

Extension Education and Entrepreneurship Development in Nigerian Agriculture

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Abstract: The objective of this study was to analyze the impact of extension education on entrepreneurship development in Nigerian agriculture. To achieve this objective, the study reviewed existing literature and empirical data on the socioeconomic characteristics of farmers in Nigeria and the influence of these characteristics on the entrepreneurial capacity of farmers. It identified the economic contributions of entrepreneurship to agricultural development and also examined current extension education practice in Nigeria in relation to the development of the entrepreneurial capacity of farmers in Nigeria. The analysis indicates that most farmers in Nigeria have limited entrepreneurial (technical and managerial) capacity due to old age, illiteracy, lack of skill in agricultural production and gender related constraints. It also indicates that the primary aim of current extension education practice in Nigeria is the dissemination of information on and introduction of new and improved farm technologies to farmers without any provisions for improving the ability of these farmers to cope with the changes in production organization resulting from the introduction of the new technologies. The study posits that the object of agricultural development policies and programmes should be the development of the entrepreneurial (technical and managerially) capacity of farmers with a view to increasing their output and productivity. It contends that extension education should provide the basis for providing entrepreneurial training for farmers. Consequently, the paper recommends that the concept of extension education, relative to the agricultural development needs of Nigeria should be broadened to include entrepreneurial (technical and managerial) education.

Key words: Extension education, entrepreneurship development, farmers, illiteracy, gender, Nigeria

INTRODUCTION

The process of agricultural development is a complex one, which involves the interplay of many factors (Famoriyo and Nwagbo, 1981). In Nigeria, agricultural development has always been considered only in terms of the application of science and technology, the development of infrastructure and the provision of extension services. As an aspect of agricultural development, the organization of production along business lines (Adesimi, 1986) is often neglected. The organization of production along business lines requires entrepreneurship i.e., the ability to identify and select enterprises that ensure a continuous flow of income and generate the greatest margin between benefits and costs, allocate and combine production factors efficiently and effectively co-ordinate the production process. While enterprise identification and selection and efficient allocation and combination of production factors require technical competence, effective co-ordination of the

production process presupposes managerial competence. Entrepreneurship encompasses technical and managerial competence. It is the willingness and ability of the individual to seek out investment opportunities, establish and run an enterprise successfully (Kilby, 1971). The essence of entrepreneurship is innovation i.e., goal oriented change to utilize the potential of the enterprise (Wehrich and Koontz, 1994). Entrepreneurship is associated with several activities, which deal with the establishment and operation of a business enterprise.

These activities include the identification of investment opportunities, selection of particular opportunities for exploitation, promotion and establishment of the business enterprise, organization and management of human and material resources for the attainment of the objectives of the enterprise, risk bearing and innovation (Inegbenebor, 1989). The development of the entrepreneurial (technical and managerial) capacity of the farmer implies improving farmers ability to identify and select investment opportunities provide investment

capital, coordinate the production process, innovate and bear risk. The ability and willingness to provide investment capital, innovate and bear risk is a function of attitudes, motivations and aspirations. A farmer who is fatalistic exhibits a desire to avoid risk and an unwillingness to innovate (Upton, 1973). The environment may limit the motivation and aspirations of a farmer. In a traditional environment, it is likely that there will be little or no motivations and the farmer may only aspire to meet his subsistence needs and as a result there will be no incentive to increase production (Upton, 1973). The ability to identify and select investment opportunities requires technical knowledge, while the ability to provide investment capital and bear risk depends on managerial skills.

Consequently, farmers require two levels of competence technical and managerial. Technical training (competence) is indicated when a farmer is able to select and combine profitable enterprises an enterprise or combination of enterprises is profitable when total receipts exceed total payments; allocate and utilize production factors efficiently production factors are efficiently allocated when the value of the marginal physical product is equal to the marginal factor cost and efficiently utilized when the least possible amount of resources is used to obtain the best level of output; adopt and use modern production practices and techniques; identify activities, operations, materials, equipment and people needed to undertake the activities and operations; set time and cost targets and identify production risks.

