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Analysis of Community Leaders in Smallholder Farmers Access and Utilization of Agricultural Technologies in Ebonyi State, Nigeria

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Abstract: Community leader's efforts in promoting agricultural development through access and utilization of agricultural technologies among smallholder farmers seem not to have been empirically documented. The study employed multistage random sample techniques to select the community leaders – the traditional rulers, his cabinets and village heads. Data were collected using structured questionnaires which were administered as interview schedule. Data collected were analyzed using relevant descriptive and inferential statistics. Results showed that the leaders spirally completed basic primary education. It further showed that the average age of the leaders was 46 years and an average household size of 10 persons. The most accessed and utilised agricultural technologies are improved crops and seeds (rice, cassava and a variety of maize called *Oba super*); farm input (fertilizers, herbicides and pesticides); sustainable land management (crop rotation, planting distance, shifting cultivation, zero tillage, mixed farming, agro-forestry and crop protection). The study identified age, rural urban migration, lack of support from community members, educational status, low interest in agriculture, non-acceptance of technology, attitude to change, high cost of acquiring technology, low rate of return from agricultural investment, complexity of technologies, poor access to information and untimely release of technologies as the major factors limiting community leaders in influencing smallholder farmers in accessing and utilising agricultural technologies. The study recommended more participation of community leaders in adoption and utilization of agricultural technologies rather than assisting the smallholder farmers to access and utilize the technologies.

Key words: Agricultural technology · Access · Utilization · Community · Leader

INTRODUCTION

Agriculture in Nigeria is characterized by low productivity, low income, poor technology adoption and use of inefficient production techniques occasioned by the inability of farming households to access and utilise agricultural technologies in production [1]. To stem the tide, the community leaders have been advocated to assist in the accessing required technologies for utilization by the farmers in their domain. Community leaders are those categories of persons that influence the behaviour of others to work towards a desirable goal. These are group of people whose ideas and actions influence the thought and behaviour of others [2]. According to Bernard [3], community leaders are set of persons who are efficient in carrying psychological stimuli to others and are thus effective in conditioning collective response. In must rural communities, community leaders are normally democratically elected, appointment, or even by volunteering to represent different sects in the community. They play significant role in agricultural and societal development as they are intelligent, cosmopolitan, educated and influential.

The concept of leadership is very crucial to the survival of any society. Even with established norms, leaders are still needed to ensure compliance with such norms for societal orderliness and sustenance. Therefore, community leader play key roles in the society through incorporation of developmental plans which brings progress for the society. Hence, in any government sponsored project, the local leaders serve as liaison between the government and their people. Therefore, community leaders are those whose interest centre on the community development

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through acquisition of technologies for production increment and elaborate network of personal relationship [4].

Access to agricultural technologies is the acquisition of desired agricultural machineries necessary for farm expansion and product development [5]. Hence, it is the means of getting farm inputs, tools such as tractors, harvesters, bush hog, planters, etc for farm work. Access to agricultural technologies and appropriate utilization practices leads to substantial yield increase in agricultural production [6]. This invariably underscores the significant role technology stands to play in attaining the much needed growth in agricultural sector. Meanwhile, Kebede [7] predicated that appreciable access of the agricultural technologies will enhance farm productivity through greater technical and allocative efficiencies. Agricultural technologies in general can be accessed by community leaders for eventual distribution to farmers who can pay, hire or rent the technologies. Invariably, community leader can access agricultural technologies through request to agricultural supporting sectors like government and non government organizations with the target to increase and sustain agriculture. However, rural social scientists have long maintained that accessed to improved technology and market integration are predicted on the differential possession of economic resources like land, labour and capital [8]. This is in addition to socio-economic and institutional factors as well as the physical attribute of the technology itself.

Utilization of agricultural technologies is the application of practices that help to facilitate agricultural production, storage, distribution and marketing of agricultural produce [6]. According to Esther [5], utilization of agricultural technologies can be in two broad categories - material technologies and knowledge technologies. Materials technologies are major scheme of improvement inspired by the economic planner of government or private organization such as Agricultural Cooperative Association (ACA) to produce hardware technologies to the farmer in a rural area. Knowledge technologies involve the use of knowledge embedded in material technologies to facilitate diffusion of innovation and distribution processes. Otuya and Ajaye [9], deduced that utilization of agricultural technologies in agricultural operation would be beneficial globally, if technologies are distributed to farmer in rural area as the support to the sector. The success of any technology depends on its dissemination among the potential users, which ultimately is measured by the level of accessed and utilization of that technology [10].

