Implications of Agricultural Policies on Farmers Economic Welfare in Benue Division, Cameroon

Charlotte Nanyongo W.,¹ Egwu Mary-Juillet Bime,² & Mbu Daiel Tambi²
¹Department of Agribusiness Technology, University of Bamenda, Bambili, Cameroon.
²Department of Agribusiness Technology, University of Bamenda, Bambili, Cameroon.

Abstract

The main objective of this study is to determine the effect of government agricultural policies on farmers’ economic welfare in Benue division, Cameroon. Data was collected from 399 respondents using a self-administered questionnaire through a cluster sampling technique of 12 sub divisions in Benue division. Result was estimated using structural equation modelling technique using SmartPLS4.0. The result of the model shows that, government agricultural financial policy has a positive effect on farmers’ economic welfare in Benue division with a coefficient of 21.3% and it is more of agricultural climate and extension service delivery policies phenomenon. Considering that there is a growing governmental engagement in improving economic welfare, empirically, this study has closed the gap in the literature in varying issues between government agricultural policies and farmers’ economic welfare in Cameroon. The finding suggest that the decision makers should re-enforce agricultural climate and extension service delivery policies. It is a wise step to increasing economic wellbeing in Cameroon especially for the rural masses.

Keywords: Government, Agricultural Policies, Farmers, Economic Welfare, Benue Division, Cameroon

1. Introduction

The attainment of favorable economic welfare is a core objective of most governments and international organizations. This has led decision makers to the creation of policies targeted towards agriculture with the aim of ameliorating economic welfare in Cameroon. In this perspective, the green revelation championed by Ford and Rockefeller Foundation and supported by United Nation and Food and Agricultural Organization (FAO) (FAO, 2021) ease government efforts in the formulation of appropriate agricultural policies to enhance production and promote welfare. Such policies increased agricultural production in some parts of the world (Asia and Latin America countries during the 1960s -1990), improved wellbeing and entire human race in the past (Dawson et al., 2016). Generally, to fight poverty and improve wellbeing, the sustainable development goals still targeted issues related to this area (see UNDP, 2016). Development initiatives (2019) report that between 1990 and 2015 World poverty reduced from 1.9 billion consisting of 36%, to 735 million people living in extreme poverty consisting of about 10% of world population due to favorable agricultural policies (Amabo, 2019). Corral et al (2017) in their article analyzed the role of agricultural policies in reducing poverty in rural communities. Their analysis shows that the agricultural policies...
implemented helped to diversify and enhance agricultural production, so that a reduction in effective poverty occurred. They lament that; these policies need to work jointly and in harmony with other economic sectors.

Udofia and Essang, (2015) examined agricultural expenditure and poverty alleviation in Nigeria with the main objective to investigate the relationship between expenditure on agriculture and poverty alleviation in Nigeria. Time series data were used for the study from 1980 – 2012 sourced majorly from Central Bank publications and World Development Indicators and the findings show a clear but insignificant response of poverty reduction to agricultural growth. On the contrary, Yamamori (2019) disaggregated the overall income sources into agricultural GDP per worker, non-agricultural GDP per worker and remittances per capita, and calculated how much of the predicted change in poverty could be attributed to changes in each of the above sources. The paper found that more than 52% of the average poverty reduction in 12 of the 25 countries studies was due to agricultural growth, while remittances contributed to 35% of the reduction and the rest was due to non-agricultural growth. World Bank (2021) sets to determine the theoretical reasons for expecting agricultural growth to reduce poverty, and they are creation of jobs on the land, linkages from farming to the rest of the rural economy and decline in the real cost of food for the whole economy which impacts depend on the circumstances. Beside a cross country estimation of the link between agricultural yield per unit area and measure of poverty shows strong confirmation hypothesized linkage. However, they suggest that there are other development intervention capacities of reducing the number of poverties effectively.

