

Production and Marketing of Indigenous Cash Crops: The Experience of Women Farmer-Entrepreneurs in Mountain Province, Philippines

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ABSTRACT. This study focused on the production factors and marketing mix of five indigenous cash crops cultivated by 67 women farmer-entrepreneurs in the municipalities of Tadian and Lower Bauko in Mountain Province, Philippines. The study used descriptive statistics and applied profit analysis in the analysis of its findings. Results of this study show that the factors that limit the respondents' production are limited access to transportation, rainfed irrigation, and limited access to agricultural inputs and loans. In marketing their produce, it was found that the respondents have limited knowledge on processing, packaging, labeling, promoting and financial record keeping. They can hardly bargain for a higher price as the suggested retail prices (SRPs) for indigenous cash crops are not set. In terms of income per hectare, pigeon pea (*Cajanus cajan*) records the highest income annually of PhP 292,505 (USD 5,850). Overall, the income of the respondents remains below the poverty threshold for Filipinos in 2018, which was PhP 10,727 monthly. It is recommended that a market system be adopted by the local government in partnership with concerned agencies. In designing the system, it may be good to include a policy on crop production calendar where planting of crops is done per cluster, plan on setting SRP to regulate the prices, create a procedure on centralized distribution system, and identify a strategy in designing agricultural loans.

Keywords: *Cash crops, farmer-entrepreneur, marketing, production, women*

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INTRODUCTION

Rural women develop agriculture, improve food security, and reduce poverty in their communities [Food and Agriculture Organization (FAO), 2016]. They create livelihood opportunities by engaging in farming entrepreneurship (Detera et al., 2018). Farmer-entrepreneurs are those who produce for the market because they see income opportunities from their produce (Kahan, 2012). The Magna Carta of Small Farmers in the Philippines states that women farmer-entrepreneurs have the right to seek marketing assistance for their agricultural produce to establish their livelihood (Aquino et al., 2013). Likewise, the *Philippine Development Plan (2017-2022)* also envisions to expand market opportunities for the agricultural produce of women farmers (National Economic and Development Authority, 2016). Despite having strong policies and programs, the price of the agricultural produce of women farmer-entrepreneurs in the Philippines remains undervalued (FAO, 2016).

In the past, farming was male-dominated. Currently, women appear to perform more roles in the farm, including preparing and maintaining the land, planting, and harvesting the crops (Pogoy et al., 2016). In Benguet, in the Cordillera Administrative Region (CAR), Lu (2011) reported that women are more involved in farming than men. Galie et al. (2012) noted that women became farmers as men pursue off-farm work in cities or abroad, leaving the farming activities to women.

In the municipalities of Tadian and Bauko, Mountain Province, most male farmers prefer to work in areas such as mining, construction, and large-scale commercial vegetable production. Consequently, they pass on most production and marketing activities of indigenous cash crops to women. Indigenous crops are species native to a certain area (Cloete & Idsardi, 2013). Cowpea (*Vigna unguiculata*), taro (*Colocasia esculenta*), pigeon pea (*Cajanus cajan*), squash (*Cucurbita maxima*), and corn (*Zea mays*) are examples of indigenous crops (Ebora et al., 2017; Signabon et al., 2017), which are grown in Tadian and Bauko, Mountain Province. Women farmers take the responsibility of production and marketing activities. Using hand tools, they prepare their rainfed farms located in mountainous terrain and plant once a year. This scenario was also observed in Gombe State, Nigeria where almost all production activities were done by women farmers (Fabiya et al., 2007).

After harvest, women farmer-entrepreneurs market their produce where they pay attention to the product, price, promotion, and place/distribution (Balcita & Cuyangoan, 2019). In Kaduna State, Nigeria,

Owolabi et al. (2011) found that 78% of the women farmers faced issues in marketing as they do not process and label their products. This is because of their limited access to training on these areas (Ugwu, 2019). Huka (2014) stated that perishability causes the rise and fall of prices of agricultural produce. For example, if farmers cannot store their produce whenever harvest is abundant, they sell them at a far lower price. Detera et al. (2018) noted that selling their produce locally is an option among farmers, such as the case in sub-Saharan Africa and in Sorsogon Province, Philippines.

