

Effects of government agricultural subsidies on socioeconomic welfare of small holder farmers in Nambale Sub County, Busia County, Kenya

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Abstract: Without adequate inputs, farmers cannot meet the food needs of their families and those of the rapidly growing population. The cost of key inputs such as seed, pesticides, fertilizer, drugs and vaccines is high for resource poor farmers. When governments want to ensure there is sufficient food for its citizens, a variety of governmental supports are provided to the industry to ensure it maintains low costs of production and high output. This is generally in the form of subsidies. The general objective of the study was to investigate the effects of subsidized agricultural subsidies on the welfare of small holder farmers in Nambale Sub County in Busia County. The specific objectives were to examine how access to subsidized farm inputs and agricultural mechanization influence the welfare of small holder farmers in Nambale Sub County. Purposive sampling was used to select 320 small holder farmers out of which 309 were reached. Data collected was analyzed using descriptive and inferential statistics using the Statistical Package for Social Scientists (SPSS). Findings revealed that subsidized farm inputs had a weak but significant positive relationship with the socioeconomic welfare of small holder farmers. Agricultural mechanization had a weak but significant positive relationship with socioeconomic welfare of small holder farmers. The regression model summary indicated that subsidized farm inputs and agricultural mechanization accounted for 20.8% of the variations in socioeconomic welfare of small holder farmers which means that other factors not considered in the study could explain the remaining variance. More resources need to be allocated for subsidized agricultural inputs and their distribution made more regular. There is need to have the tractors for agricultural mechanization easily accessible and in good working condition for small holder farmers to realize maximum benefits.

Keywords: Agricultural inputs; agricultural mechanization; agricultural subsidies; socioeconomic welfare.

I. INTRODUCTION

Agricultural productivity is central to the lives of most Africans. It is a strong and vibrant socio-economic pillar in development. Several governments issue subsidies in the agricultural sector in form of inputs in order to improve the socio-economic viability of farming and ensure national food security [18]. About 80% of Africa's poor live in rural areas and entirely depend directly or indirectly on agriculture as their main source of income and employment [11]. These smallholders also play a key role in increasing food supplies, more so than large farms in poor countries. For these producer groups, agricultural productivity is the key determinant of welfare and agricultural productivity growth is the key hope for poverty reduction [2].

In many developing countries, policies to intensify agricultural production are being implemented for the purpose of economic development. Technological progress can foster food security and economic development in low income settings [8]. Agricultural subsidies have been among government policy programmes generally pursued in times of commodity price increase. It is expected that subsidy programmes would lead to improved production and general improvement of living conditions of rural communities. The effects have however been varied and country-specific [16].

Despite being some of the world's hardest-working people, small holder farmers are often limited in terms of skills and technical know-how as they often lack the agricultural tools (hybrid seed and fertilizer), know-how, and market access to be successful [9]. According to [7], small holder farmers are usually unable to purchase sufficient improved farm inputs to

be able to produce enough food as well as cash crops to raise income to meet other household needs. Following this observation, [17] concluded that subsidies are one of the most prevalent policy instruments that most governments use in developing countries to promote the use of fertilizer and hybrid seeds.

In Kenya, the agricultural sector is the mainstay of the economy and contributes 24% of the GDP directly and 27% of GDP indirectly through linkages with manufacturing, distribution and other service related sectors. For these reasons the sector has continued to receive priority as an important tool for promoting national development [12]. The government has provided subsidies to farmers in order to increase their outputs, reduce post-harvest losses and adopt better technologies. To this end, it has made great effort by giving farmers subsidy for farm inputs like fertilizer, seeds and tractor for hire to increase their yield [13].

The high cost of farm inputs and quality planting material in have served to hinder growth in agricultural production for farmers in Busia County and Nambale sub-county specifically leading to food insecurity [3]. Despite the challenges, the sub-county is determined to improve in agricultural production by promoting adoption of modern farming techniques including encouraging public private partnership in the provision of farm inputs and quality planting material [15].

2. EMPIRICAL REVIEW

[6] conducted a study in Malawi on agricultural input subsidies. From the study, it was noted that agriculture and maize are vital factors to the economy of Malawi and are strongly ingrained into the livelihoods of most Malawian people. However, a considerable number of people are poor, living and working on very small pieces of land primarily planting maize. Because cultivation is often done without organic or inorganic fertilizer yields will be low and subsequently the ability of farmers to afford farm inputs is greatly reduced.

