

# Influence of Farmers Multipurpose Cooperative Societies on Vegetable Production in Enugu State

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## ABSTRACT

This work examined the influence of farmers multipurpose cooperative societies (FMCS) on vegetable production in Enugu State, Nigeria, as the broad objective. Specifically, the study examined the effect of farm resources from all sources on vegetable crops output and ascertained the effect of farm resources obtained from cooperatives on vegetable farm profitability. The study adopted a survey research design. The population of the study was 3,020 FMCS with a membership of 30,257. A sample size sample of 353 was gotten by the application of Taro Yamani sample size formula. Primary data was used for the study. The research instrument was subjected to face and content validation. The reliability of the instrument was determined by a test re-test method which returned a coefficient of .94. Descriptive and inferential were used in data analysis and hypotheses were tested at a 5% level of significance. Results indicated that farm resources from all sources statistically significantly predicted vegetable farm profitability ( $F = 20.727$ ,  $p < .05$ ) and that farm resources obtained from cooperatives statistically significantly predicted vegetable farm profitability ( $F = 32.638$ ,  $p < .05$ ). It was concluded that FMCS have an influence on vegetable production in Enugu State. Sequel to this, it was recommended among others that farmers should be encouraged to join FMCS in Enugu State because of its obvious advantages.

**KEYWORDS:** *Farmers, Multipurpose Cooperative Societies, Vegetable Production, Enugu State, Crops Output and Farm Resources*

## INTRODUCTION

Vegetables (leafy and fruits) are widely cultivated in most parts of sub-Sahara Africa, as a cheap and reliable source of protein, vitamins, zinc and iron. In Nigeria, vegetable crops are produced in different agro-ecological zones through commercial as well as small scale farmers both as a source of income as well as food. However, the type is limited to a few crops and production is concentrated to some pocket areas. Despite this, the production of vegetables varies from cultivating a few plants in the backyards for home consumption up to large-scale production for domestic and export markets (Dawit, 2004). Recently, despite the ups and downs observed, the demand for vegetables especially for export is increasing (Tsegay, 2010). Vegetables can generate high income for the farmers because of high market value and profitability.

Vegetable crops such as onion, okra, pepper, amaranthus, carrot, watermelon, Pumpkin or ugu (*Cucurbita maxima*), melon, cabbage, corchorus olitorus (ewedu), hibiscus sabdariffa (sobo), adansonia digitata (baobab leaves), tomatoes (*lycopersicon esculatum*), cucumber (*cucumis sativus*), garden egg (*solanum melongena*), etc. are widely cultivated in most of the Sub-Sahara Africa, particularly by small scale farmers in most states of Nigeria (Adeolu & Taiwo, 2009; Ogunleti, 2018). Vegetables are an important feature of Nigerian's diet that a traditional meal without it is assumed to be incomplete. In Nigeria, vegetable production has been ongoing for decades, providing employment and income for the increasing population especially during the long dry season but vegetable farmers are characterized with low yield and income which can

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be solved by Farmers' Multipurpose Cooperative Societies (FMCS).

The purpose of FMCS is to help farmers increase their yields and income by pooling their resources to support collective service; provisions and economic empowerment. Farmers' cooperatives are seen as critical to achieving the government's developmental targets in the Growth and Transformation Plan, and focusing on other types of cooperatives requires an alternative framework for analysis. The main categories of farmers' cooperatives fall into mainstream activities of the agricultural undertaking including supply of agricultural inputs, joint production and agricultural marketing. Input supply includes the distribution of seeds and fertilizers to farmers.

Government has always emphasized the development and promotion of cooperatives to facilitate agricultural activities, for instance in Nigeria, government established two cooperative development agencies; Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB) Ltd and the Nigerian Agricultural Cooperative Marketing Organization (NACMO), to accelerate cooperative development in Nigeria (Agbo, 2010). Cooperative societies provide training and seminars for members as well as credit facilities (Agbo, 2010). These are among the measures that define the performance of cooperative societies as they have the possibility to influence vegetable production. It is against this background that the researcher decided to research the influence of farmers multipurpose cooperative societies on vegetable production in Enugu State as the broad objective. The specific objectives of the study are to:

1. Examine the effect of farm resources from all sources on vegetable crops output.
2. Ascertain the effect of the farm resources obtained from cooperatives on vegetable farm profitability.