Managerial training (competence) on the other hand should enable farmers to administer the farm firm effectively. A farmer is managerially competent if he is able to determine the rules and procedures of the organization determine the line of command or hierarchy of authority within the farm firm; recruit, train staff and allocate responsibilities; co-ordinate the production process i.e., meet production and supply schedules, cost and time targets and deal with government agencies and other firms such as input suppliers, credit and insurance providers, processors etc. (Onyebinama, 2004). The successful performance of the above entrepreneurial functions requires a certain level of knowledge, skills and attitudes acquired through training (formal and informal) and experience.

Objectives of the study: The broad objective of this study was to analyze the role of extension education on entrepreneurship development in Nigerian agriculture. The specific objectives were to: examine the socio-economic profile of farmers in Nigeria and the

implications of this profile for entrepreneurial capacity, identify the role of entrepreneurship in agricultural development, examine current extension education practice in relation to the provision of entrepreneurial (technical and managerial) training for farmers, make recommendations on measures necessary for the development of the entrepreneurial capacity of farmers.

MATERIALS AND METHODS

To achieve these objectives, the study reviewed existing literature and empirical (secondary data) on the socioeconomic characteristics of Nigerian farmers and the implications of these characteristics for entrepreneurial capacity. It identified the potential contributions of entrepreneurship to agricultural development and also examined current practice in extension education in relation to the development of the entrepreneurial capacity of farmers.

The conclusions and recommendations were deduced from the implications of the existing literature and empirical data.

Socioeconomic profile of farmers and entrepreneurial capacity: In Bauchi, Borno, Imo, Plateau and Sokoto states, about 65, 50, 85, 52 and 66% of farmers respectively are at least 41 years old (Igben, 1988). In Imo state, farmers are on the average about 58 years old (Njoku, 1990). In a study on commercialization of smallholder agriculture in Imo state, Onyebinama (2004) reports that about 75% of the sample farmers were at least 50 years old, while the average age of the sample farmers was 56.

In Ogun state, Ayinde reports that about 75% of sample farmers were at least 40 years old with an average age of 47 years, while in Osun state, an average age of about 58 years has been reported (Bamire *et al.*, 2007). Inoni report that sample farmers in a study in Delta state were on the average 52 years old with 80% of the farmers between 45-71 years old. They attribute the old age of farmers in the state to rural-urban migration of able-bodied young men and women among other factors. They argue that with such an aged agricultural work force productivity is bound to be low. The contention, (Igben, 1988) is that old farmers tend to be conservative and risk averse. A risk averse farmer is less likely to be innovative. Onyebinama (2004) contends that innovation adoption will likely decrease, while sensitivity to risk will likely increase as the age of the farmer increases. Since the essence of entrepreneurship is innovation, old age will probably constrain entrepreneurial (technical and managerial) capacity.

The level of literacy among smallholder farmers is low (Osuntogun and Oludimu, 1982; Njoku, 1990; Abu and Obinne, 1999). Low literacy levels imply limited ability to cope with the complexities of new innovations, the intricacies of product and factor markets and the bureaucratic procedures of government agencies that provide services for agriculture. Skills acquired through special training in agriculture are important to the farmer in identifying activities and operations, materials, equipment and people needed to undertake the activities and operations and in allocating responsibilities (Onyebinama, 2004). There are indications that education enables farmers to acquire and make better use of production information.

A more educated farmer acquires more information and to that extent is a better producer (Hayami, 1969; Lockheed *et al.*, 1980; Philips, 1994; Wang *et al.*, 1996; Yang, 1997). Studies in Nigeria such as (Durojaiye and Olanloye, 1992; Awolola, 1995) indicate that education made significant and positive contributions to agricultural production. Amaza and Olayemi (2000) also posit that farmers with formal schooling tend to be more efficient in food production due probably to their enhanced ability to acquire technical knowledge. Old age and illiteracy among Nigerian farmers are probably a consequence of out migration. La-Anyane (1985) contends that there is a shift of manpower out of agriculture into other sectors of the economy and into urban areas in spite of the already high levels of unemployment in urban centers and the existence of positive marginal products in agriculture.

