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Increasing Women's Access to Agribusinesses and Improvement in Financial Resources through Micro-Credit Enhance Forestry and Agricultural Business in Vietnam

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Abstract

Environmental degradation has recently become an international issue requiring forestry and agricultural growth that improves environmental uncertainty. This aspect requires the emphasis of new

researchers and policymakers. Hence, the present study examines the impact of women's employment in forestry and agriculture, micro-credit for forestry and agriculture, agricultural land, inflation and population growth on the forestry and agricultural growth in Vietnam. The study extracted secondary data from secondary sources such as World Development Indicators (WDI) from 1991 to 2022. The study also applied the dynamic autoregressive distributed lag (DARDL) model to check the linkages among understudy constructs. The results exposed that women's employment in forestry and agriculture, micro-credit for forestry and agriculture, agricultural land, inflation and population growth have a positive association with forestry and agricultural growth in Vietnam. The study guides the policymakers to achieve high growth in forestry and agriculture and must focus on women's access to forestry and the extensive flow of micro-credit for forestry business.

1. Introduction

Countries around the globe are fighting their war for the stability of their economy with the aim to uplift their people's standard of living. The economy of any country is the combination of multiple sectors. The performance trend of these sectors is the ultimate trend of the economy. Some of those sectors are man-made but some are based on natural gifts like land. The nature-supported sectors like agriculture require less effort and provide more outcomes. Agriculture is one of the important sectors of every country of the world. Many countries of the world uplift their standard from developing to developed nations by proper utilization of their agriculture. Some countries are rewarded more by nature in terms of agriculture. It's one of the sectors which is associated with every section of society. Keeping in view the importance of this sector the current study aimed to explore it. Vietnam is one of those countries which is rich in natural resources in terms of agriculture. Its importance can be highlighted by the factor that the country's 39.43% area is agricultural land (Pham, Chuah, & Feeny, 2021). The average farm size of the country is 1560s square meters. In 2022, the agricultural and forestry industry in Vietnam contributed 11.88 % of the GDP of the nation. Prior to that, this sector had its GDP share increase for the first time in the most recent years in 2020. Prior to 2020, Vietnam's industry and service sectors gained importance, which resulted in a

declining GDP contribution from the agricultural, forestry, and fishery sectors (Nguyen & Drakou, 2021). Following trade liberalization and agricultural reforms in the 1980s, the nation switched from being a net importer to an exporter of agricultural goods. This demonstrates the significance of this industry to the nation (Nguyen et al., 2019). Many significant commodities, including rice, coffee, pepper, and cashew nuts, are now produced and exported by the nation in large quantities. As the second-largest coffee exporter after Brazil, for example, Vietnam has maintained its position. However, as local demand has grown, more agricultural items are being imported into the nation. In 2020, fresh fruits, tree nuts, and vegetables will be the most valuable imported foods (Pham Thi, Kappas, & Faust, 2021).