## REVIEW OF RELATED LITERATURE

### Concept of Vegetable

The term vegetable is used to describe the tender edible shoot, leaves, fruits and roots of plants and spices that are consumed whole or in part, raw or cooked as a supplement to starchy foods and meat (Olasantan, Makinde & Salau, 2018). Agwu (2011) define vegetable as the edible portion of a plant (excluding fruits and seeds), such as the roots, tubers, stems and leaves, a common definition that excludes sugar crops such as sugarcane and sugar beet as well as starchy root crops such as cassava, yams, and taro.

Vegetable farming is one of the silent money makers in Nigeria. In a country made up of over 100 million

people of different tribes and ethnicities, whose major common denominator is the use of vegetables in preparing their food, vegetable farming in Nigeria is indeed a reliable business, especially in the off-season when other crops could not be commercially produced and could generate a higher amount of cash income per unit area of land more than other crops and ensure continuous in-flow of cash to farmers which makes it very profitable (Ogunleti, 2018).

The common vegetables cultivated in the Eastern part and Enugu State, in particular, are Okro (*Abelmoschus esculentus*), Water Leave (*Talinum triangulare*), Pepper (*Piper nigrum*), Scent Leave (*Ocimum grattissimum*), Green (*Omocestus viridulus*), Tomatoes (*Lycopersicon esculatum*), Cucumber (*Cucumis sativus*), Garden egg (*Solanum melongena*), Curry (*Murray akenoigii*), Bitter Leave (*Vernonia amygdalina*) (Osuji, Ehirim, Rahji, Awoyemi, Salman, Odii, Onyemuwa, Ibeagwa, Chikezie and Okwara, 2017).

Among the rural dwellers in Nigeria, especially in the southern part, green vegetables such as amaranthus, basil, bitter leaf and fruited pumpkin are cultivated at the backyard gardens or farms close to their living houses on small scale. It seems that small scale farming is the genesis of agricultural and communal life; and is known to contribute to food security (Emodi & Albert, 2018). Backyard farming on small plots of land has been in existence from the time of communal settlement among the cavemen (Dilrukshi, Russell & Karim, 2013). Vegetable production, though practised as backyard farming by some farmers, is faced with fairly large capital and considerable investment on lands, soil amendments and watering equipment (Osuji et al, 2017). Cultivating vegetables close to the house is intended for ease, convenience and accessibility while cooking, and getting it fresh straight to the pot. Backyard gardens could be seen as ways to relieve hunger and its concerns in the face of a food crisis. These vegetables are harvested and collected fresh from the farm to the pot at will, without specified harvesting season. It was noted that most households consume the majority of their produce, though they sell some that are produced in excess (Mgbada, Adesope, and Enyinda, 2014). These proceeds are partly used to purchase other foods that are needed by the family members which are not cultivated in their homestead farm. The cultivated vegetables are waste from previously bought and used seed or stalks from the market. Through this, environmental wastes can be reduced and climate change and biodegradation would be cut to a minimal (Emodi and Albert, 2018).

A vegetable is used in preparing Egusi, Afang, Ogbono, Edikang Ikong, and many other Nigerian delicacies (Ogunleti, 2018), and it plays important role in bodybuilding due to its nutritional value, economic security and its short maturity cycle. The aim of eating fresh vegetables is for the nutritional content and therefore it requires being consumed fresh for body nourishment. According to Dimelu and Odo (2013), vegetable composition is imperative in human nutrition, because it contains vital nutrients such as vitamins C (ascorbic acid), A, thiamine (B1), pyridoxine (B6), niacin (B3),

folacin (B9), E, minerals, and dietary fibre. Vegetables are rich sources of vitamins A, B, and C which helps to lower susceptibility to infection. e.g.: Carrots, sweet corn, amaranthus and celosia provide Vitamin A; Bitter leaf, waterleaf, *solanum* and celosia provide Vitamin B; Tomatoes, carrots, lettuce, cabbage and amaranthus provide Vitamin C (Olasantan et al, 2018).