The out migration has three qualitative features with important implications for agricultural production. The out migration is age, skill and gender selective. The out migrants are relatively young, mostly males and often literate and skilled. As a result, elderly, illiterate and unskilled men and women have become the dominant labour force and entrepreneurs in agricultural production. Osuala (1991) contends that women probably constitute >60% of this labour force. Ellis (1988) refers to these elderly, unskilled and illiterate women as the invisible agricultural producers in the rural communities. These women participate in all aspects of agricultural production, Adeyokunu (1981) and Ekejiuba (1991) posits that as the out migration continues, more and more women will take over what was traditionally men's work. Women, in addition to old age, illiteracy and lack of skill in agricultural production are constrained by biological factors such as child bearing and rearing and household management (Onyebinama, 1998).

According to Onyebinama (2004), previous experience in farm business management should enable farmers set realistic time and cost targets, allocate,

combine and utilize resources efficiently and identify production risks. Paradoxically, farmers in Nigeria are known to have >20 years and up to 50 years of farming experience (Osuntogun and Oludimu, 1982; Oboh *et al.*, 2007) and still operate at subsistence levels and without production plans. Rogers (1970) posit that such subsistence farmers are inclined to mistrust which negatively affects co-operation and organization beyond the family circle.

According to him subsistence farmers are also fatalistic, little inclined to save and invest exhibit a lack of interest in innovation, a low level of aspiration and limited attention for the future. These attitudes adversely impact on entrepreneurial capacity. This is probably why most farmers in Nigeria have limited technical and managerial capacity. Consequently, they perform more of laborious tasks and less of entrepreneurial (technical and managerial) functions and are therefore unable to exploit the improvements that have been made on the physical, social and economic environment of agricultural production in Nigeria.

Economic role of entrepreneurship in agricultural development: Nigerian agriculture is still in a state of underdevelopment. In economic terms, it is still a subsistence (peasant) activity (a way of living) instead of a commercial activity (a way of earning a living). As a subsistence activity agricultural production is characterized by the absolute lack of production plans, use of crude tools (machetes and hoes), smallholdings and low cash incomes. From a socio-cultural perspective, the underdevelopment of Nigerian agriculture is evident in the people's attachment to traditional attitudes, customs and beliefs evident in land tenure practices and farming systems. In physical terms, the environment of agricultural production in Nigeria, which is largely rural is characterized by lack of functional modern infrastructure pipe borne water, electricity, all season roads, communication services, hospitals, storage and preservation facilities, markets etc. The underdevelopment of Nigerian agriculture is the reason for Nigeria's huge and increasing food import bills from about 0.13 billion naira in 1973 to about 75.56 billion naira in 2000 (Onyebinama, 2004) decreasing export earnings from agriculture; inadequate supply of agricultural raw materials for domestic industries; high levels of unemployment in the rural areas and the consequent rural urban migration and the chill penury pervading the rural communities, where the majority of the population resides. According to Amucheazi (1991), abject poverty in the rural environment is evident in high rates of consumption

of income, poor living conditions and low purchasing power. Development is a multi-faceted process with physical, economic and socio-cultural dimensions. In physical terms, it involves a transformation of the physical environment. In economic terms, development is indicated by increase in incomes and output while radical changes in institutional, social and administrative structures as well as in popular attitudes, customs and beliefs (Todaro) are indicative of socio-cultural development. The Nigerian economy is predominantly an agrarian economy. Agriculture still makes a significant contribution to the Gross Domestic Product (GDP) and provides employment for the majority of the population.

The index of the development of Nigerian agriculture is its ability to make significant contribution to overall economic development through the provision of adequate and well balanced food for the ever increasing population, the provision of raw materials for domestic industries, provision of foreign exchange through export earnings and release of labour to other sectors of the economy. To fulfill these roles, Nigerian agriculture needs to be transformed from a subsistence activity to a market-oriented, profit driven activity. The probable vehicle for this transformation is entrepreneurship. The development of the entrepreneurial (technical and managerial) capacity of farmers is probably, the stimulus needed for the transformation of Nigerian agriculture.

