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EFFECT OF GENDER INCLUSION ON FARMERS' LIVELIHOOD: EVIDENCE FROM FARMERS IN MEZAM DIVISION NWR OF CAMEROON

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Abstract

This study investigates the effect of gender inclusion on the livelihood outcomes of farmers in the Mezam Division in the North West region of Cameroon. The data was elicited via a survey questionnaire administered to a sample of 381 farmers. Using the cluster sampling approach, proximity villages were grouped into three clusters of towns and stratified sampling was then used to select farmers to participate in the study. The study's objective was achieved using ordinary least squares and control function regression estimation techniques with the altercation. The result revealed that gender inclusion significantly affects farmers' livelihood outcomes in Mezam. The findings imply that if women are given equal opportunities in farming activities, the livelihood outcomes of farmers in the Mezam Division will improve. The result also indicated that the average female household contributes less than the male household. It was recommended that the Government implement policies promoting equal opportunities in farming activities while ensuring gender-inclusive programs.

Keywords: *Gender Inclusion, Livelihood Outcomes, Control Function Regression*

1. Introduction

Given that agriculture plays a pivotal role in fostering economic growth and enhancing the quality of life in several developing nations, previous endeavours to revitalise this sector have been ineffective due to their failure to acknowledge the significance of women's involvement and the detrimental impact of gender disparities on productivity. Based on the findings of Gustafsson et al. (2013) in The State of Food and Agriculture, it is observed that women constitute an average of 43% of the agricultural labour force in developing nations. This percentage varies between regions, with Latin America reporting a lower proportion of 20%, while Eastern Asia and Sub-Saharan Africa exhibit a higher proportion of 50%. According to [1], implementing measures aimed at mitigating gender disparities in the availability of productive resources and services has the potential to enhance agricultural yields on women's farms by around 20-30%. This, in turn, might lead to a notable rise in agricultural production within developing nations, estimated to range from 2.5% to 4%.

To achieve these benefits, both male and female farmers must have enough access to knowledge, skills, and technologies to enhance their agricultural productivity. Nevertheless, there is a general and particularly pronounced deficiency in the extent of interaction between farmers and extension workers, particularly among women [2]. There is a need for reform in the policies and organisations responsible for providing extension services to provide a more suitable approach for both male and female farmers. Gender relations encompass several aspects that are intertwined with Agricultural Extension Services, the organisation and policies of agricultural development institutions, and the advantages derived from agricultural growth and enhanced livelihoods for smallholder farmers and the whole economy. The phenomenon of extension takes place within intricate social contexts that are predetermined by gender dynamics. Consequently, it is a significant error to conceptualise extension as a purely technical endeavour devoid of any value judgements [3]. According to Hegde and Venkattakumar (2016), prioritising training upliftment within the agricultural extension system is the most effective approach for including farm women in lucrative livelihood endeavours and, therefore, improving the quality of rural life [4].

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Despite engaging in agriculture as an economic activity, less than 10% of rural women are agripreneurs, so rural women in Cameroon still constitute the poorest population. Statistics have shown that Although rural women in Cameroon produce up to 90% of the food consumed nationwide, less than 10% are engaged in agripreneurship in Cameroon [5]. Also, Female food crop entrepreneurs in Cameroon are in the informal sector merely because of their social and cultural status [6]. However, more is needed to know about the relationship between farmers' skills and their livelihood. This study, therefore, argues that rural women in Cameroon are limited by access to financial resources, need more training skills, have an overload of domestic work, have discriminatory socio-cultural norms and have difficulties in navigating the business environment. As such, it is still being determined if women adequately participate in agricultural training activities in mandated institutions and how much this affects farmers' livelihoods. The study will analyse the factors limiting women's participation as agripreneurs in the agricultural value chain. Furthermore, this study aims to develop grassroots strategies that can be implemented to increase and enhance rural women's engagement in agripreneurship in Cameroon.

