



# **DETERMINANTS OF WOMEN'S PARTICIPATION IN SMALL-SCALE VEGETABLE FARMING IN CABINTAN, ORMOC CITY, LEYTE**

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Small-scale vegetable farming is relatively known to be the major source of income among villages residing in Cabintan, Ormoc City, Leyte. However, very few studies articulating women's participation and role in small-scale vegetable farming are available in this area. The existing studies are mostly about aggregate production and farmers' practices. This study aims to fill that gap by examining women's involvement in farming activities and determine factors that influence their participation. A total of 146 women were randomly selected and interviewed. The women's participation in small-scale vegetable farming was categorized as active or less active. Results show that more than eighty percent (83.7%) of the women respondents are considered active in farming activities while only around 15.6% are considered less active. Regarding farming activities, women are mostly involved in the marketing aspect but spend less time in land preparation. The multiple linear regression analysis shows land tenure influences women's decision to participate in farming. In addition, women are more likely to be involved in farming if the husband is a farmer as well. This implies that government programs aiming to encourage women's participation should also consider their husbands' occupations. In addition, continued capacity-building programs were emphasized

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by women as essential in dealing with challenges in small-scale vegetable production.

**Keywords:** women's participation, small-scale production, livelihood

## 1. INTRODUCTION

Agriculture has traditionally been seen as a major source of poverty reduction, job creation, and natural resource conservation. The ability to grow vegetables is one of the most fundamental human abilities. Over the last several decades, things have altered dramatically in many ways, with small-scale firms in various regions of the world ensuring new market and export opportunities.

Small-scale agriculture is the type of agriculture that is practiced on relatively small plots of land. In small-scale agriculture, the land does not exceed one hectare. Small-scale agriculture is practiced for both subsistence and commercial purposes (Agromoris, 2021). Small-scale vegetable production has expanded significantly to cater for fresh market export in recent decades. Small-scale agriculture can increase food system investment in small-holders improving food security. Farmers are attempting to achieve self-sufficiency in vegetables for sale or trade in rural communities.

The inclusive participation of farmers is very important to support the success of agricultural development. Farmers as the main actors of development, need to have the responsibility to realize production and productivity targets to achieve self-sufficiency and sustainable self-sufficiency (Yuniarsih et al., 2021). The vegetable sector is acknowledged to have great significance in improving the overall living standard of small farmers, including female farmers not only through increased income but also through increased participation (Joshi, 2021.).

This study focuses on gender issues particularly women's participation in small-scale vegetable production. This is of interest because gender systems are diverse and complex. They are determined by community norms and values (Mason and Smith, 2003). Agricultural planners and service providers frequently presume that farming is a male-dominated sector, with men as farmers and women as farmer spouses. Although women are involved in vegetable production, it is believed to be on a limited scale due to personal and household attributes possessed by women that can serve to constrain their participation in community organizations (Balayar, 2022). Lower levels of education, marital

status, and age are influencing factors on the participation rates of women in agricultural activities (Haile, 2016).

The progress of farmer groups is an important thing that must receive attention, in order to spur the development of other farmer groups in their farming activities. Despite an abundance of research on and growing social recognition of women's contributions to farming around the world, in many countries, women farmers and their experiences are still relatively invisible to society. Therefore, it is necessary to know the level of participation of members particularly women who are members of the existing farmer groups, in an effort to determine the extent of member participation in fully supporting their farming activities and opportunities.

It is worth investigating whether more participatory household decision-making similarly contributes to greater cooperation, as well as productive outcomes, especially in agricultural households where men and women have different roles and knowledge of the resources (Doss & Meinzen-Dick, 2015).

This study assesses women's participation in vegetable production showing how they are involved, what hinders their involvement, how they benefit, and how they contribute to small-scale vegetable production. The results of this study provided essential information as to gender issues involved in farming and how can women and men maximize their productive contribution to farming.

The general objective of this study was to assess the level of participation of women in small-scale vegetable farming. Specifically, it aims to: (1) determine the level of participation of women in small-scale vegetable farming; (2) determine the constraints that limit women's involvement in small-scale vegetable farming; (3) identify the factors in women's participation in small-scale vegetable farming; and (4) provide recommendation to encourage women's participation in small scale vegetable farming.

## 2. LITERATURE REVIEW

Small-scale vegetable farming, which refers to producing vegetables not only for own consumption but also to sell in the market thereby improve the livelihoods of smallholder farmers, remains the major intervention adopted by national and international governmental and non-governmental organizations (Shrestha & Karki, 2017).

As the sustainable food and local food movements grow in affluent countries, some of these smallholdings are gaining increased economic viability. There is an estimated 500 million smallholder farms in developing countries of the world alone, supporting almost two billion people (HLPE, 2013).

