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Social, Environmental and Political dimensions of Roots Crop Value Chain Analysis: The Case of Samar, Philippines

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A B S T R A C T

This paper evaluates the Social, Environmental and Political dimensions of Roots Crop Value Chain Analysis in the Case of Samar, Philippines through crop accounting and financial analysis in 2nd district, Western Samar, Philippines. Commercially important crops in Samar are the roots crops that the local farmer are producing for commercial and for personal consummations such as banana, sweet potato, cassava, yam and taro, locally known as "saging na analdaba, kamote, bilanghoy, ube and gaway"respectively, are well-known for their ability to produce a reasonable yield in poor soil conditions with less or no farm inputs. This is the reason why these commercially important crops are often grown by resource-limited farmers and are regarded as a good source of food security and its health benefit. To analyze its productivity, this study was conducted in 2022. Data gathering was primarily done through survey questionnaire, researcher observation and key informant interviews. Results revealed that different gender roles exist where men are primarily responsible for farming while women are for marketing. It also discovered the reason why farmers, though provided with options, often choose the less profitable transaction path, due to perishability of crop. It also solved the mystery of low productivity in this locale as compared with the national and international production. Typhoons, government policies, and pricing mechanisms affect its overall productivity. Cost build-up, value-added, and cost and returns analyses are interesting. Farmers are less profitable yet have the highest opportunity for profitability when the constraints are addressed while sellers have a high degree of profitability due to fewer input costs. The existing entry barriers in each chain were also identified, along with the researcher's recommendations on how to eliminate or mitigate them.

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INTRODUCTION

Innovation is a crucial to any success, it is one of the twelve pillar of the Global Competitiveness Index (GCI) may it be a person, organization or even to innovate something for a best result. Innovative technologies and approaches can increase productivity and profitability, improve consumption of nutritious food, empower youth and women access to information, technology and markets and ensure that agriculture practices are environmentally sustainable for future generations.

In the fast faced of world agriculture, the world used innovation to provide an opportunity for agriculture producers to increase productivity for more yields while better managing natural resources. This helps to ensure long-term viability and reduce the negative environmental impacts of production, such as pollutants and waste. Technological change has been the basis for increasing agricultural productivity and promoting agricultural development. Research affects the productivity of farming systems by generating new technologies which, if appropriate to farmers' circumstances, will be rapidly adopted. Farmers now use automated harvesters, drones, autonomous tractors, seeding, and weeding to transform how they cultivate their crops. The technology takes care of menial and recurring tasks, allowing them to focus on more critical functions.

There are greater impact of technology to the farmers, it aids the farmers with information in order to determine the amount of water, pesticides and fertilizers needed by the crops. It makes use of available resources and hence minimizes the cost and wastage. Farmers no longer have to apply water, fertilizers, and pesticides uniformly across entire fields. Instead, they can use the minimum quantities required and target very specific areas, or even treat individual plants differently with this enhance method the farmer will benefits which include higher crop productivity. Advances in machinery have expanded the scale, speed, and productivity of farm equipment, leading to more efficient cultivation of more land. Seed, irrigation, and fertilizers also have vastly improved, helping farmers increase yields.

On the other hand, of all the technology innovation in world, Samar farmers are being left behind, aside the fact that Western Samar is 9th among the top ten(10) poorest provinces in the Philippines with 39. 5 poverty incidence, in spite of the riches in land area to be planted for agricultural products. Samar is the third largest Island in the Philippines by area, it has the largest area 559, 100 hectares after the islands of Luzon and Mindanao, Philippines with a 1.9 million population as of 2020 (PSA, 2020). The province constitutes the 42% of the island total land area and 26 % of Region 8. Samar is described as hilly and mountainous ranging from 200 to 800 meters high, Slopes are generally steep and bare of trees. Western Samar has the four main groups of soils which the predominating soils is clay loam which is the largest in term of area which is about 234, 092 hectares, represent the 34% of the total area. Most of this land found on plain and along the valleys where most of the agricultural crops are grown. The total agricultural land of the Western Samar constitute about 18% or 101,954 hectares of its total land area, crops suitable for the province are

abaca, banana, cacao, cassava, coconut, corn, legumes, oil palm, papaya, rice, sugarcane, sweet potato, taro, vegetables and yam, but the most of this commodities are coconut and rice are the farmers most agriculture favorite agriculture products which in 2018, 13, 151, 567 metric tons for rice productions and 272,617 metric tons for coconut (Department of Agriculture of the Philippines, 2018).

