Assessment Of The Interactions Between Agricultural Extension Functions Run By County And National Governments In Kitui County After Devolution, Kenya.

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Abstract
Agriculture supports the livelihoods of rural people in developing countries, including Kenya. Agriculture is the mainstay and driver of the Kenyan rural economy. Despite the critical role of agriculture in Kenya, poor access to extension support services persists. The study was carried out to establish the interactions between agricultural extension functions run by county and national governments as proxies for the years 2012 (before devolution) and 2016/2017 (after devolution). A total of 70 extension officers were sampled from Kitui County using a stratified random sampling approach. Secondary information sources such as national and county ministries' reports and existing literature were reviewed to supplement the primary data. A questionnaire was the main tool used for data collection in this study. Data obtained were analyzed through: descriptive and inferential statistics; linear regression analysis. The study established that most of the sampled respondents reported insufficient performance in extension service provision by the county government due to challenges of the interaction between agricultural extension functions run by county and national governments. This is due to the minimal involvement of county extension staff in the development and implementation of the work plans as well as monitoring and supervision at the national level. This study recommends that more involvement of extension staff in the development and implementation of work plans at the national level as well as monitoring/supervision should be enhanced to contribute to better interactions between national government and county governments.

I. Introduction

Background Information

Agriculture supports the livelihoods of rural people in developing countries (World Bank, 2021). The contribution of agriculture to the Gross Domestic Product (GDP) in sub-Saharan Africa is approximately 30% (Jayne & Sanchez, 2021). In developing countries, more than 90% of the rural population depends on rain-fed agriculture for food security and income (Hlophe-Ginindza & Mpandeli, 2021). The contribution of the agriculture sector to the GDP in East Africa is about 40%, being a source of livelihood for approximately 80% of the region's residents (Amwata, 2020). In Kenya, agriculture (practiced by approximately 75% of the rural population) is mainly rain-fed and geared towards subsistence purposes (Kogo et al., 2021). The sector accounts for 33% of GDP and 80% of national rural employment (GOK, 2019). According to Kenya's Agriculture Sector Transformation and Growth Strategy, agriculture may be a very effective means of enabling people to earn a living and a useful tool for the country's economic development (GOK, 2019). The Kenya Vision 2030, together with the Big Four Agenda, recognizes the agriculture sector as an economic pillar focused on the promotion of food security and employment creation (Wanderi & Makandi, 2019). Consequently, it influences the country's poverty incidence levels, nutrition and health, as well as the overall quality of life (Ayieko et al., 2021). In order to achieve its goals, the agriculture sector should be supported with respect to productivity (MOALF & C, 2017). It is generally agreed that the provision of agricultural extension services can enhance agricultural productivity in Kenya (Kogo et al., 2021). Agricultural extension can support and facilitate people who are engaged in agriculture through the provision of agro advisories, bridging the skills and technology gaps for improved livelihoods and wellbeing (GOK, 2019). Extension services may involve both government agencies as well as private sector actors. In some cases, extension is also provided by NGO's and producers/farmers organizations. Extension can extend research and technology knowledge to rural farmers, which by extension can improve their welfare. Modern extension services include technology transfer, facilitation, training/learning, linkages to markets and enhancement of partnerships for the benefit of farmers (Davis, 2008). According to the Strategy for Revitalizing Agriculture (SRA), agricultural extension is considered a useful tool in poverty alleviation (MOALF&C, 2017). Consequently, the declining effectiveness of the public extension service can be considered as a major factor that impedes agricultural growth and development. The Strategy for Revitalizing Agriculture (SRA), proposed key

reforms in the extension systems geared towards linkages between research and technology generation points, the extension system and farmers - the final beneficiaries.

Prior to ushering in the devolved government on March 4th, 2013, following the enactment of the Kenyan Constitution in the year 2010, the agriculture sector comprised of ten (10) separate sub-sectors, namely: crops, livestock, fisheries, land, water, cooperatives and marketing, environment and natural resources, regional development, and development of ASAL's. The devolution of extension services is aimed at taking the services closer to the people and ensures effective service delivery (GOK, 2011). The main setbacks of agricultural extension service in Kenya include inadequate funding, poor staffing and lack of involvement of farmer in planning (Rivera, 2004). In the devolved system, county governments have the mandate to provide extension services and authority to levy taxes on the services they provide (GOK, 2011). The effectiveness of the devolved extension system is dependent on farmer awareness, access to information, and the affordability of extension services (Ragasa et al., 2015). This 6 responsibility is not only for the county governments but also the national government. This can be achieved through coordination between the two levels of government. More clarity on the roles of each party is crucial. So far, both the county governments and the national government have put in place adequate measures to be able to grow and develop the agriculture sector in the country (Wafula & Odula, 2018).