Corral et al (2017) investigated the impact of agricultural policies on poverty reduction in developing countries. This study analyses the role of agricultural policies in reducing poverty in rural communities. Two aspects were analysed: firstly, whether there has been a reduction in poverty in the basins analysed for the period 2006–2013; and secondly, whether that poverty reduction, to the extent that it has occurred, has been due to the agricultural policies applied. The analysis shows that the agricultural policies implemented helped to diversify and enhance agricultural production, so that a reduction in effective poverty occurred. However, these policies need to work jointly and in harmony with other economic sectors. Zhu and Chen (2016) studied agricultural policy and economic welfare using data from rural China. Their work reviewed the process of China’s policies reforms in the last several decades and assesses the long-term impacts of various agricultural policies on the poverty reduction and rural-urban equality. Using the Statistical System data from 1978-2015, it reveals that through 30 years of gradually reform and accession into the WTO, China’s agricultural sector has been greatly liberalized and marketed, meanwhile the de-collectivisation of production and Household Responsibility System and procurement prices increased income growth of farmers. China’s anti-poverty strategy and rural development still face a lot of challenges from the new period, the pressure for further reforms remains.

Meanwhile, Rusliyadi et al (2018). on rural diversity, agricultural innovation policies and poverty reduction, they explored the implications of rural livelihood diversity for agricultural innovation policies with particular emphasis on the relative roles of farm and non-farm income observed that favourable governmental agricultural policies are very vital rural poverty reduction. Actually, it takes an agricultural knowledge and information systems perspective to argue for differentiated approach to targeting agricultural innovations, based on an analysis of rural assets. Their Research findings includes; the diversification of rural employment and
income is an increasingly important fact of life in the developing world; the agricultural path out of income poverty is relevant for only a portion of the rural poor, technological innovation can make direct contributions to farm household welfare, but the effects vary according to the level of integration of agricultural markets, technological innovation can also have indirect benefits for the poor through effects on food prices, employment and backward and forward linkages with other parts of the economy, and recent changes in the funding of agricultural research and extension and increasing institutional complexity necessitate the development of new approaches to prioritising and targeting agricultural innovation.

Rusliyadi et al (2018) interrogated the impacts of innovative policy on poverty reduction and rural development in Nigeria. The paper relied majorly on the secondary data sources. Findings revealed that apart from the Green Alternative policy of 2016 that has endured to date, with the hope of meeting 2020, its targeted expiration year, most agricultural policies in Nigeria are short-lived, as compared to long term agricultural policies in China. For instance, between 1970 and 1980, Nigeria had NAFPP, ADPs, OFN, and GR. Also, between 1999 and 2008 (less than 10 years) Nigeria had NEEDs, NSPFS, RTEP, and NFSP. Whereas, China consistently operates 5-year agricultural plans. Also, rural communities in Nigeria are yet to enjoy a fair distribution of Research and Development (R&D) allocations, investment, and technical personnel as compared to their counterparts in China. The study concludes that innovation is a powerful policy tool that is needed to ensure poverty reduction, food security, and enhance rapid rural development in the country. The study recommends, amongst others, that agricultural policies should span for at least 5 years irrespective of changes in government. There should be a fair distribution of R&D allocations, investments, and technical personnel in rural areas of the country. Also, there should be policies to support vertical farming, artificial intelligence, and the adoption of mobile apps, etc. These are policy issues that will impact the vast population of rural dwellers to enhance agriculture, food security, and sustainable development. Based on these arguments, the objective targeted in this study is to verify the implication of agricultural policies on farmers economic wellbeing in Benue Division, Cameroon.

2. Materials and Method

The study in conducted in Cameroon precisely the Benue division of the north region of Cameroon. The North Region makes up 66,090 km² of the Northern half of the republic of Cameroon with a population density of 37/km². The region is surrounded by Far North to the north, Adamawa Region to the south, Nigeria to the west, Chad to the East, and Central Africa Republic to the southeast. The city of Giroux is both the political and industrial capital of the North Region and is the third largest port lying on the Benue River. The region has a population of 2,442,578 (2015) (City population, 2020) and is made up of four divisions and twenty subdivisons namely: Benue- Garoua 1, Garoua 2, Garoua 3, Bibemi, Pitoa, Lagdo, Dembo,Gashiga, Basheo, Barndake, Ngong and Touroua; Faro- Poli and Beka; Moyo-Louti – Guider, Mayo-Oulo and Fiquil; Mayo Rey- Tchollerie, Touboro and Madingring (UCCC, 2014). The climate is tropical in North. In winter, there is much less rainfall than in summer. The Köppen-Geiger climate classification is Aw (Climate data, 2021). The average temperature in Garoua ranges from 26.0 °C (78.8 °F) in the January to 33.0 °C (91.4 °F) in April. The region is made up of metamorphic and sedimentary rocks interspersed with granite. The Adamawa plateau divide the region into two main soil types; the Ferruginous soil and ferrallitic lateritic soil.
Many of the North ethnic group’s farm on small plots for subsistence. Majority of the crop they cultivate include sorghum, millet and maize which is thier main staple foods throughout most of their provinces. Cassava is mostly cultivated in Adamawa plateau while rice is popular in their cities. Cotton constitutes the major cash crop as it grows well in the north river valley and managed by Sodecotton. In respect to settlement, the region is mostly populated averaging 12 to 25 person per km2 in most areas. In term of religion, Islam is the dominant religion in the North due to the cultural and political domination of the Fulbe, while Christianity - Catholic church, the Cameroon Baptist Convention, Presbyterian Church in Cameroon, etc are a minority (Oluwatoyin, 2019).

