ASSESSMENT OF THE CONDITIONS OF THE FARMING HOUSEHOLDS IN NORTH COTABATO

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ABSTRACT

This study was conducted to assess the conditions of the farming households in North Cotabato as basis to reform the development of agri-preneurs in line with the country's thrust of transforming farmers as entrepreneurs. The research used the quantitative method approach to analyzed the conditions of the farming households in North Cotabato in relation to the crops they produce. Stratified random sampling was employed in the collection of data from four hundred (400) farming households using a self-constructed questionnaire validated by the panel. Data generated were analyzed descriptively and by inferential statistics using analysis of Variance (ANOVA). The research revealed that the primary commodity produced is rice, followed by rubber and coconut.

Among the perceived conditions of the farming households, the study revealed that farmers agree on the conditions in terms of infrastructure facility, market information, managerial skills, and entrepreneurial skills. On the other hand, the farmers neither agree nor disagree on their conditions on market opportunity, access to credit facility, enabling environment, and government policies on entrepreneurial development. The result also found that significant differences arises when the conditions in terms of access to credit and the enabling environment were grouped based on the primary crop produced. Finally, the study also found that there was a significant difference as to access to credit facility, market intelligence, and entrepreneurial competencies when grouped based on the secondary crops produced.

KEYWORDS: Agribusiness, Farm Conditions; and Inclusive Business.
JEL CODE: Q10, Q12, & Q13

INTRODUCTION

Farmers are considered the backbone of economy. In many developing agricultural countries, about one-third of the world's population depend on smallholder farming. Majority of the world's poor live in rural areas wherein smallholder farming is their only economic subsistence, that agricultural growth is important to be continuously carried out to attain agricultural growth which was identified as an effective mechanism in reducing poverty. Business organizations has a crucial role to play in integrating smallholder farmers within the company's value chain that would allow the access of goods, services, and livelihood opportunities in a commercially viable way to the base of the pyramid (BoP). Golja & Pozega (2012) states that the notion of inclusive business calls for additional focus and innovation in the way companies do business. It involves creating new forms of employment, new markets, and affordable products and services that will spur economic growth and encourages entrepreneurship. Hertveldt, Masuoka and Dixit (2012) defined inclusive business as a private sector approach in providing goods, services, and livelihoods on a commercially viable basis, either at the scale or scalable, to people at the base of the pyramid by making them part of the value chain of companies' core business as suppliers, distributors, retailers, or customers. According to Kennemer Foods International, Inc. (2015, May 04), the Philippine Business for Social Progress (PBSP) inclusive

business operates at a higher scale and social impact, compared to social enterprises, SMEs and the traditional programs of corporate social responsibility as it is able to integrate over the long term the base of the pyramid segment into its value chain.

However, by looking at the approach in which inclusive business is used by different and various companies, it showed that the engagement of the business organizations to the farmers limit in the context of "business as usual", that the focus is basically to safeguard their supply requirement but does not really allow the farmers to engage in the core of activities of the business organizations. In the Philippines, small farmers are exposed to an environment where they are susceptible to exploitations, and that agricultural growth and farmers' capacity to become an entrepreneur is determined based on these conditions. Recognizing the importance of entrepreneurs in the growth and development of any economy, the impact of farmers' engagement to inclusive business will need to be assessed to determine the current conditions of entrepreneurial development as perceived by the farmers of North Cotabato.

Specifically, the study seeks to know the Crops Produced; the conditions as perceived by the farmers in terms of Market Opportunity, Access to Credit Facility, Enabling Environment, Infrastructure Facilities, Market Information, Managerial Skills, Entrepreneurial Competencies, and Government Policies on Entrepreneurial Development; and finally test if there is a significant difference on the conditions when grouped based on the crops produced. These are further illustrated in the conceptual framework shown in figure 1:

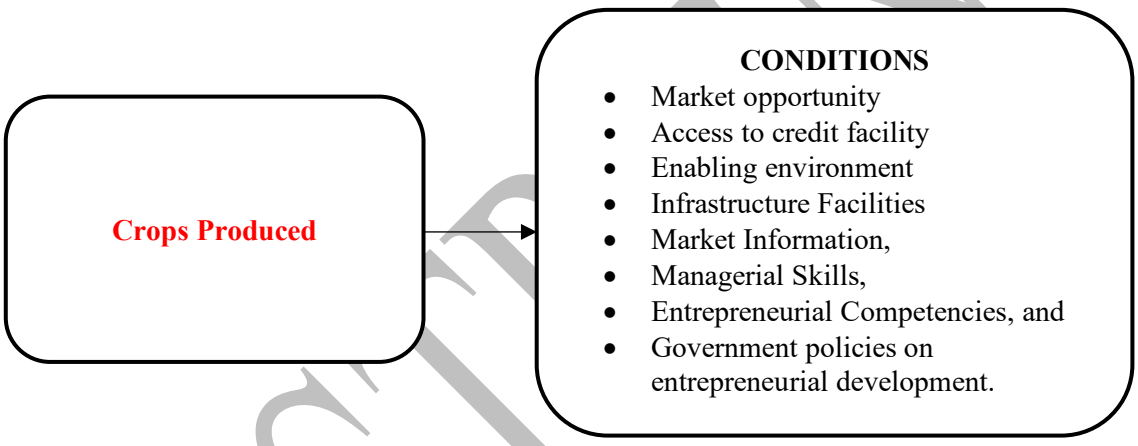

Figure 1. Conceptual Framework of the Study

MATERIALS AND METHODS

A quantitative approach was used in this study, particularly the descriptive-comparative approach. According to Ariola (2006), descriptive research is fact finding with adequate interpretation. It is something more and beyond just data-gathering, the true meaning of the data collected should be reported from the point of view of the objectives and the basic assumption of the project underway. Descriptive research as described and interpreted by Best and Khan (1989) is the answer to the "what is". Further, they explained it as a type of research concerned with conditions of relationships that exist; practices that prevail; beliefs, processes that are going on; effects that are being felt, or trends that are developing. In this study, the descriptive statistical tools such as frequency distribution (using mode) and mean was applied to compute for the distribution of crops produced and the perceived conditions of farming household, respectively.

On the other hand, a comparative research approach was also employed. According to Ariola (2006), it is a type of research that provides explanation about the extent of relationship between two or more variables. The statistical tool used to test the significant difference of the conditions as perceived by the farmers when grouped according to the crops they produce was the Analysis of Variance (ANOVA). They were, according to Gupta (1999), as the most used test statistics by statisticians for test of differences researches. As a guide for the use of ANOVA, a Test of Homogeneity of Variance was conducted to determine if the variances between the sub-groups are homogenous or not. This also becomes the basis on which Post Hoc test will be employed based on the results of the

sig. value. A Tukey HSD and Tamhane's T2 for equal and not equal variances respectively were used. If Test of Homogeneity of Variance is $p<0.05$, then use Tamhane's T2 otherwise use Tukey HSD. After the Test of Homogeneity of Variance, an analysis was conducted on the results of the ANOVA test by looking at the sig. value. Only those factors that $p<0.05$ were considered for further analysis using the Post Hoc Test to determine the specific differences among the sub-groups.

Through the evaluation of the perceived conditions of the farming households, the study aimed to come up with a descriptive analysis on the crops produced of the farmers in the area, and further comparing on how their conditions differ based on the crops produced. Ultimately, through this descriptive-comparison study, a deeper understanding on the situation of farmers in North Cotabato.

Primary data were also used in this study from the responses of the farming households in North Cotabato, specifically in the seventeen (17) municipalities of Alamada, Aleosan, Antipas, Arakan, Banisilan, Carmen, Kabacan, Libungan, Magpet, Makilala, Matalam, Midsayap, M'lang, Pigkawayan, Pikit, President Roxas, Tulunan, and the city of Kidapawan. The researcher was involved in the process of conducting and gathering the primary source of data using the survey method through a self-constructed questionnaire validated by three technical experts with a consistency score of 0.956 using Cronbach's Alpha. It is typically impossible to access the whole population needed for the research, a representation of a larger population is necessary to generalize the population from with the sample was drawn, thus, the stratified random sampling technique was used in selecting the respondents for the study as shown in Table 1. According to Ariola (2006) stratified random sampling is a sampling procedure in which the population is divided or categorized into two or more subpopulation known as strata; the elements for the sample are then randomly selected from the strata. The researcher also used the Slovin's Formula in determining the number of respondents of the study:

Formula: $n = \frac{N}{(1+Ne^2)}$

Where: n = Number of sample size

N = Total population

e = 5 percent degree of error

$n = \frac{271,784}{1+(271,784 * 0.05^2)} = \mathbf{400}$

Table 1. Respondents Sample Distribution per Area in North Cotabato using Stratified Random Sampling.

