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IMPLICATIONS OF AGRICULTURAL SUBSIDIES ON AGRICULTURAL PRODUCTIVITY IN MEZAM, CAMEROON

NDASHI TALATU
University of Bamenda

MBU DANIEL TAMBI
University of Bamenda

NDAMSA DICKSON THOMAS
University of Bamenda

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ABSTRACT

This study investigated the effect of agricultural subsidies on farm productivity in Mezam, Cameroon. The study made used of primary survey via a structured questionnaire and snowball sampling technique to obtain data from 352 farmers in Mezam. Regression analyses were done using the Generalised Linear Model. Results show that agricultural subsidies is negatively corroborating with agricultural productivity revealing that dispite the governmental effort to provide subsidies to farmers not all the entire subsidies is channel for the intended purpose. The result is both male and female phenomenon. The study suggests that the redesigning of subsidy programs to explicitly stimulate agripreneurial behavior and to improve productivity. Subsidy packages with market supports schemes like buyer linkages, agro-processing and cooperatives which can help convert productivity into sales is greatly encouraged by this study. Policy designers should consider supporting rural farmers with infrastructure and market access to fully leverage subsidies for agripreneurial activities and to improve farm productivity.

KEYWORDS: - Agricultural Subsisdies, Productivity, Gender, GLM, Mezam Division, Cameroon.

1.0 INTRODUCTION

Globally, agriculture has been a main call for concern as almost the world population depends on it for food, reduction in poverty and economic growth. According to Alson *et al.*, (2014), agricultural sector account for a smaller share of the global economy, but remains the central to the lives of many people in the world. In 2012, about 1.3 billion people approximately 19% were directly engaged in farming. Looking beyond direct employment, in 2010 about 2.6 billion

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people around the world depended on agriculture for their livelihoods, as actively engaged workers or as dependents. According to Mamun (2024), global agricultural production has grown wide with the development of improved genetic varieties of crops and livestock. The average annual growth rate in agriculture was 2–3% during the period 1961–2019 (Fuglie *et al.*, 2021). Developing countries are now catching up with developed countries in agricultural growth, greatly motivated by productivity growth in Southeast Asia, China, and Latin America (Fuglie, Wang and Ball 2012; Martin, 2019).

Agricultural subsidies defined by Foa, (2015) as a financial assistance to farmers through direct transfer or price support, rmain a coner stone for agricultural policy, yet their impact on agripreneurship and agricultural productivity is heavily contested. Globally, over half of government support for food and agriculture is allocated as subsidies to producers, particularly in the form of input support. While input-linked subsidies like fertilizers and seed often boost short term productivity and income, studies shows that it can also leads to over production, market distortions and environmental degradation, prompting policy push towards smarter decoupled subsidy system (Experimenal Agricultural International, 2024;CGSpace, 2024). Simultaneously, the aspect of agripreneurship which is the fusion of agricultural activities with entrepreneurial innovation is emerging as a critical driver for transforming subsistence farming in to profitable business ventures (Nwibo *et al*.,2016).

Agriculture is an important sector of the economy in Cameroon, employing a large proportion of the population and serving as a key source of income, employment, and food security. In rural areas such as Mezam Division, agriculture remains the dominant livelihood activity, particularly among smallholder farmers. However, despite its economic and social importance, the sector continues to experience low levels of productivity and limited transformation. Empirical evidence suggests that agricultural production in Cameroon is largely characterized by subsistence farming, low use of modern inputs, and dependence on rainfall, all of which constrain output and efficiency (Diao et al., 2010; Molua, 2011). These limitations are further compounded by structural challenges such as inadequate extension services, weak market access, and limited rural infrastructure, which collectively hinder the capacity of farmers to improve yields and adopt innovative farming practices. As a result, agricultural productivity in Mezam remains significantly below its potential, raising concerns about the effectiveness of policy interventions aimed at improving the sector.

Agricultural subsidies are expected to play a transformative role in enhancing productivity by making essential farm inputs affordable and accessible to all farmers. A well-designed and effectively implemented subsidy program should lead to increased adoption of improved seeds, fertilizers, and modern farming technologies, resulting in higher crop yields, improved farm

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efficiency, and increased farmer incomes. Furthermore, subsidies should be complemented by strong institutional support systems such as agricultural extension services, access to credit, market linkages, and infrastructure development to ensure sustainable agricultural growth (Fan et al., 2008; World Bank, 2019). In such a scenario, farmers in Mezam Division would be able to move beyond subsistence farming to more commercialized and market-oriented agriculture, thereby contributing significantly to food security, poverty reduction, and economic development in Cameroon. However, this ideal situation remains largely unattained due to persistent systemic and implementation challenges.