Another study conducted by [7] on fertilizer subsidies in sub-Saharan Africa noted that small holder farmers in sub-Saharan Africa face particularly difficult challenges with high fertilizer prices, lack of liquidity/credit and lack of knowledge. The study further indicated that fertilizer subsidies can play a role in raising fertilizer use and agricultural productivity in low input/low output agricultural systems. They can help demonstrate the benefits of fertilizer and kick start market development by raising input demand at a large scale. The general observation was that in sub-Saharan Africa, fertilizer is a critical but scarcely used input

A study conducted by [5], on agricultural mechanization and agriculture transformation indicates that sufficient demand is a precondition for successful mechanization. In general, demand for mechanization emerges at the point when it becomes cost effective for farmers to use it over other available options. Thus, policy interventions aimed at promoting mechanization must first confirm whether sufficient demand is indeed present failure to which tractor hiring services quickly collapse under these programmes and machines often left idle, scrapped and/or abandoned.

[14] conducted a study in Adamawa State in Nigeria on the role of agricultural mechanization in economic development and they established that where mechanization of agriculture is implemented and there is more supply of multi-purpose machines to transfer farmers' labour and fatigue to machines, this will greatly improve agricultural production. Agriculture mechanization is an enterprise that creates job opportunities with the application of machines. According to [14], the implementation of agricultural mechanization has to be done by involving the active participation of agricultural business society including; consumers/farmers, related industry, producers and financial institutions

3. CONCEPTUAL FRAMEWORK

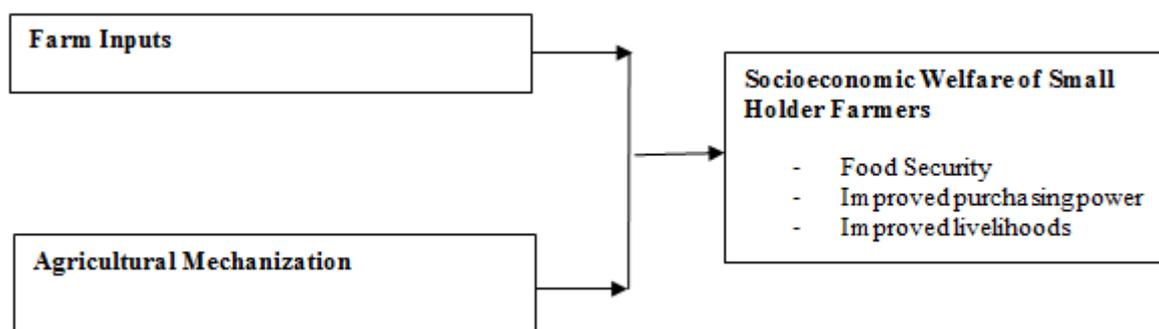


Figure 1: Conceptual Framework

4. CRITIQUE OF EXISTING LITERATURE

Where farmers are able to access government agricultural subsidies, possibilities of increased agricultural production are great. Widespread use of fertilizer and other farm inputs by small holder farmers is however constrained by the fact that most small holder farmers are resource poor and therefore affordability and profitability are a problem [6]. The use of fertilizer in Sub Saharan Africa is significantly lower than in other developing regions. This impacts negatively on agricultural production

Agricultural mechanization has great potential to contribute towards agricultural transformation. However, most farmers still rely predominantly on manual labour. Agricultural intensification is driven by increased population pressure and rising demand for agricultural products. This in turn prompts mechanization both through the adoption of existing and the development of new technologies [5]. In Africa, more than 60 per cent of the population are involved in agricultural activities. Despite this, it has the least mechanized agricultural system. The continent needs to adapt to already existing technologies that are affordable and usable by small holder farmers [1].

5. RESEARCH METHODOLOGY

The study adopted the exploratory research design. The target population for the study comprised of small holder farmers located in the four wards within the Sub-county. Out of a population of 1,886 small holder farmers, 320 respondents were sampled for the study using purposive sampling technique. Data was collected using structured questionnaires. Respondents were taken through the questionnaire and their responses recorded accordingly. Both descriptive and inferential statistics were used to present the findings. Regression analysis model was used to analyse the data to determine if the independent variable has any effect on the dependent variable. The regression equation is as indicated below:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

Where Y = Socioeconomic welfare

β_0 = Constant term

β_1, β_2 = Beta coefficients

X_1 = Farm inputs

X_2 = Agricultural mechanization

ε = Error term

6. RESULTS AND DISCUSSION

6.0 Response Rate

Out of the sampled 320 respondents, 309 questionnaires were completed giving a response rate of 96%. This was an excellent response rate especially when considering the generalizability of the study findings.