Adequate consumption could reduce human diseases, such as gastrointestinal cancer deaths, cardiac disease and stroke deaths worldwide (Dimelu and Odo, 2013). In support, American Heart Association (2013) reported that fruit and vegetables are estimated to reduce cancers of the digestive system to about 19%, heart disease to 31% and stroke to 11%.

Vegetables were said to be rich in vitamins and minerals substances such as antioxidants and beta-carotene which are assumed to protect the body against damaging chemicals. Vegetable consumption seems high in demand, and vegetable farming is becoming a lucrative business in developing countries such as Nigeria. It seemed difficult for farmers to meet up with the high demand for vegetables because of the poor road network, poor transportation, timing; poor packaging and branding of vegetables (Tavonga, 2014). On the occasion that vehicles break down on the road, vegetables for their perishable nature would weaken with time spent in transportation, and most times might get rotten before they reach the market and the consumers. Vegetable's nutritional content when it fails to reach the consumers on time depletes because the consumers will not receive it fresh for consumption.

This study focuses on cucumber, garden egg melon ugu and tomatoes because they are adopted crops in Enugu State.

### Cooperative

A cooperative society is seen from different perspectives by various scholars, writers, policymakers and operators. Some of these writers are of the view that the cooperative is a strong

organization where different entrepreneurs of cooperators pool their resources together with the view of making a surplus. Lawal (2002), sees this organization as an industrial organization where several people may combine as consumers to produce a commodity, the proceeds of which are distributed among the participants. Brown (2006), thinks of a cooperative society as a business organization in which a group of individuals who have a common interest, mutually agree to join together to establish this business in order to promote their economic activities like production, distribution or marketing of goods and services, and for the provision of welfare benefits to their members.

The International Cooperative Alliance (ICA, 2010) defines a cooperative as "an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise". It is a business voluntarily owned and controlled by its member patrons and operates for them and by them on a non-profit basis. It is also a business enterprise that aims at the complete identity of the component factors of ownership control and use of services (Nweze, 2001). The multipurpose type of cooperative societies is gaining wide popularity among Nigerians because of a number of benefits which include reduced administrative costs, diversification of interests and services, economies of scale and linkage of economic activities (Agbo, 2010).

Arua (2004) viewed cooperatives as an important tool for improving the living conditions of farmers. According to Bhuyan (2007) cooperatives are especially seen as significant tools for the creation of jobs and the mobilization of resources for income generation. Levi (2005) asserted that cooperatives employed more than 100 million men and women worldwide. In Nigeria, cooperatives provide locally needed services, employment and input to farmers, cooperatives also provide opportunities to farmers to organize themselves into groups to provide services that will facilitate the output of members. According to Nweze (2002) cooperative societies serve as avenues for input distribution. Through their nationwide structure, they have developed strong and reliable arrangements for the distribution of food crops, fertilizers, agrochemicals, credits, seeds, and seedlings.

### Farmers' Multipurpose Cooperative Societies and Agricultural Production

Farmers multipurpose co-operatives play a very important role both in establishing economic structures and in motivating farmers to become more

efficient and utilize improved techniques. This greatest asset is great mobilization power. Farmers cooperatives appeal to the self-interest of the farmer in a way they can understand, can demonstrate things with terrible results, make maximum use of the locally available resources and prove that farmers working together in a spirit of mutual aid can improve their food production, production and economic position.

There is sound evidence that farmers' cooperatives are an invaluable institution for promoting social and economic development and achieving a more equitable distribution of income. The aim and role of farmers' cooperatives vary widely to provide useful services where none exists to reduce excessive cost of middlemen, help farmers get a fair share of the national income, direct agriculture towards the goal of national economic planning and generally to improve the social and economic conditions of the rural people. Farmers usually regard and judge cooperatives in terms of economic benefit to members. The role of cooperatives in food production is an important topic of study and much has been done by scholars and cooperators to justify its prime role in securing economic and political development in the country.