Figure 1. Benoue division in the North Region, Cameroon

Source: City population (2020)

Empirical Specification
To evaluate the effect of Agricultural Policies on Poverty Reduction in Benue Division we used the Partial Least Square Estimated model via the application of the structural equation modelling. Generally, Economic welfare as well as poverty is a multi-dimensional variable to be captured by different indicators, while agricultural policies have lots of explanatory variable and can possibly correlate. Because of the behaviour of these variables, we used the partial least square structural equation modelling technique. The application of the model has been
extended to the domain of agriculture, social sciences, economic sciences, educational sciences, Industry and organizations.

It is used for exploratory studies and soft modelling and therefore does not require the meeting of very stringent multivariate analysis criteria. Cronbach’s alpha and composite reliability are both used as measures of internal consistency as theorized by authors concerning the model. Compactly, the structural model of the PLS- SEM can be given as follows:

\[ Y = \beta X + \mu \] 

Where \( Y \) denotes matrix for latent variable (variable which impact cannot not be observed e.g. quality of life), \( X \) denotes element of the coefficient matrix while \( \beta \) in the coefficient of the matrix. Taken into consideration the reality of our study, the model is specified to suit our current study as follows:

\[ PovR = \beta_1 GEAS + \beta_2 GACL + \beta_3 GAFS + \beta_4 GAIF + \beta_5 FP + U \]  

\( PovR \) = Farmers economic welfare, measured by the creation of an index using variables such as: income, health nutrition and education of household as a result of government agricultural policy. \( FP \) = Farm productivity, a measure of the direct effect of farm productivity on poverty reduction. \( GEAS \) = Government extension and advisory services, measure by a set of questions on the availability and effectiveness of these services to farm productivity. \( GACL \) = Government agricultural climatic policies, measure in terms of the various agricultural environmental policies implemented by the government to fight against the negative effect of climate change on agriculture. \( GAFP \) = Government agricultural financial policies, measure by the availability, effectiveness and accessibility of government finances for agriculture by farmers. \( GAIF \) = Government agricultural infrastructures, measure by the availability of government infrastructure like farm to market roads, markets, and other processing units. \( \beta_1 \) to \( \beta_5 \) are coefficients to be estimated of the different variables and \( U \) is the error term.

**Validity and Reliability of Model**

Validity involves the entire experimental concept and establishes whether the result meet the scientific research techniques. The researcher conducted a pilot test to assess the validity of the research instrument. The responses of the questionnaires given to the farmer respondents determined the reliability of the model as well as used to evaluation and calculate the validity index of the items. To achieve this, the PLS algorithm is generated and indicator (item) regression loads are checked for the level of significance from their calculated t-values compared to the table of critical t-values. The outer model t-statistics in the output section of the bootstrapped results was consulted for the convergent validity.

From the Smart PLS algorithm and under the PLS quality criteria, a cross loading statistics was obtained. Cross loading means that all the loadings of an indicator on its corresponding construct should have a larger magnitude than any other loading with any other construct across the rows and down the columns. Discriminate validity is demonstrated by comparing the cross loadings with the absolute value of 0.100 distant from the loadings on the primary construct. The strong loading on its corresponding latent construct is an indication that the indicator is more strongly correlated with other indicators of that construct than it is with indicators of other constructs. If other indicators and their corresponding latent variables exhibit a similar behaviour, it is concluded that there is strong discriminant validity between indicators in the measurement model.
By comparing the square root of the average variance extracted (AVE) to the correlations with other constructs, discriminant validity can also be demonstrated. Banda (2020) and Amungwa (2018) argued that it is the square root of the AVE that are used and not the AVE directly because the correlation of a construct with its measurement indicators should be higher than its correlation with any other construct. When each diagonal values (square root of AVE) is greater than the off diagonal value for the same row and column, then there is strong discriminant validity and this confirms the choice of retaining the different items on the scale in the final model.