Location	Number of Population*	Percentage	Sample Households
District 1			
Alamada	12,163	4%	18
Aleosan	7,607	3%	11
Libungan	10,080	4%	15
Midsayap	29,883	11%	44
Pikit	25,348	9%	37
Pigkawayan	13,210	5%	20
District 2			
Antipas	5,694	2%	8
Arakan	9,207	3%	14
Kidapawan City	28,898	11%	43
Magpet	9,747	4%	14
Makilala	17,233	6%	25
President Roxas	9,753	4%	14
Tulunan	12,004	4%	18
District 3			
Banisilan	8,281	3%	12
Carmen	17,683	7%	26
Kabacan	17,836	7%	26
M'lang	20,204	7%	30
Matalam	16,953	6%	25
TOTAL	**271,784**	**100%**	**400**

*Source: National Statistics Office, 2010 Census Population & Housing

RESULTS AND DISCUSSION

Primary Farm Production

Table 2 revealed that 34 percent of the respondents produce "rice" which is followed by "rubber" at 29.30 percent, "coconut" at 18.75 percent, "corn" at 9.75 percent, "banana" at 5 percent, while "other production" such as palm oil, cacao, mango, mung beans, vegetable and sugar cane shared the 3.25 percent.

This shows that the direction of the several government agencies, non-government organization as well as business organization does not align to the primary commodity produced in the area. However, there a potential to encourage farmers to practice intercropping and mixed cropping to maximize land use and increase income.

Table 2. Distribution according to Primary Crop Produced

Primary Crop Produced		Respondents	
		Frequency	Percent (%)
1	Coconut	75	18.75
2	Rubber	117	29.25
3	Corn	39	9.75
4	Rice	136	34.00
5	Banana	20	5.00
6	Others	13	3.25
	Total	**400**	**100.00**

Secondary Farm Production

Table 3 revealed that 45.75 percent of the respondents said they do not have secondary commodity produce in their farm, while 22.75 percent said they produce "coconut", followed by "rubber" at 10.25 percent, "rice" at 4.75 percent, "banana" at 4.25 percent "coffee" at 3.25 percent and "cacao" and "corn" at 2.50 percent, while "other production" such as palm oil, cacao, mango, mung beans, vegetable, sugar cane, livestock, gemilina, fish pond, calamansi, and flower shared the 4 percent. The 54.25 percent of the respondents who confirmed of having a secondary farm production shows an indication that farmers in North Cotabato are trying to find ways on how increase their income by tapping other market aside from the primary commodity they produce. The result is promising since the potential of intercropping and mixed cropping in maximizing land use is still possible.

Table 3. Distribution according to Secondary Crop Produced

Secondary Crop Produced		Respondents	
		Frequency	Percent (%)
1	None	183	45.75
2	Cacao	10	2.50
3	Coffee	13	3.25
4	Coconut	91	22.75
5	Rubber	41	10.25
6	Corn	10	2.50
7	Rice	19	4.75
8	Banana	17	4.25
9	Others	16	4.00
	Total	**400**	**100.00**

Conditions of Farming Households

The conditions of farming households as perceived by the farmer respondents was measured in terms of market opportunity, access to credit facility, enabling environment, infrastructure facility, market information, managerial skills, entrepreneurial development, and government policies on entrepreneurial development as shown in Table 4. The 400 farmer respondents were identified as the key informants of the sample area which are assessed on the perceived conditions of the farming households.

Table 4. Mean Scores of the Perceived Conditions of Farming Households.

Conditions of Farming Households	Mean	Interpretation
1. Market Opportunity	3.33	Neither agree nor disagree
2. Access to Credit Facility	3.12	Neither agree nor disagree
3. Enabling Environment	3.33	Neither agree nor disagree
4. Infrastructure Facility	3.80	Agree
5. Market Information	3.48	Agree
6. Managerial Skills	3.86	Agree
7. Entrepreneurial Competencies	3.95	Agree
8. Government Policies on Entrepreneurial Development	3.23	Neither agree nor disagree

The mean score for "market opportunity" is 3.33 which is interpreted as neither agree nor disagree. With this, suppliers need to clearly understand what the market wants, the best way to produce so they can deliver suitable products to the market. In this case, the farmers may or may not agree on the opportunities available in the market. Next result revealed that the mean score for "access to credit facility" is 3.12, interpreted as neither agree nor disagree. This could mean that there is no clear indication that the farmers are able to access financing from bank, and other lending institution available in their area. Access to finance has become a key to inclusive economic growth and that liquidity constraints have substantial effect on entrepreneurial behavior, taking this into consideration, this confirmed the result on why majority of the respondents do not have non-farming activities. As for "enabling environment" the mean score is 3.33, also interpreted as neither agree nor disagree which mean that the environment is not that strong to empower farmers to become self-sufficient. Enabling environment through business reforms has been acknowledged as an important pre-requisite for unleashing a private sector response.