Still, there is a dearth of studies on indigenous cash crops. Most studies in the Philippines about women involvement in agriculture discuss about production and marketing of staple crops (e.g., banana, corn, and sweet potatoes) and large highland vegetable production such as cabbage, carrots, potatoes, and beans (Hampel-Milagrosa, 2001; Detera et al., 2018). Global scholarship in the same area such as those from Vietnam, Nigeria, India, and Kenya report about millets, fruits, rice, maize, and peas.

With the literature review above, this study aimed to look into the different marketing variables and production factors in relation to indigenous crops grown by women farmer-entrepreneurs in the municipalities of Tadian and Bauko, Mountain Province. These sites were chosen because they have a significant number of women farmer-entrepreneurs producing and marketing indigenous crops. The marketing variables investigated were the product, price, promotion, place or distribution, and profit, while the production factors were capital, entrepreneur, land, and labor. Additionally, this study also aimed to come up with policy programs to address the challenges women farmers experience during the production and marketing stages of their cash crops.

METHODOLOGY

The study employed a descriptive research design. Primary data were gathered through interviews with women farmer-entrepreneurs of indigenous cash crops. The study was conducted in 10 barangays (villages) of Tadian and two barangays of Bauko municipalities of the Mountain Province. Mountain Province has 10 municipalities and is located in CAR (Figure 1). The climate of the study sites is temperate (Lirio & Paing, 2007) with an average temperature of 19.35 °C (Climate-Data.org, n.d.). The climate is Type III, which means that dry season is from November to April and the rest of the year is wet season [Philippine

Statistics Authority (PSA), 2020]. The topography is mountainous with an average elevation of 962 m (Worldwide Elevation Finder, n.d.). The soil types of the area are mountain and clay loam.

Of the 118 women farmers in the masterlist of the two municipalities, 67 served as respondents in this study. Stratified random sampling was employed in recruiting the respondents. They were chosen on the basis that they were growing cash crops for commercial purposes. Descriptive statistics such as averages, frequency counts, and percentages were used in analyzing the data collected.

The profile of the farmers as well as capital, land, and labor resources were assessed. The data collection also aimed to determine marketing variables such as product, price, promotion, and place strategies. All factors and variables were accounted to measure the profitability of the cash crops except for the cost of family labor. Cost and

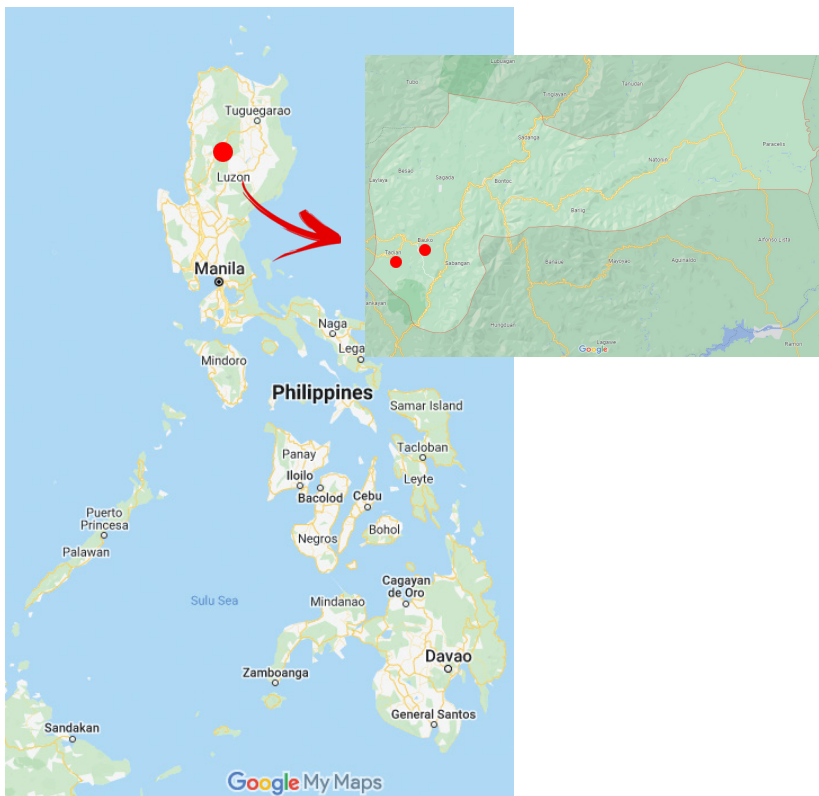


Figure 1. Map of Mountain Province, Philippines showing the location of the study (Source: Google Maps)

profit were computed on a per hectare basis. The challenges met by the women farmer-entrepreneurs during the production and marketing of the crops were documented as bases in proposing policy programs. All values in Philippine peso use USD 1 = PhP 50 conversion rate.