According to the report of Federal Ministry of Agriculture 2001, effective access and utilization of agricultural technologies is the key to the nations foods supply. Therefore, farmers are expected to use accessed technologies in agricultural practices to improve their production. However, contemporary observations show that while some use improved practices, a reasonable number still use traditional methods thereby subjecting the farmers to unbearable low yield. Reasons adduced for this includes lack of knowledge of improve practices as well as scarcity and cost of the necessary farm supporting input [1]. This then, affects the nation drive toward achieving the comprehensive sufficiency in food production [2, 11]. In view of the importance effective access and utilisation technologies have on agricultural production, a closer analysis seems not to have shown the position of community leaders in Ebonyi State, Nigeria. To address the problem, the study described the socio-economic characteristics of the community leader; characterized the agricultural technologies accessed and utilized by the community leaders in agricultural production; and analysed the constraints to community leaders access and utilization of agricultural technologies.

Methodology: The research was carried out in Ebonyi State, Nigeria. The State is made up of thirteen local government areas (LGAs) and a population of 2,173,501 people made up of 1,040,984 males and 1,132,517 females [NPC 12]. It is located between longitudes $7^0 30^{/}$ and $8^0 30^{/}$ east of the meridian and latitudes $5^0 40^{/}$ and $6^0 45^{/}$ north of the equator. The State falls within the tropical rainforest and derived savannah zones of Nigeria. There are two distinct annual climatic seasons (rainy and dry seasons) in the area. This weather regime controls the pattern of crop production in the area. Over 85% of the total population are engaged in one form of agricultural production or the other with the major agricultural products as yam, cassava and rice. Some of the communities are situated on marginal lands characterised by rocky terrains, flood or erosion-prone soils. Stone quarrying which seems to be a factor in environmental and ecosystem degradation is also a major economic activity in certain areas of the state namely Abakaliki, Afikpo and Ishiagu.

The study employed multistage random sampling technique to select the community leaders. The community leaders selected includes the traditional rulers, his cabinets and village heads. In the first stage, six LGAs out of the thirteen LGAs of the State were randomly selected. The second stage involved the random selection of three communities each from the randomly selected

LGAs. The last stage involved the random selection of ten community leaders from the randomly selected eighteen communities to give a total of one hundred and eighty community leaders. Meanwhile, the chairman and secretary traditional rulers' council of Ebonyi State were purposively selected. In all a total of one hundred and eighty – two (182) community leaders were used as the sample size. Relevant data for the study were collected using structured questionnaires which were administered as interview schedule. The data collected were analyzed using relevant descriptive and inferential statistics.

RESULTS AND DISCUSSION

The result of the analysis was presented and discussed in this section. This result was presented and discussed in line with the research objectives which include; describing the socio-economic attributes of the community leaders, identifying the type of agricultural technologies accessed and utilized by community leaders, identification of factors that influence community leaders access and utilization of agricultural technologies, analyzing the strategies adopted community leaders in diffusing accessed technologies to smallholder farmer and identifying the factors that constrain leaders in accessing and utilizing agricultural technologies.

Socio-Economic Characteristics of Community Leaders: The socio-economic characteristics of the community leaders which were analyzed and discussed are; age, gender, marital status, educational level, total annual income, household size, farm size, years of leadership, leadership category. The result of the analysis showed that majority of the community leaders (69%) were male whose mean age was 46 years though majority (58%) were within the age bracket of 56 – 70 years. This was in line with the *a priori* expectation since communities leaders are supposed to be those who are of age and know the nitty-gritty of community governance. This therefore justified by Kebede [7], who reported that community leaders are mainly aged people as younger people are more interested in entrepreneurship, trade and politics thus, making community leadership prone to older people. Meanwhile, the high percentage of males in community leadership was justified to be factual as in Africa, males are regarded as the heads and breadwinners of the families and so are as well expected to have upper hand in leadership positions. Consequently, women are expected to take permission from their husbands who are perceived to have the legal and customary right to involve in leadership.