In measurement model assessment, both convergent and discriminant validities should fit the theorised model of the research. That is the degree to which a scale will yield consistent and stable measures over time. FAO (2017) alpha and composite reliability are both used as measures of internal consistency of theorised model. Values at or above the cut-off point (0.70) suggest that the model has high internal consistency and is therefore susceptible to yield consistent and stable measures over time. However, Iruo et al. (2019) suggest that better statistics for estimating structural model reliability is the measure of composite reliability. This is so because the estimation by SmartPLS of composite reliability makes use of the indicator weights obtained within the monological network. Additionally, Jayne (2019) alpha (CA) tends to be underestimated in a PLS model because it assumes that all indicators are equally reliable with equal outer loadings on the construct. Models that largely meet the cut-off point of greater than 0.70 suggested by Bekun and Akadiri (2019) have good composite reliability.

R2 evaluate the variance of the dependent construct explained by the model represented by the figures in the latent construct circles. However, the principle of the theorised model, also determines how to interpret the variance explained. The effect size is an assessment of the usefulness of each construct to the model adjustment. The predictive relevance is an assessment of the accuracy of the adjusted model. These two indices are obtained through a jack-knifing (blind-folding) analysis procedure. The effect size is read from the communality estimates (CV Com) of each latent construct. The predictive relevance is read from the redundancy estimates (CV Red) of each latent construct. These values are compared with the cut-off points for interpretation as noted in the result section.

3. Results

Demographic Characteristics of Respondents

From Table 1 a greater proportion of farmers were female compared to male. Out of the 400 respondents (farmers), 250 (62.7%) were female while the remaining 149 (37.3%) were male. This implies majority of the farmers are woman. With respect to marital status, majority of them were married i.e. 216 giving a percentage of 54.1, 128 were single giving a percentage of 32.1, 7.0% were divorced and 6.8% were widows. In the domain of education, majority of farm owners or farmers are primary school drop outs i.e., 204 of them giving a total of 51.1% those with secondary/high school certificates were 152(38.1%), farmers with tertiary education were 43(10.8%). The nature of farming activity. Farmers involve in crop production are 179(44.9%), those involve in livestock farming were 161(40.4), and those engage in other agricultural activities were 59(14.8).
Table 1: Demographic characteristics of Respondents

<table>
<thead>
<tr>
<th>Variables</th>
<th>Modalities</th>
<th>Freq.</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender of Respondent</td>
<td>Male</td>
<td>149</td>
<td>37.3</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>250</td>
<td>62.7</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>399</td>
<td>100</td>
</tr>
<tr>
<td>Marital Status of Respondent</td>
<td>Single</td>
<td>128</td>
<td>32.1</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>216</td>
<td>54.1</td>
</tr>
<tr>
<td></td>
<td>Divorced</td>
<td>28</td>
<td>7.0</td>
</tr>
<tr>
<td></td>
<td>Widow(er)</td>
<td>27</td>
<td>6.8</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>399</td>
<td>100</td>
</tr>
<tr>
<td>Level of Education</td>
<td>Primary</td>
<td>204</td>
<td>51.1</td>
</tr>
<tr>
<td></td>
<td>Secondary/High School</td>
<td>152</td>
<td>38.1</td>
</tr>
<tr>
<td></td>
<td>Tertiary</td>
<td>43</td>
<td>10.8</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>399</td>
<td>100</td>
</tr>
<tr>
<td>Nature of Farming Activity</td>
<td>Crop Production</td>
<td>179</td>
<td>44.9</td>
</tr>
<tr>
<td></td>
<td>Livestock</td>
<td>161</td>
<td>40.4</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>59</td>
<td>14.8</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>399</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Author, from field survey

**PLS Construct of Government Agricultural policies and Farmers Economic Welfare**

This specification of the Structural Equation Model simply presents the pattern through which the different government agricultural policies under consideration in this study as specified in equation (2) of the methodology section. The policies include: government extension and advisory services (GEAS), government agricultural financial policy (GAFP), government agricultural infrastructural policy (GAIF), and government agricultural climatic policy (GACLP) affect poverty reduction in Benue division in the Northern region of Cameroon.