In reality, farmers in Mezam Division face multiple and interrelated challenges that limit their productivity and reduce the overall effectiveness of agricultural subsidies. Access to key farm inputs such as fertilizers, improved seeds, pesticides, and modern equipment remains limited and often unaffordable for many smallholder farmers. In addition, constraints such as lack of access to credit, land tenure insecurity, farmer–grazer conflicts, and the ongoing socio-political instability in the North-West Region further exacerbate the situation (Ngome & Focho, 2017; Ndzié, 2020). Although agricultural subsidies have been introduced to mitigate some of these challenges, their distribution has been uneven and sometimes inefficient, with issues such as poor targeting, elite capture, corruption, and delays affecting their effectiveness (Liverpool-Tasie, 2014; Tambo et al., 2016). Consequently, while some farmers benefit from subsidized inputs and support programs, a significant proportion remains excluded, thereby limiting the overall impact of these interventions on agricultural productivity in the division.

To address the problem of low agricultural productivity, the government of Cameroon and its development partners has implemented several measures through agricultural subsidy programs and policy initiatives. These measures include the provision of subsidized fertilizers, improved seeds, and farming tools, as well as occasional financial assistance to farmers through programs led by the Ministry of Agriculture and Rural Development (MINADER). Additionally, efforts have been made to strengthen farmer cooperatives, promote the adoption of modern farming techniques, and improve access to extension services (MINADER, 2018; World Bank, 2020). In the North-West Region, including Mezam Division, special intervention programs have also been introduced to support farmers affected by socio-political instability by distributing agricultural inputs and facilitating the resumption of farming activities (Government of Cameroon, 2021). Despite these efforts, the effectiveness of these measures remains questionable, as many farmers still report limited access to subsidies and minimal improvements in productivity.

The continued low level of agricultural productivity in Mezam Division has several serious consequences for both farmers and the broader economy. At the household level, low

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productivity translates into reduced farm incomes, increased vulnerability to poverty, and heightened food insecurity. Farmers are often unable to produce enough surplus for market sale, which limits their ability to invest in improved farming practices and perpetuates a cycle of low productivity and poverty. At the macro level, ineffective subsidy programs result in inefficient use of public resources and reduced returns on government investment in agriculture (Jayne et al., 2018). Furthermore, persistent productivity challenges undermine the role of agriculture as a driver of economic growth and rural development in Cameroon. If these issues are not adequately addressed, the gap between potential and actual agricultural output will continue to widen, thereby threatening food security and sustainable development in the region. This situation therefore necessitates a thorough empirical investigation into the implications of agricultural subsidies on agricultural productivity in Mezam Division, with a view to informing more effective policy design and implementation.

2.0 LITERATURE REVIEW

World Bank (2023) conducted a study to assess the effect of agricultural inputs subsidies on productivity using a meta-analysis in developing countries. The primary objective was to assess the impact of input subsidies like fertilizers and seeds on yield and income targeting specifically poor farmers. The findings revealed that subsidies had a positive effect of farm productivity and house hold income. The study concluded that by reducing the cost of inputs, subsidies encourages farmers to expand their production scale, use modern, higher-yielding agricultural inputs and techniques, which increases overall efficiency and productivity. The findings equally suggested that when subsidies are effectively targeting poor household, they not only improve yield, but also contributes to improved living standards for those household. They recommended thatprioritizing bundled inputs, improving targeting and governance, addressing market imperfections like credit constraints, and performing rigorous benefit-to-cost evaluation. They equally recommended the refining of disburement processes and monitoring for potential overuse of fertilizers.

Yaohong *et al.*(2025) carried out a study on China's Rural Revitalisation policy (RRP) and agricultural modernisation including analysis of agricultural new-quality productivity (ANQP). The main objective was to evalute the policy's effectiveness in intergrating sustainable agriculture, food security, and poverty alleviation initiatives between 2010-2024. They used a PRISMA 2020 systematic review to analyze 33peer-reviewed articles focusing on China's Rural Revitalization policy (RRP). Accounting for factors such as rural population age, gender, household size, consumption upgrading, land consolidation, modernized agricultural inputs, sustainability practices. The results showed that, RRP contributed to a reduction in rural poverty rates butincreased agricultural productivity. The study equally showed that, the aging population reduces productive investment and slows down the adoption of new agricultural technologies.

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Again, the skewed gender ratio weakens the efficiency of labor division and distort optimal resource allocation, while raising demand for-quality. The house hold size did not have a significant statistical effect on agricultural modernisation. They recommended training and management of rural talents.

