



EXTENSION SERVICES AND AGRICULTURAL PRODUCTION IN MEZAM DIVISION, CAMEROON

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ABSTRACT

This study examined the role of extension service delivery on agricultural production in Mezam division, Cameroon. The objectives targeted are: to analyze the influence of agricultural extension service on agricultural production in Mezam Division and to verify the challenges associated with enhancing agricultural production. Methodologically, the study employed 2SLS technique to estimate the result. Primary data was collected among 200 farmers in the Mezam Division using a well-structured questionnaire via simple random sampling. The result shows that extension service delivery is strongly correlating with agricultural production. In addition, agricultural training, education and the frequency of extension agent visiting a farmer and access to credit were equally observed to be influencing agricultural production in the study area. The study equally shows that difficulties consulting extension agent, climate change, transportation cost due to poor farms to markets roads, were found to be negative constraints of agricultural production. The study recommends that, the decision makers should create more awareness on the importance of the employment of extension service delivery workers; it's a wise step towards augmenting agricultural production. Equally, that stakeholders in the domain of agriculture, should strategically consider agricultural production constraints such as difficulties consulting extension agent, climate change, transportation cost due to poor farms to markets roads to improve on agricultural production.

Keywords: Extension, Service Delivery, Agricultural Production, 2SLS

INTRODUCTION

Agriculture employs over 70% of Cameroonians and contributes enormously to economic development. The agricultural sector is responsible for providing food security to both the Cameroonian rural and urban populations via local production (GOC, 2017). However, with the rapidly expanding population growth, there is an increased pressure on natural resources and this situation is further hampered by the adverse impact of climate change on agriculture. For example, based on the third and fourth assessment reports of the inter-governmental panel on climate change that predicted extreme events due to climate change scenarios (Boko *et al.*, 2017) there remains chances that drought in Cameroon may still occur with devastating effect, That may include food shortages and long-term food insecurity. These definitely points to the likelihood of serious food security problems in Cameroon. This study throws lights on the agricultural systems and food crop productivity in Cameroon and strategies to improve agricultural practices to ensure sustainable increase in food production capacity and food security in Cameroon. Practically, agriculture employs 65–70% of Africa's labour force and typically accounts for 30 - 40 % of the Gross Domestic Product. More than 70 % of the continent's poorest populations live in rural areas and agriculture is their most important economic activity (World Bank, 2014). It provides food for the increasing population and raw materials for agro-based industries. The sector is however faced with several problems which militate against optimizing its growth potential. Some of the constraints include low



productivity, poor marketing facilities, and distribution infrastructure, inadequate access to credit, weak extension services and an inadequate database.

Agricultural extension services imply informing, teaching and advising farmers regarding new and improved technologies and getting a feedback from the farmers to research and implement dealers. This is with a view to helping the farmers improve their productivity, income earning power and standard of living (Makapela, 2015). Farmers have received most of the production technologies from the extension system. The extension system needs to be oriented with the knowledge and skills related to the market. This revamping of extension system will certainly play a catalytic role for ushering in farmer-led and market-led extension (MoFA, 2017) which can increase food productivity, hence bringing about development. The world's land area suitable for sustainable production expansion that is, non-protected, non-forested, and with low population density, Africa has the largest share by far, accounting for about 45% of the total. About two-thirds of this area is spread over eight countries: Angola, the Democratic Republic of Congo (DRC), Madagascar, Mozambique, South Sudan, Sudan, Tanzania, and Zambia (Ndoye and Kaimowitz, 2010). The decline in growth of agriculture is caused by lack of access to markets and credits, low level of technology especially mechanization, inadequate post-harvest infrastructure (storage, processing, transport), low uptake of research findings by stakeholders and limited availability of improved technological packages especially planting materials and certified seeds (MoFA, 2017). Agricultural extension services are now a major activity and basic element in programmes and projects formulated to bring about agricultural development and improvement in the quality of lives of the rural poor farmers (FAO, 2014).