The "infrastructure facility" got a mean score of 3.80, interpreted as agree. This means that the basic facilities such as electricity, water, telecommunication, farming machineries and road network is available in North Cotabato. When it comes to "market information", the mean score is 3.48, interpreted as agree. This means that the farmers are informed of the materials, facts, figures, intelligence needed for their production, and that of the market. However, the result of the condition in terms of market opportunity, is not aligned with market information as the availability of market opportunity is interpreted as neither agree nor disagree. The result of the study could further mean that information received by the respondents may not be of their interest considering that commodities that have global demand such as cacao and coffee were not their priority, and that there were few if not no value adding activities allowed to coconut and rubber farmers. The "managerial skills" also got an "agree" interpretation based on its 3.86 mean score. This means that the respondents believed to possess the skills of manager to run their farms and other endeavors. Another condition that got an "agree" interpretation is the "entrepreneurial competencies" with a mean score of 3.95. This means that the respondents believed to acquire the characteristics of becoming an entrepreneur, this could further mean that, if given a chance the farmers of North Cotabato can make things happen. Finally, "government policies on entrepreneurial development" mean score is 3.23, interpreted as neither agree nor disagree. This could mean that there are no clear economic incentives given by the government to motivate the farmers in becoming an entrepreneur, thus, the uncertainly of this condition may have been the resulted on why few farmers are engaged in non-farming activities.

Test of difference of the Conditions of Farming Households when Grouped According to the Top Three (3) Primary Crop Produced

As determined by one-way ANOVA, Table 5 hypothesized that there is a significant difference in the condition in terms of access to credit facility (p=0.028) and enabling environment (p=0.008) when grouped according to primary commodity of farm production, thus rejecting the null hypothesis. A Tukey HSD test was used to determine what made a significant difference in the condition in terms of access to credit facility (p=0.028), while Tamhane's T2 test was used to determine the significant difference in the condition in terms of enabling environment (p=0.008).

Access to Credit Facility. The Post Hoc test revealed a significant difference in the condition in terms of "access to credit facility" is between coconut and rubber with a sig. value of 0.028. By looking at the result of the survey as found in Table 5, the average mean score of access to credit facility of coconut farmers is 2.88 while rubber farmers revealed a mean score of 3.27, both interpreted as neither agree nor disagree. Pena (2014) in a news article published by EDGE Davao, the demand for various kinds of coconut by-products has been rising in the domestic and world markets such as coco sugar, coco cream, and coco chunks. Mangahas (2010) reported in the Asian Development Bank that Mindanao is the sole producer of rubber in the Philippines and suggested to capitalize on its development potential to take advantage of the market opportunities amidst large demand for this agricultural commodity. However, PBSP revealed that Philippines has the smallest rubber in the world market dominated by the ASEAN countries. According to the National Economic Development Authority (NEDA) in 2011, the Philippine Development Plan 2011-2016 is focused on inclusive growth that is anchored in the social contract between the government and the population. The direction of different concerned government agencies, non-government and business organizations may not be aligned in the situation of North Cotabato. The credit system offered by banks in the globe is focused on guaranteed return, that if the risk is too high the bank will normally decline the loan application which affects the condition "access to credit facility". This could impact opportunities available in the market as the farmers will not be able to take advantage of the available opportunities.

Enabling Environment. The primary commodity on farm production revealed a significant difference in the condition in terms of enabling environment with sig. value of 0.008 for "coconut to rice". By looking at the result of the survey as shown in Table 5, the average mean score of enabling environment of rice farmers is 3.45, interpreted as agree compared to coconut farmers whose mean score is 3.00, interpreted as neither agree nor agree. According to Konig, Da Silva, & Mhlanga (2013) the competitiveness of an enterprise and the creation of its value activities are shaped depending on the environment, they further emphasized that enabling environment is closely associated with private sector development and generally refers to the business-friendly conditions that must be in place to propel private sector dynamism. According to Islam (1999), rice is a subsistence crop, and rice farming is practiced monoculture, while coconut is a multipurpose commercial crop and that many other crops such as banana, papaya, lanzones, and coffee are intercropped in it. In consideration to the situation on the agricultural requirements and value-adding activities needed by two commodities, the condition in terms of enabling environment for rice and coconut technically differs which resulted to a difference between the two commodities.