Liu *et al.* (2022), conducted a study in Chinato evaluate how subsidies influence farmers' decisions regarding sown area, grain output, and income, particularly in poverty-stricken regions. Utilizing an econometric model, the researchers analysed data from various regions, accounting for factors such as natural conditions and economic development levels, farm size and types, income and poorverty status, farmer's behaviour and regional differences. The findings revealed that agricultural subsidies significantly increased the sown area, grain productivity, and total income of farmers in impoverished areas. This was because, subsidies motivated farmers to expand grain-sown areas and reduce land abadonment. Also, subsidies funds helped farmers to purchase or hire advanced mechinery, leading to higher efficiency. Also in terms of regional differences, the influence was as greater in the northern region. Again, interms of poverty and income status, subsidies were very effective in poverty –stricken areas by increasing the disposable income of farmers and encouraging them to continue cultivation and also reducing land abandonment and increasing total sown area in the rural area. However, the impact varied across regions, influenced by local conditions and the functional orientation of grainproductivity. The study concluded that while subsidies effectively boost agricultural output and income, their efficacy is contingent upon regional characteristics and implementation strategies. They recommended that, there should be a shift from general subsidies to more precise, targeted surpport for actual grain producers to better boost their enthusiasm and operational capacity. Again, the recommended that subsidies should be tailored to promotion of the adoption of modern agricultural technology, such as high-quality seeds and improved mechinery to boost competitiveness.

Biagini(2023), investigated the impact of the European Union's Common Agricultural Policy (CAP) subsidies on the Total Factor Productivity (TFP) of cereal farms across six European countries : France, Germany, Italy, Poland, Spain, and the United Kingdom. Employing a three-step estimation strategy, including the System-GMM estimator to address endogeneity issues, the researchers analysed data from the Farm Accountancy Data Network (FADN) spanning 2008 to 2018. The factors used were subsidy type, geographic location and intrinsic farm productivity to understand their impact on TFP. The results indicated that CAP subsidies negatively impacted farm TFP especially with direct payment, though agri-environmental subsidies potentially increased farm productivity, with variations depending on the type of subsidy, country, and farm group. This is because direct payment subsidies encouraged farmers to focus on capturing support rather than increasing efficiency, leading to stagnant or declining productivity. The study

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indicated the need for policy improvements to enhance the TFP of cereal farms, suggesting that a one-size-fits-all approach may not be effective across diverse agricultural contexts.They recommended that, subsidies should move away from general direct payments, which can reduce efficiency to agri-environmental subsidies that have a positive effect on TFP and also, policies should be design to measure the significant heterogeneity in agricultural productivity and context among different countries.

Ricome *et al.*(2023) conducted a study on an ex-ante impact assessment of different modes of intervention in subsidizing agricultural inputs in Senegal. The study's objective was to analyse how various subsidy targeting strategies affect crop mix, fertilizer application, farm income, and government costs. Using the FSSIM-Dev agricultural household model calibrated on a sample of 2,278 farm households from the ESPS-2 survey. The findings demonstrated that the mode of subsidy intervention significantly influences farmers' productivity decisions and income levels. Specifically, targeted subsidies especially to smallholder farmers led to more efficient resource allocation, improved crop choices, and increased farm income, while also optimizing government expenditure. The study equally found out that, the beneficiaries of the input subsidy program in Senegal (ISP) were slightly older, more literate, belonging to a larger household and include more male-headed household. Specifically they found out that the older and less educated experienced higher technical inefficiency. Again, the results showed a significant risk of subsidized inputs being diverted to non-targted crops or farmers. Further more, the study found out that while fertilizer usage increased, the over all impact on yields and farm income was limited in certain areas due to poor implimentation. The study therefore recommended that, there should be a shift from broad ineffective subsidies distribution to more targeted approaches focused on smaller, resource-poor farmers to enhance efficiency.

Nagy (2021)conducted a literature review to investigate the relationship between agricultural EU agricultural subsidies and farm efficiency in Visegrad Group countries like Hungary, Poland, Czech Republic and Slovakia. The study aimed to synthesize empirical findings on how subsidies influence farm performance, considering traditional economic theories that suggest subsidies may distort incentives and reduce performance. A time series data was used and the review encompassed studies with mixed results ; some indicated positive effects of subsidies on farms performance, while others found negative or negligible impacts. Findings indicated a negative relationship between direct subsidies (Pillar I) and techical efficeincy, while investment grants (Pillar II) showed a positive correlation, with results varrying among the countries in the study. The study also indicated that, the effect of subsidies is context-dependent, influenced by factors such as the type of subsidy, implementation mechanisms, and regional agricultural practices. The study concluded that while subsidies can enhance performance under certain conditions, they may also lead to inefficiences if not properly structure and targeted.