Participation in agricultural projects is putting responsibility in the hands of farmers to determine agricultural programs which can make services more responsive to the local conditions, accountable, effective, and sustainable. A myriad of literature exists on participation and determinants of participation in agricultural programs. The farmers' participation in agricultural projects can either be nominal, consultative, action oriented or shared (Botlhoko & Oladele, 2013).

The involvement of farmers in empowerment programs and increasing agricultural production is highly expected. Farmers play crucial role in achieving food sufficiency. According to Nahayo et al. (2017), there are several factors that can influence farmers to participate in crop intensification. This includes gender, availability of non-farm income, their land size, farming experience and market experience (Nahayo et al., 2017). Increasing farmer participation including women is one of the options to improve agricultural business.

In developing countries, women play a significant role in food production and nutrition provision by engaging in agriculture, processing, and food preparation within the household (Ibnouf, 2009; Giles et al., 2019, Nuñez et al., 2023). The feminization approach in agriculture has been a useful and distinct way in which to understand the broad range of practices that women perform in farming families alongside an understanding of how women's productive activities shape, and are shaped by, varying gender norms and relations (Gustavvson, 2020).

Women's contributions to society have received more attention in recent years from academics and policymakers including families, communities, and industries involved in agriculture. While it is critical to highlight their achievements, there are a few things to keep in mind. Women's various and shifting roles and practices have received little attention, unchanged gender relations shaping, and being shaped by, women's identities in different ways. Understanding particular ways in which men and women blend goals and coordinate activities in agriculture production is imperative (Seymour, 2017).

Women appear to have equal access to productive resources such as land and inputs, and greater control over household income than men in Southeast Asian countries (e.g. Myanmar, Thailand, Indonesia and the Philippines) (Akter,

et al., 2017). Some women see themselves as equal partners in the farming enterprise, but others are clear that they play a subordinate role to the males in their household. Unmarried women are often involved in agriculture, in a range of capacities but, as discussed above, struggle to access land in their own right. Despite this, many women engage in relatively autonomous farming activities, ranging from small-scale vegetable production to livestock farming, and a few women themselves as fully-fledged farmers comparable to their male counterparts (Kleinbooi & Lahiff, 2007).

As survival became more and more dependent upon a cash economy, men were pushed into wage labor. They now have access to and control over the means of survival—jobs and income. The divide between productive and reproductive spheres became wider, with women becoming increasingly marginalized in reproductive roles (Archer & Meer, 1997).

Reproductive labor was not seen as having value, and women's status in society declined. Women, by and large, came to be dependent upon men, as even their productive work relied on cash earnings brought in by the men. Alongside this greater economic reliance on men, and the concomitant loss of access to natural resources, went an erosion of women's status and worth in society (Archer and Meer, 1997).

The existing empirical studies of highlighting gender within the context of Leyte is a bit limited (Castillo et al., 2021; Saloma et al., 2022). Broadly, the agriculture literature consistently show that women lack access to and control over resources and income. Consequently, the CGIAR Gender and Agriculture Research Network strongly emphasizes improving women's control over resources and income (CGIAR, 2014). During the pandemic, women has shown to have active engagement in small-scale vegetable production (Seriño & Ratilla, 2021).

Empowering women in the agricultural value chains can create significant development opportunities for them and generate spill-over benefits for their households and communities (Quisumbing & McClafferty, 2006; McDougall et al., 2019; Williams et al., 2021). Integrating women into markets for high value agricultural commodities requires a holistic approach that involves critical understanding and identification of the bottle-necks to, and opportunities for, women to participate in the production and marketing of such commodities (Rubin & Manfre, 2014).

### 3. CONCEPTUAL FRAMEWORK

A conceptual framework gives details of the variables that are examined and their expected relationships to the study. It groups the variables into independent, dependent, and intervening variables (Mugenda, 1999). This study was based on Williams et al. (2021) mixed method approach and participation framework.

Figure 2 shows the conceptual framework used in this study. Women's participation in small-scale vegetable farming is largely influenced by three major factors, specifically socio-demographics, economic factors, and the nature of participation. The socio-demographic characteristics include the variables like age, gender, marital status, educational attainment, household size, and family background. For the economic factors, it captures employment opportunities, accessibility to farmers training, reasons of involvement. For nature of participation, it reflects the various farm practices that women may participate (UNIDO, 2018).

These variables have indirect effect in the measurement of women's level of participation. These indicators impact the main guidelines for implementing successful development projects related to women and their participation (Davran, 2019).