Women contribute to agriculture and rural economic activities in all developing country regions. Their roles vary considerably among and within regions and are changing rapidly in many parts of the world where economic and social forces are transforming the agriculture sector. The emergence of contract farming and modern supply chains for high-value agricultural products, for example, present different opportunities and challenges for women than for men. These differences derive from the various roles and responsibilities of women and the constraints that they face. Women work in agriculture as farmers on their account, unpaid workers on family farms, and paid or unpaid labourers on other farms and agricultural enterprises. They are involved in both crop and livestock production at subsistence and commercial levels. They produce food and cash crops and manage mixed agrarian operations, often involving crops, livestock and fish farming. These women are considered part of the agricultural labour force (FAO, 2010).

Most of the studies in the literature have shown that gender inclusion is a concept that transcends mere equality (Inglehart, Norris, & Welzel, 2003). It's the belief that all services, opportunities, and establishments are open to all people and that male and female stereotypes do not define societal roles and expectations. While the United States has made dramatic strides in lessening the gap between the sexes, statistics show that prevalent challenges exist, and we must address and eliminate them before our society can achieve true gender inclusion. Promoting gender inclusion by creating demonstrative examples of the concept in action is of the utmost essence as we strive toward this objective. Patil & Babus (2018) also reported that the underperformance in this sector is because rural women, who constitute a bulk of farmers, are emancipated and discriminated against regarding access to resources necessary for increasing productivity. Although laws and policies related to women and rural women have been passed in many African countries, they still face challenges that limit them from engaging in agricultural training [7]. [8] stated that women's cultural and social status serve as a primary barrier. Thus, it is essential to examine the profile of these women and the conditions under which they operate to augment the results they have achieved so far. It is critical, especially regarding ongoing efforts to improve livelihood in Cameroon; these efforts should incorporate everyone, including women[9].

2. MATERIAL AND METHODS

The data used in this study was obtained from the survey questionnaire administered to a sample of 381 farmers. Using a cluster sampling approach, proximity villages were grouped into three cluster sub-divisions (Bamenda I, II, and III), and stratified sampling was then used to select members to participate in the study.

Model Specification

This Objective is motivated by the work of Zhou et al. (2019) and Patil & Babus (2018). They argued that agriculture in Africa is underperforming because of discrimination practices towards gender inclusion and access to the necessary financial resources that can be used to increase productivity. Gender inclusion is a critical effort towards improving the farmers' livelihood. Gender inclusion is an exogenous binary variable, while farmers' livelihood outcomes are endogenous. Farmer's livelihood outcome is a multidimensional concept and can only be adequately measured using multiple correspondences as explained supra items on the questionnaire. Based on the abovementioned argument, the model of this Objective can be specified as follows.

$$FLO = \theta_1 G + \theta_2 PEDU + \theta_3 SEDU + \theta_4 TEDU + \theta_5 X + \varepsilon_2 \quad 3.5$$

Where G stands for gender inclusion, θ1 captured the magnitude of the effect of gender inclusion on farmers' livelihoods. The coefficients θ1 to θ4 captured the magnitude of the effect of education on farmers' livelihoods, respectively. The parameters can either be positive or negative. At the same time, the parameter θ5 captured the effect of another associate covariate on farmers' livelihood outcomes. The Ordinary Least Square estimation method (OLS) will estimate the parameters.

Table 1: Description of the Variables

Variable	Variable	Description of Variables
Dependent Variable	---	---
Farmers livelihood outcomes	flo	Continuous
Independent Variables	---	---
Gender Inclusion	g	Continuous
Gender(1=Female, 0 otherwise)	female	Binary

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Marital status (1=married, 0 otherwise)	married	Binary
Education (1=no education, 0 otherwise)	noedu	Binary
Education(1=Primary education, 0 otherwise)	pedu	Binary
Education(1=Secondary education, 0 otherwise	sedu	Binary
Education (1=Tertiary education, zero otherwise)	tedu	Binary
Farm experiences in years	farm exp	Continuous
Farm ownership(1=yes, 0 otherwise)	ownership	Binary
income	**income**	---.
< 100,000 frs	Inc0	Binary
100,000 - <150,000 frs	Inc1	Binary
150,000 - <200,000 frs	Inc2	Binary
200,000 frs plus	Inc3	Binary