Through provision of extension services, the field extension staffs are mandated to transfer proven and accepted farming practices to farmers in a participatory manner and to assist them to secure microloans to help them get started on their own farms or expand them. The field extension staffs are also expected to teach rural farmers post-harvest processing and storage of the foodstuffs. They also provide credit and market-access assistance to the farmers to secure capital for their activities and to sell their surplus crops to generate income for their families (MoFA, 2017). The global food system has been undergoing a major transformation over the past two or three decades, first in Europe, North America, Japan and Oceania, and more recently, in developing countries (Harl, 2010). First, large-scale, multi-national supermarket chains (e.g., Wal-Mart, Carrefour, Tesco, Ahold, and Metro) and meat processing (e.g., Tyson, Smithfield, and ConAgra) and commodity firms (e.g., Cargill, ADM, Bunge, and Zen Noh) dominate the worldwide food industry (Makapela, 2015). Second, the major life-science companies (e.g., Syngenta, Monsanto, BASF, Dow, DuPont, and Bayer) dominate the input supply industry, including seed and agro-chemicals. Third, these changes at both ends of the global food supply chain are bringing about the steady commercialization of production agriculture worldwide. As a result of these changes, prices for the major food commodities are declining and these changes are having a direct, negative impact on small- and medium-scale farmers, especially those in developing countries (Harl, 2010). In 2006, there were an estimated 1.32 billion farmers in developing countries, and due to the continuing increases in population growth, this number is expected to gradually expand during the foreseeable future (FAO, 2014). Most of these developing country farmers have very small farms, very limited resources and excess family labor; these farm households comprise the majority of the rural poor in developing countries. While cropping intensities are continuing to increase in most nations, such as China and India, unless these small- and medium-scale farmers shift to higher-value crops and/or enterprises, farm income will, at best, remain stable. However, in most cases farm income is declining as world commodity prices decrease. In order for extension to advise small-



and medium-scale farmers about alternative high-value crops or products that they might be able to successfully produce and market, it is essential that extension become more market-driven (Ndoye and Kaimowitz, 2010). The challenge for extension leaders is to determine how to bring about this strategic change in program focus. To begin, there are four essential axioms that must be followed as an extension system shifts to high-value crops, livestock and other enterprises (Swanson *et al.*, 2013).

The first axiom is: If there isn't a market, don't encourage farmers to produce a specific crop or product. Therefore, the first task to be carried out is to assess the potential markets for different high-value crops or products that can be successfully produced in different townships/blocks within each county or district. The second axiom is: If the crop (or product) cannot be successfully grown or produced within a county/district, due to unfavorable agro-ecological conditions, then look for more promising crops or products that are better suited to that county/district (Swanson *et al.*, 2013). The third axiom is: If farmers cannot easily transport the product to market, while maintaining quality, look for more promising products that can be successfully marketed. The fourth axiom is: diversify into a sufficient number of different high-value crops/products that are suitable for the different farmer associations (FAs) within the county (Swanson *et al.*, 2013). Majority of Cameroon's population lives in rural areas with agriculture as their main economic activity. With the rural sector producing the bulk of the nation's output of food, the standard of living of the rural people needs to be improved (Makapela, 2015). One way of achieving this is a carefully planned and implemented agricultural transformation strategy necessary to accelerate the pace of agricultural modernization for increased yield and income. Among the objectives of the provision of extension services is to transfer improved agricultural technology to the farmers and assist them to secure micro loans and get access to market to enable them increase farm productivity to create wealth for improved living standards. As a result of this, provision of extension services has been high on the agenda of the government of Cameroon for some time, but little success has been achieved (Makapela, 2015).

This has been blamed on several challenges including inadequate funding of extension services programmes, lack of extension logistics and inadequate and ill-motivated extension field staffs (Boko *et al.*, 2017). These challenges invariably underpin the conditions under which the 6 AEAs disseminate the agricultural information to the farmers. Therefore, there is the need for objective examination of the problems affecting effective agricultural extension delivery in the North West region of Cameroon so that recommendations could be made from the study to reverse the situation (Alex *et al.*, 2004). The research also provide an entry point for revising the strategies of the National Extension Services Policy and restructuring the extension services delivery with the view of making it more efficient and effective in transforming traditional agriculture into a modern one for rural poverty reduction in the study area. The objectives targeted were to analyze the link between Agricultural extension service and the production of agricultural product in Mezam Division and verify the challenges associated with agricultural extension services in enhancing agricultural production.