Cooperative societies have been known to make a significant contribution to the economy, society and cultural transformation of their economies and in particular, agricultural transformation (Omogbee and Okoedo- Okojie, 2012). Ikpefan (2004) highlighted the report of the International Labour Organization (ILO) 89th Session, June (2001) on the contributions of cooperatives to economic growth. In that report, it was stated that the livelihood of nearly 3 billion people or half of the world's population was made secure by cooperative enterprises based on the United Nations estimates of 1994. Also, it was reported that agricultural cooperatives are the largest producers of fruits and vegetables for the national market in Burkina Faso, responsible for 77% of Cotton production in Cote d' Ivoire and 90% of national milk production and export 70 % of the surplus wheat production in Uruguay (Omogbee and Okoedo-Okojie, 2012).

### **Performance of Multi-Purpose Cooperatives**

Multi-purpose cooperatives are a unique type of private enterprise that embraces both the associative component as well as the business component and are guided by the International Cooperative Alliance (ICA) values and principles of cooperation. The motive is inducing individuals to join existing or to form new cooperatives that can originate in the economic-rational sphere and the sociological and

psychological spheres. Multi-purpose cooperatives are associations of primary producers who have come together to achieve some common commercial objectives more successfully than they could as individuals such as marketing their produce, purchasing farm supplies, purchasing consumer goods for sale, sharing equipment, or supplying services such as storage or transport. More generally, their goal is to enable rural people to improve their social and economic conditions by working together in ways that are more productive than working individually (Masuku et al, 2016).

Develtere *et al.* (2008) reported that the declining performance of agricultural cooperatives has seen the income of crop farmers dwindle over the years, a situation that has triggered some of the co-operators to come up with innovative cooperative ventures in this sector. Furthermore, cooperatives are also increasingly venturing into other non-traditional sectors including housing, consumer, livestock and bee-keeping. It is also significant to note that cooperatives are increasingly looking beyond their national borders to find markets for their products, which was not possible in the era of state-controlled cooperative development. Available information suggests that such opportunities are increasingly being utilized by cooperatives to tap economies of scale to improve the productivity of their members. Such cooperatives are operating as demand-driven and market-oriented business organisations. The result is the increasing improved performance of such cooperatives as evidenced by higher turnover of the cooperatives; improved income to the participating members; and improved cooperatives.

Reports regarding the financial difficulties experienced by agricultural cooperatives in Africa have been much more common recently than news of their successes. Several financial ratios for cooperatives (revenue growth, return on assets and operating margins) were calculated which indicated weak performance in the cooperative sector. This creates doubt about the viability of the cooperative form of agriculture business, causing members to question their cooperative's performance and/or become reluctant to proceed in organizing a future venture under the cooperative structure (Gray and Kraenzle, 2002).

### **Factors that Affect Performance of Farmers Cooperative Society**

Cooperatives society in Nigeria has suffered several setbacks, some of the responsible factors can be traced back to the policy of the colonial masters who introduced cooperative as a means to ensure that farmers produced export crops (Attah, 2012). This led

to misperception of the true meaning of cooperative by the rural farmers in Nigeria. According to Eze (2000), the majority of the vegetable farmers cooperative members remain in the societies to gain benefit from government agricultural assistance. He also added that members were not willing to commit their limited resources to the cooperative movement and, therefore, resort to their status quo.

Agbo (2000) observed that the absence of clearly stated government policies on channelling aids to rural farmer cooperatives is a problem. There are cases where government loan schemes to rural farmers cooperatives pass through the ministry of commerce and industry. Ministry of Agriculture or even the ministry of local government and Rural Development. This lack of a clearly established channel for aids to Nigerian rural farmers has often led to unhealthy and damaging competition between the ministries concerned. This is not in the best interest of the growth of agricultural cooperatives in Nigeria.

Other factors that lead to the malfunction of the farmers cooperative in respect to vegetable production include the cooperative reliance on the government for agric incentives, poor education among the members (MAM SER 2000).