Source: Compiled by the Author, 2022

3. RESULTS AND DISCUSSION

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Flo	381	.020	1.001	-1.298	3.812
g	344	.436	.231	0	1
Female	381	.42	.494	0	1
Married	381	.614	.487	0	1
Pedu	381	.223	.417	0	1
Sedu	381	.257	.438	0	1
Tedu	381	.27	.445	0	1
farm exp	381	10.142	10.194	0	67
Fownership	381	.866	.341	0	1
Income	.	.	.	.	.
Less 100,000 frs	381	.315	.465	0	1
100,000 - <150,000 frs	381	.344	.476	0	1
150,000 frs -<200,000 frs	381	.097	.297	0	1
200,000 frs and above	381	.215	.412	0	1

Source: Computed by Author using STATA 14, 2023

The results in Table 4.8 revealed that the livelihood of farmers has a mean score of 0.020 and a standard deviation of 1.001, ranging from -1.298 to 3.812. The results of the descriptive statistics show that gender inclusion has a mean of 43.6%. Female has a mean value of 42% compared to male respondents. The descriptive statistics show inequality in the distribution of gender. The proportion of married respondents was very high; that is, more than 50% of the respondents were married. The mean years of farm experience was 10 years and 1 month. The result of the descriptive statistics also indicated that most of the farmers have at least attended tertiary education. The finding also revealed that most farmers owned a farm, that is, 88.6% on average.

Table 3: Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) fo	1.000									
(2) g	0.136	1.000								
	(0.012)									
(3) female	0.077	-0.198	1.000							
	(0.136)	(0.000)								
(4) married	-0.175	-0.027	-0.058	1.000						

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	(0.001)	(0.622)	(0.262)							
(5) pedu	0.036	-0.141	0.170	0.075	1.000					
	(0.488)	(0.009)	(0.001)	(0.144)						
(6) sedu	-0.118	0.000	-0.026	-0.089	-0.315	1.000				
	(0.021)	(0.993)	(0.610)	(0.084)	(0.000)					
(7) tedu	0.228	0.090	-0.051	-0.173	-0.326	-0.358	1.000			
	(0.000)	(0.095)	(0.321)	(0.001)	(0.000)	(0.000)				
(8) farm_exp	-0.163	-0.010	-0.108	0.167	-0.008	-0.136	-0.149	1.000		
	(0.001)	(0.859)	(0.035)	(0.001)	(0.875)	(0.008)	(0.004)			
(9) fownership	-0.255	-0.216	0.022	0.211	0.081	0.073	-0.281	0.213	1.000	
	(0.000)	(0.000)	(0.667)	(0.000)	(0.114)	(0.157)	(0.000)	(0.000)		
(10) Income	-0.167	0.101	-0.158	0.137	-0.066	-0.001	-0.091	0.176	0.125	1.000
	(0.001)	(0.060)	(0.002)	(0.007)	(0.201)	(0.986)	(0.077)	(0.001)	(0.015)	

The result in Table 4 shows that gender inclusion, female, primary and tertiary levels of education significantly affect the livelihood of farmers in the Mezam Division.

Meanwhile, the level of farm experience, farmer's ownership, and income level were instead found to be negatively associated with farmers 'livelihood outcomes.

Table 4: Result of the regression

	(1)
VARIABLES	Lfo
g	0.391**
	(0.184)
female	0.0762
	(0.0932)
married	-0.254***
	(0.0937)
pedu	0.0826
	(0.130)
sedu	-0.233**
	(0.112)
tedu	0.226*
	(0.135)
farm_exp	-0.00762**
	(0.00350)
fownership	-0.511***
	(0.178)
Less 100,000frs	-1.224***
	(0.370)
100,000 -<150,0000 frs	-1.144***
	(0.368)
150,000 - <200,000 frs	-1.320***
	(0.371)
200,000 frs and Plus	-1.303***
	(0.365)
Constant	1.533***
	(0.429)
Observations	344
R-squared	0.231
Ramsey Test	0.90[3, 328;0.4403]
Mean VIF	3.44

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Observations	344

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, *

The result in Table 4 revealed that gender inclusion significantly positively affects farmers' livelihood outcomes in the Mezam division in the North West region of Cameroon. The significance of gender inclusion on farmers' livelihood outcomes in Mezam permits us to reject null hypothesis two in the study, which states that gender inclusion does not significantly affect farmers' livelihood outcomes in Mezam. The findings imply that if women are given equal opportunities in farming activities, the livelihood outcomes of farmers in the Mezam Division will improve.