The results revealed that majority (81%) of the leaders are married. This justified the cultural practice of the people where it is a norm for any leader to be officially married to be made a leader. This could be attributed to the fact that married people have greater family responsibilities and seek best possible ways to handle such situations and so are best perceived to handle leadership positions. Meanwhile, the result showed that the leaders were poorly educated as the average years of schooling was 7 years. The poor educational status of these leaders is not favourable for adoption of innovation hence; it will translate to poor agricultural development. The income status of the community leaders has been found to be poor as justified from the six-nine thousand, five hundred and eighty three naira (N69,583) average income earned. This could be attributed to low level of income earned by the subordinates in the society as justified by Erbungh [7] who reported that community leaders whose subordinates did not earn high income also had low income.

Meanwhile, the average household size of the leaders was ten (10) persons who cultivate an average of two (2) hectares in scattered plots. The households can be said to be large and this could be ascribed to the polygamous nature of community leaders since in African, where a man is entitled to marrying more than one wife. This was in line with the *a priori* expectation since they command influence in the society which makes admirable for many girls who are willing to be their wives. The two hectare cultivated by the leaders is relatively large in the area though not enough to support commercial agriculture but the land cultivated could be attributed to the fact that they are in charge of the land and people.

The results showed that the leadership experience of the leaders to be averagely high on a ten (10) years post installation. This was in line with the a priori expectation since well experienced people are expected to be in leadership positions than inexperienced people in order to bring about development in the community. Comprehensive analysis of the leaders has shown that majority of the community leaders (53.85%) are in the category of Kings whereas 8.79% were in the category of youth, women and market leaders. This implies that the most celebrated leaders in the community are mostly the traditional leaders who are seen and perceived as the major decision makers in the community.

Table 1: Socio-economic Characteristics of Community Leaders

Socio-economics	Frequency (N=182)	Percentage	Mean
Age			
<40	3	2	
41-55	51	28	46
56-70	106	58	
>70	22	12	
Gender			
Female	56	31	
Male	126	69	
Marital status			
Single	35	19	
Married	147	81	
Educational status			
Primary school completed	42	23	
Secondary school completed	85	47	7
First degree completed	31	17	
Above first degree	24	13	
Total annual income			
<50,000	11	12	
50,000-100,000	29	32	69,583
100,000-200,000	16	18	
>200,000	35	38	
Household size			
<4	36	20	
5-8	14	8	10
9-12	126	69	
>12	6	3	
Farm size			
<0.5	14	8	
0.5-1.5	30	16	2.0
1.5-2.5	58	32	
>2.5	80	44	
Leadership experience			
<10	72	40	
10-20	86	47	10
21-40	20	11	
>40	4	2	
Leadership category			
Social	15	8	
Political	26	14	
Traditional	98	54	
Religious	27	15	
Youth	16	9	

Agricultural Technologies Accessed and Utilized: Effective use of agricultural technologies determines the rate of agricultural production. It also impacts on poverty reduction, environmental degradation and industrial development. The agricultural technologies identified and analyzed included; improved crops and seeds, improved farm inputs and sustainable land management. The result as presented in Table 2 showed that the most accessed and utilized improved crops and seeds include rice, cassava and a variety of maize called *Oba super* in Nigeria. The high rate of access and utilization of these technologies can be attributed to the agro ecological zone of the area. The area is well known for cassava production hence the popular *Garri Okwor* that feeds the State and beyond. Again, owing to aggressive campaign on rice production by the government of Ebonyi State and the subsequent introduction improved varieties aimed at producing a minimum of 5 tonnes per hectare, many farmers have resorted to adoption of new rice technologies. Similarly, owing to the complete ban on rice importation and its corresponding increase in the domestic price of the commodity in Nigeria has led to the enhanced increase on the access and utilization of improved rice technology.

Table 2: Agricultural Technologies Accessed and Utilized

Technology	Frequency N = 182	Percentage
Improved crops and seeds		
Cucumber	26	14.29
Oba super maize	100	54.95
Legumes	52	28.57
Rice	160	87.91
Cassava stems	138	75.82
Farm inputs		
Pesticides	136	74.73
Fertilizer	142	78.02
Herbicides	142	78.02
Sustainable land management		
Crop rotation	158	86.81
Mixed farming	94	51.65
Shifting cultivation	120	65.93
Irrigation	24	13.19
Alley cropping	36	19.78
Agro-forestry	78	42.86
Crop protection	68	37.36
Planting distance	122	67.03
Zero tillage	38	20.88
Improved livestock	106	58.20

Further analysis showed that the major farm input technologies accessed and utilised by the community leaders are the fertilizers, herbicides and pesticides. The overwhelming adoption of the three technologies can be attributed to high adoption of rice technology. Again, due to the practice of zero tillage by most rice farmers in the area, the use of herbicides to clear weeds prior to rice planting became in vogue and hence, the high level of herbicides adoption.