The development of the entrepreneurial capacity of farmers will enable them to make significant contributions to agricultural development by: identifying and exploiting investment opportunities in mainstream agricultural production, providing investment capital for the establishment and promotion of agro and allied enterprises, stimulating the development of the allied downstream sub-sector (input supply) through backward integration and upstream sub-sector (product processing) through forward integration, inducing the development of ancillary services for agriculture such as insurance through risk bearing and transforming the state of agricultural technology through innovation and innovation adoption. Without entrepreneurship, Nigerian agriculture will remain largely, a subsistence low external input activity with the consequent low output and low income for farmers. The country's quest for self-sufficiency in food production will remain elusive, while the dream of achieving the millennium development goal of eliminating hunger and starvation will remain a mirage.

RESULTS AND DISCUSSION

Extension education and entrepreneurship development: Technical knowledge in the form of ideas, materials,

methods and practices are products of research. Research products or results in their original form are not likely to be accessible and useful to farmers. To bring research results to farmers someone must teach farmers how these practices should be employed and adopted under their own individual farming and resource conditions (Benor, 1984). This engenders the need for an extension service. According to James (1986) the development, size and uses of the extension service depend on the need to increase output and productivity on individual farms, agricultural productivity on the aggregate and plan the use of rural resources in the national interest.

Given the role of technical knowledge in increasing agricultural output and productivity, the extension service provides the physical framework for disseminating information on and introducing new technologies to farmers. The extension service is used to explain new technologies to farmers and to teach them how to adopt and adapt improved production practices in order to increase their production and income. The extension service also ensures that the agro-economic and social environment of farmers and the day to day production problems they face are appreciated by research, thereby facilitating the continuous reorientation of research towards the priority needs of farmers and the early resolution of important technological constraints (Benor, 1984).

The traditional function of the extension service is education. Unfortunately, the provision of education by the extension service in Nigeria has been limited to introduction of new technologies and feedback to research. As a result extension education is considered synonymous with the dissemination of information on new technologies to farmers. For instance Anyanwu (1998) asserts that "extension's most effective and efficient operational strategy is to provide or act as a link between sources of knowledge, idea or information and the end users of the knowledge, after the knowledge has been processed by extension professionals into forms usable and adaptable to appropriate local conditions". According to him, extension is most effective when it performs its traditional role of acquiring, processing and disseminating, in its most practical and simplified forms, complex and sometimes abstract knowledge from research activities. Consequently, the quest for agricultural development in Nigeria has always emphasized research and extension. While research has all along generally developed new technologies and proved their worth to a relatively small number of farmers, extension has been responsible for the introduction of the new technologies to as many farmers as practicable (Unamma *et al.*, 2004). The emphasis on the development of new technologies

and the introduction of these technologies to farmers has been the driving force behind the preoccupation to evolve an enduring linkage on a permanent basis between research and extension. Consequently, various extension research linkages has been tried over the years. These include the:

- Agricultural Extension Research Liaison Service (AERLS) in which the subject matter specialist provided the link between research and extension
- National Accelerated Food Production Programme (NAFPP) under which research was designed at the research institutes and taken to the farmers field
- Farming Systems Research (FSR) also known as On-Farm Research (OFR) which involved testing innovations under farmers conditions and results closely monitored in terms of profitability and acceptability. The results provided the basis for modifications, addition of new technologies or rejection of inappropriate ones
- National Agricultural Research Liaison Services (NAERLS) created in 1987 with the mandate to strengthen the linkage between research and extension by coordinating the activities of the various research institutes based AERLS
- Village Adoption Approach which involved the adoption of villages by research institutes and universities for the purpose of extending technologies such as the Badeku Rural Development Project (University of Ibadan), Isoya Rural Development Project (University of Ife), Okpuje Rural Development Project (University of Nigeria), Zaria Rural Change Project (Ahmadu Bello University)
- Technology Generation and Transfer Programme (TGTP) a collaboration between research institutes, agricultural development programmes and other scientists to conduct diagnostic survey in selected ADP areas with a view to selecting potentially viable technologies to address identified problems
- Research Extension Farmer Input Linkage System which involves input and marketing organizations in the research extension linkage