The result also indicated that the average female household contributes less than the male household.

The finding also revealed that married farmers have a reduced livelihood compared to non-married farmers. The result in Table 4 equally shows that educational qualifications have a mixed effect on farmers' livelihood outcomes. The result revealed that primary education can contribute positively to spurring livelihood outcomes of farmers, though it was found not to be significant. However, the result of secondary education was instead found to be significant but negatively associated with livelihood outcomes. The implication is that most of those who engage in farm activities when their level of education is secondary may not be passionate about it since they may be expecting that after their secondary education, they may have well-paying jobs.

The result also says farm experience and ownership significantly influenced farmers' livelihood outcomes. The finding implies that owning a farm and having a lot of farming experience does not guarantee success, as farmers may still practice poor farming strategies due to the poor fertility of the soils and many other factors that seem to be ignored.

The result of the Ramsey reset test, variance inflation factors and homoscadacity of the model show strong evidence of model fit, as the Ramsey null hypothesis of model misspecification was rejected. The model also does not suffer from multicollinearity as the VIF was well below the cut-off criteria 5. The model also assumed homoscedasticity of variance in the estimates as the model was fitted using the robust option, which controls for heteroscadacity.

4. CONCLUSION

The study's objective was to investigate the effect of gender inclusion on farmers' livelihood outcomes in Mezam Division, in the North West region of Cameroon, using ordinary least square regression, pseudo control function with and without interaction. The result revealed that gender inclusion has no significant effect on the livelihood of farmers in the Mezam division. The findings imply that if women are given equal opportunities in farming activities, the livelihood outcomes of farmers in the Mezam Division will improve. The result also indicated that the average female household contributes less than the male household. The finding also revealed that married farmers have a reduced livelihood compared to non-married farmers. Based on the findings, this study recommended that.

Implement policies that promote equal opportunities in farming activities, ensuring gender-inclusive programs and addressing the identified gender gap in agricultural training. Encourage local communities to promote gender equality in farming activities by ensuring that both men and women have equal access to resources, opportunities, and participation in decision-making processes. Strengthen farmer associations by fostering knowledge sharing and creating an environment encouraging both male and female farmers to participate and benefit from these organisations. Collaborate with extension services to incorporate gender-sensitive content in agricultural training programs, ensuring that both male and female farmers benefit from the latest scientific advancements.

5. REFERENCES

1. Gustafsson, B., H.-O. Kreiss, and J. Oliger, Time dependent problems and difference methods. Vol. 2. 2013: Wiley Online Library.
2. Dreher, A. and J.-E. Sturm Do the IMF and the World Bank influence voting in the UN General Assembly? Public Choice, 2012. 151: p. 363-397.
3. O'Connell, A.D., et al., Quantum ground state and single-phonon control of a mechanical resonator. Nature, 2010. 464(7289): p. 697-703.
4. Hegde, M. and R. Venkattakumar, Technology transfer and skill development towards improved livelihood in rural India. Indian Research Journal of Extension Education, 2016. 15(4): p. 227-233.
5. Kendemeh, P.M., An Analysis of Factors Limiting Rural Womenâ€™s Engagement in Agripreneurship in Cameroon. 2020.
6. Fonjong, L., Challenges and coping strategies of women food crops entrepreneurs in Fako Division, Cameroon. Journal of International Women's Studies, 2004. 5(5): p. 1-17.
7. Kayarkanni, S., Role of Women in Agricultural Production. Indian Streams Research Journal, 2012. 2(9): p. 1-7.
8. Doss, C.R. and A.R. Quisumbing, Understanding rural household behaviour: Beyond Boserup and Becker. Agricultural Economics, 2020. 51(1): p. 47-58.
9. Patil, B. and V.S. Babus, Role of women in agriculture. Int J Applied Res, 2018. 4(12): p. 109-114.

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