There are a number of challenges being faced by the agriculture sector in Vietnam and one of the prominent is climate change. This has a significant effect on the overall performance of this sector. Many of its commodities, notably rice, one of the most significant agricultural export goods, are impacted by this, including the production of those commodities (Nguyen et al., 2019). Mekong Delta, the primary rice-growing region of Vietnam, has been producing less rice recently. As a result, both the government and farmers are attempting to identify ways to modify agricultural output to take into account shifting climatic conditions and topographic features. There are a number of factors which resulted in an uplift the agriculture performance and one of the prominent is the contribution of the country's women in the agriculture sector. The 60% manpower of this sector is comprised of women (Pham Thi, Kappas, & Faust, 2019). Despite these facts, there are numerous issues associated with the agriculture sector like credit policy of the country (Tran, Vu, & Goto, 2022), agriculture credit rates (Tuan Anh, Gan, & Anh, 2020), the high rate of inflation in the country (Laiprakobsup, 2019), the increasing population growth of the country (Pham & Riedel, 2019), lack of modern era technology implementation in the country. Keeping in view the importance of these factors the current study explored these factors from an agriculture and forestry point of view. The GDP from the agriculture and forestry sector in Vietnam is given in Figure 1.
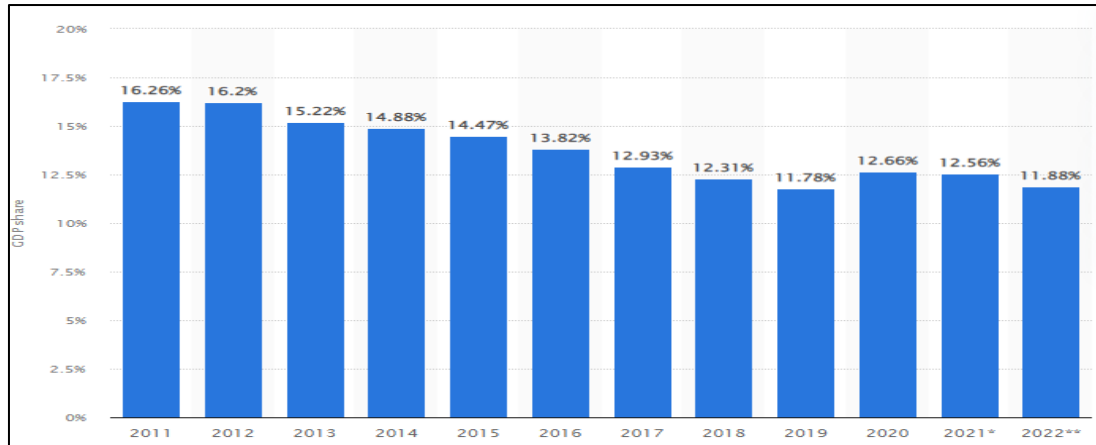
Figure 1: GDP from Agriculture and Forestry in Vietnam
Source: Statista

There is a lot of literature exists on the forestry and agriculture development but still, there are a number of gaps that exist in the literature and the present investigation are addressing are 1) the equation comprised of the variables like forestry and agriculture growth, women employment in forestry and agriculture growth, micro-credit for forestry and agriculture growth, agriculture land, inflation and population growth particularly in Vietnam is not tested before in recent time, 2) Folarin et al. (2021) and Ceesay (2020), investigated the nexus between employment and forestry and agriculture development in different countries at different times, however, the current study has also worked on it along with other variables like micro-credit for forestry and agriculture growth, agriculture land, inflation and population growth with fresh data set sample set, 3) Emenuga (2019) and Florence and Nathan (2020), investigated the nexus between micro-credit for agriculture and forestry and agriculture development in different countries at different times, however, the current study has also worked on it along with other variables like women employment in forestry and agriculture, agriculture land, inflation and population growth particularly in Vietnam with fresh data set sample set, 4) Urruty et al. (2016) and Aznar-Sánchez et al. (2019), investigated the nexus between agriculture land and forestry and agriculture development in different countries at different times, however, the current study has also worked on it along with other variables like women employment in forestry and agriculture, micro-credit for forestry and agriculture, inflation and population growth with fresh data set sample set, 5) Kagochi

(2019) Nnoli et al. (2023), investigated the nexus between inflation and forestry and agriculture development in different countries at different times, however, the current study has also worked on it along with other variables like women employment in forestry and agriculture, micro-credit for forestry and agriculture, agriculture land and population growth in Vietnam with fresh data set sample set, 6) Peterson (2017) Ideh, Nenbee, and Vite (2022), investigated the nexus between population growth and forestry and agriculture development in different countries at different times, however, the current study has also worked on it along with other variables like women employment in forestry and agriculture, micro-credit for forestry and agriculture, agriculture land and inflation with fresh data set sample set.

2. Literature Review

In Nigeria, one of the key industries that must be developed in order to achieve economic growth is agriculture. In order to ensure that the sector is effectively resurrected and efficient enough to lower the economy's poverty level to a less significant stage, positive measures must be made. The expansion of Nigeria's economic performance was significantly aided by agricultural involvement, output, and international agricultural trade. In this context, Folarin et al. (2021), checked whether the employment of both males as well females in the agriculture sector has any sort of nexus with agriculture growth in terms of productivity. The study was conducted on the population of Nigeria. For the sake of analysis, the study employed the ADF analysis approach. The results received from the analysis proposed that the employment of both males as well females in the agriculture sector has a clear nexus with agriculture growth in terms of productivity. The agriculture sector is one of the important pillars of the Gambian economy. The betterment of the country's economy is the witness to the betterment of the agriculture sector. In this context, Ceesay (2020), checked whether there is any sort of nexus between employment in the agriculture sector and economic development. The study was conducted on the population of Gambia. The study was empirical in nature. The study used data from 57 years as a sample. The selected sample covers the tenure from 1960 to 2017. For the sake of analysis, the study employed the linear regression analysis approach. The results