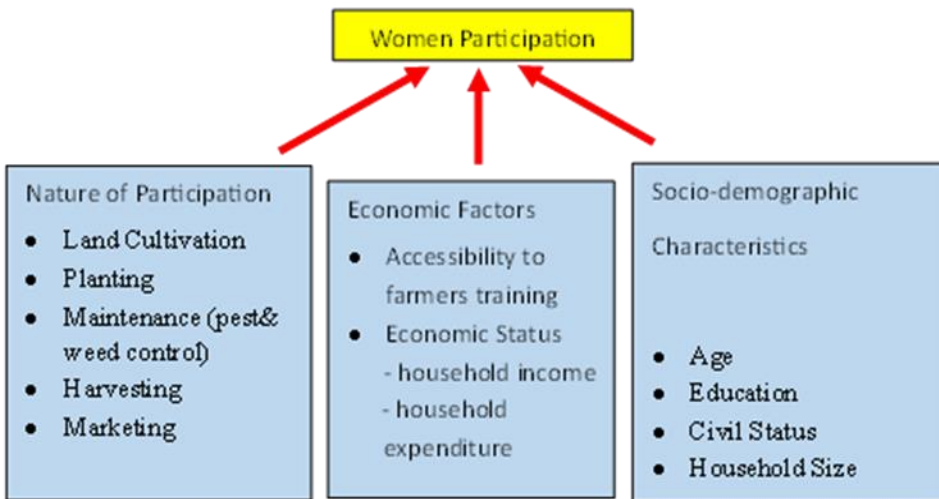


Figure 1. Factors affecting Women's Participation are presented in the schematic diagram above.

#### 4. METHODS

##### *Location of the Study*

This study was conducted in Cabintan, Ormoc City, Leyte. It has been recognized as a vegetable bowl in Ormoc City (ACIAR,2019). Figure 2 shows the location of the study. It is situated at approximately 11.0835, 124.7209, in the island of Leyte. Elevation at these coordinates is estimated at 645.7 meters or 2,118.4 feet above mean sea level (PhilAtlas, 2019). The climate is relatively cool allowing growing subtropical vegetable. The area receives rainfall frequently with wet and very wet months. The wet months are from February to June, and very wet months are from July to January. It is a rain feed farming area, and can produce high quality temperate vegetables in cool mountain climate (ACIAR, 2012).



Figure 2. Geographic Location of Brgy. Cabintan Ormoc, City Leyte

Source: Google Map (2018)

##### *Sampling Procedure*

The population of this study are farmers. Main target groups were women community organizations engaged in commercial vegetable farming. The sample size will be determined using Slovin's formula;

$$n = \frac{N}{1+Ne^2}$$

where

n - sample size

N - number of total population

e - margin of error

The total population of Cabintan is 2498 and approximately 82% are farmers, which results in 2048. Using Slovin's formula with an 8% marginal error, the sample size is 146 farmers. Purposive random sampling was used to collect data for each household covered in this study.

Calculation for sample size:

$$n = \frac{2048}{1+(2048)(0.08)^2} = 146$$

### ***Data Collection Procedure***

Descriptive statistics and inferential statistics were used to analyze the data collected. With the help of Excel and Stata software, descriptive statistics were employed to measure the objectives.

Multiple regression analysis was used to determine the relationship between women's level of participation and their socio-demographic and economic factors. The respondents were surveyed and/or interviewed in their houses and farms. These places were selected for the convenience of respondents and for the creation of a suitable situation, where both sides (researcher and respondent) exchanged their views frankly and informally.

The questionnaire mostly contained closed-ended questions. To avoid confusion, the questionnaire was designed in English but the questions were asked in the local language (Bisaya). During the interview, every effort was taken to explain the questions and their purpose to obtain accurate and reliable information. Before conducting the survey, informed consent was asked to the respondent. The respondents were also informed that participation in the survey is voluntary and they can withdraw from the interview at any time. Collected data are treated with utmost confidentiality and will be solely used for the research.

### ***Econometric Model***

To evaluate the statistical relationship between women's participation levels as influenced by their socio-economic status and varying conditions, the econometric model is postulated as follows: , and economic considerations.

$$\begin{aligned} \text{aveworkinghrs} = & \beta_0 + \beta_1 \text{age} + \beta_2 \text{education} + \beta_3 \text{married} + \beta_4 \text{farmowner} + \\ & \beta_5 \text{no\_of\_Children} + \beta_6 \text{husfarmer} + \beta_7 \text{houseuclear} + \\ & \beta_8 \text{house\_owner} + \beta_9 \text{lnincome} + \mu \end{aligned}$$



where

- aveworkinghrs – average working hours spend in farm daily
- age – women farmer age in years
- education – Educational attainment measured in years
- married – reflects the civil status of women, taking 1 if married and 0 otherwise
- farmowner - taking 1 if owner, and 0 if otherwise
- no\_of\_children – number of children
- husfarmer - taking 1 if husband is a farmer, 0 if otherwise
- housenuclear - taking 1 = nuclear, 0 = extended
- house\_owner - taking 1 if owner , 0 if not
- lnincome = log of total income
- u = remaining error term

## 5. RESULTS AND DISCUSSION

### *Socio-demographic characteristics of the household*

This section discusses the women’s participation rate and socio-demographic details of women farmers, including their age, and level of education, are covered in this section. Table 2 shows the socio-demographic characteristics of the respondents. Results were divided into two main categories, less active and active involvement of women in small-scale vegetable production.