Samar people are known to be the Waray, being stereotypes for being musical, happy-go-lucky, laid back, heavy drinkers, and swift to pick fights. Samarnon are considered to have retained more of the beliefs and folklore of pre-Christian times. Waray is imbued with courage, which is a quality of being brave, very well-known to have the ability to face danger, difficulty, uncertainty, or pain without being overcome by fear or being deflected from a chosen course of action, often stereotyped as brave warriors, as popularized in the tagline, "basta ang Waray, hindi uurong sa away" (Waray never back down from a fight.) (de Cadiz,2011) . Samarnon are also known as contented people, during the Spanish era, often called lazy, for being contented to live in simplicity as farmers, and for making tuba palm wine from coconut nectar. Waray are also known for their love of music, in particular the Kuratsa, a courtship dance.

Meanwhile, the concept of value chains and clusters is a concept to increase competitiveness through geographical concentration of various companies and institutions that are interconnected in certain sectors (Daryanto, 2018). Value chain analysis on the commodity of important consumer commodity is carried out to find out the contribution or role of each actor involved in tubers roots crops agribusiness that is directly related to the profits received by each actor.

The results of the value chain analysis are expected to help in taking strategic or policy steps to improve the level of the value chain that is considered unsuitable. Upgrading small farmers through value chain interventions is part of a broader agenda in international development practice known as 'value chain development' (VCD). However, in tuber root crops particularly sweet potato and cassava producer communities, the effort to develop the value chain tends to fail because the farm households often respond to interventions in counter intuitive ways to how roasters might imagine (Vicol, M. et. Al., 2018).

Value-chain concepts represent an important change in thinking about development and the relationships among agricultural producers, traders, processors, and consumers. The term "value chain" is used in different ways in the professional literature's. In this paper, a value chain refers to the sequence of interlinked agents and markets that transforms inputs and services into products particularly for commercially important crops in Samar with attributes that consumers are prepared to purchase. Millions of low-income people, a large proportion of whom are women, participate in agricultural value chains as producers, traders, processors, and retailers.

The value chain approach has potential to increase agricultural productivity, household welfare and build social capital (Rutherford et al.

2016). It is envisioned that through value chains farmers can be empowered to realize better prices and capture benefits of value addition. This is also expected to create sustained demand for food, leading to stable commercial relationships between sellers and buyers. Value chain networks range from local to national and global levels. The globalization is a major challenge for the locally evolved value chains that cater to the demands of domestic consumers.

Value-chain participation in more demanding markets requires smallholders to deliver regular supplies of produce of consistent quality and sufficient quantity. Meeting these conditions requires access to land, inputs, technology, knowledge, organization, capacity, skill, and infrastructure, which may not exist in some communities or among some groups of asset-poor producers.

The limited asset endowment of an individual farm family is not the only thing that may limit the benefits it derives from market participation. Participation of smallholder farmers in high-value markets exposes them to new risks, which might outweigh the potential benefits (Ricketts et al., 2014).

An analysis of experiences in Latin America (Berdegue et al., 2015) indicates that the marketing opportunities and performance of family farmers are strongly influenced by the local economic environment, or "proximate context." Smallholders who operate in areas experiencing open, dynamic development – for example, near provincial towns with growing incomes, markets, and employment – tend to have more market opportunities and take better advantage of them than farmers in less economically dynamic areas.

Based on the discussion above, the researcher was able to determine the gap between the world agriculture practices than the Samar agriculture practices that in spite of the high technology that been uses in agriculture in the progressive countries in the world that uses Agriculture 4.0 represents the fourth agriculture revolution that uses digital technologies and moves toward a smarter, more efficient, environmentally responsible agriculture sector, the farmers and other actors in the value chain for value crops in Samar has a lead back o traditional approach in planting, and this has a greater impact on the yields , income and quality of life of the farmers and the different actors connected to the value chain of the value crop in Samar.

THEORETICAL REVIEW

The challenges of the value-added product of a commercially important crop of Samar can be addressed through a better understanding of the linkages between the farmers, middlemen, retailers, processors and consumers along the commodity value chain. The value chain concept is a systems approach that draws from different disciplines; a systems approach that combines component and functional relationships (Da Silva and De Souza Filho, 2007).

This study relies with Hellin (2006) which proposed that the value chain analysis should commence with delineating the value chain by creating a map of the market. The market map aids in building an understanding of different players or actors in an input or output value chain. It also helps in identifying the relationships between the actors as well as the factors that determine how well or badly the value chain is working. After understanding the different

actors, one is able to identify the different tools to use for different actors such as trader surveys.