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Fuglie *et al.*(2024) examined the impact of farm subsidies like inputs, outputs and decoupled subsidies on global agricultural productivity or total factor productivity (TFP), output growth and labor productivity. The study utilized a long time series on the nominal rate of assistance for 42 countries, covering over 80% of global agricultural productivity with factors like input, output and decouple subsidies. Regression analyses revealed that input subsidies have a positive effect on both output growth and labour, while output subsidies showed a positive but relatively small impact on output growth only. The findings suggest that input subsidies possitively affect output and labor productivity, output subsidies have a smaller positive impacts on output, and decoupled subsidies showed no significant effects on productivity. The authors recommended targeted support, capacity building, careful policy evaluation and focusing subsidy packages on smallholders in some regions. Infact, the study emphasised the importance of carefully selecting subsidy instruments to maximize gains in the agricultural sector.

In a study focused on India, Kumar and Dey (2020), investigated the effectiveness of government input subsidies on enhancing paddy rice. Using panel data from the National Sample Survey, the authors analysed how fertilizer and electricity subsidies impacted and farm income over a ten-year period. Their methodology incorporated fixed-effects regression models to control for unobserved heterogeneity at the farm level with factors such as, age, gender, education, family size, farm size, land type, access to Kisan Credit Card and awareness on Minimum Surpport Price. Findings indicated that fertilizer subsidies increased paddy yields by approximately 12%, while electricity subsidies for irrigation had a smaller yet positive effect on output. Also, the results showed that education and innovation are key drivers of profitability. Gender disparities also affected income, with male showing higher productivity. The authors recommended better targeting mechanisms toward small holder farmers, balancing subsidies with long-term public investment like investment in infrastructure and R and D, improving farmers' awareness through extension services and improved monitoring systems to ensure subsidies reach marginalized farmers and promote equitable growth in agricultural productivity.

In Nigeria, Okoruwa*et al.*,(2023), studied the influence of government fertilizer subsidy programs on maize productivity and farm income. Using primary survey data from 800 maize farmers with factors like age, education, household size and cooperative membership, access to credit and extension services; and employing two-stage least squares regression to correct for endogeneity, they evaluated the direct and indirect effects of subsidies on productivity. Their findings indicated that farmers benefiting from the subsidy increased maize output by approximately 18%, and the subsidy had a significant positive effect on farm income due to reduction in cost. The study also indicated that subsidy recipients were more likely to adopt complementary technologies such as improved seeds and better pest management, leading to improvements. Access to credit, larger farm size and educational level equally had positive effect

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on fertilizers use, productivity and income level due to reduce cost. However, challenges in subsidy delivery, including delays and corruption, were identified as barriers limiting the full potential of subsidy programs. The authors recommended strengthening governance mechanisms to ensure timely and equitable distribution of subsidies to achieve sustained agricultural growth.

3.0 METHODOLOGY

This study was conducted in Mezam-Bamenda, North West Region Cameroon. Bamenda, also known as Abakwa and Mankon town the head quarter of Mezam in North-Western Cameroon and is equally the capital of the North West Region. The city has a population of about 2 million people and is located 366 km North-West of the Cameroonian capital, Yaoundé. Bamenda is known for its cool climate and scenic hilly location (Mbah,2015). This study is limited to the linkages between agricultural subsidies and agricultural productivity. The notion of subsidies is captured as a micro concept and does not involve the macro sense of it. Agricultural productivity is distinct and tied only to improvement or increase in agriculture in terms of input/output and does not involve sales of any form. The study adopted a cross-sectional survey design to attain its objectives. This design allowed for the collection of quantitative data from multiple sub-divisions at a single point in time to ensure accurate representation. The study used primary data collected through a self-administered questionnaire. The questions were administered after it was pretested with 20 farmers selected at random within Mezam Division farmers after which some adjustments were made and validated by the supervisors.

The target populations of the study were famers living within 7 Sub-Division in Mezam, in the North West Region of Cameroon. To ensure that the data points selected were really representative of the whole population, a multistage sampling method was applied at the first stage. Each Sub-Division was identified and there after, the main viallages under each sub division was considered. From each of the villages, considering the estimated number of farmers obtained.A statistical procedure for calculating sample size from a population was used to arrive at the final sample size. The Taro Yamane formula, asample size of 352 farmers was gotten.