received from the analysis proposed that there is a significant nexus between employment in the agriculture sector and economic development. The productivity of any sector depends upon a number of factors like technology, manpower, overall management, and operational efficiency. One of the factors of manpower in terms of employment is directly associated with productivity, particularly in the agriculture sector. In this context, Autor and Salomons (2017), checked whether there is any sort of nexus between employment in the agriculture sector and productivity growth. The study was conducted on the population of OECD economies. The study used data from 37 years as a sample. The selected sample covers the tenure from 1970 to 2007. For the sake of analysis, the study employed the MLR analysis approach. The results received from the analysis proposed that there is a significant nexus between employment in the agriculture sector and economic development.

Credit is important to agricultural enterprises because it allows farmers to access cash that they may not otherwise have. It aids them in acquiring the resource seeds, machinery, and land that are necessary to run a productive farm. Literature proposed that there is a nexus between credit and agriculture growth. In this context, Emenuga (2019), checked whether there is any sort of nexus between commercial bank credits and agriculture development in terms of productivity. The study was conducted on the population of Nigeria. The study was empirical in nature. The study used data from 37 years as a sample. The selected sample covers the tenure from 1981 to 2017. For the sake of analysis, the study employed the ADF analysis approach. The results received from the analysis proposed that there is a significant nexus between commercial bank credits and agriculture development in terms of productivity, particularly in Nigeria. Commercial banks in Uganda have increased their lending to agriculture during the previous ten years. However, the rising agricultural loan disbursements from commercial banks have not resulted in a corresponding rise in agricultural GDP growth. In this context, Florence and Nathan (2020), checked whether there is any sort of nexus between commercial bank agriculture credits and agriculture growth. The study was conducted on the population of Uganda. The study was empirical in nature. The study used the data from 10 years as a sample. The selected sample covers the tenure from 2008 to 2018. For the sake of analysis, the study

employed the ARDL analysis approach. The results received from the analysis proposed that there is a significant nexus between commercial bank agriculture credits and agriculture growth particularly in Uganda. Similarly, Kassouri and Kacou (2022), checked whether there is any sort of nexus between market credit structure and agriculture development. The study was conducted on the population of West African economies. The study was empirical in nature. The study used data from 20 years as a sample. The selected sample covers the tenure from 1995 to 2014. For the sake of analysis, the study employed the panel-based analysis approach. The results received from the analysis proposed that there is a significant nexus nexus between market credit structure and agriculture development.

The foundation of any public policy intended to control pesticide usage must be a comprehensive understanding of the variables affecting such use. Agricultural land use change is potentially a significant factor in determining the total amount of pesticide usage in a particular nation because agricultural pesticide use is mostly crop-dependent. In this context, Urruty et al. (2016), checked whether there is any sort of nexus between agricultural land usage changes and agriculture. The study was conducted on the population of France. The study was empirical in nature. The study used data from 24 years as a sample. The selected sample covers the tenure from 1989 to 2013. For the sake of analysis, the study employed the ARDL analysis approach. The results received from the analysis proposed that there is a significant nexus between agricultural land usage changes and agriculture. Similarly, Aznar-Sánchez et al. (2019), conducted a systematic review of sustainable land in the agriculture sector. The study reviewed the articles published in 29 years. The articles were downloaded from search engines like google scholar, sage. The selected sample covers the tenure from 1988 to 2017. After having a detailed review of the selected articles the concluded that land is the prime factor of agriculture sector. The sustainable usage of the land results in positively effect the agriculture sector across the globe.

