, B. (1984): "Some Issues involved in the Transfer and Adoption of Agricultural Innovations in Nigeria." *Nigeria Journal of Rural Sociology.* 1(1 & 2): 51–66.

Onu, D.O. (1988) *Agency-related factors that affect the functional effectiveness of field staff in Imo State extension service.* M.Sc. Thesis, University of Nigeria, Nsukka, pp. 63–87.

Onweagba, A.E. (1988): *The influence of information source use on knowledge level and adoption behaviour of farmers in Imo State.* Ph.D. Thesis University of Nigeria, Nsukka, pp. 102–103.

Savile, A.H. (1965): *Extension in rural communities: A manual for agricultural and home extension workers.* London O.U.P. New York, Toronto. pp. 32–39.