METHODOLOGY

A concurrent mixed method design (Creswell & Plano Clark, 2007) was used in this project. A combination of qualitative and quantitative tools to describe the structure and flow activities (or used operations), to determine the cost and value of activities and its economic returns to the participants and identify Social, Environmental and Political dimensions of Roots Crop actors, their constraints and opportunities along value chain. Structured questionnaire, and checklist was used to collect quantitative data from value chain actors such as farmers and local traders, while unstructured interviews and on-site observations was used to obtain qualitative data from participants from local markets sellers, middle men and processors of commercially important crops in Samar and officials from the Department of Agriculture to validate or triangulate the data gathered. Quantitative data was analyzed using SPSS version 21 and qualitative data was manually coded and thematically analyzed.

Sampling

The respondents' farmers, and participants seller, middle men and food processors was selected using a multistage sampling procedure based on the following criteria and considerations. First, the researcher purposely select municipalities that highly produced the highly commercialized root crops and products. Secondly, barangays were randomly selected and with the assistance of the LGU Agriculture office, the registered farmers for each selected barangays were chosen randomly to participate in the study. Qualitative information was collected using snowballing technique by face to face interview and researcher observation.

Questionnaire:

In this study researcher used research made questionnaire, but for some the questions it was based on the study of Mkani, W. 2013, and properly cited. For part 1 of the questionnaire the researcher ask permission through a letter to the Philippine Statistics Authority(PSA) to allow the researcher to a adopt to use some questions for the purpose of the present study.

Ethical Consideration

To ensure the ethical welfare of the respondents and participants the researchers comply and secure ethics review certificate from the local ethics review board of the university (Samar State University) to ensure that the participants was properly treated and participating the study project cannot harm them. With regards to respondents, the researchers ask for their consent form for their voluntary participation, explained the pros and cons of participating to the study comply first ethics certificate from the local ethics review board of Samar state University a consent form for their voluntary participation in conducting the data gathering process, that anytime the participants want to withdraw from the study, they are allowed anytime as

they want to. In general the researcher has no conflict of interest in conducting this study.

RESULTS

In this study the researchers consider only the staple root crops and fruit crops which is a substitute to rice by the Samarnon or Samar, the commercially important crop in Samar, the important root crops such as sweet potato(camote), taro(gaway), cassava(bilanghoy) and yam(ube) locally called/known as Duma, and fruit crops banana(analdaba) and sweet yellow corn (Mais).

Table 1: Socio-demographic profile of each player and level of involvement of farmers in the high value crops of value chain in Samar, Philippines

Profiles		**High value Crop Farmers**	**Middle Men**	**Processors**	**Sellers**
Respondents/Participants		91	8	8	12
Average age		47	42	39	40
Gender	Male	37	3		2
	Female	54	5	8	10
Civil Status		Married	Married	Married	Married
Average Family Monthly Income		Ph.P 9, 714.28	Ph.P11, 200	Ph.P10, 350.00	Ph.P9, 200. 00
Number of Family members		8	6	6	7
Highest Educational attainment		High school graduates	College Level	High school graduates	High school graduates

Socio-demographic profile of each player or actors of the High value crops of Samar

The average age of the farmer respondents in high value crop of Samar the value chain is on the age bracket of 47 years old. As compared to the result of PSA's study in 2019 which revealed an average age of 48, the results obtained can be interpreted that there exists no notable difference as far as the age is concerned (PSA, 2020). Table 1 also shows that most farmers are female while the majority of middlemen and sellers are female. It appears that women are responsible for marketing and also women are partner of male for farming, which matched the results of a study in southwest Nigeria. It was also revealed that the level of farmers' income is considered below the country's poverty threshold (8 x PhP 1,275 = PhP10,200), while middlemen and sellers' income also hover below the threshold (6 x PhP 2,566.67 = PhP 15,400.02) and (7 x PhP 3,232.14 = PhP 19, 392.84), respectively. Based on the 2021 analysis, it can be inferred that farmer of Samar that produced commercially value crops are resource-limited, which is a typical scenario since commercially value crops can

be grown with less or no farm inputs. It can also be noted that the average number of family members for both players is far above the Philippines 2022 average household size of 4.1 persons. All players also seem to have the same model class of civil status and educational attainment

Structure and flow of the value chain for the Commercially important crops of Samar

Based on the value chain map in Figure 2, farmers primarily deal with three actors – sellers, processors and middlemen. There were cases, however, where they directly sell it to consumers; however, if it seldom happens, it usually involves very low volume or quantity. Sellers, on the other hand, can sell it directly to consumers or food processors, whoever may agree to the price. This is most common in the markets of downtown Catbalogan City, Calbiga, Pinabacdao and other local markets of the municipalities like Talora and Daramwhere marketing activities take place every day. When high value crop such as banana, sweet potato, cassava, yam and taro is sold to either consumer or small food processor, at some point, the processing immediately begins and it been sold to the costumer or for customer consumption.