The betterment of the country's economy is the witness to the betterment of the agriculture sector. Literature proposed that there is a significant nexus between inflation and agricultural development. In this context, Kagochi (2019), checked whether there is any sort of nexus between inflation and economic development. The

study was conducted on the population of Sub Shara economies. The study was empirical in nature. The study used data from 33 years as a sample. The selected sample covers the tenure from 1980 to 2013. For the sake of analysis, the study employed the DPG analysis approach. The results received from the analysis proposed that there is a significant nexus between inflation and economic development. Additionally, the Agriculture sector is one of the pillars of the Nigerian economy. In this context, Nnoli et al. (2023), checked whether there is any sort of nexus between inflation, exchange rate and agriculture development in terms of export. The study was conducted on the population of Nigeria. The study was empirical in nature. The study used data from 33 years as a sample. The selected sample covers the tenure from 1986 to 2019. For the sake of analysis, the study employed the FAOSTAT analysis approach. The results received from the analysis proposed that there is a significant nexus between inflation, exchange rate and agriculture development in terms of export. Moreover, Mawejje and Lwanga (2016), checked whether there is any sort of nexus between inflation and agriculture in terms of supply shocks. The study was conducted on the population of Uganda. The study was empirical in nature. The study used the data from 12 years as a sample. The selected sample covers the tenure from 2000 to 2012. For the sake of analysis, the study employed the VAR analysis approach. The results received from the analysis proposed that there is a significant nexus between inflation and agriculture in terms of supply shocks.

One of the quickly raising issues for this era is the rapid increase in population. Since every sector of the world is based on humans it enhances its importance. On the other side, some sectors have complete dependence on manpower like agriculture. Literature proposed that there is a significant nexus between the population in terms of growth and agriculture. In this context, Peterson (2017), checked whether there is any sort of nexus between population growth and agriculture development as a section of the economy. The study was empirical in nature. The results of the study proposed that there is a significant nexus between population growth and agricultural development as a section of the economy. Similarly, Ideh et al. (2022), checked whether there is any sort of nexus between population growth, health expenditures, and agriculture in terms of economic development. The study was conducted on the

population of Nigeria. The study was empirical in nature. The study used data from 39 years as a sample. The selected sample covers the tenure from 1980 to 2019. For the sake of analysis, the study employed the OLS analysis approach. The results received from the analysis proposed that there is a significant nexus between population growth, health expenditures, and agriculture in terms of economic development. Additionally, Karim and Amin (2018), checked whether there is any sort of nexus between population and agriculture in terms of economic growth. The study was conducted on the population of South Asian economies. The study was empirical in nature. The study used data from 35 years as a sample. The selected sample covers the tenure from 1980 to 2015. For the sake of analysis, the study employed the VECM analysis approach. The results received from the analysis proposed that there is a significant nexus between population and agriculture in terms of economic growth.

3. Research Methods

The study examines the impact of women's employment in forestry and agriculture, micro-credit for forestry and agriculture, agricultural land, inflation and population growth on forestry and agricultural growth in Vietnam. The study extracted secondary data from secondary sources such as WDI from 1991 to 2022. The article developed the study equation given below:

$$FAG_t = \alpha_0 + \beta_1 WEFA_t + \beta_2 MCFA_t + \beta_3 AL_{it} + \beta_4 EG_t + \beta_5 INF_t + e_t \quad \textbf{(1)}$$

Where;

FAG = Forestry and Agricultural Growth

t = Time Period

WEFA = Women Employment in Forestry and Agriculture

MCFA = Micro-credit for Forestry and Agriculture

AL = Agricultural Land

INF = Inflation

PG = Population Growth

The study used one dependent variable named forestry and agricultural growth measured with agriculture, forestry, and fishing value added (annual % growth). In

addition, the study also used two predictors, such as women employment in forestry and agriculture measured with employment in agriculture and forestry, female (% of female employment) and micro-credit for forestry and agriculture measured with micro-credit provided by financial sector (% of GDP). Finally, the study used three control variables named agricultural land measured with agricultural land (% of land area), inflation measured with consumer prices (annual %) and population growth measured with population growth (annual percentage). These constructs and measurements are given in Table 1.