The researcher ensured reliability by probing the providers' purpose of the data collected, ensuring that the data was collected within the period under study and that the data was complete and accurate. The researcher also ensured that the data was obtained from its original source (primary data) and the questionnaire was self-ministered. Also, the Alpha Cronbach analysis was conducted to test the reliability of the variables used in the study. Agricultural productivity which is the measure of the efficiency with which inputs such as land, labour and machinery are converted into agricultural output is the dependent variable of the model. It is captured as a linear variable on a rating scale of 0-10 points. Amongst the many factors that can affect it, are

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agricultural subsidies. Hence, the main independent variable of this model is agricultural subsidies captured as an index. This link can be expressed in a simple functional form as follows;

$$AP = f(AS, X) (1)$$

Where, AP , AS, and X represent agricultural productivity, agricultural subsidies and other variables that can jointly affect agricultural productivity respectively. As earlier indicated, the dependent variable of this link is agricultural productivity that is linear and captured in a rating scale. The nature of agricultural productivity appeals to a generalised linear model. This is because this technique solves simultaneously for autocorrelation due to the non-normality assumption of the responses. Hence, we can proceed to express this link in an econometric form as in equation 2;

$$AP = \beta_0 + \beta_1 AS + \beta_2 X + \varepsilon (2)$$

WhereAP,AS, and X are as earlier defined and β_0,β_1, $\beta_2$are the parameters to be estimated in the model for the intercept, agricultural subsidies and other control variables,$\varepsilon$is the error term of the model.

4.0 RESULTS

4.1 Descriptive Statistics of Variables used in the Model

The descriptive statistics of the variables used to verify this link are presented in Table 1.The results shows that farmers questioned, perceived that their farm productivity stood on an average of 55.3%. This implies that the most of the farmers use their farm inputs properly on their farm that improves farm productivity. Also, results reveal that about 51.9% of farmers on average have received subsidies at the time data was collected. The implication is that farm productivity should be high as a result of this. The sampled population was dominated by more males than females (53.1%), and an average 34.4% of farmers questioned had attended primary school which is a typical characteristic of farmers. Most of them do not attend higher levels of schooling. Concerning age approximately 50% were of the age bracket between 1-35 years and 58% of the sampled population were married. Household size showed that very few households harboured between 1-10 persons, and 82% of the farmers were in the rural areas and only 17% of them belonged to a professional group.

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Table 1: Descriptive Statistics of variables use in the study

Variable	Full sample		Female Sub sample		Male Sub sample	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
Farm productivity (scale of 0-10)	5.534	2.787	5.509	2.791	5.557	2.790
Subsidy index	0.519	0.295	0.580	0.256	0.465	0.316
Gender (male=1, 0 otherwise)	0.531	0.500	N/A	N/A	1	0
Education (primary=1, 0 otherwise)	0.384	0.487	0.400	0.491	0.369	0.484
Age (1=35 years, 0 otherwise)	0.5	0.501	0.515	0.501	0.487	0.502
Marital Status (1=married, 0 otherwise)	0.585	0.494	0.612	0.489	0.562	0.498
Financial Status (1=poor. 0 otherwise)	0.457	0.499	0.527	0.501	0.396	0.490
Household size (1-atmost 10persons, 0 otherwise)	0.060	0.237	0.085	0.280	0.037	0.190
Residency (1=rural, 0 otherwise)	0.821	0.384	0.788	0.410	0.850	0.358
Belong to professional group (1=belong, 0 otherwise)	0.179	0.384	0.255	0.437	0.112	0.317
Observations	**352**		**165**		**187**	

Source: Authors' Computation (2026)

In terms of gender, of the 352 respondents, 165 were females and 187 were males, showing that most of them were males as earlier mentioned. The mean farm productivity is slightly lower for females (55%) than that for males (55.6%). This indicates that male farmers in the area of study should be more performant on the farm than the females. Results also show that on the average more female farmers had received subsidies than their male counterparts during the period under study. The expectation is for female farm productivity to be higher than that of the male farmers. More females had obtained primary education as well as majority of them were around the age of 35 contrary to the male farmers.

The descriptive statistics further show that 61% of female famers were married as opposed to only 56% male farmers that was married. Poverty is perceived to be higher amongst the male farmers than the female farmers. This could be because male farmers have the tendency to waste their incomes in non-productive activities as well as they are less hard working on the farm than

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female farmers. Looking at household size, it is revealed that female headed households that had at least 1 to 10 persons were more than the male headed households. More male farmers lived in the rural areas than the female farmers (85%>78%).

4.2 Estimates of Effect of Agricultural Subsidies on Agricultural Productivity

The results for the effect of subsidies on agricultural productivity are presented in Table 2. The results of the effect of agricultural subsidies on agricultural productivity that corresponds to the first objective of the study. An increase in farm subsidies reduces agricultural productivity by 1.983 points at 1% level of significance. Hence, agricultural productivity reduces when farmers receive subsidies. This finding is counter intuitive because farm subsidies reduce cost of production that should normally be reflected on increase in productivity. Liu *et al* (2022), Yaohong *et al*(2025) and World Bank (2023) observed that access and use of subsidies lead to use of fertilizers, improved seeds and machinery that increases agricultural efficiency.