RESULTS AND DISCUSSION

The farm sites of the respondents were located in the contours and base of the mountains. Almost 75% of the land has a slope of 30 degrees and above while 15% is classified as flat to rolling landscapes (Hampel-Milagrosa, 2001).

The women farmer-entrepreneurs of Tadian and Bauko operate individually in micro scale commercial agriculture. They use hand tools without the aid of machines or farm animals. They manually weed, till, and prepare the plots (if necessary) of their farm. Every year they ready the land for planting during the onset of rainy season, which is usually during the last week of April or the first two weeks of May.

The indigenous cash crops that they plant are corn, taro, cowpea, pigeon pea, and squash. The women farmer-entrepreneurs apply fertilizers on their plants and weed occasionally. They segregate the ones that do not pass their quality check for their own family's consumption. After harvest, the products are then marketed to resellers either at the public market or delivered door-to-door. These show the women farmer-entrepreneurs' level of commitment in producing and marketing their produce. To aid in their needs financially, women farmers have access to six cooperatives and one microfinance institution.

The succeeding section presents details of the production factors such as capital, entrepreneur, land, and labor. Additionally, the marketing variables of the indigenous cash crops as well as the challenges met by women farmer-entrepreneurs are also presented.

Factors Considered in the Production of Indigenous Cash Crops

Capital. The money and assets used by businesses to manufacture their products are their capital (Intrepid Private Capital Group, 2017). Capital includes both financial resources or money and human capital or labor (Goodwin, 2003). Working capital is the amount needed by farmers in their farming activities, which may be used to procure inputs and equipment for production.

In the working capital of women farmer-entrepreneurs, 62% spent below PhP 2,000, 25% used up PhP 2,001 to PhP 4,000, and 13% incurred PhP 4,001 and above (Table 1). The women farmer-entrepreneurs who spent PhP 2,000 and below did not buy seeds for sowing because they used their *farm saved seeds*. Those who incurred PhP 4,000 and above bought their seeds for sowing and applied organic and commercial fertilizers such as chicken dung and complete fertilizer (14-14-14).

Likewise, farmers did all the farm activities using their hand tools. Procurement of costly farm machines like tractors is not among their priorities. They shared that those are difficult to transport because most paths leading to their farm are foot trails, which are steep, narrow, and far. The high stone walls of field terraces deter the transfer of such machines from one field to another.

Table 1. Socio-economic characteristics of women farmer-entrepreneurs

CHARACTERISTICS	FREQUENCY	PERCENTAGE
Working Capital		
PhP 2,000 and below	41	62
PhP 2,001 - PhP4,000	17	25
PhP 4,001 and above	9	13
Source of Credit		
Personal savings	35	52
Financial institutions	12	18
Other informal sources	6	9
Family/Friends	14	21
Source of Seeds for Sowing		
Previous produce	49	73
Family/Friends	18	27
Age (Years)		
21-40	17	26
41-60	41	61
61 and above	9	13
Educational Level		
Elementary undergraduate	10	15
High school undergraduate	38	57
High school graduate	17	25
College undergraduate	2	3

Similarly, Okunade (2007) found that the least used input by women farmers in the Isoya Rural Development Project in Nigeria are machines such as tractors. Use of primitive and laborious farm tools in addition to using low yielding and unimproved planting resources, however, negatively impacts production (Fabiya et al., 2007). Szilag-Sikora et al. (2015) explained that if machines are customized to reach the farm so women farmers could operate them, the overall profitability of their farming enterprise will increase.

In Table 1, it can be seen that 82% of the credit sources of the respondents are from informal sources. This result is similar with the findings of past studies (Owolabi et al., 2011; Lu, 2011; Mahendra Dev, 2012). Among the reasons for not availing of loans from formal sources were high interest, inability to meet monthly payment schedule, and costly processing expenses. The monthly amortization of loans is cumbersome for the respondents as the source of their payment comes from the income of their produce, which takes 4-8 months to mature. The financial institutions are also relatively far from their residence, which means that they need to travel to process and pay their loans. High interest rate is among the reasons women farmers lost interest in availing formal loans in Nigeria (Okunade, 2007).