Table 1: Variables with Measurements

S#	Variables	Measurement	Sources
01	Forestry and Agricultural Growth	Agriculture, forestry, and fishing value added (annual % growth)	WDI
02	Women's Employment in Forestry and Agriculture	Employment in agriculture and forestry, female (% of female employment)	WDI
03	Micro-credit for Forestry and Agriculture	Micro-credit provided by the financial sector (% of GDP)	WDI
04	Agricultural Land	Agricultural land (% of land area)	WDI
05	Inflation	Inflation, consumer prices (annual %)	WDI
06	Population growth	Population growth (annual percentage)	WDI

The study checks the variables' details using descriptive statistics that provide the minimum and maximum values along with the average and standard deviation of all variables. In addition, the study also checks the correlation among constructs using a correlation matrix. To apply the appropriate model in the study, the article checks the stationarity of the variables using Phillips-Perron (PP) and Augmented Dickey Fuller Test (ADF) tests. The equation for the tests is given below:

$$d(Y_t) = \alpha_0 + \beta t + Y Y_{t-1} + d(Y_t(-1)) + \varepsilon_t \quad \textbf{(2)}$$

Moreover, the article also examines the co-integration using (Westerlund & Edgerton, 2008) approach, which is also a necessary step to apply the appropriate model in the study. The equations are mentioned below:

$$LM_\varphi(i) = T\hat{\varphi}_i \ (\hat{r}_i/\hat{\sigma}_i) \quad \textbf{(3)}$$

$$LM_\tau(i) = \hat{\varphi}_i/SE(\hat{\varphi}_i) \quad \textbf{(4)}$$

In equations (3) and (4), $\hat{\boldsymbol{\varphi}}_i$ exposed the estimate beside standard error, r^2_i exposed the long-run measured variance, while ρ_i exposed the factor loading parameters vector and $\boldsymbol{\varphi i \ (L) = 1 - \sum \varphi_{ij}L^j}$ exposed the scalar polynomial with L lag length.

In addition, the study also applied the ARDL model to check the association among the variables because the ARDL model is the best approach when the data is time series (Ghazouani, Boukhatem, & Sam, 2020). In addition, it is also the best approach when some constructs are stationary at I(0), and others are stationary at I(1) (Zaidi & Saidi, 2018). Moreover, the ARDL approach has the ability to handle the effects of heteroscedasticity and autocorrelation on the estimations (Nazir et al., 2018). The equation for the ARDL approach is mentioned below:

$$\Delta FAG_t = \alpha_0 + \sum\delta_1\Delta FAG_{t-1} + \sum\delta_2\Delta WEFA_{t-1} + \sum\delta_3\Delta MCFA_{t-1} + \sum\delta_4\Delta AL_{t-1} +$$
$$\sum\delta_5\Delta INF_{t-1} + \sum\delta_6\Delta PG_{t-1} + \varphi_1 FAG_{t-1} + \varphi_2 WEFA_{t-1} + \varphi_3 MCFA_{t-1} + \varphi_4 AL_{t-1} +$$
$$\varphi_5 INF_{t-1} + \varphi_6 PG_{t-1} + \mathcal{E}_t \quad \textbf{(5)}$$

Finally, the study also applied the DARDL model to check the linkages among understudy constructs. This approach is developed by Jordan and Philips (2018). Moreover, it covers all the issues that are not controlled by the ARDL model. The equation for the DARDL model is given below:

$$\Delta FAG_t = \alpha_0 + \sum\delta_1\Delta FAG_{t-1} + \sum\delta_2\Delta WEFA_t + \sum\delta_3\Delta WEFA_{t-1} + \sum\delta_4\Delta MCFA_t +$$
$$\sum\delta_5\Delta MCFA_{t-1} + \sum\delta_6\Delta AL_t + \sum\delta_7\Delta AL_{t-1} + \sum\delta_8\Delta INF_t + \sum\delta_9\Delta INF_{t-1} + \sum\delta_{10}\Delta PG_t +$$
$$\sum\delta_{11}\Delta PG_{t-1} + \mathcal{E}_t \quad \textbf{(6)}$$

4. Research Findings

The study checks the variables' details using descriptive statistics that provide the minimum and maximum values along with the average and standard deviation of all variables. The outcomes exposed that FAG average value was 3.557, WEFA mean value was 55.006 per cent, and MCFA average value was

25.736 per cent. In addition, the outcomes also revealed that the AL mean value was 31.535 per cent, INF was 5.262 per cent, and PG was 1.198 per cent. These figures are given in Table 2.

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
FAG	32	3.557	1.187	0.486	6.878
WEFA	32	55.006	13.751	27.180	75.912
MCFA	32	25.736	1.661	23.092	28.478
AL	32	31.535	6.446	20.741	41.693
INF	32	5.262	4.950	-1.710	23.115
PG	32	1.198	0.374	0.735	2.138

In addition, the study also checks the correlation among constructs using a correlation matrix. The results exposed that women's employment in forestry and agriculture, micro-credit for forestry and agriculture, agricultural land, inflation and population growth have a positive association with forestry and agricultural growth in Vietnam. These figures are given in Table 3.