Contrary to this our results are in line with that of Biagini (2023) who investigated the impact of the European Union's Common Agricultural Policy (CAP) across six European countries. Their results indicated that CAP subsidies negatively impacted total farm productivity. This negative effect suggets that subsidies can create dependency on government support rather than encourage innovation and effieciency. When farmers rely on subsidies, they might not invest in improving productivity. This may also indicate there is a misuse or misdirection of government support amonsgt farmers as seen by Nagy (2021). His study indicated that, the effect of subsidies is context-dependent, influenced by factors such as the type of subsidy, implementation mechanisms, and regional agricultural practices. As seen by Ricome *et al.,* (2023) in Senegal, the mode of subsidy intervention significantly influences farmers' productivity decisions and income levels. They said targeted subsidies especially to smallholder farmers can lead to more efficient resource allocation, improved crop choices, and increased farm income, while also optimizing government expenditure.

It is also revealed that male farmers reduce farm productivity more than female farmers by 0.659 at 10% level of significance. This corroborates the findings of Senapati (2020) who saw in his study in India that male farmers easily make riskier decisions on the farm than women which reduces farm efficiency. This assertion contradicts the works of Cairn et al (2021) who showed that women are early adopters of new risk management methods that can reduce efficiency. Kumar and Dey (2020), also saw in his study that gender disparities affected farm income, with male showing higher productivity. Agriculture demands a lot of energy which men normally can offer and increase productivity more than the female farmers.

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In line with the findings of Kumar and Dey (2020) and Desta and Gella (2019), results demonstrate that having primary education increases farm productivity by 0.804 points and results are significant at 10% level. This can be explained by the fact that having basic literacy help farmers to apply and understand new farming methods and inputs which can improve efficiency. This also goes in line with the fact that education and innovation are key drivers of profitability because education influences the understanding and adoption of new agricultural technologies. The variable age is revealed to positively and signficantly affecting farm productivity. Specifically, a farmer that is 35 years or below increases farm productivity by 1.03 points. This is because this age group is very energetic and more receptive to innovations and technology that can help increase farm productivity. Results show that being married than single increases farm productivity but the increase is insignificant.

Table 2:Estimates of Effect of Agricultural Subsidies on Agricultural Productivity

Variable	**Coefficient**
	Agricultural Productivity
Subsidy index	-1.983*** (3.94)
Gender (male=1, 0 otherwise)	-0.659* (2.23)
Education (primary=1, 0 otherwise)	0.804* (2.53)
Age (1=35 years, 0 otherwise)	-1.029*** (3.54)
Marital Status (1=married, 0 otherwise)	0.244 (0.85)
Financial Status (1=poor. 0 otherwise)	-1.582*** (5.13)
Household size (1-atmost 10persons, 0 otherwise)	-0.705 (0.98)
Residency (1=rural, 0 otherwise)	-0.711 (1.51)
Belong to professional group (1=belong, 0 otherwise)	-1.675*** (3.07)
Constant	9.243*** (13.10)
Log likelihood	-352.94
Scale parameter	4.4652

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(1/df) Deviance	4.4652
(1/df) Pearson	4.4652
Observations	**352**

Source: Authors' Computation (2026)

Notes: ***, **, * signifies 1%, 5% and 10% levels of significance. Figures in parentheses are Z scores.

Still on Table 1 results show that being poor than rich greatly reduces farm productivity at 1% level of significance. Chirwa *et al.*,(2017), had this same results in a study in Malawi that poor even hardly have subsidies which reduced their productivity. This finding appeals to the logical reasoning that poor farmers can not easily afford for modern farm inputs that can be combine with their labour to increase productivity. Also such category of farmers often lack means to obtain professional training and to access credit all which can cause them to become less productive in the farm. Large houshehold size has been revealed to exert a negative influence on farm productivity. Belonging to a household that has up to 10 persons in the house reduces productivity by 0.705 points at an insignificant level. This contradicts the findings of Chirwa *et al.*,(2017) and Ogundari and Ojo (2021), who saw that household size is an important determinant of farm productivity. The negative influence implies that having more mouths to feed can divert time and energy away from farm task and resources such as income might not be invested in the farm appropraitely.

Our results further reveal that living in the rural than the urban area reduces farm productivity by 0.711 points at an insignificant level. Belonging to a professional training group has revealed to have a negative effect on farm productivity. This is indication that farmers who belong professional training groups probably spend most of their time attending meetings and un neccessary discusions that rather distract and take away their time from farm work. This is a typical attitude of farmers especially those in the rural areas. However other authors like Cheptea *et al* (2014), saw that rural development subsidies promoted modernization and diversification that tended to enhance efficiency.

4.3 Estimates of Effect of Agricultural Subsidies on Farm Productivity by Gender

We further decomposed results into female and male sub groups to verify if the same conclusions can be made between these two categories of people. The results are presented in Table 3.