Statement of the Problem

There is documented empirical evidence of a relationship between decentralization and service delivery (Ahmad et al., 2008; Besley et al., 2007; Freinkman & Plekhanov, 2009; Kannan, 2013). Unfortunately, most studies have focused on developed countries and a few on selected developing countries of Asia and Latin America. The relationship between decentralization and service delivery in the context of sub-Saharan Africa and particularly in Kenya is scarce (Balunywa et al., 2014; Tshukudu, 2014). A good extension system is the one that is tailored to the local context (GOK, 2012). The governance system in Kenya is dedicated to making devolution work thereby encouraging local participation in planning and development program of the government. The citizens are also expected to facilitate service delivery through taxes (GOK, 2011). It follows that it is more reasonable to design programs that fully satisfy the farmers if they are to pay for extension services given to them. The devolution of agricultural sector in Kenya presents an opportunity to increase farmer participation as well as ensure that extension services are delivered in a way that benefit farmers to the maximum. Unfortunately, the agricultural sector faces challenges; extension officers are few and not adequately facilitated; they are unable to reach many farmers (GOK, 2011). There is inadequate literature on this topic leading to significant knowledge gaps as far as the impact of devolution of the agriculture sector on delivery of agricultural extension services and agricultural productivity in Kitui County is concerned. Given the importance of extension services as a tool for improved household food security and income, this study is therefore justified, urgent and very critical.

Objective of the Study
The specific objective of the study was:

To establish the interactions between agricultural extension functions run by county and national governments after devolution.

Hypothesis
The following hypothesis guided this current study.

Ho: There is no significant interaction between agricultural extension functions run by county and national governments.

Scope of the Study

A wide variety of crops exist in Kitui County, for subsistence and commercial purposes. The major food crops include beans, maize, bananas, fruits, vegetables, millet, sorghum, green grams and cassava, among others. This study only focused on maize, the main staple food and the most commonly grown by farmers in order to understand the interactions between agricultural extension functions run by county and national governments on productivity by farmer's in Kitui County.

II. Literature Review

Interactions between Agricultural Extension Functions Run by County and National Governments The current constitution of Kenya was promulgated in the year 2010. This introduced a major change in the governance framework in Kenya. Two-tier system of governance was established, comprising of a single national government and new 47 county governments. The establishment of a two-tier system of governance was aimed at improving the access of public services to citizens and increasing their participation in governance and development matters. This included the transfer of some administrative functions and mandates (previously

carried out by national departments and ministries) from the national government (headed by the president) to the county governments (headed by the governors). After devolution, county governments were allocated the significant responsibilities of promoting the agriculture sector, among other sensitive responsibilities such as health, roads, trade, planning, and many other functions. There was a general feeling that the county governments could not undertake such responsibilities by then (Jessop, 1998). Some of the challenges that faced the county governments in their execution of the new mandates included operational challenges (lack of capacities by the county governments' staff) and inadequate budgets (county governments received a budget allocation from the national government through an agreed formula). Although the counties were expected to raise their revenues at their localities, such funds were perceived as meager. There were concerns that the funds allocated to the counties were generally inadequate to facilitate the discharge of some of the devolved county functions (Njagi et al., 2014). The six schedules of the constitution stipulated that the devolved county functions shall be: agriculture, health services, pollution, nuisances and advertising control, cultural activities, public entertainment, and public amenities, transport, animal control and welfare, trade development and regulation, county planning and development, education and childcare, policy implementation, firefighting and disaster management, control of drugs and pornography; and county public works and services. 15 The devolved government is found in chapter eleven of the Kenya constitution, part 174 of Section 29 of the Fourth Schedule, which states that the National government is responsible for agricultural policy making while the counties are supposed to act according to the policies of the national government. According to Part 2 (Section 1 of the Fourth Schedule), the roles of county governments in agriculture include crop and animal husbandry; managing the livestock sale yards; running abattoirs; plant and animal disease control; and fisheries, while the national government is mandated to act as a regulator of the agriculture sector by way of policy formulation. Counties are mandated to implement national policies on agricultural services and act as facilitators/providers of such services in their devolved units (Simiyu, 2015).