While the extension service has made tremendous progress in the area of information dissemination on and introduction of new technologies to farmers, this progress has not translated into increased agricultural output and productivity. Technological or technical change induces changes in production organization that depend on the type of technical change. Technical change that involves

a product technology, among other things introduces the farmer to new factor markets, which may be local or international. The farmer should be capable of operating effectively within the new factor market. Technical change involving a process technology may alter a farmer's production technique. It may imply new combinations of production factors or the choice of a new enterprise or combination of enterprises.

New combinations of production factors may imply factor substitution. The choice of a new enterprise implies enterprise selection from among an array of possible enterprises. This presupposes viability analysis. Enterprise combination or substitution may require partial or whole farm budgeting. The farmer must be technically and managerially competent to handle these changes. In reality, given the low level of education among smallholder farmers in Nigeria, the adoption of any new technology by farmers, makes them less technically and managerially competent within the context of their ability to handle the totality of production and management decisions which the adoption of the new technology necessitates and which are essential to the success of the business enterprise.

The inability of smallholder farmers to exploit the gains in the application of science and technology to smallholder agriculture is largely due to lack of entrepreneurial (technical and managerial) capacity to handle the post adoption production challenges associated with new technologies. The relevance of extension education relative to the transformation of Nigerian agriculture is to fill this gap. Amaza and Olayemi (2000) report that while technical efficiency was positively influenced by extension contact, allocation efficiency was not. According to them, it is an indication that extension messages have ignored economic issues that could enable farmers to achieve optimal input combination.

CONCLUSION

Most smallholder farmers in Nigeria who produce the bulk of the output of the agricultural sector are women, elderly, illiterate and unskilled in agricultural production. This makes entrepreneurship education an imperative for agricultural development in Nigeria. The experience with extension education in Nigeria clearly indicates an emphasis on the pre-adoption and adoption phases of the process of technical change. The post-adoption challenges faced by farmers in terms of the intricacies and complexities of new factor markets and changes in production organization as a result of the adoption and

use of new technologies are largely ignored by extension education. The profitability and sustained use of a new technology, post adoption depends primarily on the capacity of the farmer to cope with these challenges. For instance, Onyebinama (2004) reports an adoption (ever use) rate of 66% for inorganic fertilizer in Imo state and a current use rate of 50% at the time of the study.

The primary reason for the lower current use rate was the cost of fertilizer. The cost of fertilizer is a post adoption challenge associated with the factor (fertilizer) market in terms of availability and access. Coping with this challenge requires entrepreneurship in this case the ability to provide investment capital. The role of extension education in entrepreneurship development is to build this capacity. To achieve optimal input combination (efficient allocation of inputs) and increased output (efficient utilization of inputs) smallholder farmers in Nigeria need technical and managerial training.

RECOMMENDATIONS

The provision of entrepreneurial (technical and managerial) education for farmers has far reaching implications for extension education practice in Nigeria. First, the objective of the extension service should be to make smallholder farmers technically and managerially competent. The success of farmers as entrepreneurs depends on their ability to estimate future demands, determine the appropriate quantity and timing of inputs, calculate probable production costs and selling prices and the possession of the art of superintending and administration (Schumpeter, 1947). Technical and managerial competence is indicated in this ability and in the possession of the art of administration.

Second, for the extension service to provide entrepreneurial training for farmers, the concept of extension education needs to be broadened. Extension education should include technical and managerial education.

Technical education should not be limited to the dissemination of information on new technologies. It should inculcate in farmers the ability to understand the production process (input output relationship) and to modify or alter this relationship for efficient and profitable production. Managerial education improves the administrative ability of farmers. To be able to administer their farm business, farmers need basic training on record keeping, accounting, marketing, labour management etc. Third, there is need to review the structure of the extension service to enable it serve as the physical and institutional frame work for providing farmers with technical and managerial training.

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