## PRESENTATION AND ANALYSIS OF DATA

The Effects of Farm Resources from All Sources on Vegetable Crops Output

**Table 1: Mean Score of the Effects of Farm Resources from All Sources on Vegetable Crops Output**

S/N	Items	SA	A	D	SD	Undecided	Mean	Remark
14	Quality seedlings and chemicals are through the private arrangement.	102 (26%)	276 (70%)	17 (4)	-	-	4.17	Accepted
15	Credit needs are satisfied by other sources.	68 (17%)	223 (57%)	53 (13%)	51 (13%)	-	3.78	Accepted
16	Repayments are well spaced and in convenient instalments.	69 (18%)	122 (31%)	136 (34%)	68 (17%)	-	3.48	Accepted
17.	The number of government extension officers visiting is adequate.	-	51 (13%)	156 (39%)	188 (48%)	-	2.65	Rejected
18.	Farm extension service from other sources has boosted my farm profitability.	119 (30%)	105 (27%)	102 (26%)	69 (17%)	-	3.69	Accepted
19	Labour is provided through the private arrangement.	171 (43%)	122 (31%)	51 (13%)	51 (13%)	-	4.05	Accepted
20.	Fertilizer needed is sourced from the market.	239 (60%)	105 (27%)	51 (13%)	-	-	4.48	Accepted
<b>Grand mean</b>							<b>3.76</b>	<b>Accepted</b>

Source: Field Survey, 2020

Table 1 shows the mean score of the effects of farm resources from all sources of vegetable output. Out of the 7 items, 6 items (14, 15, 16, 18, 19 and 20) were regarded as accepted because their respective mean ratings are above the criterion mean of 3.00 which is the point for acceptance of the item in the questionnaire. Only one item (17) was regarded as rejected because the mean rating was below the accepted mean rating. Furthermore,

Nevertheless, Excessive bureaucracy has contributed a lot to the problems of farmers cooperatives. Government officials who handle agricultural cooperatives matters tend to forget that farmers are in entirely different types of business. This is because agricultural activities must be performed, at definite seasons and delays can be dangerous. Fund for pre-season loans which are received late constitute a problem to farmers rather than help (Martin, 2002).

## METHODOLOGY

The research method adopted for this study was survey method. The study was carried out in Enugu State, Nigeria. The population of the study is comprised of 3,020 FMCS with a membership of 30,257 all the members of the FMCS constitute the population of this study with a sample size of 353, arrived at using Yaro Yamani sample size formula. Primary data (interview and questionnaire) was used for the study. The research instrument was subjected to face and content validation. The reliability of the instrument was determined by a test re-test method which returned a coefficient of .94. Descriptive (mean) and inferential statistics (multiple linear regression analysis) were used in data analysis, while hypotheses were tested at a 5% level of significance.

the grand mean ratings of the 7 items were 3.76 which was above the criterion mean of 3.00. This implies that farm resources from all sources affect vegetable crops output.

The Effects of the Farm Resources obtained from Cooperatives on Vegetable Farm Profitability

**Table 2: Mean Score of the Effects of the Farm Resources obtained from Cooperatives on Vegetable Farm Profitability**

S/N	Items	SA	A	D	SD	Undecided	Mean	Remark
21	Improved seedlings and chemicals supplied are obtained from cooperatives.	154 (39%)	88 (22%)	102 (26%)	51 (13%)	-	3.87	Accepted
22	Much credit needed is satisfied by cooperatives.	153 (39%)	105 (27%)	69 (17%)	68 (17%)	-	3.87	Accepted
23	Repayments are well spaced and in convenient instalments.	85 (21%)	190 (48%)	52 (13%)	68 (17%)	-	3.74	Accepted
24	Cooperative provides adequate extension officers.	-	225 (57%)	102 (26%)	68 (17%)	-	3.40	Accepted
25	Farm extension service from cooperative has boosted my farm profitability.	34 (9%)	225 (57%)	51 (13%)	85 (21%)	-	3.53	Accepted
26	Labour is provided through the cooperative arrangement.	35 (9%)	51 (13%)	104 (26%)	205 (52%)	-	2.79	Rejected
27	Fertilizer needed is sourced from cooperative.	35 (9%)	138 (35%)	119 (30%)	103 (26%)	-	3.27	Accepted
<b>Grand mean</b>							<b>3.26</b>	<b>Accepted</b>

Source: Field Survey, 2020

Table 2 shows the mean score of the effects of farm resources obtained from cooperatives on vegetable farm profitability. Out of the 7 items, 6 items (21, 22, 23, 24, 25 and 27) were regarded as accepted because their respective mean ratings are above the criterion mean of 3.00 which is the point for acceptance of the item in the questionnaire. Only one item (26) was regarded as rejected because the mean rating was below the accepted mean rating. Furthermore, the grand mean ratings of the 7 items were 3.26 which was above the criterion mean of 3.00. This implies that farm resources obtained from cooperatives affect vegetable farm profitability.