Table: Functional distribution in the agricultural sector between the national and county governments

National government	County government	Functions not assigned and not clear who will carry them out
• Agricultural Policy • Veterinary Policy (including regulation of the profession) *Related sector* • Trade development and regulation including markets, fair trading practices, and cooperative societies • Certain aspects of natural resources and environmental conservation including soil and water conservation, and forestry • Water services including storm water conservation (damming, etc.)	• Crop and animal husbandry • Livestock sale yards • County abattoirs • Plant and animal disease control • Veterinary services (excluding The regulation of the profession) • Animal control and welfare; and fisheries *Related sector* • Protection of environment and natural resources including fishing, hunting and gathering, protection of animals and wildlife, water protection, securing sufficient residual water and safety of dams	• Regional Development • Development of Northern, Arid, and Semi-Arid Lands • Animal and plant health inspectorate • Plant and animal research • Livestock Extension Programmes

Source: Constitution of Kenya, 2010. Fourth Schedule

III. Research Methodology

Research Design

The study used an ex post facto descriptive survey design. This type of design involves data collection after a naturally occurring event. It involves collection of information from a sample that has been drawn from a population that has received a natural treatment not designed by researcher (Fraenkel et al., 2012).

Study Area
Location of Kitui County

This study was undertaken in Kitui County in Kenya (located in the eastern region - lower part, about 160 km east of the country's capital city). Kitui County lies between 0° 10' and 3 ° 0' south in terms of latitudes and 37° 50' and 39° 0'east in terms of longitudes. The county is the sixth largest in Kenya in terms of land area (approximately 30,496.4 square kilometers) – however, about 6,369 Km2 is part of Tsavo East National Park. The county is bordered by Taita Taveta (South), Makueni (West), Machakos (Northwest), Tana River (East), Embu and Tharaka Nithi (North). Administratively, Kitui County has eight sub-counties: Mwingi Central, Mwingi West, Kitui Central, Kitui East, Kitui Rural, Kitui South, Kitui West, and Mwingi North. The county has a total of 40 administrative wards and 247 local villages. The county has a population of 1,136,187 according to the 2019 census comprising 262,942 households (Kitui County Government, 2021).

Physical and Topographic Features

The general landscape of Kitui County is flat and gently slopes down towards the east and northeast where altitudes are as low as 400 meters. The county is predominantly arid and semi-arid with very erratic and unreliable rainfall. There are several highlands in the county such as Mutitu Hills, Migwani, Mumoni, Kitui Central, Mui and Yatta plateau that receive high rainfall relative to the lowlands of Kyuso, Nguni, and Tseikuru. Kitui County has an altitude ranging between 400m - 1800m above sea level (Kitui County Government, 2021)

Population of Study

The study population consisted of farmers and extension officers. The target population was all Extension officers (228) in Kitui County. Sample size determination and Sampling Procedure

To come up with an appropriate sample size, the Nassiuma (2000) formula for Sample size determination was used. $n = NC^2 \div C^2 + (N-1) \, e^2$

Note:

n=sample size;

N=population size;

C=Coefficient of variation which is $\leq 30\%$;

e=margin of error which is fixed between 2-5%). The study sample was calculated at a 20% coefficient of variation and a 2% margin of error. A twenty percent coefficient of variation was used to ensure that the sample was wide enough to justify the results being generalized for Kitui County. Higher coefficients of variation were not used to avoid very large samples due to the limitation of research funds. A two percent margin of error was used because the study used an ex post facto survey, whereby the independent variables could not be manipulated, and hence necessitating a relatively higher margin of error. The population size was 228 extension officers in Kitui County.