METHODOLOGY

The study is carry-out in Mezam Division of the North West Region of Cameroon. Mezam Division is located between latitudes 5°40' and 7°50' North and longitudes 9°40' and 11°51' east of the Greenwich Meridian (World Bank, 2014); with a total surface area of 1,841.45 km with a total population of 524, 127 inhabitants in the 2017 census. The agricultural population is estimated at 258,467 inhabitants representing 43.07% of farm families (Tambi, 2014). This population belongs to a large set of Ethnic groups, made up of several tribes such



Ngemba (Awings, Mankons, Bafuts, Nkwens, Pignins, Akums, Njongs), Mugahkah (Bali) and Bei (Baba II, Bafochus). Agriculture is the main occupation of the people of this area and crop production is very valid. Current crops are rice, maize, beans, tubers and vegetable crops, onion, Irish. There is equally the present of fruit trees and medicinal plants are found in this locality. These crop are used only for consumption and only surplus is sold in the local market and in neighboring or distance places. Onion production is one of the main crop cultivated by the population of this subdivision and it is therefore one of the main source of income since it is mostly cultivated for sell. Farmers in this area also engage in life stock production and cattle rearing.

The region is also characterized by the convergence of many rivers flowing down from the mountains and come to the accumulation zones. The multiplicity of the river system in the region is of considerable benefit to the development of farming activities even in the dry season. It has the savanna type of vegetation with grasses and trees scattered all over the village especially where there are steep slopes (Singh *et al.*, 2006). Agro forest trees like tephrosia, acacia and caliantra are planted by farmers. These are leguminous trees which help in soil fertility. The village looks like a forest zone at a glance the population is distributed with many villages within their boundaries corresponding to tradition chieftdom. Customary law remains the primary means of land acquisition (Kumar and Mitra, 2009). There is the predominant of the young population of the area which is the major asset for potential agricultural production and development in the region. The chief crop produce in the zone are maize, irish potatoes, beans, groundnuts, soya beans, tomatoes and cocoyam are the chief crop of people in this division. The diet of the people consist of rice, achu, Irish corn fufu accompany by vegetable, meat or dry fish (Rivera, 2014).

Sampling Techniques and Sample Size

The sample was drawn through simple random sampling methods. The simple random sampling technique was used to select the respondents making a total of 200 farmers for the study. This sampling technique is preferable because all the elements in the population had equal chances of being selected and included in the study without bias. In this study, simple random sampling was used to obtain a sample of household's producers. Through this technique each household in the population was given equal and independent chance of selection in the sample (Kumar and Mitra, 2009).

The sample size was drawn from the registered farmers' sectors which had a population of about 889 farmers. The sample size is chosen to meet one or more goals, which include: precision of estimation, power, and cost. Considering the Yamen formula of 1967 that is: $n = N / 1 + Ne^2$, where N is the total number of farmers population (i.e. 400) and e is standard error (i.e. 5%). Among the many farmers in Mezam division, only 400 farmers are actually using the services of extension service delivery. Thus, $n = 400 / 1 + (400)(0.05)^2 = 200$. The 200 farmers are those we randomly sampled.

Data Collection

Primary data was obtained from respondents who are Key informants through face to face interview. Key informants included agricultural extension workers, executive officers and questionnaire to farmers. This method was appropriate to obtain primary data due to the socio-economic and demographic characteristics of the study population. Kumar and Mitra (2009) have shown education level, age structure, socioeconomic structure and ethnic background as important things to consider when making a decision leading to primary data collection method. Information base on secondary source of data were based on research literature

comprised of researching the internet, reviewing relevant books, journals articles about the research topic to get information and concept related to the topic (Singh *et al.*, 2006).

Data Analysis

Data for the study were analyzed using MS-Excel and the Statistical Packages for Social Science version 20 software programs so as to determine the descriptive statistics such as frequencies, percentages, mean and standard deviation while the inferential statistics used was ordinary lead square regression.

Model Specification

Agricultural extension service is an appropriate framework for measuring agricultural products as condition by extension services, thus modeling econometrically the effects of Agricultural extension on agricultural production in Mezam division; we apply the following equation of interest:

$$P_i = \Phi + \lambda ES_{agric} + \psi \pi_i + \varepsilon_i \quad (1)$$

Where P_i is agricultural production which is our outcome variable of interest; ES_{agric} is simply Agricultural extension service; π_i represent a vector of exogenous demographics of maternal, paternal and environmental characteristics while i is the unit of observation of agricultural production in Mezam division. In the econometrics, λ portrays the actual effect of Agricultural extension service on agricultural production of agricultural farmers. In addition, Φ, ψ are parameters to be estimated, while ε is the error term respectively. Given that there can be some biases due to omitted variables, it will be possible that the covariance of ES_{agric} and the error term (ε) is not equal to zero, hence making our result inconsistent. To redress this situation, we identify an instrument variable M , the instrument is a factor that affects agricultural extension without directly influencing production, in other words it's a variable that can partially determines agricultural extension but is uncorrelated with the error term. The agricultural extension and agricultural production generating function may take the following structural form:

$$ES_{agric} = \Phi_{PF} + \lambda_{PF} FPR_i + \gamma_{PF} \pi_i + \mu_i \quad (2)$$

The instrument use in our study is Farmers Place of Resident (FPR), with such an instrument; we can estimate a two stage regression model with the first stage equation as indicated in equation (2). As Murray (2006a) indicated in the literature, the consistency of the estimate of λ relies on the validity of the log of rice farm as our instrument. Thus, as FPR is uncorrelated with ε , then the instrumental variable estimate of λ is consistent. Morrill noted that this is fundamentally an untestable assumption. Everything being equal, our model can be estimated by taking the predicted value of agricultural extension service from equation (2) and substituting it in for agricultural production in equation (1) in an IV 2SLS model. Based on the introduction of instrumental variables, Tambi (2014) explained that Mwabu (2009) has already mentioned three properties of an instrument that needs to be noted at the outset. First, an instrument is relevant if its effect on a potentially endogenous explanatory variable is statistically significant. Second, an instrument is strong, if the size of its effect is 'large'. Finally, the instrument is exogenous if it is uncorrelated with the structural error term. An instrumental variable that meets all these requirements is a valid instrument.

Endogeneity can arise due to: errors-in-variables, omitted variables and simultaneous causality (Mwabu, 2009). Endogeneity and heterogeneity bias can compromise the validity of OLS estimators. The IV approach is intended to oxygenize the endogenous regressors using



valid, relevant and strong instruments and the most commonly used IV estimation method is the single equation approach of two-stage least squares (2SLS) estimators (Swanson *et al.*, 2011). Mwabu (2009) suggested the strategy for supporting instrument validity, that is we test over-identifying restrictions using Sargan's test statistic (nR^2) which has a chi-square distribution with degrees of freedom equal to $(l-q)$, the degree of over-identification (where n is the sample size, R^2 is from first-stage regression showing the strength of the instrumental variable, l is the number of IVs and q is the number of endogenous variables). This test the null hypothesis that all instruments are valid, hence failing to reject signifies instrument validity. Mwabu (2009) shows that the bias of 2SLS approach grows with the number of IVs (l), declines as sample size (n) rises and as the strength of the IVs (R^2) increases. Thus, as long as nR^2 is larger than l , (which will often hold true if the instruments are strong), 2SLS has smaller bias than OLS.

Considering the reduce form estimate, we remark that the 2SLS estimate of FPR can also be thought of as resulting from the division of the reduced form estimate $\hat{\lambda}_{PF}$ below, by the first-stage coefficient derived above FPR_{PF} (Mwabu, 2009). The reduced form equation is the regression of agricultural production on the instrument: This actually indicates whether the instrument is correlated with the outcome of interest.

$$P_i = \Phi_{PF} + \hat{\lambda}_{PF} FPR_i + \gamma_{PF} \pi_i + \sigma_i \quad (3)$$

Evaluating our endogenous variable, reveals that 2SLS estimate is a reasonable estimation strategy with a continuous endogenous variable. This makes our model of instrumental variable robust in terms of estimations.

RESULTS AND DISCUSSION

Characteristic of Agricultural Farms in Mezam, Cameroon

Table 1 revealed that 83.4% of the respondents in the Division farmed on small hectare of land; between 1 and 2 hectares. And only 16.6% farm on a large piece of land, from 2 and above. It can therefore be deduced from the table that despite the extension services intervention, a very large number of the farmers' farm on small area of land and this might be the reason why subsistence farming dominates in the study area with farm income low and poverty high.

According to Table 1, it shows that out of the 200 respondents only 69.5% of the respondents have ever received formal education. Concerning acquisition of agricultural training we observed that 16.5% farmers had professional training, 52.5% farmers had workshop training and 31% had on the field training. Lack of training will definitely lead to low production and hence low income which will definitely leads to poverty.