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Table 3: Effect of Agricultural Subsidies on Farm Productivity by Gender

Variables	**Female sub sample**	**Male sub sample**
	Farm productivity	
Subsidy index	-2.974*** (4.15)	-2.775*** (4.44)
Education (1=primary, 0 otherwise)	0.261 (-0.67)	0.589 (-1.32)
Age (1=35 years, 0 otherwise)	2.489*** (-6.57)	0.223 (0.52)
Marital Status (1=married, 0 otherwise)	0.605 (1.56)	0.8031* (1.98)
Financial Status (1=poor. 0 otherwise)	3.006*** (-7.41)	-0.811* (-1.85)
Household size (1-atmost 10persons, 0 otherwise)	-2.912*** (-3.91)	5.938*** (4.98)
Residency (1=rural, 0 otherwise)	-0.216 (-0.41)	-4.398*** (-3.95)
Belong to professional group (1=belong, 0 otherwise)	-0.076 (-0.14)	-7.725*** (-6.27)
Constant	10.272*** (12.58)	11.210*** (9.63)
Log likelihood	-352.945	-429.507
Scale parameter	4.465	6.081
(1/df) Deviance	4.465	6.081
(1/df) Pearson	4.465	6.081
Observations	**165**	**187**

Source: Authors' Computation (2026)

Notes: ***, **, * signifies 1%, 5% and 10% levels of significance. Figures in parentheses are Z scores.

Table 3 showed that the effect female and male farmers have on farm productivity are not the same. Looking at subsidies which is our main focus, results have demonstrated that when female farmers recieve farm subsidies they put it into farming activities than their male counterparts do. Specifcally, being a female farmer and has a subsidy increases farm productivity by 2.972 at 1% level of significance. On the other hand, a male farmer who receieves afarm subsidy reduces farm Productivity by 2.775 points still at 1% level of significance. This ties with the findings of Senapati (2020) who saw in his study in India that male farmers easily make riskier decisions on

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the farm than women which reduces farm efficiency. Hence women are prudent in farming decisions than men which can easily lead to increase in farm productivity.

Education plays an insignificant role on farm productivity between female and male farmers. Results also reveal that female farmers of the age 35 years increases farm productivty at a significant rate more than the male farmers of this age group. This can be explained by the fact that women of this age pay much attention to details and adaptability causing them to be more resilient and productive in the farm. It is established that at this age, female farmers have gained much experience on the farm since they start going to the farm with their parents at a younger age than the male farmers. Their performance in the farm becomes more productive than that of the males who start going to farm at a latter age.

Results on Table 3 further show that a male farmer that is married adds more to farm productiivty than a married female farmer. This may be explained by the fact that married men tend to have more access to land, credit and other resources that can boost their productivity more than that of the female married farmers. It goes without saying that married women may spend most of their time in carrying out household responsiblities which reduces the time and resources that the can put into the farm reducing their farm productivity. In terms of financial status, a female farmer considered to be poor still performes well on the farm but for a male, productivity reduces when they are considered poor than rich. This implies that female farmers that are poor always device ways and strategies to maximise the limited resources at their disporsal having in mind they have families to feed.

This same Table 3 shows that a large female headed household reduces farm productivity while that for the male headed household increases farm productivity. This simply reflects the fact that women are often carried away with household responsibilities when they have many mouths to feed. Male farmers who lived in the rural settings reduces farm productivity by 4.398 points at 1% level of significance same with female farmers who reduces it only by 0.216 points at an insignificant rate. The implication is that male farmers residing in rural areas are less performance because they are distracted with other activities like drinking that makes them less effecient on the farms than the female farmers. The same results are obtained for belonging to professional training group where male farmers that belong to such group reduces productivity more because they spend most of their time attending meeting and discussions that are not neccessry.

Synthesis of Agricultural Subsidies on Farm Productivity

This result corresponds to the first objective of the study. An increase in farm subsidies reduces agricultural productivity by 1.983 points at 1% level of significance using the GLM method of

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analysis. Hence, agricultural productivity reduces when farmers receive subsidies. This finding is counter intuitive because farm subsidies reduce cost of production that should normally be reflected on increase in productivity. Liu *et al.,* (2022), Yaohong *et al.,* (2025) and World Bank (2023) saw that access and use of subsidies lead to use of fertilizers, improved seeds and machinery that increases agricultural efficiency. Contrary to this our results are in line with that of Biagini (2023) who investigated the impact of the European Union's Common Agricultural Policy (CAP) across six European countries. Their results indicated that CAP subsidies negatively impacted total farm productivity. This negative effect suggets that subsidies can create dependency on government support rather than encourage innovation and effieciency. When farmers rely on subsidies, they might not invest in improving productivity. This may also indicate there is a misuse or misdirection of government support amonsgt farmers as seen by Nagy (2021). His study indicated that, the effect of subsidies is context-dependent, influenced by factors such as the type of subsidy, implementation mechanisms, and regional agricultural practices. As seen by Ricome *et al.,* (2023) in Senegal, the mode of subsidy intervention significantly influences farmers' productivity decisions and income levels. They said targeted subsidies especially to smallholder farmers can lead to more efficient resource allocation, improved crop choices, and increased farm income, while also optimizing government expenditure.