Extension officers

$n = NC^2 \div C^2 + (N-1) \, e^2$

$n = 228 \times 400 \div 400 + (228 - 1) \, 4 \; 91200 \div 1308 = 69.72$

Instrumentation

A questionnaire was designed and used as the main instrument of data collection for extension officers in Kitui County. The questionnaire which was used for the agricultural 69 extension officers. Questionnaires were used simply because they can reach a large number of respondents within a short time, they give the respondents adequate time to respond to the items, offers a sense of security and confidentiality to the respondents and lastly they tend to be objective since there is no bias resulting from the personal characteristics (Ogula, 2005). It is also useful in that the type of response to each question facilitates consistency across the respondents (Casley & Kumar, 1988). The items of the questionnaire were developed on the basis of the objective of the study. The instrument was self-administered to the agricultural extension officers but the researcher was available to assist in case of difficulty in filling questionnaires. The questionnaire consisted of structured and closed ended questions.

Data Analysis Procedure

The coded data was exported into STATA program version 16.0 for subsequent analysis. Before the actual analysis, the data was cleaned of any outliers and entry errors. In this study, descriptive and inferential statistics through econometric models were used to analyze data. The inferential statistics modeling, linear regression, was used.

Linear Regression

Linear regression was used to establish the factors that influence the interactions between agricultural extension functions run by county and national governments. The effectiveness of communication and linkages between national and county governments was quantified and selected factors were assessed on how they influenced the interactions.

In multiple regression, the dependent variable,

Y, was defined as: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$

Where;

Y = Dependent variable (extent of interactions between national government and county government);

β_0 = Constant term;

X_1 = Level of involvement of extension staff in the development of work plan in the national government

X_2 = Level of involvement of extension staff in the implementation of work plan in national government

X_3 = Level of involvement of extension staff in monitoring/supervision of agricultural extension programmes/projects in the national government

ε = error term of the model.

IV. Results

Interactions between agricultural extension functions run by county and national governments

Areas of service delivery	High	Moderately	low	Not Involved	Total	Mean	Std. dev.
Development of work plan	10* **(14.3)	5* ** (7.1)	27* **(38.6)	28* ** (40)	70* **(100)	1.6	0.33
Implementation of work plan	9* **(12.9)	10* ** (14.3)	23* **(32.8)	28* ** (40)	70* **(100)	2.09	0.85
Monitoring/supervision of agricultural extension programmes/projects	11* **(15.7)	13* ** (18.6)	21* **(30.0)	25* ** (35.7)	70* **(100)	1.96	0.98
Overall						1.88	0.82

(* represents frequencies while **Figures in brackets represent percentages)

The majority of the extension personnel interviewed reported that they were lowly involved in the development, implementation, and monitoring/supervision of agricultural extension programs/projects at the national level as shown by table 4.1 above.

Test of Hypothesis H_0

Objective was translated into the following hypothesis: H_0 Selected factors do not significantly influence interactions between national government and county government. The hypothesis was tested using linear regression. Table below shows the influence of selected factors on extent of interactions between national government and county government.

Extent of interactions between national government and county government	Coef.	SE	t-value	Sig.
Level of involvement of extension staff in development of work plan in the national government.	1.81	0.13	13.600	0.000*
Level of involvement of extension staff in implementation of work plan in national government	0.97	0.39	2.510	0.015*
Level of involvement of extension staff on monitoring/supervision of agricultural extension programmes/projects in the national government	0.71	0.30	2.411	0.019*
Constant	2.07	0.21	9.88	0.000

Calculated $F_{(3,66)}$ = 7.68, Critical $F_{(3,66)}$ = 2.74; Prob> F = 0.000; Adj R-squared= 0.348 *significant at 5% level ($P \le 0.05$)

Results in Table above reveal that all coefficients were statistically significant at 5%. The F – ratio (3, 66) for the fitted model was 7.68 with a probability value of 0.000. The adjusted R^2 of 0.348 was above the statistical threshold of 5%, confirming that the extent of interactions between the national government and county government was significantly influenced by the selected factors. It further implied that the selected factors collectively account for about 34.8% of the variance in interactions between the national government and county government, other factors notwithstanding.

The coefficients for the level of involvement of extension staff in the development of work plans in the national government level of involvement of extension staff in the implementation of work plans in the national government and the level of involvement of county extension staff in monitoring/supervision of agricultural extension programs/projects in the national government were positive and statistically significant at 5% level ($P<0.05$).