### Test of Hypotheses

**H<sub>01</sub>:** Farm resources from all sources have no significant effect on vegetable crops output.

**Table 3: Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.529 <sup>a</sup>	.279	.367	.936	2.242

a = Predictors:

- Farm Size in Hectares
- Quality seed and volume of chemical used
- Number of Labour
- Quantity of fertilizer used

b = Dependent Variable: Estimate Vegetable Crop Output (VCOP)

The "R" column represents the multiple correlation coefficient. It is considered to be the measure of the quality of the prediction of the dependent variable (VCOP). A value of 0.529 indicates a 52.9% level of prediction. The "R Square" column represents the coefficient of multiple determinations, which is the proportion of variance in the dependent variable that can be explained by the independent variables (technically, it is the proportion of variation accounted for by the regression model above and beyond the mean model). A value of 0.279 that the independent variables explain 27.9% of the variability of our dependent variable, (VCOP).

**Table 4: ANOVA<sup>a</sup>**

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	72.681	4	18.170	20.727	.000 <sup>b</sup>
	Residual	341.886	390	.877		
	Total	414.567	394			

Source: Field Survey, 2020

a = Predictors:

- Farm Size in Hectares
- Quality seed and volume of chemical used
- Number of Labour
- Quantity of fertilizer used

b = Dependent Variable: Estimate Vegetable Crop Output (VCOP)

The F-ratio in the ANOVA table 4 tests whether the overall regression model is a good fit for the data. The table shows that the independent variables statistically significantly predict the dependent variable,  $F(4, 390) = 20.727$ ,  $p < .0005$ . This indicates that the regression model is a good fit for the data.

**H<sub>02</sub>:** Farm resources obtained from cooperatives have no significant effect on vegetable farm profitability.

**Table 5: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.493 <sup>a</sup>	.243	.257	.970

Source: Field Survey, 2020

a = Predictors:

- Farm Size in Hectares
- Improved seeds and volume of chemicals obtained from Cooperatives
- Number of Labour provided by Cooperatives
- Quantity of fertilizer from Cooperatives

The multiple correlation coefficient (R) is 0.493 indicates a 49.3% level of prediction and the coefficient of determination ( $R^2$ ), is 0.243 the independent variables explain 24.3% of the variability of our dependent variable, (VFP).

**Table 6: ANOVA<sup>a</sup>**

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	47.570	4	11.893	32.638	.000 <sup>b</sup>
	Residual	366.997	390	.941		
	Total	414.567	394			

Source: Field Survey, 2020

a. Dependent Variable: Estimate of Yearly Profit (VFP)

b. Predictors: (Constant),

- Farm Size in Hectares
- Improved seeds and volume of chemicals obtained from Cooperatives
- Number of Labour provided by Cooperatives
- Quantity of fertilizer from Cooperatives

The F-ratio in the ANOVA Table 6 tests whether the overall regression model is a good fit for the data. The table shows that the independent variables statistically significantly predict the dependent variable,  $F(4, 390) = 32.638$ ,  $p < .0005$ . This indicates that the regression model is a good fit for the data.

### Conclusion

The study examines the influence of Farmers Multipurpose Cooperative Societies on Vegetable Production in Enugu State. The results from the study have shown that cooperatives are a credible platform for promoting vegetable production in Enugu state. They supply farm inputs and credit at affordable

prices and serves as agents for the distribution of fertilizers and improved seed and seedlings. It was concluded that Farmers Multipurpose Cooperative Societies have an influence on vegetable production in Enugu State.

## Recommendations

The findings of the study have some significant implications for improving the performance of FMCS on vegetable production in Enugu State. The following recommendations are therefore made:

1. Farmers should be encouraged to join FMCS because of its obvious advantages.
2. FMCS should be run in such a way that it becomes possible for every farmer, no matter how lowly, to get involved.
3. Government, through its relevant agencies, should give more support to those FMCS that meet the requirements of membership strength, years of existence and others as revealed through this study to enhance their performance.

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