

AGRICULTURAL MECHANIZATION AND WOMEN ENTREPRENEURS IN THE AGRICULTURAL SECTOR IN RURAL AREAS

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Abstract

Most developing countries, and indeed, African countries have an economy strongly dominated by the agricultural sector. Agriculture generates up to 50 percent of gross domestic product (GDP), contributing more than 80 percent of raw materials to industries. Women make essential contributions to the agricultural and rural economies in all developing countries. Their roles vary considerably between and within regions and are changing rapidly in many parts of the world, whence economic and social forces are transforming the agricultural sector. Inasmuch as agriculture can be an important engine of growth and poverty reduction, the sector is underperforming partly because women, who are often a crucial resource in agriculture and the rural economy, face constraints that reduce their productivity. Furthermore, 30 to 40 percent of agricultural produce is lost owing to poor post-harvest handling, storage and processing methods. The low level of engineering technology inputs in agriculture had been cited as one of the main constraints hindering the modernization of agriculture and food production system in Africa. Based on secondary data, the study assesses the influences of agricultural mechanization on women entrepreneurs in the agricultural sector in rural areas.

Keywords: Agriculture, women, rural areas

Introduction

Development of the society, more so for the developing countries, is directly related to the income generation capacity of its members. Agriculture being a key income generation activity for many members in the developing countries mechanization is an indispensable input to rural development and the entrepreneurship based on farming can directly affect the income mainly of women who form a major chunk of our population. Inasmuch as agriculture is a major source of income, the production of food in the developing countries is more often than not labour intensive and the manual work carried out by farmers and their families is very arduous and time consuming which is a major constraint to increasing agricultural production.

The growth of modernization processes such as industrialization, technical change; urbanization and migration has provided an entrepreneurial opportunity for the farmers to improve their farm output encourage it. Entrepreneurship on small scale is the only solution to the problems of unemployment and proper utilization of both human and non human resources and improving the living conditions of the poor masses.

Kuratko (2016) in his book on entrepreneurship states that Entrepreneurship is the dynamic process of

creating incremental wealth. This wealth is created by individuals who assume the major risks in terms of equity, time, and/or career commitment of providing value for some product or service. The product or service itself may or may not be new or unique but value must somehow be infused by the entrepreneur by securing and allocating the necessary skills and resources. Rural women's participation in agro based activities is much more than what statistics reveal.

This is mainly due to the fact that most of the work done by the women at farm and home is disguised as daily chores. Mechanization and easy availability of labour provide more time to energetic women to engage themselves in self-employment or entrepreneurial ventures. Rural women having a pool of human and non-human resources to take up an enterprise need only an innovative mind and motivation. But a successful entrepreneur requires some essential pre-requisites.

Women and Agriculture

Agriculture in Rural Areas

The National Geographic Society (2016) defines a rural area as "an open swath of land that has few homes or other buildings, and not very many people." Agriculture is a major component of the viability of



rural area in most parts of the world and represents the predominant land use and is the primary industry for most rural areas and most rural people live or work on farms and farming activities make up the basic fabric of rural life, contributing significantly to the overall state of rural regions in terms of employment and business opportunities, infrastructure and quality of the environment. The “agriculture sector is primarily composed of small-scale, family-owned or tenanted farms that have largely survived the transition through generations” (Alsos, Carter, & Ljunggren, 2011). For the rural folk in the developing countries agriculture is an integral part of their economy and society. Viable rural communities are maintained by farming as an important economic activity that creates employment as well as deliver multiple economic, social, environmental benefits.

Importance of Agriculture in Rural Areas

Agriculture represents a significant share of the rural economy and as such greatly is a potential economic contributor to rural development. As is the case in most of the developing countries, farming is the primary economic activity and supports the vast majority of the population in employment and a source of income. There is a lot of potential role of farming in the rural that can be achieved through mechanization so as to maximize benefits to the society and thereby improving the economic security of the rural folk who significantly depend on agriculture or agricultural labour as their primary source of livelihood.

Women and Agriculture in Rural Areas

Given that most of the population in the developing countries lives on the countryside and that most of them depend directly or indirectly on agriculture to survive, the importance of agriculture cannot be gainsaid. In the rural areas women play an integral role in farming and agricultural development can make a huge difference in their lives and can significantly contribute to the economic growth as well as reduce poverty and improve food security.