Table 5. Difference in the Conditions of Farming Households When Grouped According to the Top Three (3) Primary Commodity of Farm Production

Conditions of Farming Households	Primary Crop Produced	Mean	F	Sig. Value
1. Market Opportunity	Coconut	3.25	1.239	0.291
	Rubber	3.48		
	Rice	3.34		
2. Access to Credit Facility	Coconut	2.88	3.598	**0.028***
	Rubber	3.27		
	Rice	3.04		
3. Enabling Environment	Coconut	3.00	4.874	**0.008***
	Rubber	3.28		
	Rice	3.45		
4. Infrastructure Facilities	Coconut	3.74	1.508	0.223

	Rubber	3.78		
	Rice	3.92		
5. Market Information	Coconut	3.42	0.918	0.401
	Rubber	3.40		
	Rice	3.55		
6. Managerial Skills	Coconut	3.71	1.523	0.220
	Rubber	3.81		
	Rice	3.94		
7. Entrepreneurial Competencies	Coconut	3.83	0.455	0.635
	Rubber	3.93		
	Rice	3.94		
8. Government Policies on Entrepreneurial Development	Coconut	3.30	2.443	0.088
	Rubber	3.25		
	Rice	2.99		

Significant at 0.05

Test of difference of the Conditions of Farming Households when Grouped According to the Top Five (5) Secondary Crop Produced

As determined by one-way ANOVA, Table 6 hypothesized that there is a significant difference in the conditions in terms of enabling environment (p=0.041), market information (p=0.029) and entrepreneurial competencies (p=0.039) when grouped according to secondary crop produced, thus rejecting the null hypothesis. A Tukey HSD test was used to determine what made a significant difference in the condition in terms of enabling environment (p=0.041), market information (p=0.029) and entrepreneurial competencies (p=0.039).

Enabling Environment. One-way ANOVA revealed a significant difference in the condition in terms of "enabling environment" (p=0.041). By looking at the result of the survey as found in Table 6, the average mean score of enabling environment of rice farmers is 2.95, interpreted as neither agree nor disagree while banana farmers revealed a mean score of 3.86, interpreted as agree. This means that the enabling environment between rice and banana will need to be reviewed as it could be an indicator for a shift in direction that is slowly felt by the respondents in the region. According to the official website of the Philippine Statistics Authority (PSA), banana in 2002 recorded the biggest with 41.1 percent of the commodity produced in North Cotabato, this is unlikely in the current situation considering that rice shown to be the top primary crop produced in the region. The direction of the concerned government agency that is working to create an enabling environment for the farmers may have focused on rice in line with the governments thrust in making Philippines a rice sufficient country.

*Market Information***.** The secondary crop produced results revealed a significant difference in the condition in terms of "market information" with sig. value of 0.029 for rice to banana. By looking at the results of the survey as found in Table 6, the average mean score of market information of rice farmers is 3.03, interpreted as neither agree or disagree while banana revealed a mean score of 4.02, interpreted as agree. According to the Department of Agriculture (2015), banana is still promising, banana farmers' organization and cooperative are well organized which resulted to a much clearer direction for the banana farmers, and that information relevant to the market demand is clearer in this perspective. Accordingly, the goal of the government and business organization in tapping the huge global demand for high value crops such as cacao and coffee and the direction of the government in making Philippines a rice sufficient country may have confused the respondents which resulted to a significant difference in the condition in terms of "market information".

Entrepreneurial Competencies. Results revealed a significant difference in the condition in terms of "entrepreneurial competencies" with sig. value of 0.039 for rice and coconut to banana. By looking at the result of the survey as found in Table 6, the average mean score of entrepreneurial competencies of banana farmers is 4.39, interpreted as strongly agree, this means that banana farmers are keen to agree that they are ready to become an entrepreneur compared to coconut farmers whose mean score is 3.75 and rice farmers mean score of 3.64, both interpreted as agree. The vast potential for value adding for these two commodities such as virgin coconut oil, and coco sugar for coconut and

banana chips, vacuum packed turon for banana it will somewhat create an assumption of the entrepreneurial competencies between them.