The adoption of sustainable land management by farmers is necessary for enhanced agricultural production. From the analysis, it was noted that most accessed and adopted sustainable land management are; crop rotation, planting distance, shifting cultivation, zero tillage, mixed farming, agro-forestry and crop protection. The high level

of access and adoption of these technologies especially planting distance, agro-forestry, crop protection and zero tillage can be attributed to efforts of agricultural stakeholders such as National Fadama III, Agricultural Development Project (ADP), Ministry of Agriculture and Universities of Agriculture aimed at repositioning agriculture.

Constraints to Access and Utilisation of Agricultural Technologies: Despite the availabilities of agricultural technologies it seems there access and utilization are constrained by many factors which were categorized into; social, economic and institutional. The naming of the factors were based on the Kaizers rule thumb as adopted by Nwibo and Alimba [13]; Ashley *et al.* [14] in which factors that loaded 0.4 and above were used in naming it.

Social Factors: The identified social factors that constraint community leaders access to agricultural technologies are age, rural urban migration, lack of support from community members, educational status, low interest in agriculture, non-acceptance of technology and attitude to change. Formal and informal educational training are major components of the agricultural development. This is because a nation that has overcome underdevelopment and poverty are known to have relatively high stocks of educated manpower [15]. They reported that community based informal training activities on indigenous agricultural practices can also be an important aspect of the agricultural system of innovation. The study further reported that high rate of rural-urban migration has invariably reduced the amount of labour utilisation for agricultural production as most of the able bodied men that could have been used for production do migrate out of the countryside to urban area in search of white-collar jobs. Again, the negative attitude of most farmers to changes in technological advancement which has resulted to non-acceptance of technology has greatly affected access and utilisation of agricultural technologies. This is apparently justified as most farmers are difficult at adapt to change thus, making them stick to the old methods and technologies that promote insignificantly agricultural transformation. Similarly, most technologies have not been adopted or utilised today because such technologies have not been utilised by their leaders. This is because most smallholder farmers have strong confidence on their leaders to the extent they can only adopt when they have adopted. The study further revealed that as a result of declining interest of most people in agriculture accessioned by the risks and uncertainties, poor returns from agriculture when compared with the returns from other real sectors of the economy that characterise the sector, community leaders most a times are sceptical in influencing smallholder farmers to access and utilise agricultural technologies.

Economic Factors: The identified economic factors that limit community leaders in influencing smallholder farmers in accessing and utilising agricultural technologies include high cost of acquiring technology and low rate of return from agricultural investment. It has been observed that improved agricultural technology has the potentials of increasing agricultural production and poverty reduction [10]. But, these technologies in most cases are beyond the reach of the smallholder farmers. Some of these technologies are machineries and equipments, agro-inputs, etc. This finding was justified as the risk averse behaviour of some farmers have them to see adoption of new technology that has high cost effect as not having enough economic advantage thus, underscoring there importance.

Institutional Factors: These are the factors that deal with the extent to which institutions impacts on technology adoption by smallholder farmers. These factors according to Ozor and Nwankwo [15] include all facilities and machineries that enhance farmer access to productive input and product market. Meanwhile, the study identified complexity of technologies, poor access to information and untimely release of technologies as the major institutional factors that limit community leaders in influencing smallholder farmers in accessing and utilising agricultural technologies. Similarly, the extent to which the farmer find the existing technology to be complex and difficult to comprehend has been noted to a major challenge to access and utilization of agricultural technologies. Again, complexity of the new innovation can prevent farmers from its use, because they don't know how some of the technologies work. The study further revealed that most agricultural technologies are not released on time for farmer's access and utilization. This can be attributed to the corrupt practices that are ravaging most ministries and agencies responsible for agricultural transformation in Nigeria. Some of these practices include diversion of the technologies destined for farmers to other location where they were not designated and hoarding of the technologies to create scarcity.