It is also revealed that male farmers reduce farm productivity more than female farmers by 0.659 at 10% level of significance. This corroborates the findings of Senapati (2020) who saw in his study in India that male farmers easily make riskier decisions on the farm than women which reduces farm efficiency. This assertion contradicts the works of Cairn et al (2021) who showed that women are early adopters of new risk management methods that can reduce efficiency. Kumar and Dey (2020), also saw in his study that gender disparities affected farm income, with male showing higher productivity. Agriculture demands a lot of energy which men normally can offer and increase productivity more than the female farmers.

In line with the findings of Kumar and Dey (2020) and Desta and Gella (2019), results demonstrate that having primary education increases farm productivity by 0.804 points and results are significant at 10% level. This can be explained by the fact that having basic literacy help farmers to apply and understand new farming methods and inputs which can improve efficiency. This also goes in line with the fact that education and innovation are key drivers of profitability because education influences the understanding and adoption of new agricultural technologies. The variable age is revealed to positively and signficantly affecting farm productivity. Specifically, a farmer that is 35 years or below increases farm productivity by 1.03 points. This is because this age group is very energetic and more receptive to innovations and

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technology that can help increase farm productivity. Results show that being married than single increases farm productivity but the increase is insignificant.

Still, results also showed that being poor than rich greatly reduces farm productivity at 1% level of significance. Chirwa *et al.*,(2017), had this same results in a study in Malawi that poor even hardly have subsidies which reduced their productivity. This finding appeals to the logical reasoning that poor farmers can not easily afford for modern farm inputs that can be combine with their labour to increase productivity. Also such category of farmers often lack means to obtain professional training and to access credit all which can cause them to become less productive in the farm. Large houshehold size has been revealed to exert a negative influence on farm productivity. Belonging to a household that has up to 10 persons in the house reduces productivity by 0.705 points at an insignificant level. This contradicts the findings of Chirwa *et al.*,(2017) and Ogundari and Ojo (2021), who saw that household size is an important determinant of farm productivity. The negative influence implies that having more mouths to feed can divert time and energy away from farm task and resources such as income might not be invested in the farm appropraitely.

Our results further revealed that living in the rural than the urban area reduces farm productivity by 0.711 points at an insignificant level. Belonging to a professional training group has revealed to have a negative effect on farm productivity. This is indication that farmers who belong professional training groups probably spend most of their time attending meetings and un neccessary discusions that rather distract and take away their time from farm work. This is a typical attitude of farmers especially those in the rural areas. However other authors like Cheptea *et al.*, (2014), saw that rural development subsidies promoted modernization and diversification that tended to enhance efficiency.

5.0 CONCLUSION

The aim of this study was to empirically and theoretically verified the effect of agricultural subsidies have no statistically significant effect on agricultural productivity in Mezam Division. Some other important findings from the study include the fact that the effect subsidies have on agripreneurship is not homogenous across gender. Female farmers who received subsidies had a positive and significant impact on agripreneurship contrary to their male counter parts who reduced agripreneurship at a significant level when given subsidies. Variables such as age, financial status and household size were all significant for female farmers in this same link but for males, other variables like marital status, financial status, household size, place of residence, and belong to a professional group were significant. Concerning the challenges faced by agripreneurs in Mezam division, at the top was poor infrastructure, followed by inconsistency in

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supply of farm inputs and price variations. It is also important to note that food processing cost was an important determinant of agripreneurship in Mezam as revealed from the results.

It has been established by the study that agricultural productivity is a measure of the efficiency with which agricultural inputs are converted to agricultural output. Descriptive results have revealed that agricultural productivity is slightly above average. Between males and females, the males are slightly more productive on the farm than women on average.

Based on findings, results showed that subsidies negatively affect agricultural productivity in Mezam Division. Hence, a targeted subsidy for farmers in Mezam is recommended. This will help farmers to be accountable for the use of subsidies granted to them so that they will not be tempted to misuse the subsidies. Farmers from this study are encouraged to adopt innovative farming practices when granted subsidies to avoid dependency. Developing and implementing a gender-sensitive subsidy program that recognizes different risk behaviors of male and female farmers is recommended.

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