Table 1: Characteristic of Agricultural Farms in Mezam, Cameroon

Variable	Frequency	Percent
<i>Distribution according to the Farm Sizes</i>		
<1hec	89	44.4
1-2 hec	78	39.0
>2hec	33	16.5
Total	200	100.0
<i>Distribution of famers according to formal education</i>		
Yes	139	69.5
No	61	30.5
Total	200	100.0
<i>Distribution according to Types and Domain of Training</i>		
Professional	33	16.5
Workshop	105	52.5
on the field	62	31
Total	200	100
<i>Types of Crops produced and the purpose of production</i>		
garden crops	38	19
Fruits	35	17.5
crop production	88	44
animal production	39	19.5
Total	200	100

Source: author

The results also revealed that several types of training were being done. This types were professional, workshop and on the field. The results identified that 30.5% of the respondents in the division received the various types of training did it either in the domain of marketing or production. 6 persons indicated that they have a professional training in production. 10 persons have a professional training in marketing, making a total of 16 persons under professional training. Workshop training has 15 persons on production and 6 in marketing, making a total of 21 out of the 61 persons. 21 persons where trained on the field under the domain of production and only 3 persons on marketing making a total of 24 persons. The total number of persons for production was 42 out of 61 agricultural trained persons and 19 for marketing.

Considering the types of crops produced and the purpose of production, the main crops grown include maize, cassava, plantain, cocoyam, yam, rice, tomatoes, garden eggs and okra and the main animals reared include cattle, sheep, goats, birds, pigs and grass cutter. From Table 1, the survey revealed that various types of production are done in Mezam division. There is garden crop production whereby 38 engaged solely for marketing purpose, fruit cultivation where 18 person are doing it for marketing and 17 for family consumption. 88 participant deals with other crops cultivation and out of this participant, 49 do it for marketing purpose and 09 for consumption. There were 39 persons who also deal with animal production and most were for marketing purpose. From the survey, it was shown that most farmers produce for marketing purpose.

Regression Estimates of Influence of Extension Service on Agricultural production

From Table 2, the results revealed that family size has a great influence on agricultural production. This is shown by it statistical level of significant of $P < 0.01$.

Table 2: Relationship between Extension Services and Agricultural production

Variable	OLS	2SLS
Agricultural production		
Extension Service	0.168*** (7.58)	0.204***(5.18)
Training in agriculture	0.104** (1.98)	0.567***(50.66)
educational level	0.416*** (2.00)	0.050*** (6.03)
family size	.021*** (7.69)	0.026*** (16.95)
Frequency of extension visit	0.096* (1.66)	0.002*** (18.02)
Fertilizer in your farm	0.824 (1.39)	0.068* (1.80)
Climate change effect	-0.302* (-1.87)	-0.084 (-0.15)
Access to credit	3.306 *** (27.73)	0.171*** (19.68)
Prices effects	0.018 (0.93)	0.096 (0.83)
Difficulties consulting extension agent	-0.017 (-0.21)	-0.061*** (-6.36)
Transporting cost	-0.123 (-0.27)	0.149*** (13.56)
Market information	-.0141*** (-5.10)	0.354*** (13.42)
Treatment	.0514 (0.37)	0.057*** (4.57)
Constant	-.105** (-2.12)	-0.120*** (-13.67)
F test of excluded instruments/ Joint F		118.60 [0.0000]
Cragg-Donald F-Stat		104.919 [16.38]
Sargan statistic		0.000
Durbin-Wu-Hausman χ^2 test of endogeneity		38.117 [0.0000]
R – Squared	0.8256	0.7824

Source: Author. Notes, ***, **, and * indicate 1%, 5%, and 10% significance level

This indicates that a greater number of persons in a household will lead to greater labor making production to be greater. In the other hand, difficulty in consulting extension agent was negative and statistical significant ($P < 0.01$). Production can be greater if more experience is gain from an experience people. When the farm size is big, the quantity produce increases. Farm size was statistical significant ($P < 0.05$).

Climate change is statistically significant ($P < 0.05$) this indicates that the amount of rain full or sunshine will effect production negatively or positively. Transportation cost can also be affected by climate change hence hindering the movement from the farm to the market. Transportation was ($P < 0.05$). More so the coefficient for access to credit is positive, showing that there exist a positive relationship between access to credit and agricultural production. If the farmer has the ability to always sick for credit in financial institution in the form of loans and grants in order to add to his capital, it will help him to boost his quantity of agricultural products. Increase in capital leads to increase in production hence, increase in income and revenue. Access to credit is statistically significant ($P < 0.05$).