6.1 Access to subsidized farm inputs

The study findings indicated that 96.5% agreed that smallholder farmers receive various inputs from government such as fertilizer, seeds and pesticides. Regarding time of receipt of the said inputs, majority of the respondents (85.4%) agreed that the inputs are received on time. Asked whether the inputs are of good quality and the right quantity, 76.4% agreed that the inputs received are of good quality and the right quantity. 81.6% agreed that the inputs are affordable. As to whether the inputs are distributed regularly, more than half of the respondents (62.1%) did not agree with this statement. This goes to show that even though farmers receive farm inputs from the government, their availability is not guaranteed for each planting season. The descriptive results on access to farm inputs demonstrate that access and availability of farm inputs provides an opportunity for farmers to be able to address some of their socioeconomic needs. The general findings are supported by Belt (2015), who noted that for agriculture to prosper, farm inputs need to be available, affordable, accessible and of good quality. When agriculture prospers, farmers are not only able to meet their food needs but through sales of surplus they are able to increase their purchasing power.

6.2 Access to Agricultural Mechanization

The findings revealed that majority of the respondents, that is, 55%, did not agree that subsidized tractor services were easily available. This was attributed to a number of reasons including tractors being grounded due to mechanical failures and/or due to lack of fuel. On the question of affordability, 48.2% of the respondents agreed that it was affordable. Regarding the statement concerning the use of a tractor covering more land in less time, 51.8% of the respondents agreed with this statement. On whether more farmers are embracing mechanization and moving away from manual labour, 44.6% of the respondents agreed with this statement. The issue of access to agricultural mechanization services was not very clear cut as respondents were divided between those who agreed and disagreed with certain aspects of this variable. However it is clear that through the use mechanical technologies, farm production can be substantially increased. Mechanical technologies are both labour saving and directly increase yields and production [10]. This would have an impact on the socio-economic welfare of the small-scale farmers.

6.3 Socioeconomic Welfare of Small Holder Farmers

From the findings, 97.4% of the respondents agreed that access to farm inputs improves production such that farmers are able to address food security issues at the household level. Regarding the statement on whether access to subsidized inputs has led to an increase in production thus enabling the farmers to get some income from the sale of surplus produce, 97.1% agreed with the statement. Whether the improved yields and income raised from the surplus actually enable farmers to meet other household needs, 96.2% of the respondents agreed with the statement. On whether farmers are able to save having increased their levels of income 58.9% agreed with the statement. From the findings, it is clear that agricultural subsidies are key in ensuring improved productivity. According to [4], improved productivity means there is increased incomes in the agriculture sector which in turn ensures there is increased economic activity in other areas.

6.4 Correlation results

The findings indicated that the correlation between farm inputs and socioeconomic welfare of small holder farmers indicate a positive correlation ($r = 0.442$, p value = .000). This implies that farm inputs are a significant predictor of socioeconomic welfare of small holder farmers. It also implies that there is a probability of .442 that the socioeconomic welfare of small holder farmers will increase with an increase in farm inputs.

The findings also indicated that the correlation between agricultural mechanization and the socioeconomic welfare of small holder farmers is positive but weak ($r = 0.188$, $p = .001$). This means that though the relationship between agricultural mechanization and the socioeconomic welfare of small holder farmer is weak, there is a .188 probability that the socioeconomic welfare of small holder farmers will increase with an increase in agricultural mechanization.

6.5 Model Summary

Computing the direct influence on the independent variables, that is, farm inputs and agricultural mechanization on the dependent variable, socioeconomic welfare, the table below summarizes the findings

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.456 ^a	.208	.203	.94080

a. Predictors: (Constant), Mechanization, Farm Inputs

Table I: Model Summary

From the table above, the model summary indicates a positive R value (0.456) which means that there is a positive correlation between the predictor variables (farm inputs and agricultural mechanization) and the dependent variable (socioeconomic welfare of small holder farmers). The R^2 value is 0.208 implying that 20.8% of variations in the dependent variable can be explained by the independent variables. This therefore means that other variables not in the model contribute 79.2% of the dependent variable. Regarding farm inputs, the findings are consistent with the World Bank report [19] which states that seeds, fertilizer and agro-chemicals among other inputs are essential for improving productivity and incomes of small holder farmers in developing countries. Input supply is therefore critical if agriculture

is to prosper and the government needs to improve small holder farmers' access to inputs. On agricultural mechanization, the findings are supported by [10] who noted that the use of mechanical technologies does not only save labour but also directly increases yield and production. Despite the current level of mechanization being low, its use and adaptation can substantially increase farm production. The government can get useful insight from developing countries that have experienced fast growth in agricultural mechanization on sustainable ways to provide this service.