The inputs were seeds for sowing, and organic and commercial fertilizers. All respondents applied commercial fertilizers on their crops; organic fertilizer such as chicken dung was only applied on taro. Fertilizer application only happened once during the whole cropping season. Table 1 shows that 73% of the respondents' sources of seeds for sowing were from farm saved seeds while 27% were bought or traded seeds with their family or friends. To preserve the seeds for sowing, some respondents stored them in a jar with pine resin wood or mothballs. It was found that since time immemorial, the seeds being sown by the respondents were seeds that were passed on to them from their ancestors. These continuous cultivation of seeds for sowing has a corresponding yield penalty (Ravi et al., 2010). Okwu and Umoru (2009) then stressed that to increase harvest, women farmers should capitalize on farm inputs.

Entrepreneurs. An entrepreneur starts, manages, and assumes the risk of a business to gain an income (Medina, 2012). Kahan (2012) detailed that farmer-entrepreneurs are farmers who plant crops for business. In this study, the women farmers are the entrepreneurs who plant indigenous cash crops and sell them for extra cash. They were grouped into youth (21-40 years old), middle age (41-60), and old age (61 and above). Table 1 presents that majority of the women farmers (61%) were middle aged. Mwangi et al. (2015) found that age is a factor

influencing low productivity as aging women farmers are less likely to adopt new technologies. A case study conducted by Ngoc Chi and Yamada (2002) found that aged farmers in Can Tho Province, Vietnam did not have faith in technology and they only relied on their own experience. Meanwhile, Olowabi et al. (2011) explain that women farmers under the youth category are expected to be more productive in their farm work than those in other age groups given that they are at the prime of their lives.

Table 1 shows that 57% of the respondents were high school undergraduates while 25% finished high school. Ten respondents (15%) were elementary undergraduates while 3% were college undergraduates. The respondents shared that they have been planting these crops since childhood and were educated in their elementary days the traditional practice of farming. Hence, they are hesitant to shift to other crops, which they have no knowledge of in terms of crop management and yield. The findings imply that the women farmers' education is a factor in their struggle to adopt a technology. Ngoc Chi & Yamada (2002) found that the women farmers of Can Tho Province in Vietnam did not adopt farming technology because of low education, newness of the technology, reliance on their own experience, and fear of getting low yield. Education has been found to be an important determining factor in terms of getting a good income (Hansen & Greve, 2015), realizing high yield (FAO, 2014), and disseminating new knowledge (Mahendra Dev, 2002).

Land. Ninety percent of the women farmer-entrepreneurs said that they inherited the land that they or their respective spouses cultivate. With the size of their farmland (approximately 0.10 ha on average), they are operating in small scale; thus, large production is not to be expected. This situation is a factor for their low production.

In Paracelis, Mountain Province, 48% of the corn farmers own their farm through inheritance (Signabon et al., 2017). Their farmland is a valuable property of the family and by tradition it should not be sold. This culture limits women farmers to buy additional land for larger production. A similar situation was reported in Kaduna State, Nigeria where 50% of women farmers inherited their farmland, which also limited their scale of production (Owolabi et al., 2011). Odeny (2009), on the other hand, reported a different finding where women farmers in Africa were found to either be landless or having limited access to land.

In this study, the nearest farm was 1 km while the farthest was 15 km away from the residence of the women farmer-entrepreneurs. Most of them have no access to paved roads, making transportation extremely

difficult. They usually travel on foot for an average of 45 minutes to 1 hour going to their farm. They practice terrace farming with the size and shape following the contours and base of the mountain. Majority of the farmlands are rainfed because water remains scarce even though there are irrigation systems. They cannot buy water for their crops because of the terrain and distance. Hampel-Milagrosa (2001) noted that one of the problems in vegetable production in CAR is the remoteness of farmlands. In Botswana, to respond to water shortage, women farmers buy water for their crops, which results in reduced income (Fehr and Moseley, 2016). Access to a reliable source of water is key to optimizing production gains (Falkenmark, 2013).

To enhance soil fertility, all respondents reported that they burn the weeds or the remnants of the previous crop(s) and mix them with the soil when the land is toiled and plotted. Sunflower leaves and weeds were reported to be mixed in the plots to serve as fertilizers.