V. Discussion

Interactions between agricultural extension functions run by county and national governments Results of the current study indicate that there was greater involvement of extension staff in the development of work plans in the national government is attributed to better interactions between the national government and county government. The Results of the current study are in agreement with the Ministry of Devolution and Planning (2016), which found that proper execution of the county's devolved functions on agriculture is dependent on enhanced interaction between the county and the national government. For good interaction, staff from the devolved units should be involved in the development of a work plan in the national government. According to the Ministry of Devolution and Planning (2016), the 2010 Constitution of Kenya is a good roadmap to various institutional reforms and implementation. The adoption of a devolved system of government that is coherent with the functioning of the national government can fundamentally enhance the country's governance structure.

Coordination of activities and institutional roles are facilitated and conveyed, through institutions within the government as provided in the constitution. Proper coordination of the work planning process can be a good move towards delivering better services to the citizens.

Results of the current study indicate that greater involvement of county extension staff in the implementation of work plans in national government is attributed to better interactions between the national government and county government. According to the COG (2017), more benefits can be realized through the enhancement of interactions between the national government and county government. This corroborates the findings of the current study that involvement of county extension staff in executing national functions is in line with the constitution of Kenya (2010) as contained in Article 190, and the County Governments Act (2012) offers a framework that enables the performance of devolved functions, including the agricultural extension services. The legal framework that supports the devolution of agricultural extension services envisaged that proper coordination mechanisms were necessary and should be established. Greater involvement of extension staff in monitoring and supervision of agricultural extension programmes/projects in the national government is attributed to better interactions between the national government and county government. According to the COG (2017), more benefits can be realized through the enhancement of interactions between the national government and county government. This corroborates the findings of the current study that such interactions could lead to a lack of duplication of activities and better coordination of agricultural extension services to farmers.

VI.   Conclusion And Recommendations

There is minimal interaction between agricultural extension functions run by county and national governments. Most county extension staffs are involved in a scale of medium and low with respect to development of work plan, implementation of work plan and monitoring/supervision of agricultural extension programmes/projects. Greater involvement of extension staff in development and implementation of work plan in the national level as well as monitoring/supervision can significantly contribute to better interactions between national government and county government.

Most of agricultural extension providers disclosed minimal performance in extension service delivery by the county government. Respondents sampled disclosed that given chance they can be comfortable working with the national government. Extension service delivery in the study area is affected by several factors such as lack of transport to do extension work efficiently, delayed salaries, timely promotion of agricultural extension officers, clear terms of service with no duplication, appreciative and enabling working atmosphere and increased facilitation for extension activities. This translates to allocation of more funds to agricultural extension to facilitate transport, salaries payment in time, promotion, training and avoidance of work duplication for better extension service delivery in Kitui County.

Greater involvement of extension staff in the development and implementation of work plans as well as monitoring/supervision at the national level should be enhanced to contribute to better interactions between the national government and county government.
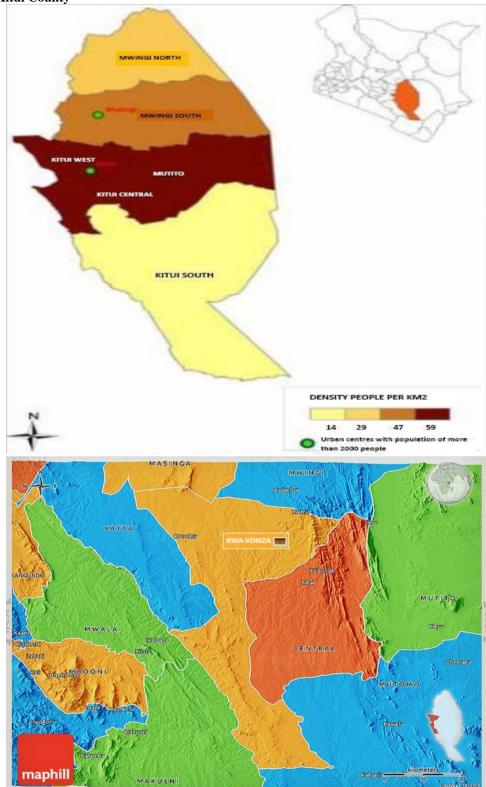
VII.   Acknowledgement

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Map Of Kitui County