Profitability of the commercially important value crops of Samar according to actors in the chain

Table 2: Profitability of the sweet potato according to actors in the chain.

Sweet Potato				
Parameter	Farmer N = 91	Middlemen N= 5	Retailer/seller N = 12	Processor N = 8
Average revenue	50.00(tambak)	60.00 (tambak)	80.00 (tambak)	100.00 (tambak)
Average cost	13.00	56.00	72.00	87.50
Average Income	37.00	4.00	8.00	12.50
Net profit margin	74%	6.67 %	10%	12.5%

Per tambak, Ph.P peso

Table 2 shows the profitability of commercially important of Samar which is the sweet potato, based on the analysis the middlemen have the lowest net profit margin among the actors in the value chain analysis for commercially important crops of Samar. An average 6.67% net profit margin means that each peso sold by the middlemen can generate 6.67 or 7 cents. Although they got the lowest net profit margin (NPM), they spent the shortest period in the chain - a day to a week. The quantity of every transaction is also in bulk. This margin means that for every 1 sacks of transactions, they earned a net profit of more than PhP 375, 00 – 400.00.

Vendor selling his sweet potato along the road in Jiabong Samar

Costumer buying sweet potato in a vendor in Catbalogan City

Based on the data the processors of sweet potato(kamote) net profit ranked second with a 12.5% NPM. This margin translates to an average of 12.5 or P13.00 cents per peso sold of sweet potato processed food. Sweet potato processing in the study Western Samar is behind. Despite the utilization of sweet potato in the food industry, such as in the form of purees, flour, starches, beverages, and canned products [Guiriba,2019], its uses in the parameter of the study are limited only to household consumption, animal feed and small-scale snack product processing can sell of sweet potato tubers during the peak season.

The actor in the value chain analysis for sweet potato(camote) that has the 2nd least net profit margin are the sellers. An average of 10% net profit margin means that each peso sold by the sellers can generate 10 cents. Seller crucial problem is the proper storage of tubers. If not sold, the tubers will deteriorate or spoil, which a rare case because seller used it for their consumption if not sold. Farmers, on the other hand, raise their prices when they take on the role of a seller or food processors.

Table 3: Profitability of the cassava according to actors in the chain.

Cassava				
Parameter	Farmer N = 91	Middlemen N= 5	Retailer/seller N = 12	Processor N = 8
Average revenue	20.00 (tambak)	30.00 (tambak)	50.00 (tambak)	80.00 (tambak)
Average cost	7.00	23.00	35.00	64.50
Average Income	13.00	7.00	15.00	15.50

Net profit Margin	65%	23%	30%	19.38%

Table 3 shows the profitability of commercially important crops for cassava, the data shows that processors of cassava have the lowest net profit margin among the actors. An average 19.38 % net profit margin means that each peso sold of processed food from cassava(bilanghoy) can generate 19.38 or 19 cents. They got the lowest net profit margin (NPM) because of high price of ingredients and materials in food processing using cassava. Cassava processing in Western Samar is also limited only to household consumption, animal feed and small-scale snack product processing can sell three to five sacks of cassava tubers.

The retailer/seller net profit ranked second with a 30 % NPM. This margin translates to an average of 30 cents per peso sold of cassava net profit. Cassava Seller crucial problem is the proper storage of tubers. If not sold, the tubers will deteriorate or spoil, cassava should be consumed with in 2 to 3 days and the seller should dispose the cassava immediately as soon as they procure the cassava.

The actor in the chain analysis for cassava that has the 2nd least net profit margin are the middlemen. An average of 23% net profit margin means that each peso sold by the sellers can generate 23 cents. They spent the shortest period in the chain - a day to 2 days so sold the product so that cassava will not be spoiled.

Table 4: Profitability of the Banana according to actors in the chain.