Labor. The respondents detailed that most (90%) activities relating to production and marketing are done by them. They prepare the land (weed, till, prepare plots), plant, maintain, harvest, transport, and market. This practice was also reported in the study by Lu (2011) in Benguet and by Fabivi et al. (2007) in Nigeria where women farmers did the arduous tasks in their farm from cultivating the land up to marketing their crops.

The respondents in this study shared that they either ask for the help of their family members or pay for baggage fees to transport their produce. Usually, the case is that in accounting for labor expenses, they only account for hired labor and exclude the labor from themselves and their families. Picazo-Tadeo and Reig-Martínez (2005) stressed that in computing for net income, family labor is a key expense in small farms to gauge the profitability of the fixed assets and other variables.

Variables Considered in Marketing the Indigenous Cash Crops

The women farmers market their produce after harvest. The variables of marketing, namely: product, price, promotion, and place were considered. Their net income was also computed to gauge the profitability of their indigenous cash crops.

Product. The indigenous cash crops grown by the women farmers are corn, taro, cowpea, pigeon pea, and squash. These crops used to be subsistence crops in the past which the respondents have been

planting since childhood. Corn (64%) and squash (59%) are the most popular among the crops. Taro is planted only by 30% of the farmer-respondents because, according to them, the crop is vulnerable to pests (Table 2).

In packaging their produce, 100% of the women farmers used primary package. Secondary and tertiary packages are not being used. The usual primary package is a *sando* bag for small quantity and a sack for crops in bulk. In selling crops to retailers, winnowing basket or a sack is used in which the contents are transferred to the containers of resellers. If they sell their crops in bundles, they use bamboo/banana trunk strips or sturdy vines in tying.

With the nature of their produce, they only use primary packaging as it is the most convenient for them. However, Reyhle (2016) emphasized that product packaging is important because it helps consumers remember a product and creates brand recognition. The respondents appear to not follow the requirements of the Republic Act 7394 of 1992 or the Consumer Act of the Philippines, which requires that produce must be labeled accordingly. They shared that they are not familiar with product labeling. Bacarella et al. (2015) stressed that food labels are important as they provide the product details. Good packaging and labeling are keys to high product value and chance of getting bought by the consumers (Ahmed et al. 2014; Arbabi et al., 2015). Ahmed et al. (2014) stressed that packaging and labels may be better marketing tools than ads.

Table 2 shows that all five indigenous cash crops were sold in their original form; thus, their shelf life is only 1-10 days. Three of the five indigenous cash crops (i.e., corn, cowpea, pigeon pea) were traditionally processed through sun drying, which increased their shelf life to more than 11 days. Items that had the least chance of being bought were sundried to extend their shelf life. The sun-dried produce has longer shelf life but are sold cheaper. Sun drying is their last and only resort when it comes to processing their produce because they do not have processors and knowledge on food processing. Their measuring units are either per piece, kilogram, cup (16 mm diameter, 22 mm height), *salup* (roughly 2 kg), and bundle (about 18 mm diameter). In a study on millet processing, Ravi et al. (2010) learned that traditional knowledge on processing food erodes its market value. Adeyeye (2017) also found that traditional food processing of farm produce is not fitted for large production; thus, he stressed the importance of advancing the knowledge in this area. He added that storage and processing technologies are needed to add value to products and increase shelf life.

Table 2. Marketing strategy by women farmer-entrepreneurs

MARKETING STRATEGY	FREQUENCY	PERCENTAGE
Product		
Indigenous cash crops grown		
Corn	43	64
Squash	40	59
Cowpea	34	51
Pigeon pea	28	42
Taro	20	30
Shelf life of indigenous cash crops		
1 - 10 days	5	100
11 - 60 days	3	60
More than 60 days	3	60
Price Strategy		
Difference between the selling price set by women farmer-entrepreneurs and buying price set by resellers		
PhP 1 - PhP 10	38	57
PhP 11 - PhP 15	13	19
PhP 16 and above	16	24
Difference between the selling price of the women farmer-entrepreneurs and buying price of buyers during barter		
PhP 1 - PhP 100	6	60
PhP 101 - PhP 200	3	30
PhP 201 - PhP 300	1	10
Distribution Strategy		
Door-to-door	41	61
Resellers	35	52
Flea market	21	31
Promotion Strategy		
Sales promotion		
Price drop	53	79
Quantity benefit	41	61
Free samples	10	15
Promotion expense which was not accounted annually		
PhP 500 and below	39	58
PhP 501 - PhP 1,000	15	22
PhP 1,001 and above	13	19