Women make significant contributions to the rural economy yet they “consistently have less access than men to the resources and opportunities they need to be more productive. Increasing women’s access to land, livestock, education, financial services, extension, technology and rural employment would boost their

productivity and generate gains in terms of agricultural production, food security, economic growth and social welfare” of the rural folk (FAO, 2011)

In the developing countries around the world agriculture drives growth and development and reduces poverty. This sector, however, has not maximized its potential in many countries partly because women, who are often a crucial resource face challenges that hamper their productivity. Apparently, “women comprise 43% of the agricultural labor force, on average, in developing countries; this figure ranges from around 20% in Latin America to 50% in parts of Africa and Asia, but it exceeds 60% in only a few countries” (Babu, Gajanan, & Sanyal, 2014). Inasmuch as “agricultural systems vary across the world, spanning large-scale mono-crop landscapes to smallholdings of farmers who typically live on less than two hectares” (Fanzo, Hunter, Borelli, & Mattei, 2013) which means the time women spend in agricultural activities varies according to type of crop and production cycle and generally the labour contribution from women far exceeds that by men and as such “women make essential contributions to agriculture in developing countries, but their roles differ significantly by region and are changing rapidly in some areas. Their contribution to agricultural work varies even more widely depending on the specific crop and activity” (Babu et al., 2014). This is besides other responsibilities that they have in the home such as preparing meals and fetching firewood for fuel and water and their participation therefore make significant contributions to the agricultural and rural economies in all developing countries.

Women’s Contribution in Agriculture in Rural Areas

Women “comprise nearly half of the world’s workforce, women supply the main financial support for 30 percent of the world’s homes” (Al-Hadad, 2015) and as such are the pillars of the agricultural workforce doing much of the tedious and back-breaking tasks in agriculture animal husbandry and homes reflects levels of poverty and is mainly determined by access to productive resources and income earning opportunities, though sometimes others perceive that when female farmers are mentioned that it is in reference to wives who may help out once in a while in farming. We are talking of women who take the active role directly or indirectly.

Women’s roles vary significantly in the devel-

oping countries for each region have different dynamics though the circumstances around them are changing rapidly in many parts of the world, where economic and social forces are transforming the agricultural sector. Women in the rural areas often manage complex households as they engage in multiple activities which typically include producing agricultural crops, tending animals, processing and preparing food, working for wages in agricultural or other rural enterprises, collecting firewood for fuel and water, engaging in trade and marketing, caring for family members and maintaining their homes.

In this respect there are a number of challenges that women in the rural areas face in the quest to be successful and there is need to enhance women's contributions to agricultural production and sustainability which include governments support for public services and investment in rural areas so as to improve women's living and working conditions; prioritizing technological development policies and target rural areas, providing mechanisms that will meet farming women's needs as well recognizing their knowledge, skills and experience in the production of food and by assessing the negative effects and risks of farming practices and technology, including pesticides on women's health, and taking measures to reduce use and exposure.

Agricultural Mechanization

The history of agriculture contains many examples of tool use, such as the hoe and the plough compounded by the limited area that can be cultivated and as such "increasing agricultural mechanization has long been of interest to many African countries" because of "constrained by through the use of the hand hoe and its association with perceptions of primitiveness and drudgery, agricultural mechanization and large-scale farming have long been a part of the vision of modernizing agriculture in many African countries"(Houssou, Diao, & Kolavalli, 2014). The importance of agricultural mechanization in development is therefore unquestionable inasmuch as the effects achieved through mechanization is dependent on the successful application and use of intermediate devices that provide the mechanical advantage thus significantly reversing the situation of extreme poverty in rural areas in developing countries is enhancing agricultural mechanization, and when properly applied will increase the productivity of farmers, more so women who are actively engaged in agriculture.

What is Mechanization?

The Merriam Webster dictionary defines mechanization as "to change (a process or an activity) so that it is done with machines instead of by people or animals" Mechanization therefore hastens production enabling the farmer accomplish his or her task by boosting efficiency and meet his or her target. The term "Agricultural mechanization" generally refers to the application of tools, implements, and powered machinery as inputs to achieve agricultural production. In general three sources of power are used in agriculture; manual, animal and motorized (fossil fuel and electric) (FAO, 2013).

In order to provide solutions to the difficulties experienced by farmers, governments in developing countries have to facilitate the acquisition of the machinery as well as providing environments that will enable them to maximize their potential and significantly increase output and gainfully farm. Farm machineries, equipment and implements significantly play a vital role in the enhancement of sustainable food production and policies should be put in place in the developing countries that will enable farmers acquire them.