Banana				
Parameter	Farmer N = 91	Middlemen N= 5	Retailer/seller N = 12	Processor N = 8
Average revenue	20.00 (hand)	25.00 (hand)	35.00(hand)	50.00(hand)
Average cost	10.00	22.00	28.00	41.50
Average Income	10.00	3.00	7.00	8.50
Net profit Margin	50%	12%	20%	17%

In table 4, the value chain analysis for commercially value banana, the middlemen have the lowest net profit margin among the actors. An average 12% net profit margin means that each peso sold by the middlemen can generate 12 cents. Although they got the lowest net profit margin (NPM), they spent the shortest period in the chain - a day to a week. The quantity of every transaction is also in bulk. This margin means that for every bunch of transactions, they earned a net profit of more than Ph.P 125.00 – Ph.P 130. The processor's net profit ranked second with a 17 % NPM. This margin translates

to an average of 17 cents per peso sold of banana(analdava) processed food. Banana processing in Western Samar is are limited only to household consumption, animal feed and small-scale snack product processing like Bananaque, and small banana food processed like banana chips for local consumers and nearby cities and Provinces.

The actor in the chain analysis for banana(analdava) that has the 2nd least net profit margin are the sellers. An average of 20% net profit margin means that each peso sold by the sellers can generate 20 cents. Seller crucial problem is the proper storage of banana. If not sold, the banana will deteriorate or spoil, seller used it for their consumption if not sold. Banana will rot 4 days to 1 week.

Participant root crop vendor selling along the road of Buray Paranas Samar

Participant Market vendor selling root crops in Basey Samar

Table 5: Profitability of the yam(Ube) according to actors in the chain.

Yam/Ube				
Parameter	Farmer N = 91	Middlemen N= 5	Retailer/seller N = 12	Processor N = 8
Average revenue	20.00	25.00	30.00	50.00
Average cost	5.00	22.00	28.00	37.50
Average Income	15.00	3.00	7.00	2.50
Net profit Margin	75%	12%	23%	11.25%

The processors have the lowest net profit margin among the actors in the value chain analysis for yam(ube). An average 11.25 % net profit margin means that each peso sold of processed food from yam(ube) can generate 11.25 or 11 cents. They got the lowest net profit margin (NPM) because of high price of ingredients and materials in food processing using yam(ube). Yam(ube) processing in Western Samar is limited only to household consumption, animal feed and small-scale snack product processing can sell three to five sacks of yam tubers and few or small processing products for candy that been sold to local consumer.

Farmer selling his produce yam(ube) from his farm in Catbalogan City

Store for root crop in Pinabacdao Samar

The retailer/seller net profit ranked second with a 23 % NPM. This margin translates to an average of 23 cents per peso sold of cassava net profit. Cassava Seller crucial problem is the proper storage of yam tubers. If not sold, the tubers will deteriorate or spoil, yam(ube) should be consumed with in 2 to 3 weeks and the seller should dispose the yam(ube) immediately so that they can income not lose.

The actor in the chain analysis for commercially important crop, yam(ube) th actor that has the 2nd least net profit margin are the middlemen. An average of 12% net profit margin means that each peso sold by the sellers can generate 12 cents. They spent the shortest period in the chain - a day to 1 week to sold the product so that yam(ube) will not be spoiled.

Table 6: Profitability of the Taro (gaway) according to actors in the chain.

Taro(Gaway)				
Parameter	Farmer N = 91	Middlemen N= 5	Retailer/seller N = 12	Processor N = 8
Average revenue	120.00(botok)	130.00 (botok)	150.00 (botok)	180.00 (botok)
Average cost	54.00	125.00	135.00	162.50
Average Income	66.00	5.00	15.00	17.50
Net profit Margin	55%	3.84%	10%	9.72%

In the profitability of value chain analysis for commercially important crops of Samar for taro(gaway), the middlemen have the lowest net profit margin among the actors. An average 3.84% net profit margin means that each peso sold by the middlemen can generate 3.84 or 4 cents. Although they got the lowest net profit margin (NPM), they spent the shortest period in the chain - a day to a week.

Based on table 6, seller ranked second with a 10% NPM. This margin translates to an average of 10 cents per peso sold of taro(gaway) net profit gain. While Taro (gaway) processor in Western Samar has a net profit margin of 9.72%, this means that for every Peso of sold processed food using taro 9.72 cent earn, taro food processing in Samar are limited only to household consumption

and household gathering, taro is excellent pair for lechon, animal feed and small-scale snack product processing like (ginat- an) or taro with coconut milk and local food processed product binagol sold to local consumers and tourist in Pasalubong Center of Samar, Calbiga and nearby cities and Provinces.