Figure 1 shows the results of the path coefficients and the factor loadings. The construct is represented by the circle while the manifests or indicators of the constructs are represented using the rectangle. The number in the circle of welfare construct represents the goodness of fit index (R square). The magnitude of the relationship between the constructs and it manifest is captured by the factor loadings or the centroid weight. The magnitude of the relationship between constructs is referred to as the path coefficient. Path coefficients and factor loadings are not very much informative in explaining whether the predictive variations in the system are significant or not. The path coefficients, however, indicate that there exist relationships between the constructs. To improve on the efficiency of our model, some indicators with negative values were dropped, this is because an indicator with a negative value shows that it does not capture or contribute to the construct effectively.
To evaluate construct reliability, a 0.70 threshold was by suggested by Oberle (2017) as well as Kristin (2018) for construct reliability using Cronbach’s Alpha and composite reliability. In SEM, the composite reliability is used to replace Cronbach’s Alpha (Laszlo and Krippner, 2018). As the coefficients (0.834, 0.738, 0.718 and 0.879 for government agricultural climate policy, government extension and advisory services, government agricultural financial policy and government agricultural infrastructure respectively), are much higher than the minimum of 0.7, it can be concluded that high levels of internal consistency exist in the latent variables. Except for poverty, which is a bit below the threshold of 0.7. Meanwhile, discriminate validity is the degree to which a construct is distinct from other constructs in the model (Looga et al.,
Convergent validity was assessed by the test provided by Fornell using square root of the AVE. Manla (2019) suggested that the threshold value of AVE should be 0.50 for a construct to attain convergent validity. The result show that there is prove of convergent validity since the AVE of all constructs are above the threshold value of 0.5. Though only poverty has a threshold value below the threshold value. Thus, the model passes the test of convergent validity, meaning that all indicators that were used in measuring or capturing the constructs in the SEM model are effectively measuring the constructs of the model.

**Discriminate Validity**

**Table 3: Heterotrait-Monotrait Ratio (HTMT)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>GACL</th>
<th>GEAS</th>
<th>GAFP</th>
<th>povR</th>
<th>GAIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>GACL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEAS</td>
<td>0.889</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GAFP</td>
<td>0.791</td>
<td>0.848</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>povR</td>
<td>0.436</td>
<td>0.623</td>
<td>0.598</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GAIF</td>
<td>0.575</td>
<td>0.695</td>
<td>0.607</td>
<td>0.627</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Author

Discriminate validity verifies the extent to which one construct discriminate or differ from other constructs in the model. This was tested by the use of Heterotrait-Monotriat ratio (HTMT). According to this test, the threshold value of HTMT between the constructs in the model should be less than 0.90. A critical look at our HTMT table, indicate that the measurement model has met this criterion, since all the value of HTMT among the constructs are below 0.9. We further confirm the result for discriminate validity with Fornell-Larker criterion. According to this criterion, the value of square root of AVE of latent construct must be greater than or beat the correlation for the same construct. From the Fornell and Larker criterion table below, all the constructs have a high correlation value between the construct itself and a lower correlation value with other construct in the model. Hence, there is high level of discriminate validity.

**Table 4: Fornell-Larcker Criterion**

<table>
<thead>
<tr>
<th>Variable</th>
<th>GACL</th>
<th>GEAS</th>
<th>GAFP</th>
<th>povR</th>
<th>GAIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>GACL</td>
<td>0.561</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEAS</td>
<td>0.435</td>
<td>0.646</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GAFP</td>
<td>0.569</td>
<td>0.785</td>
<td>0.600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>povR</td>
<td>0.373</td>
<td>0.563</td>
<td>0.348</td>
<td>0.648</td>
<td></td>
</tr>
<tr>
<td>GAIF</td>
<td>0.312</td>
<td>0.457</td>
<td>0.207</td>
<td>0.306</td>
<td>0.595</td>
</tr>
</tbody>
</table>

**Source:** Author

**Results of Bootstrapped (Path Coefficient with Levels of Significance)**

PLS-SEM does not assume the data is normally distributed, which implies that parametric significance tests used in regression analyses cannot be applied to test whether coefficients such as outer weights and loadings are significant. Instead, PLS-SEM relies on a nonparametric bootstrap procedure to test coefficients for their significance. In bootstrapping, a large number of subsamples (i.e., bootstrap samples) is drawn from the original sample – with replacement.
Replacement means that each time an observation is drawn at random from the sampling population, it is returned to the sampling population before the next observation is drawn (i.e., the population from which the observations are drawn always contains all the same elements).