Note: USD 1 = PhP 50 conversion rate

Price. The price of the produce is either set by the women farmers or by the resellers. When the women farmer-entrepreneurs set their price, the approach they use is competition-based. This approach means that the price set is based on the price of the competitors (Medina, 2012). Table 2 shows the difference between the selling price set by women farmers and the buying price set by resellers. Women farmer-entrepreneurs (57%) shared that their produce was priced by the resellers PhP 1 - PhP 10 lower than the original price; 19% with PhP 11 - PhP 15; and 24% with PhP 16 and above. The produce with the highest difference was pigeon pea. The resellers set the buying prices as low as PhP 250 less than the selling price set by women farmer-entrepreneurs even when there was shortage of produce when the price was expected to be higher.

The data show that resellers dictate the price. Women farmers could not bargain because there was no suggested retail price (SRP) that could serve as their basis. The women farmer-entrepreneurs were forced to accept the lower price set by the resellers. The same experience was observed by Alamu (2017) in Zambia where the farmers sold their produce to resellers and did not get the fair value for their produce. About 15% of the women farmers resorted to barter trading for other goods for their unsold produce during flea markets. The commonly bartered produce are pigeon pea and cowpea. Table 2 shows the range of amount women farmers lose when they barter.

Since the farmlands of the women farmers are rainfed, they all plant at the same time. Come harvest, they compete with each other because the market is flooded with the same product forcing the price to drop. Once the supply is depleted, the price increases; however, the production expense is also high. The situation is the same with the practice of farmers in Kilimanjaro, Tanzania where agricultural crops are seasonally-produced causing fluctuations on their price (Huka, 2014). The price fluctuation of agriculture products is risky for farmers because they lose their profit if the price of their produce drops (Grega, 2002).

Since majority of the produce must be sold fresh, the women farmer-entrepreneurs opt to sell their produce despite the risk of receiving a low price. To increase the price, the produce of women farmers should be processed. Considering that majority of the produce should be fresh while being sold, those that are not bought are sold at a lower price. Others were traditionally processed and sold at a much lower price. Perishability causes the price fluctuations of agricultural produce because storage is an issue whenever there is an abundant harvest; hence, farmers sell their produce at a much cheaper price

(Huka, 2014). To prolong the shelf life and to overcome seasonality and perishability, the produce must be processed (Pant & Chinwan, 2014).

Without access to transportation, the produce of the respondents is delivered on foot; thus, it takes a long time to reach the market and some of the produce become blemished along the way leading to price reduction. Due to poor road connections in CAR, the produce gets damaged along the way resulting in lower prices (Hampel-Milagrosa, 2001). This shows that if only the produce reaches the market on time and in good quality, women farmers will be guaranteed of a decent income as better access to transportation cuts marketing cost. This way, women farmers will receive higher prices for their produce.

Place/Distribution. Place/Distribution is the distribution of a product from the producers to the buyers (Medina, 2012). From the farm gate to the house of women farmer-entrepreneurs where the produce is sorted, the produce is transported on foot, which lowers its quality because of blemishes. Among the issues in product distribution are transport equipment and road conditions (Arbabi et al., 2015). Poor transportation facilities damage and hasten the deterioration of farm produce before it reaches the market (Babatunde et al., 2014). In another study, Migose et al. (2018) found that the distant farm location to the market decreases the earnings of farmers as a result of higher transportation costs. Solving these transportation-related issues means improvements in the overall production and income of farmers (Abur et al., 2015).

After sorting, 61% of the women farmer-entrepreneurs distribute their produce through door-to-door delivery, 52% through resellers, and 31% through flea markets (Table 2). Women farmers believe that they can dispose their produce faster and control its price through door-to-door peddling. Door-to-door peddling and resellers are preferred because they cut transportation costs since flea markets are far from their barangay. Such preferences are common practices in areas where distance is an issue in product distribution. In Sorsogon, Philippines, farmers sell their produce within and nearby barangays to avoid post-harvest activities (Detera et al., 2018).

While the youth-respondents could do long hours of peddling, they were challenged by the short shelf life of their produce. Hence, they resort to vending their products to resellers and/or significantly reduce the price if not sold within the day. Likewise, the middle- and old-aged women farmers reported difficulty in carrying heavy load, forcing them to sell their crops to resellers at a lower price. In a study on issues

and challenges on distribution of agricultural products in Indonesia, Nainggolan (2004) noted that the inadequacy of distribution system affects the women farmer-entrepreneurs' product distribution, post-harvest activities, and bargaining position.