Street Vendor selling banana and taro in Catbalogan City

Food product of Taro processed in Calbiga Samar

The processor's net profit ranked second least net profit margin with a 9.72 % NPM. This margin translates to an average of 9.72 or 10 cents per peso sold of Taro processed food sold. Taro (gaway) processing in Western Samar are limited only to household consumption, animal feed and small-scale snack product processing, a small food production for sagmani and Binagol in Municipality of Calbiga, Samar, which is sold to local consumer and tourist of the province and exported to the nearby cities Catbalogan City, Samar and Tacloban City, Leyte.

Table 7: Profitability of the Sweet Yellow Corn according to actors in the chain.

Sweet (Yellow) Corn				
Parameter	Farmer N = 91	Middlemen N= 5	Retailer/seller N = 12	Processor N = 8
Average revenue	40.00	50.00	60.00	70.00

Average cost	27.00	45.00	50.00	65.00
Average Income	13.00	5.00	10.00	5.00
Net profit Margin	32.5%	10%	15.38%	15.63%

The middlemen have the lowest net profit margin among the actors for value chain analysis for sweet(yellow) corn. An average 10% net profit margin means that each peso sold by the middlemen can generate 10 cents. Although they got the lowest net profit margin (NPM), they spent the shortest period in the chain - a day to 3 days. The quantity of every transaction is also in bulk. This margin means that for every 1 sacks of transactions, they earned a net profit of more than PhP 300. 00.

The processor's net profit ranked second with a 15.63% NPM. This margin translates to an average of 15.63 cents per peso sold of sweet potato processed food. Sweet potato processing in the study Western Samar is are limited only to household consumption and small-scale snack product processing can sell three to five sacks of sweet (yellow) corn during the peak season.

The actor in the chain analysis for sweet (yellow) corn that has the 2nd least net profit margin are the sellers. An average of 15.38 % net profit margin means that each peso sold by the sellers can generate 15.38 cents. Seller crucial problem is the proper storage. If not sold, sweet (yellow) corn will deteriorate or spoil, which a rare case because seller used it for their consumption if not sold. Farmers, on the other hand, raise their prices when they take on the role of a seller or food processors.

DISCUSSION

Challenges and opportunities in the value chain

This section discusses the constraints, challenges, and opportunities in the chain. This is divided into different sub-sections, such as socio-cultural, environmental, political, and economic, to provide an organized approach to understanding the challenges and opportunities.

Socio-cultural challenges and opportunities.

Farmers in Samar still use traditional knowledge in planting root crops and fruit crops, including land planning, planting material collection, soil quality management, insect and weed control, harvesting and post-harvest management. Despite modernization and innovations in agriculture, high value crops in Samar farmers are still left behind. According to the study's findings, 95% of farmers still use traditional methods. In addition, farmers are practicing staggered harvesting. In this practice, only the marketable-sized roots are collected in the first three harvest stages before the vines are finally removed and ploughed out [Cruz. F, 2018]. Staggered harvesting is common in areas with less harvesting and local market destinations. This affects farmer's productivity and income.

In addition, the harvest of high value crops is generally too low to supply other markets. Besides traditional knowledge and practices, the need to

incorporate science-based sweet potato farming can increase farmers' production volumes and maintain land planning, planting resources, soil fertility management, pest and weed control, harvesting and post-harvest management in a productive and successful manner.

Environmental constraints and opportunities.

Most of the farmers in Samar plant root crops because they are resistant to climatic changes it requires few inputs, and yield a high return. Some of the farmers said it was because there was a high demand for the products, root crops camote, cassava, taro, banana and yam are used as ingredient for kakanin, local food recipes used for all occasions like fiestas, birthday and other special occasion in human life celebrations, and both the camote flesh (edible roots) and the camote leaves can be sold, which are a good source of extra income.

Similarly, one in every four people believes that growing and consuming or eating root crops is a healthy alternative to a staple food. Interestingly, a few people consider eating root crops as a medicine to cure some illnesses, specifically sweet potato(camote) and banana.

Some of respondents and participants believes that the challenges of planting root crops in Samar are climate change which have impacts root crops production. The province is geographically located in a high-risk area for typhoons, droughts, and floods. Extreme weather resulted to farmers suffer losses because of changes in the texture, size, and shelf life of crops. Similarly, in the worst-case scenario problems to farmers, the claim that pests have a 70% effect on their farms. bucatcat (grub), bukbok sa kamote (sweet potato weevil), bokbuk sa banana and mice(yatot) are the most prevalent pests that eat the root crops and tamsi (bird) for the fruit crops like the Banana and the sweet yellow corn.