According to Phelan and Sharpley (2012) there are two key uses of the term competency, first, as the behavior one demonstrates and secondly, as minimum performance standard. Datukan's (2015) study mentioned that there are certain behavioral patterns that contribute towards the success of an individual and these behavioral patterns will make things happen. According to the condition confirmed that banana farmers are more organized in the perspective of export development as revealed by the High Value Crops of the Department of Agriculture which they mention it is still the leading fruit grown in the Philippines and a consistent top dollar earner, compared to rice and coconut.

Table 6. Difference in the Conditions of Farming Households When Grouped According to the Top Five (5) Secondary Commodity of Farm Production

Conditions of Farming Households	Secondary Crop Produced	Mean	F	Sig. Value
1. Market Opportunity	Coffee	3.74	2.036	0.091
	Coconut	3.58		
	Rubber	3.22		
	Rice	3.11		
	Banana	3.22		
2. Access to Credit Facility	Coffee	3.57	1.777	0.136
	Coconut	3.27		
	Rubber	3.14		
	Rice	2.74		
	Banana	3.43		
3. Enabling Environment	Coffee	3.80	2.556	**0.041**
	Coconut	3.29		
	Rubber	3.48		
	Rice	2.95		
	Banana	3.86		
4. Infrastructure Facilities	Coffee	3.77	2.238	0.067
	Coconut	3.79		
	Rubber	3.67		
	Rice	3.24		
	Banana	4.07		
5. Market Information	Coffee	3.59	2.761	**0.029**
	Coconut	3.43		
	Rubber	3.70		
	Rice	3.03		
	Banana	4.02		
6. Managerial Skills	Coffee	3.87	0.723	0.577
	Coconut	3.72		
	Rubber	3.58		
	Rice	3.45		
	Banana	3.94		
7. Entrepreneurial Competencies	Coffee	4.07	2.583	**0.039**
	Coconut	3.75		
	Rubber	3.87		
	Rice	3.64		
	Banana	4.39		
8. Government Policies on Entrepreneurial Development	Coffee	3.71	1.889	0.114
	Coconut	3.05		
	Rubber	3.12		
	Rice	2.99		
	Banana	3.75		

Significant at 0.05

CONCLUSION

When the conditions were grouped based on the primary crop produced, it was observed that there was a significant difference in terms of access to credit and the enabling environment, as well as access to credit, market information, and entrepreneurial competencies for secondary crops.

Despite result which revealed that farmers in North Cotabato have the appropriate competencies to become an entrepreneur, the conditions showed a significant difference which could mean that the opportunities available for the farmers are affected by their ability to borrow money to expand operation. Farmers are faced with financial issues that limit their potential for growth and development. The global banking system in terms of credit facility favors investment with relatively assured return which has become a constraint for farmers who would like to take on the available opportunities. Enabling environment depends on the type of commodity, direction of the various concerned government agencies and focus of different business organization in pushing forward various initiatives that meet global requirement which affects the market information received by farmers as these directions do not align in the commodity produced in the area.

RECOMMENDATION

Based on the findings and conclusions of the study, the following recommendations were presented:

First, in order to align the crop production in the region with that of the national thrust, the Provincial Government of North Cotabato through their seventeen municipalities and one city will have to revisit their Comprehensive Land Use Plan (CLUP) to reestablish their direction aligned with the strategic direction of the National Government. This is to address the difference in the development plan between the national and local government. Relative to this, they will have to establish a list of land inventory along with soil composition to determine the best commodity that should be planted in the area that will produce volume and quality grade commodities to meet the global requirement.

Second, the Provincial Government of North Cotabato in collaboration with different concerned agencies like the Department of Agriculture (DA), should establish a guide for agricultural investment. This will allow the maximization of opportunities through intercropping and mixed cropping, through this business organization will be able to tap on areas that has existing crops but has areas to grow globally demanded commodities like coconut which can be intercropped with cacao or coffee.

Third, an inventory of the commodities per land utilization must be available to further determine the intervention and appropriate direction of the government. This will allow business organization to further determine the possibility of intercropping, mixed cropping, and other business opportunities. Further, this will allow the realistic computation of yield per hectare to address supply requirement as well as identify appropriate technology needed to maintain or increase productivity.

Fourth, this research recognized certain boundaries and areas of concern may have been overlooked, hence further studies may be done using other statistical tool, and combining other factors.

And lastly, to further prove the result of the study, and provide a more comprehensive rationalization on the conditions of the farming households in North Cotabato, further study on the impact of the per farming engagement in the conditions perceived by the farmers is therefore recommended.

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