Table 3: Matrix of Correlations

Variables	FAG	WEFA	MCFA	AL	INF	PG
FAG	1.000					
WEFA	0.396	1.000				
MCFA	0.422	0.985	1.000			
AL	0.425	0.964	0.982	1.000		
INF	0.082	0.110	0.110	0.099	1.000	
PG	0.267	0.806	-0.828	-0.878	-0.211	1.000

To apply the appropriate model in the study, the article checks the stationarity of the variables using PP and ADF tests. The outcomes indicated that the FAG, WEFA, INF and PG are stationary at I(0), while MCFA and AL are stationary at I(1). These figures are given in Table 4.

Table 4: Unit root test

	DF		PP	
Series	Level	First difference	Level	First difference
FAG	-2.986***	------	-3.101***	------
WEFA	-2.664***	------	-2.901***	------
MCFA	------	-4.392***	------	-4.774***
AL	------	-4.256***	------	-4.392***
INF	-2.192***	------	-2.884***	------
PG	-2.329***	------	-2.372***	------

Moreover, the article also examines the co-integration using (Westerlund & Edgerton, 2008) approach, which is also a necessary step to apply the appropriate model in the study. The outcomes indicated that the probability values are lower than 0.05 and the t-statistics are larger than 1.96. These figures indicated that co-integration exists. These figures are given in Table 5.

Table 5: Co-integration test

Model	No Shift		Mean Shift		Regime Shift	
	Test Stat	p-value	Test Stat	p-value	Test Stat	p-value
LM_τ	-4.271	0.000	-5.332	0.000	-4.382	0.000
LM_φ	-4.382	0.000	-5.434	0.000	-4.765	0.000

Finally, the study also applied the DARDL model to check the linkages among understudy constructs. The results exposed that women's employment in forestry and agriculture, micro-credit for forestry and agriculture, agricultural land, inflation and population growth have a positive association with forestry and agricultural growth in Vietnam. These associations are given in Table 6.

Table 6: Dynamic ARDL model

Variable	Coefficient	t-Statistic	Prob.
ECT	-1.091***	-3.291	0.002
$WEFA_{t-1}$	0.873**	2.091	0.043
WEFA	1.009***	4.362	0.000
$MCFA_{t-1}$	3.201***	4.398	0.000
MCFA	0.774**	2.409	0.033
AL_{t-1}	3.124**	2.781	0.027
AL	0.876***	4.291	0.000
INF_{t-1}	1.281***	5.673	0.000
INF	0.984***	5.940	0.000
PG_{t-1}	1.271***	3.901	0.000
PG	2.191***	5.493	0.000
Cons	3.325***	5.101	0.000

R square = 61.765 Stimulation = 5000

5. Discussions

The results showed that women's empowerment has a positive impact on forestry and agricultural business in Vietnam. Previous studies have shown that when getting involved in agricultural activities, they bring new approaches and perspectives to the business, thus leading to innovation and efficiency. Past study done by Malapit et al. (2020), also supported this activity. According to them, women's involvement in agricultural activities can diversify knowledge, ideas, and skills within the industry which leads to problem-solving, sustainable and resilient agricultural systems. Women also play a significant role in processing, food production, and distribution because when they are involved and engaged in agriculture they would prioritize and improve the nutrition and food security for families. Women also have a crucial proportion, especially in rural areas in many developing or underdeveloped countries. Diiro et al. (2018), also supported this hypothesis. According to them, by providing them with employment opportunities, the potential to earn money will increase which leads to improvement in the conditions of the economy and poverty

reduction. Hence, promoting employment in women in agriculture and forestry not only provide benefit to agribusiness but also improve the economic and social goals which include gender equality, sustainable resource management, and poverty reduction. Significantly, the government should take some crucial steps to empower and support them to fully participate in these fields.