Most of the farmers respondents and participants claimed that they have lower production than that of the previous harvest. They attributed it to the poor soil condition, which is typical to the cassava, taro, yam and sweet corn farmlands when the soils are not properly managed or used. Some of the respondents employ conventional tillage which is not a sustainable farming practice and which can even adversely affect the root crops. This practice can increase the farm production in its initial year; however, such practice can also destroy the soil composition and kill microorganisms, which help nourish crops in times of nutrient depletion, by exposing it under the scorching sun.

Economic constraints and opportunities.

Farm gate prices of high value crops in Samar among farmers are varied and sometimes extreme. The highest price reported for sweet potatoes, taro(gaway), cassava(bilanghoy), banana(inaldava) and sweet yellow corn lowest price (sold in bulk). The farm gate typically results in lower incomes for the farmer since the rates given to the farmer are lower and flexible. They attribute high costs to the failure to access scales for weighing products and the lack of market awareness. Farmers and traders have also noticed that the price of root crops is not steady in the market. Some reasons given are the occurrence of typhoons, low supply because of the restriction of the covid- 19 pandemic, high price of the gasoline and diesel and many other reasons. On the other

hand, farmers claim that the production of high value crops in Samar contributes to 44% of the total sources of income. The actors of the value chain used revenues from the production, selling and processing of high value crops are used for food (72%), support for schooling of children (16 %), medicine (8%) and emergency funds (4%).

Most of the farmers also identified a lack of capital as their major difficulty in farming root crops while sellers complained that the instability of prices is their major difficulty. Most of farmers are not applying fertilizers, which also lead to lower production. It is due to the fact that, in addition to its ability to produce a reasonable yield on low-fertility soils, root crops respond very well to fertilization. This finding is in consonance with the study conducted by PSA (PSA, 2021).

Political constraints and opportunities.

1234The government has provided strong support for commercially high value crops production. The Department of Agriculture (DA) has a program called Food Staples Sufficiency Programs (FSSP) 2011-2016 and Special Area for Agriculture Development (SAAD) 2019- 2022 that aims to increase the incomes of marginalized sectors of agriculture and fishery through production of commercially important crops throughout the country. This is in line with the country's goals of having enough food and changing people's eating habits to include root crops instead of rice and corn. In the study area, the local government provides training of Samar through Department of Agriculture (DA) and Department of Trade and Industry (DTI), seeds, tools and financial assistance to some farmers, seller, and for food processors provision for a place where they can display their produce products like tabo in the city program implemented in Catbalogan City through the Provincial Department of Agriculture(DA), Provincial government of Samar and City government of Catbalogan. More intervention, however, should be provided to farmers and processors so that they can produce more products and add more value and income to the farmers and processors.

CONCLUSIONS

Commercially important value crop of Samar (Western Samar) value chain analysis reveals that the production has an excellent ability or value to have a good source of income of the actors in the value chain and usually undertaken by those who live below the poverty line. Commercially important value crops in Samar production gave farmers an 79% net profit margin and contributed to 38% of their livelihood through direct sale and value-addition via processing for food and non-food uses. However, widespread growth and consumption problems, such as lower production returns, use of native varieties that are long to harvest, use of ordinary or traditional methods, and field diseases and pests, and issues of post-harvest storage, survival, usage, and distribution remain. Technology on farming and processing is lacking and unavailable. It is therefore recommended to shift the focus of the government and NGOs' efforts and initiatives for farmers to attain higher production.

The commercially important value crops supply chain in the Western Samar reveals that farmers only deal with individuals they meet or have prior dealings with. As a result, developing personal relationships with other farmers is a requirement for trading. This type of networking, however, limits the opportunity for farmers to offer their harvests at a higher price to other agents. Hence, it is essential to widen the social circle of high value crops farmers by forming associations and cooperative enterprises dedicated to the development of the high value chain.

Commercially important value crop in Samar (Western) is not utilized to its full potential as evidenced by low production. Thus, financial support from government agencies should be provided to acquire the farm inputs necessary to boost production. Aside from this, it can be concluded that logistics, a non-value-adding element, has lowered the returns without giving benefits. Hence, a technological mechanism can reduce or eliminate non-value adding expenses.

Financial accounts of players/actors are not being maintained. Thus, it is highly recommended for the players/actors to maintain financial records through simple bookkeeping. An accounting enhancement program could be proposed by the university like Samar State University(SSU) to assist the players in record keeping practices and financial literacy training or seminars.