Therefore, an observation for a certain subsample can be selected more than once, or may not be selected at all for another subsample. The number of bootstrap samples should be high but must be at least equal to the number of valid observations in the dataset. The test result of the bootstrapping is presented below after a 5000-bootstrap sample. Both the values of the path coefficients and the values of the factors loading are reported with their probability values in bracket.

**Figure 2. Bootstrapped Estimated Model**

Source: Author from SmartPLS4.0

The outcome of the bootstrapped estimated model shows that the value of majority of the indicator is significantly influences the outcome of their construct, hence they correctly capture their constructs. More to that, with respect to the pathway coefficients, the model shows that, government agricultural financial policy has a positive effect on farmers economic wellbeing in Benue division with a coefficient of 0.213 and significant at 1% level of significant. Meaning that, an improvement of government agricultural price policy in Benue division, will go a long way to increase the rate of farmers economic wellbeing among farmers in Benue division. Similarly, government agricultural infrastructure has a positive effect on farmers economic wellbeing with a coefficient of 0.016 but not significant. The effect is the smallest among all the constructs. Meaning that, though government agricultural infrastructure has a positive effect on farmers economic well-being in Benue division, the effect is small and insignificant.

Furthermore, government agricultural climate policy has a positive effect on farmers economic well-being in Benue division with a coefficient or pathway coefficient of 0.170 and significant at 1% level of significant. Meaning that, if the government improve agricultural climate policy
such as irrigation and climate adaptation seeds, greenhouse effect policy, it will go a long way to increase farmers economic well-being in Benue division by 0.170. This effect is the second smaller effect. In addition, government extension and advisory services has the greatest effect on farmers economic well-being. The pathway coefficient indicate that the relationship is positive with a coefficient of 0.421 and significant at 1% level of significant. Meaning that increasing the services of government extension and advisory agents in Benue division, will greatly increase farmers economic well-being to a level of 0.421.

Verification of Hypothesis

Table 5: Path coefficients and P-values

| Variable | Original sample (O) | Sample mean (M) | Standard deviation (STDEV) | T-statistics (|O/STDEV|) | P-value | Decision |
|----------|---------------------|-----------------|-----------------------------|--------------------------|---------|----------|
| GACLPI -> PovR | 0.170*** | 0.177 | 0.050 | 3.375 | 0.001 | Rejected (Ho) |
| GAFP -> PovR | 0.213*** | 0.217 | 0.047 | 4.525 | 0.000 | Rejected (Ho) |
| GAIF -> PovR | 0.016 | 0.024 | 0.057 | 0.284 | 0.777 | Accepted (Ho) |
| GEAS -> PovR | 0.421*** | 0.417 | 0.050 | 8.365 | 0.000 | Rejected (Ho) |

Source: Author

Our hypothesis was stated in their null form, meaning that we assumed that all the agricultural policies have no significant effect on farmers economic well-being in Benue division in the Northern region of Cameroon. From the results, any coefficient with a probability value above 0.1 is consider insignificant and thus rejection of hypothesis while any coefficient below 0.1 is consider significant and thus acceptance of hypothesis. Three hypotheses rejected the null hypothesis, meaning that there is a significant effect of these agricultural policies on poverty reduction in Benue division that is agricultural climate policy, government agricultural financial policy, and government extension and advisory services. Meanwhile, one null hypothesis was accepted, meaning that there is no significant effect of this policy on farmers economic well-being in Benue division that is government agricultural infrastructure.