Promotion. The respondents shared that they do not promote their produce. However, they offer sales promotion such as quantity benefit, price drop, and free samples. Table 2 shows that 79% of the respondents lowered their price so it is at par with the price of their competitors and for faster disposal of their produce. Other farmers (61%) employed quantity benefit where the excess weight of less than 1/4 kg of their produce was given free of charge. Those using measuring cans added a heap of their produce from the rim free of charge. Some of them (15%) gave free samples to their consumers.

The respondents spent a good sum of money in doing sales promotion of their produce (Table 2). For example, 58% of the respondents spent PhP 500 and below while 19% spent above PhP 1,000. These promotional expenses were not accounted for as expense as women farmers saw it as a debt of gratitude to their consumers. Notably, they did not promote using traditional and online channels. Hence, they may have missed the benefits of promoting using social media given that 54% of consumer buying decision is influenced by social media (Lovett & Staelin, 2016).

In Sorsogon, Philippines, only a few farmers growing staple crops promote their produce (Detera et al., 2018). In selling a produce, the most appropriate promotion strategy should be adopted to inform and convince consumers (Anton et al., 2009) because once they are well-informed of the product, they are likely to patronize it. In his study, Jekanowski (2000) showed the importance of promoting when he argued that consumers may be willing to buy locally produced goods but are unwilling to look for farmers from whom they can buy. In the US, promotion is being done at the level of the state where each state produces, processes, and sells agricultural crops within the state under a particular brand (Crenwelge, 2016).

Profit. Profit is the earning left after all expenses on labor, inputs, and taxes are paid (Medina, 2012). However, the respondents defined profit as *gross sales less the cash spent for production* without adding other expenses such as labor cost. They noted that they did not record all their expenses during production and marketing; hence, they were unaware if they gained income or incurred losses. This issue on non-record keeping was also reported in Nigeria (Olawepo, 2010).

Factoring in labor, inputs, depreciation costs, promotion, and packaging costs per hectare, Table 3 shows that pigeon pea had the highest net income of PhP 292,505, followed by taro PhP 238,219. Corn had the lowest net income at PhP 76,967. Labor costs constituted the biggest expense.

Depreciation cost was computed using straight line depreciation formula where the cost of asset is subtracted with the salvage value, then divided by the useful life of the hand tools (Ibarra, 2013). Pigeon pea had the highest income because input cost was low since seeds for sowing were from their farm saved seeds. While promotion and labor expenses were high, gross sales were also high. Taro had the highest input cost because the rhizome for sowing and the fertilizers were bought. Corn had the lowest income because gross sales was low even if promotion costs were low. This implies that among the produce, pigeon pea and taro have the potential to yield higher income with better farming resources.

More than half (52%) of the women farmer-entrepreneurs' level of income per annum is below PhP 15,000, 28% is from the PhP 15,001 to PhP 50,000 bracket, and 20% is above PhP 50,001. Assuming the respondents' only source of income is their cash crops, it appears that they are nowhere the poverty threshold in the Philippines estimated at PhP 10,727 per month for a family of five in 2018 (Mapa, 2018). The low income is connected to low price caused by issues relating to transportation, short shelf life, low yield, distribution systems, and promotion strategy. The income range of the farmers in this study is similar with the income of 67% of women farmers in Kaduna State, Nigeria of NGN 10,000 (USD 68) (Owolabi et al., 2011). They further said that the low profit may be because the women farmers were unable to avail of credit and did not invest in inputs and farm technologies. Okwu and Umoru (2009) added that in Benue State, Nigeria, 71% of the women farmers' income level is either average or low.