In reference to this, Asefa (2005) posits that the "spatial dimension of crop production requires that the machines suitable for agricultural mechanization be mobile-they must move across or through materials that are immobile The seasonal characteristic of agricultural production requires a series of specialized machines-for land preparation, planting, pest and pathogen control, and harvesting-designed for sequential operations", each of which is carried out for only a few days or "weeks in each season" thus in order or the farmer to improve and maintain competitiveness in the prevailing market environment by keeping consumer price as low as possible, the cost of production must be kept low as well. This can be achieved through agricultural mechanization which is labor-saving and capitalizing on economic opportunities.

Levels of Agricultural Mechanization

FAO (2013) highlights the following levels of agricultural mechanization:

1. Mechanization based on human power sources

This level of mechanization is basically a manual technology which is the use of hand tools and manually powered machines. Mechanization at this



level relies upon human beings as the source of power (“muscle power”). Tools used here are machetes, hoes, spades, forks, axes, knives, but also machines such as manually powered winnowers and seed drills. Hand tools are generally multi-purpose tools and may be used for several operations related to crop production and agro processing, they are relatively easy to manufacture and use, as well as easy to maintain and to repair. They also offer the advantage that they are inexpensive and accepted socially. However, their use demands very high levels of human effort which limits what can be achieved in production terms. In terms of area to be cultivated, the use of hand tools puts a limitation on the area that can be cultivated by one person. Within this overall limitation, the amount of time it takes to accomplish various farming operations will nevertheless vary widely according to considerations such as the crop, soil type, soil moisture, optimum seeding dates and desired quality of work. The amount of work a human can deliver is influenced by nutrition and health. Estimates shows that in Sub-Sahara especially among the small scale farmers, hand tool technology are widely used while its use is decreasing in Asia.

2. **Animal power based mechanization**

Animals are used extensively as a source of power in agriculture. The potential draught power of animals varies greatly according to the type of animal. The main animals used for work purposes are horses, oxen, mules, donkeys and camels. However, their size, nutrition, state of health and general condition at the time of use are key factors determining the amount of work they are capable of carrying out. There is considerable evidence to show that by replacing and augmenting human power with animal traction, the total cultivated area can be expanded and labour productivity increased

3. **Mechanical power based mechanization**

Engine powered machines represent the highest level of mechanical technology in agricultural mechanization. The sources of energy are usually fossil fuels but may also involve direct or indirect use of wind or solar resources for generating electricity for electric motors. Generally the use of advanced mechanical technology calls for higher levels of management and support services in order to optimize returns on the investment. The introduction of mechanical power into agriculture has normally brought about increases in both labour and land productivity. Where the conditions for the use of

tractors and large machinery are suitable, investment in agricultural mechanization has proven to be profitable.

Women and Agriculture Mechanization

Women are the backbone of the rural economy significantly contributing to the economy especially in the developing countries of the world inasmuch as they do not own or receives as much land, financial access, farm inputs, agricultural training and other necessary information as compared to men. Given that “traditionally, women have been the repository of much knowledge concerning seeds and soils because of their roles in subsistence agriculture” (Cullingford & Blewitt, 2013) and many effective innovations have been generated locally and empowering them and investing in them especially the rural women will significantly increase productivity by improving their working conditions as well as reducing the time that they will take working in the farm. It is unfortunate that agricultural mechanization is “still far from women and bypassing them” though “it is now well established that mechanization serves to reduce women’s workload and facilitate some hard operations” (Abdelali-Martini, 2011).

The Food and Agriculture Organization (FAO) “estimates that equalizing access to productive resources for female and male farmers could increase agricultural output in developing countries by as much as 2.5 to 4 percent. Eliminating barriers preventing women from entering certain sectors or occupations would have similar positive effects, increasing output per worker by 13 to 25 percent” (The International Bank for Reconstruction and Development/The World Bank, 2011). Thus when empowering women enables them to claim their rights to access land and fully utilize it and thus exploit available opportunities as well as make choices as to how to best use the land and therefore grow the economy, enhance food security and greatly improve the prospects for current and future generations.

The greatest effect of empowering women in their agricultural endeavours is because the current crops that are available for planting often require considerable technological sophistication and special care in order to maximize the expected yield, more so after harvesting because of the perishability of the crop so as to be able to meet the market standards. The problem of perishability is compounded in rural areas where almost every farmer grows the same perishable

crop and consumption of the farm produce will have to be limited and the farmers have to look for markets for their produce outside their locality. There is also a possible risk of crop failure due to diseases and pests or due to inadequate rainfall, which are a lot higher than in traditional crops. Unfortunately access to technology is limited to the small-scale farmers who can't afford to purchase the needed equipment and the small-scale farmers more often than not have to rely on agricultural extension services that are sometimes provided by the governments.