Predictive Relevance of Model

Blindfolding procedure suggested for predictive relevance by Mellor and Malik (2017) and Ogbeide and Ele (2015) was used to test predictive relevance of the model. The results of the test are presented below in Table 6.
Table 6: Predictive Relevant

<table>
<thead>
<tr>
<th>Variable</th>
<th>Q²pred</th>
<th>PLS-SEM_RMSE</th>
<th>PLS-SEM_MAE</th>
<th>LM_RMS_E</th>
<th>LM_MA_E</th>
</tr>
</thead>
<tbody>
<tr>
<td>PovR1</td>
<td>0.171</td>
<td>0.735</td>
<td>0.612</td>
<td>0.737</td>
<td>0.609</td>
</tr>
<tr>
<td>PovR2</td>
<td>0.004</td>
<td>0.770</td>
<td>0.664</td>
<td>0.738</td>
<td>0.604</td>
</tr>
<tr>
<td>PovR4</td>
<td>0.249</td>
<td>0.668</td>
<td>0.509</td>
<td>0.676</td>
<td>0.519</td>
</tr>
</tbody>
</table>

Source: Author

Cross-validation was performed using PLS Predict by randomly dividing the sample into folds (subsets). The outcomes include Q2 predict, mean absolute error, and root mean squared error (RMSE). Here, we use Q2 predict values to assess the model’s predictive capability. Hair et al., (2014) assert that the Q2 predict values for the dependent construct indicators must be greater than zero for a model to be predictively useful. The Q2 values in the table are above 0.00. Hence, the model demonstrates a strong predictive relevant.

4. Discussion of Results

The goal of this study was to determine the effect of government agricultural policies on farmers economic well-being in Benue division. The policies include; government agricultural financial policy, government agricultural climate policies, government agricultural infrastructure and government extension and advisory services. The role of government policies in the domain of agriculture is crucial. That is why Corral et al (2017) in their article analyzed the role of government agricultural policies in reducing poverty in rural communities. Their analysis shows that the agricultural policies implemented helped to diversify and enhance agricultural production, so that a reduction in effective poverty occurred. They lamented that; these policies need to work jointly and in harmony with other economic sectors.

Our findings of the outcome of the bootstrapped estimated model with respect to the pathway coefficients of the various government agricultural policies, the model shows that, government agricultural financial policy has a positive effect on farmers economic well-being in Benue division significant at 1% level. Meaning that, an improvement of government agricultural price policy in Benue division, will go a long way to increase farmers economic well-being among farmers in Benue division. This finding is in line with those of Udofia and Essang (2015) who examined agricultural financial expenditure and poverty alleviation in Nigeria with the main objective to investigate the relationship between financial expenditure on agriculture and poverty alleviation in Nigeria. They used time series for the study from 1980 – 2012 sourced majorly from Central Bank publications and World Development Indicators and the findings show a clear but insignificant response of poverty reduction to agricultural growth.

On the contrary, Cervantes-Godoy and Dewbre (2010) disaggregated the overall income sources into agricultural GDP per worker, non-agricultural GDP per worker and remittances per capita, and calculated how much of the predicted change in poverty could be attributed to changes in each of the above sources. Their paper found that more than 52% of the average poverty reduction in 12 of the 25 countries studies was due to agricultural growth, while...
remittances as a source of finance contributed to 35% of the reduction and the rest was due to non-agricultural growth.

Similarly, government agricultural infrastructure has a positive effect on farmers economic well-being with an insignificant coefficient. The effect is the smallest among all the constructs. Meaning that, though government agricultural infrastructure has a positive effect on farmers economic well-being in Benue division, the effect is small and insignificant. This conformed to the study of Ogundipe et al (2016), they pointed out that access to agricultural support services remains a major factor constraining the growth of smallholder agriculture and that to achieve a broad-based smallholder agricultural development, it will be necessary to broaden the scope of the program to include smallholder farmers in the former homelands. Hence, they suggested that while agriculture plays a major role in poverty alleviation, the poverty problem in South Africa cannot be solved by promoting smallholder agricultural growth alone. More attention should also be given to the promotion of nonfarm activities (e.g. Agro-industry), particularly those that are linked to the smallholder agricultural sector. The increase in the number of processing units of agricultural product will increase value addition of farm product, as a result of this, farmers can sell at competitive prices, which will go a long way to increase their total income and eventually a reduction in poverty.