Table 3: Constraints to Community Leaders Access and Utilization of Agricultural Technologies

Variable name	Factor 1 Social	Factor 2 Economic	Factor 3 Institutional
Age	0.412	0.014	0.076
Scarcity of land	0.135	0.512	0.172
Complexity of technology	0.291	0.170	0.810
Non acceptance of technology	0.642	0.105	0.089
High rate of rural to urban migration	0.534	0.018	0.075
High cost of acquiring technology	-0.124	0.910	0.012
Lack of support from community members	0.490	-0.173	-0.017
Educational status	0.653	0.085	0.038
Low rate of return from agriculture	0.290	0.830	-0.017
Attitude to change	0.685	0.038	0.023
Poor access to information	0.052	0.085	0.738
Poor communication skill	0.290	0.032	-0.017
Low access to extension agents	0.085	0.038	0.923
Untimely release of technology	0.290	-0.32	0.717
Environmental degradation and adverse weather condition	0.085	0.038	0.023
Low interest in agriculture	0.685	0.038	0.123

Conclusion and Recommendations: Community leaders have been recognized as agents of community and agricultural transformation. They contribute significantly to the smallholder farmers adoption agricultural technologies. This is because the farmers in most cases look upon their leaders to adopt a particular technology before such technology can be adopted by them. In all, the study posit that community leaders have contributed significantly in smallholder farmers' access and utilization of agricultural technologies in Ebonyi State, Nigeria.

Based on the findings, the study recommended more participation of community leaders in adoption and utilization of agricultural technologies rather than accessing of the technologies; making of agricultural technologies less complex for easy understanding and utilization by farmers; and timely release of technologies

REFERENCES

1. Okpukpara, B.C., 2010. Proper HPA risk Reduction Strategies Synthesis of Country Background Paper. IFPRIHPAI, paper 6 2010.
2. Ani, A.O., 2007. Agricultural Extension: A pathology for sustainable Agricultural Development. Published by Apani publications No 27 Bugaruwa Road, Kaduna, pp: 72-75.
3. Benard, H.R., 2011. Research Methods in Anthropology. Qualitative and Quantitative Approaches. 5th Edition. Altamira Press, UK.
4. Agwu, E.D., 2012. Identification of factors that influence the Technical inefficiency of Indian farmers. Austrian Journal of Agricultural Economics, 40(2): 103-128.
5. Esther, D., 2014. The Roles of opinion leader in the diffusion of new knowledge: The cause of integrated pest management. Elsevier, World Development, 34(7): 1287-1291.
6. Umeh, G.N., 2013. Roles of community leaders in introduction of innovation to rural farmers. Unpublished.
7. Kebede, A.H., 2010. Identification of factors that influence the Technical inefficiency of Indian farmers. Austrian Journal of Agricultural Economics, 40 (2): 103-128.
8. Erbungh, D.E., 2004. Measuring Technical efficiency of Urban farms in Uyo Metropolis. Global Journal of Agricultural Sciences, 4(1): 91-95.
9. Otuya, N. and A.R. Ajaye, 2006. Roles of local leaders in community development approach. Journal Leadership Education, 14(2): 189-209.
10. Reddy, A. and M.P. Reddy, 2012. Participation in unprofessional behaviours among hospitalists. Journal of Hospital Medicine, 7(7): 208-272.
11. Nwite, J.C., 2008. Improving the productivity of degraded utisol in Nigeria using organic and inorganic amendment. Part chemical property and maize yield-part.
12. National Population Commission. 2006. Official Population Figure of Ebonyi State, Nigeria. A report of NPC Abuja, Nigeria.
13. Nwibo, S.U. and J.O. Alimba, 2013. Determinants of Investment Decisions among Agribusiness Investors in South East, Nigeria. Journal of Business and Management (IOSR-JBM), 8(6): 60-67.
14. Ashley, B., S. Amber and F. Anthony, 2006. Education by nation: Multivariate analysis. Available online @ http:// www.users.muohio.edu/ porterbm/ sunj/2006/start.s
15. Ozor and Nwankwo. 2008. The Role of Local Leaders in Community Development Programmes in Ideato L.G.A of Imo state: Implication for Extension Policy. Journal of Agricultural Extension, 12(2): 63-75.