The results showed that microcredit has a positive impact on agriculture and forestay. Past study done by, also supported this result. Nakano and Magezi (2020), also supported this result. According to them, microcredit assists in small-scale agriculture and fosters access to required capital. These entrepreneurs faced many challenges in getting loans due to restricted and less credit scores. However, microcredits fill this gap by assisting them to purchase equipment, seeds, and tool which not only increases the quality but also improve productivity. Mariyono (2019), also supported this result. Microcredit assists in expanding the operations and activities in the agricultural and forestry business. People can in livestock or new crops thus exploring value-added opportunities providing profitability. Microcredit also plays a crucial role in alleviating the economy of the country as forestry or agricultural business grows, they provide employment opportunities for local communities thus improving the living standards.

The results showed that agricultural land has positive impact on agricultural and forestry business. Cheng, Zou, and Duan (2021), also supported this result. According to them, agricultural land is crucial for raising livestock and growing crops to meet the demand for food as the provision of ample land will ensure a steady contribution to nutrition and food security as well as supply of food. Agricultural land facilitates diversification and crop rotation as it enhances soil fertility, disease pressure, eradication of pests, and increase productivity level. Diversion in crops also provides additional income opportunities to farmers and minimizes the risk of depending on single crops. Agricultural land also generates animal manure and crop residues which can be utilized as natural fertilizers in forestay and these activities not only contribute to fertility but also support sustainable agricultural practices. Agricultural land also assists in economic activities for the agricultural industry as it serves as a base for rural development, income generation, and job creation. Agricultural land can be used in agroforestry systems as it also enhances

biodiversity by having trees with livestock and crops. This process also provides more sources of income which not only sequesters carbon but also improve income sources, contributing towards climatic change mitigation.

The results showed that inflation has a positive impact on agricultural and forestry businesses. Past study done by Muttaqin and Halim (2020), also supported this hypothesis. According to them, inflation may increase the prices of forestry and agricultural products which leads to profitable revenues for producers as they gain revenues for their commodities leading to an increase in income. Inflation lead to the appreciation of forested areas and agricultural land which may increase in value for beneficial purposes of investors. If forestry or agricultural business have outstanding debts, then inflation may reduce the real value of debt over time which assists in easing their financial burden. Inflation weakens the currency as compared to domestic currency which makes their forestry and agricultural products more competitive in foreign markets hence, boosting the foreign earnings. Inflation may also motivate investors to invest in real assets such as timberland and agricultural land to hedge against inflation issues.

The results showed that population growth positively impacts the forestry and agricultural business. Past study done by Chia et al. (2019), also supported this hypothesis. According to them, as the population increases, the demand for agricultural and food products also increases and this increased demand will lead to numerous opportunities for agricultural business to expand. Growing populations lead to more consumption, creating new markets for food processors, farmers, and agricultural companies. An increase in population also increases the demand for agricultural production which leads to more opportunities thus, alleviating the issues of unemployment and driving economic status. Population growth also motivates investors and governments to invest in infrastructure such as storage facilities and irrigation systems which enhance the productivity of agriculture.

6. Implications

This paper significantly contributes to the literature. As we know that forestry and agricultural business has crucial importance. The government of Vietnam is also promoting the agricultural industry to ensure an increase in rural incomes, economic growth, and food security. Various initiatives have been taken to enhance productivity and modernization in

the forestry industry. However, despite these initiatives, this industry is also facing some challenges which can be overcome by integrating some factors in forestry and agricultural business. This paper provides guidelines for policymakers, and government agencies to boost the agricultural business. This paper analyses the role of women empowerment, microcredit, agricultural land, inflation, and population growth and their impact on forestry and agricultural business. Women empowerment provides the industry with diversified and innovative skills and approaches while microcredit assists in dealing with loan purposes. The study guides the policymakers to achieve high growth in forestry and agriculture and must focus on women's access to forestry and the extensive flow of micro-credit for forestry business. While agricultural land, inflation, and population growth provide the industry with opportunities to increase profitability as well as economic situation.

7. Limitations

This paper has certain limitations which can be overcome in the future by researchers. First, this paper investigates the impact of women empowerment, microcredit, agricultural land, inflation, and population growth on forestry and agricultural business. In the future, more factors such as innovative technology, integration of Industry 4.0, and agricultural machinery can be used in future to study their impact on forestry and agricultural business. Further, this study has been done on Vietnam which is a developing country which means that this study cannot be implemented in developed countries. In the future, scholars can use this framework in developed countries.

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