Furthermore, government agricultural climate policy has a positive effect on farmers economic well-being in Benue division with a significant coefficient at 1% level. Meaning that, if the government improve agricultural climate policy such as irrigation and climate adaptation seeds, greenhouse effect policy, it will go a long way to increase farmers economic well-being in Benue division by 0.170. This effect is the second smaller effect. In addition, government extension and advisory services has the greatest effect on farmers economic well-being. The pathway coefficient indicate that the relationship is positive with a significant coefficient at 1% level. Meaning that increasing the services of government extension and advisory agents in Benue division, will greatly increase farmers economic well-being to a level of 0.421.

In general, from developing countries perspectives, Corral et al (2017) investigated the impact of agricultural policies on poverty reduction in developing countries. This study analyses the role of agricultural policies in reducing poverty in rural communities. Two aspects were analysed: firstly, whether there has been a reduction in poverty in the basins analysed for the period 2006–2013; and secondly, whether that poverty reduction, to the extent that it has occurred, has been due to the agricultural policies applied. The analysis shows that the agricultural policies implemented helped to diversify and enhance agricultural production, so that a reduction in effective poverty occurred. However, these policies need to work jointly and in harmony with other economic sectors. Meanwhile from a developed world perspective, Quiroga et al (2017), combined a farm business panel dataset for 98 EU territories with a Stochastic Frontier Analysis (SFA) approach, to assess the impact of four contemporary broad categories of common agricultural policies (CAP) subsidy programs on efficiency and environmental sustainability. In accordance with the literature, this study more correctly defines inputs as “facilitating”, whilst following recent methodological developments, crop-subsidies were treated as an endogenous strategic variable in the production function. Comparing between two discrete time periods, further tests were conducted to examine the hypothesis of technical efficiency convergence across European territories. The results suggest that first pillar crop subsidies and pillar two environmental programs generate a disincentive effect on productivity, whilst in general, the CAP promotes technical efficiency convergence
within Europe. Hence, there is a little difference between agricultural policies in developing countries and the developed world.

5. Conclusion

The main objective of this study was to determine the effect of government agricultural policies on farmers economic well-being in Benue division in the Northern region of Cameroon. Data were collected from 399 respondents using a self-administered questionnaire through a cluster sampling technique of 12 sub divisions in Benue division. The study adopted a survey research design. To realize our objective, we adopted a structural equation modelling technique using SmartPLS4.0 to estimate the results. The outcome of the bootstrapped estimated model shows that the value of majority of the indicator significantly influences the outcome of the construct, hence the study correctly captured the constructs. With respect to the pathway coefficients, the model shows that, government agricultural financial policy has a positive effect on farmers economic well-being in Benue division with a coefficient of 0.213 and significant at 1% level. Similarly, government agricultural infrastructure has a positive effect on farmers economic well-being with a coefficient of 0.016 but not significant. Also, government agricultural climate policy has a positive effect on farmers economic well-being in Benue division with a coefficient or pathway coefficient of 0.170 and significant at 1% level. In addition, government extension and advisory services has the greatest effect on farmers economic well-being. The pathway coefficient indicate that the relationship is positive with a coefficient of 0.421 and significant at 1% level.

Conclusively, government agricultural policies generally affect farmers economic well-being in Benue division in the Northern region of Cameroon, thus the government can take advantage of these policies to improve the economic prosperity of farmers in the Benue division and reduce poverty and the problem of food security.

Recommendations

The study shows that government agricultural policies significantly improved farmers economic welfare. In this light, there is need for the government to train and deploy more extension workers in the various sub divisions and community in Benue division, so as to increase farmers access to these services. This can be done by giving specific skills on how to produce dominant food crops and livestock in Benue division through workshops and seminars. This is because most extension workers serve with generally knowledge, which may not be useful in particular context with specific agricultural products.

Also, the government should effectively develop agricultural infrastructures in Benue division, such as construction of farm to market roads to ease the transportation of perishable and non-perishable crops in Benue division. This is because most farmers suffer a lot of losses in the course of transporting their agricultural product from the farm the market. Most of these products get bad or arrives the market in bad shape and quality, which goes a long way to reduce their market price and subsequently total income. There is also need to improve on the establishment of processing units in Benue division as a way of adding value to the agricultural products produce in Benue division. This will go a long way to increase their income and reduce poverty and hunger. More so, other form of government agricultural infrastructure includes the establishment and construction of a good modern market link by a good road.
will open doors for inter-regional, and inter-divisional buyers to access the market and buy the product at encouraging prices.

References