To be able to use the 2SLS, the identification test was carried out to determine if the model is exactly identified. Here, the Anderson canon correlation. LM statistic was applied and the chi square test reveals the coefficient 81.57 is statistically significant ($P < 0.01$) and as such, we reject the null hypothesis of under identification and accept the alternative of exactly identified model given us the opportunity to apply the 2SLS.

Problems Faced by Farmers in the Production of Agricultural Products.

From Table 3, the positive difference in the percentage constrain indicate that, most farmers do not face a lot of problems concerning market information but nevertheless, 0.44% of the farmers still face some challenges as far as information gotten from the market is



concern. This might be due to poor communication network since most at time communication network stop information to be passed across and most farms only relay on verbal communication. Insufficient storage space still remains a problem on the production of agricultural products. This is seen from the percentage difference (-24%). The negative sign indicate that, most farmers face a lot of issue concerning storage facilities. Good storage space leads to continue flow of goods in the market, protection of the quality of perishable and semi perishable product from deterioration. Good storage space also help in the stabilization of prices by adjusting demand and supply. Without storage facilities, farmers are forced to either produce crops on a small scar or a large scar or sell at a very cheap price therefore making little or no profit. Due to lack adequate storage facility, the rate of post-harvest losses is increasing (see FAO, 2014). Post-harvest losses are cost by poor preservation of product. More so, it is indicated on the table above that, the percentage different facing climate change effect on agricultural production is 45%. So, most farmers are in support that climate change can disrupt food availability, reduce access to food and effect food quality. For example, projected increase in temperatures, changes in precipitation patterns, changes in extreme weather events, and reduction in water availability may all result in reduce agricultural productivity. Nevertheless, pest, diseases, fungi infection and the seasonal change effect on market price has a breakeven point regarding production of agricultural product by the farmers. This shows that their percentage different which are 0.0%. This percent different indicate that the number of farmers facing such problems equal to the number of farmers not facing the very program.

Table 3: Problems faced by farmers in the production of agricultural products

Variable	NC	C	#CE NC-C	%CE
Availability of market information	0.56(112)	0.44(88)	0.12	12
Insufficient storage space	0.38(76)	0.62(124)	-0.24	-24
occurrence of natural disaster	(34)	(166)	-0.66	-66
pest, diseases and fungi threat	0.5(100)	0.5(100)	0.00	0.00
seasonal change effect	1	1	0.00	0.00
	200	200		
climate change effect on marketing	145	55	0.45	45
difficulties in consulting an extension agent	0.36(72)	(0.64)128	-0.28	-28
climate change effect	(0.28)55	(0.72)145	-0.45	-45
market price effect	(0.96)197	(0.4)03	0.92	92
Transportation cost	(0.28)55	(0.72)145	-0.45	-45

Source; Computed by author from field survey

Source: Author

Table 3 clearly shows that transportation is a major problem faced by farmers in Mezam division. This is indicated by 45% constrain different. In other to produce food, farmers need certain resources, such as seed, fertilizers, pesticide, packaging materials, and many others. Precisely because of that, transport is an essential aspect of crop production that enables delivery of agriculture resources to the farmer. Furthermore, transport is a burning component of post-harvest crop management. After all, every harvested crop need to be transported either directly from the field to the market or to the packing house and storage. Hence, farmers face transportation challenge on both end of their product.



CONCLUSION AND RECOMMENDATION

The study concluded that, extension service delivery is strongly correlating with agricultural production. In addition, agricultural training, education and the frequency of extension agent visiting a farmer and access to credit were equally observed to be influencing agricultural production in the study area. The study equally shows that difficulties consulting extension agent, climate change, transportation cost due to poor farms to markets roads, were found to have negative significant effects on agricultural production. The study recommends that, the decision makers should create more awareness on the importance of the employment of extension service delivery workers; it's a wise step towards augmenting agricultural production. The study equally recommends that stake holders in the domain of agriculture, should strategically consider agricultural production constraints such as difficulties consulting extension agent, climate change, transportation cost due to poor farms to markets roads to improve on agricultural production.

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