Table 3. Net income of women farmer-entrepreneurs per hectare

CASH CROP	GROSS SALES (PhP)	TOTAL EXPENSES (PhP)	NET INCOME (PhP)
Pigeon pea	383,722	91,217	292,505
Taro	420,121	181,902	238,219
Squash	177,386	55,147	122,239
Cowpea	243,946	160,174	83,772
Corn	204,747	127,780	76,967

Note: USD 1 = PhP 50 conversion rate

Challenges Met by Women Farmers in the Production and Marketing of Indigenous Cash Crops

Table 4 shows the challenges the women farmer-entrepreneurs faced during the production stage of their indigenous cash crops. The main challenge that they faced was low yield (94%) followed by lack of access to transportation (89%). The source of seeds for sowing was a concern since they have been planting their seeds for a long time. Almost the same issues were reported by Detera et al. (2018) in their research in Sorsogon, Philippines. The authors reported issues relating to the terrain of the farm, planting materials, and budget. Issues such as lack of inputs and low farm yield in corn cultivation were reported in the study among farmers in Mountain Province, Philippines (Signabon et al., 2017). Issues on transportation were reported in a study among farmers in Nigeria (Asogwa & Okwoche, 2012). In this study, it was noted that while the local government units distribute seeds for sowing, there appeared to be no seeds for indigenous cash crops.

Table 4 shows the challenges the women farmer-entrepreneurs encountered during the marketing stage of their produce. The main challenge in relation to marketing was low price and profit (97%); followed by limited knowledge on processing, packaging, labeling, and promoting of produce, and bookkeeping (94%). When the market is saturated with their produce, the price drops. They, however, are left

Table 4. Challenges met by women farmer-entrepreneurs in the production and marketing of indigenous cash crops

CHALLENGE	FREQUENCY	PERCENTAGE
Production Challenges		
Lack of access to transportation	60	89
Farm terrain	47	70
Low yield	63	94
Insufficient budget	10	15
Lack of input	15	22
Marketing Challenges		
Lack of distribution systems for the produce	39	58
Limited knowledge on processing, packaging, labeling, promoting and bookkeeping of produce	62	94
Low price and profit	65	97

with no choice but to sell their produce even at very low prices. It should be noted that there is no SRP for the indigenous cash crops. The practice is the resellers set the price. Hence, there is a chance that the produce of the farmers may receive very low prices.

In a study by Detera et al. (2018), they shared that the farmers in Sorsogon strategize to ensure they get good price for their produce by selling in nearby villages to cut postharvest cost. The problems encountered by the farmers in this study are shared by farmers in past studies: low income (Signabon et al. 2017), and lack of storage and packaging facilities (Arbabi et al. 2015). Given that the majority of the farmers in this study are aging, it is difficult for them to sell their products during a market day or through door-to-door peddling. To sell their products, they need to travel to the designated flea market area by means of public utility vehicles (PUVs); thus, they could only bring a limited volume of products with them. Likewise, they face the same issue when they do door-to-door peddling as they could only bring what they could carry.

The challenges the women farmer-entrepreneurs identified show the importance of an active market system. A market system is a network of sellers, consumers, and concerned agencies working collaboratively in trading products (Technoserve, n.d.). The system covers the production factors: capital, entrepreneur, land, and labor; and the marketing variables such as product, price, promotion, place or distribution, and profit.

CONCLUSION AND RECOMMENDATIONS

The women farmer-entrepreneurs are committed to till their land, plant, harvest, and sell their indigenous cash crops to gain income. Yet, their net income is minimal due to their limited access to transportation, seeds for sowing, and agricultural loans; and brief familiarity with bookkeeping and marketing. Ignoring these concerns will cause net losses in their income that may force the women farmer-entrepreneurs to stop producing these indigenous cash crops. But, on the other hand, addressing these issues would increase their net income, which may help them surpass the poverty line.

A measure to resolve these issues may be an adoption of a market system to be participated in by agencies through forging a memorandum of agreement among the municipal local government units (LGUs), higher education institutions (HEIs), and the Department of Trade and Industry

(DTI). The LGU-Municipal Agriculture Office (MAO) may also develop a crop production calendar for the women farmer-entrepreneurs to plant different cash crops per cluster to avoid oversupply during harvest time and set an SRP to control the price of indigenous cash crops. Likewise, the LGU-MAO may also design a centralized distribution of cash crops and open a seed bank where seeds for sowing from the government, donors, and farmers can be stored for barter, selling, or free distribution.

The HEIs may provide training programs on farm management, financial health, and others. The DTI may offer training programs on prolonging the shelf life of products and monitor the implementation of SRP. Also, financial institutions in the area may tailor-fit payment schemes on loans for the women farmer-entrepreneurs.

Lastly, future research may focus on production and marketing technologies suited for the value creation of these indigenous cash crops. Again, the participatory method will let the researchers and women farmers work together in crafting strategies to realize the said research endeavor.

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