It is more challenging for women who more often than not have a greater disadvantage because they not only contend with the limited access to the farm inputs but also structural differences that arise owing to cultural factors or legal rights to access capital or even land, let alone the technical knowledge to operate the machines that are needed so as to get the desired yield. There is need for the governments in developing countries to focus on women by recognizing their input and efforts by empowering them so that they are able to contribute more in the agricultural sector as well as “strengthening their access to and control over productive resources/assets such as land, capital, knowledge, information and technologies, remain important factors of an enabling environment for women’s empowerment” (Abdelali-Martini, 2011).

Importance of Women Accessing Mechanization

The improvement in agricultural technology coupled with mechanization positively impacts the lives of women from all socio-economic backgrounds, by reducing the amount of time that they will work in their farms as well as improving their income and more importantly enabling them to manage and implement their entrepreneurial skills having been relegated to manual agricultural labourer in the absence of mechanization. This is coupled with the access to and control over productive resources or assets such as land, capital, knowledge, information as well as financial resources.

Mechanization has the potential to increase production; boost operation timeliness more so when most women the rural areas continue to rely on hand hoes as a tool for cultivation. Agricultural mechanization can also raise the income of farmers and conserve natural resources by intensifying sustainable crop production practices which creates a farming cycle that leads to higher income for the farmer because the farmer can make saving out of the improved productivity.

Agricultural Mechanization and Sustainable Development

Agricultural mechanization has always been seen as a double edged sword in that, according to FAO (2013): “it has been considered as a major factor in reducing employment opportunities while at the same time it is seen as the means of reducing rural unemployment through the development of new employment opportunities”. From the economic aspect, (FAO, 2013) adds that agricultural mechanization is an investment for farmers and they have to generate income and profit from their investment by means of greater production or increased value. The economic aspect include the retailers, distributors, manufacturers, importers and service providers which must be sustainable in order to make a livelihood from their business. Secondly, from the social context, the sustainable agricultural mechanization is seen from the non-economic angle, cannot translate into cash equivalents, it benefit the users and promotes the local farmer’s status by reducing the farmer’s work load work and creating more leisure time. Last but not least, mechanization has been criticized of having a negative impact on the environment through its various practices especially on the soil, however, it has been pointed out that mechanization opens up new possibilities for the conservation of natural resources and the environment. Conservation agriculture, for example, is one of those very important concepts that have been developed during recent years.

Agricultural Entrepreneurship

Women and Entrepreneurship in Agriculture

Entrepreneurship in agriculture is a key factor for the survival of small-scale farming in a constantly changing and increasingly complex global economy and is a solution to poverty, unemployment and economic development for the developing countries. “Myriad women entrepreneurs have launched a business, some in response to a perceived opportunity, many out of necessity given a lack of viable employment alternatives” (Guillén, 2013). This has been the case for women who make essential contributions to the economy of developing countries as farmers, labourers and entrepreneurs. To be a good entrepreneur in agriculture, one needs managerial skills required to start and run a profitable farm business as well as an



‘entrepreneurial spirit’ so as to be able to be successful in their endeavour. Women can be taught the managerial skills since many have the “spirit” of an entrepreneur.

“Successful farmer-entrepreneurs are technically competent, innovative and plan ahead so they can steer their farm businesses through the stages of enterprise development from establishment and survival to rapid growth and maturity” (Kahan, 2013). The roles of women are diverse and changing rapidly inasmuch as women have less access than men to agricultural assets, inputs and services and to rural employment opportunities and the “proportion of women in agricultural production and postharvest activities ranges from 20 to 70%; their involvement is increasing in many developing countries, particularly with the development of export-oriented irrigated farming, which is associated with a growing demand for female labor” (United States Congress. House Committee on Financial Services, 2008).

Conclusion

Agriculture is the main source of livelihood for many people around the world mainly in the rural areas where it is their main activity. Agriculture is therefore the backbone of economy in any given country for it is not just the source of food but employment to millions of people in rural areas worldwide. Therefore, many rural areas in the developing countries have a large agricultural potential that need to be realized and developed through agricultural mechanization to increase investment in this sector that will not only benefit the local communities but spread to the international communities as well.

Women are the backbone of the agriculture workforce and yet they have the least access to agricultural related assets and inputs, this segregation varies according to different countries, there is need for equal access to agricultural assets and opportunities if this sector is to spur. There is a high need to embrace agricultural mechanization to enhance production in the agricultural sector and boost sustainable development.

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