7. CONCLUSION

The results from regression coefficients show that farm inputs are significantly related to socioeconomic welfare of small holder farmers. 19.6% of the variations in socioeconomic welfare can be attributed to farm inputs. From the findings, agricultural mechanization accounts for 3.6% of the variations in socioeconomic welfare of small holder farmers. The regression coefficient results indicate that agricultural mechanization has a very low impact on the socioeconomic welfare of small holder farmers. A relationship exists between agricultural mechanization and the socioeconomic welfare of small holder farmers but the relationship is weak.

For agricultural productivity to improve in Nambale Sub-county, the government, through Ministry of Agriculture, Livestock and Fisheries (MoALF), needs to improve on the provision of agricultural subsidies by supporting the small holder farmers to access the requisite farm inputs as well the relevant technology, technical skills and knowledge. This way the government will be providing opportunities for the farmers to lift themselves out of poverty and thus addressing their socioeconomic needs.

REFERENCES

- [1] Alliance for a Green Revolution in Africa. (2018). Mechanize Africa's agriculture to transform economies. Malawi. Malabo Montpellier Panel. Retrieved from <https://agra.org/mechanise-africas-agriculture-to-transform-economies/> -
- [2] Block, S. (2014), The decline and rise of agricultural productivity in sub-Saharan Africa since 1961. Tufts University. Fletcher Schools
- [3] Busia County Integrated Development Plan (2013 – 2017).
- [4] Collet, K. and Gale, C. (2009). Training for rural development. Agricultural and enterprise skills for women small holders. London: City and Guilds Centre for Skills Development
- [5] Diao, X., Silver, J. & Takeshima, H. (2016). Agricultural mechanization and agricultural transformation. Washington, DC. International Food Policy Research Institute.
- [6] Dorward, A. & Chirwa, E. (2011). The Malawi agricultural input subsidy programme 2005/06 to 2008/09. International Journal of Agriculture & Sustainability (1) 232 - 247.
- [7] Druilhe, Z. & Hurlle, JB (2012). Fertilizer subsidies in sub-Saharan Africa. ESA Working Paper No 12-04. United Nations. Food Agricultural Organization
- [8] Fisher, M. & Lively, G. E. (2007). Agricultural subsidies and forest pressure in Malawi's Miombo Woodlands. *Journal of Agricultural and Research Economics*. 32 (2)349 – 362
- [9] Harlam, A. & Hazeltine, B. (2014). Government services at One Acre Fund. Brown University. Retrieved from https://www.oneacrefund.org/.../One_Acre_Fund_Case_Study_Government_Services_Ag_Policy
- [10] Houmy, K., Clarke, L.J., Ashburner, J.E. & Kienzle, J. (2013). Agricultural mechanization in Sub Saharan Africa. Integrated Crop Management. Vol 22 – 2013. Guidelines for Preparing a Strategy. Rome. FAO
- [11] International Finance Corporation. (2014). Access to finance for small holder farmers. Learning from the experiences of microfinance institutions in Latin America. Washington DC. IFC
- [12] Kenya Agricultural Research Institute. (2010). Food security report. Policy Responses to food crisis in Kenya. KARI.
- [13] Kwach, D. O. (2011). Effect of fertilizer input subsidy on maize production in Kenya. (Masters Thesis). University of Nairobi. Retrieved from <http://erepository.uonbi.ac.ke:8080/xmlui/handle/123456789/15253>

- [14] Mada, D. A. & Mahai, S. (2013). The role of agricultural mechanization in the Economic development for small scale farms in Adamawa State. *International Journal of Engineering and Sciences*. 2(11) 91 – 96
- [15] Nambale Strategic Plan. (2013). Nairobi. Daruson Books
- [16] Petreski, M. (2011). Increasing the welfare effect of the agricultural subsidy programme for food crop production in the former Yugoslav Republic of Macedonia. Retrieved from <https://unctad.org/PublicationChapters>
- [17] Sibande, L., Bailey, A., & Davidova, S. (2014). The Impact of farm input subsidies on household welfare in Malawi. *International Conference of Agricultural Economists*
- [18] Tripp, R. & Longely, C. (2006). *Self-sufficient agriculture, labour and knowledge in small scale farming*. London. Routledge
- [19] World Bank. (2013). *Unlocking Africa's agricultural Potential*. Washington DC. USA. Retrieved from <https://openknowledge.worldbank.org/handle/10986/16624>