There is also a need to maximize the role of social institutions to stabilize and improve the chain. Specifically, the government has a major role to play. Interventions are necessary, especially in commercially important crop processing and mechanization (with respect to traditional knowledge and practices). Educational institutions like Samar State University (SSU) and research institutions Department of Agriculture(DA) and Department of Science and Technology (DOST) may be tapped to facilitate agricultural extension and education as well as the conduct of studies on product development and the integration of traditional practices and science-based approaches in commercially important crop production.

Moreover, with the growing competition because of the penetration of the global economy into the local market, there is a need to intensify the promotion of commercially important crops of Samar products and integrate them into the tourism industry. More varieties may be introduced to farmers to accommodate the more varieties of commercially important crops of Samar for commercial potential.

REFERENCES

Apata T. G. (2019), Analysis of cassava value chain in Nigeria, from a pro-poor and gender perspective J. Agric. Food Sci.10 219–37 Asian Development Bank. Evaluation Knowledge Study: Support for Agricultural

Cerio, C.(2021) Value chain of sweet potato: a sociological analysis Center for Bioresource-based Enterprise Development, College of Business and Management, Partido State University, Goa, Camarines Sur,Philippines, IOP Conf. Series: Earth and Environmental Science (2021) 012031 IOP Publishing doi:10.1088/1755-1315/892/1/012031

Da Silva, C. and de Souza Filho, H.M. (2007). Guidelines for rapid appraisals of agrifood chain performance in developing countries. (Rome: Food and Agriculture Organisation

Doe, J. D., & Dame, M. D. (2021). The New Normal Today. *Samar Journal of Science*, *3*(2), 25–29. https://doi.org/10.1016/j.landusepol.2021.105280

FAOSTAT Food and agriculture data 2008–2017 (Rome: Food and Agriculture Organization of the United Nations)

Flores E, Cruz D and Antolin 2018 Assessment of the postharvest handing systems and fresh sweet potato Asian J. Postharvest and Mechanization 1 43-56

Hellin, J. (2007). Maize value chains in East and Central Africa (ECA). A Draft background document.(International Maize and Wheat Improvement Centre (CIMMYT).

International Plant and Genetic Resources Institute (IPGRI) and National Bureau of Plant Genetic Resources, New Delhi (NBPGR) (2004). Descriptors for sesame (sesamum spp.). (International Plant and Genetic Resources Institute. Rome. Italy; and National Bureau of Plant Genetic Resources, New Delhi. India).

International Trade Centre (ITC) (2008). Organic Food and Beverages: World Supply and Major European Markets. (Geneva: International Trade Centre).

Mkani, W. 2013. Cassava and sweet potato value chains in Mvomero and Kongwa districts. MSc thesis. Morogoro, Tanzania: Sokoine University of Agriculture. https://hdl.handle.net/10568/76913

Nariyono B, Daryanto A, Firdaus M and Johar S (2018), Kontribusi Rantai Nilai terhadap Peningkatan Daya Saing Perikanan Tuna di Kabupaten Cilacap dan Sekitarnya J. Kebijak. Perikan. Indones. 10 11–23

Onsay, E.A. (2021). Productivity value chain analysis of cassava in the Philippines. IOP Conf. Series: Earth and Environmental Science (2021) 012010 IOP Publishing doi:10.1088/1755-1315/892/1/012010 PSA (Philippine Statistics Authority) 2014–2019 (Manila: PSA)

Roa, Bertuso, Villaber, FishCORAL and INREMP team (2016). Root and Tuber Crops: Production-use Systems and Food Resilience in Agri-aqua and Agro-forestry Ecosystems in Central Philippines Results of a Scoping Study. Foodstrat+ A Review of the Agriculture Sector in Eastern Visayas. https://psa.gov.ph/content/review-agriculture-sector-eastern-visayas

Rutherford, D. D., Burke, H. M., Cheung, K. K., & Field, S. H. (2016). Impact of an agricultural value chain project on smallholder farmers, households, and children in Liberia. World Development, 83(July), 70- 83.

Staritz, C. (2012). Value chains for development: potentials and limitations of global value chain approaches in donor interventions. Working paper 31, Austrian Foundation for Development Research (ÖFSE). Available at: https://www.econstor.eu/handle/10419/ 98802 accessed on 24 October 2017.

Value Chain Development Report [Internet]. 2012. Available from: https://www.adb. org/sites/default/files/evaluation-document/35898/files/eks-agriculturalvaluechain.pdf [Accessed: 28 January 2017

Vicol M, Neilson J, Hartatri D F S and Cooper P (2018) Upgrading for whom? Relationship coffee, value chain interventions and rural development in Indonesia World Dev. 110 26–37