There were two categories for women’s participation levels: active participation and less active participation (Silverthorn, 2003). Their eligibility was determined by the type of participation they had (land cultivation, planting, maintaining vegetable condition, harvesting, and marketing management) (Doss, 2011). The responder was regarded as a less active participant if she participated in only 1-2 out of the five categories of farming. Additionally, the respondent is to be considered an active participant if he/she engages in 3-5 farm operations.

Table 1 shows the participation rate of women in small-scale vegetable farming. Based on the results, 83.7% (123) are active participants in vegetable farming, while 15.6% (23) are those women who have less participation.

Table 1. Women’s participation rate in small-scale vegetable farming

<b>Women’s Participation</b>	<b>Frequency</b>	<b>Percent</b>
Less Active	23	15.6
Active	123	83.7
Total	147	100

To compare the characteristics of the women who were less active or were actively participating in vegetable growing, the data gathered were tabulated. Other factors including the husband's employment, household size, household structure, number of children, number of relatives dependent on income, house, and lot ownership were also discussed.

Table 2 shows the age distribution by participation in vegetable farming of the respondents. The age of women was categorized into 5 classifications namely: teen (13-19), adult (20-25), middle age (26-44), old age (45-64), and senior citizen. Most of the women farmers belong to the middle age category, comprising 52.74% overall of the total respondents. The average age of women who are actively participating in vegetable farming is 42, while those who do not are 41. This implies that women around their middle age are more focused on obtaining income to provide for their family, especially those who still have young-uns.

The educational attainment of the respondents is categorized into 4 classifications: primary (elementary level or graduate), secondary (high school level or graduate), college (level or graduate), and currently studying. Ninety-one out of one hundred forty-six respondents only obtain primary education (62.33%), forty-three respondents attended secondary education (29.45%), only eight of the respondents were able to attend college (5.48%), and four of them are still currently continuing their education (2.74%). It also shows that more than half of the respondents only obtain primary level of education, as they believed that education is a waste of time and are costly during back in their age, and they saw that they can obtain more money through vegetable farming in their barangay. However, the respondents are encouraging their children to pursue higher education because they don't want see their children struggle as the way they did.

The respondents' civil status was divided into five categories: single (7.53 percent), married (71.23 percent), separated (5.48 percent), widowed (6.85 percent), and live-in partner (8.9). It demonstrates that married women have the highest percentage of women participating in vegetable farming. Because farming is their primary source of income, most married women work in agriculture to assist their husbands in providing for their family's needs.

The number of college students in the household is determined by the participation of women farmers. The majority of respondents' households have no college student, only 14 have one, 2 have two, 3 have three, and one of which has four (Table 3). According to the findings, each household has an average of 0.42 college students. There is no direct relationship between the number of college

students and the participation of women. It is more likely because the respondents' children are still too young to attend college.

Table 2. Age, education and civil status of women farmers in Cabintan, Ormoc City, Leyte

		Women's Participation					
		Less Active		Active		Total	
		Count	%	Count	%	Count	%
<b>Age</b>	Teen (13-19)	1	4.35	5	4.07	6	4.11
	Adult (20-25)	4	17.39	8	6.50	12	8.22
	Middle Age (26-44)	13	56.52	64	52.03	77	52.74
	Old Age (45-64)	4	17.39	36	29.27	40	27.40
	Senior Citizen (65+)	1	4.35	10	8.13	11	7.53
	Total	23	100.00	123	100.00	146	100.00
	Mean (years)	41		42		42	
<b>Education</b>	Primary	13	56.52	78	41.00	91	62.33
	Secondary	9	39.13	34	27.64	43	29.45
	College	1	4.38	7	5.69	8	5.48
	Currently Studying	0	0.00	4	3.25	4	2.74
	Total	23	100.00	123	100.00	146	100.00
<b>Civil Status</b>	Single	2	8.70	9	7.34	11	0.08
	Married	17	73.91	86	70.00	106	72.60
	Separated	2	8.70	7	5.70	7	6.16
	Widowed	1	4.35	9	0.07	9	4.79
	Live-in partner	1	4.35	12	9.80	13	8.90
	Total	23	100.00	123	100.00	146	100.00

Under the new curriculum, elementary students are those who are still in grades 1-6, while high school students are those who are in grades 7-12. According to the findings, 56 of the 146 respondents' households have no children attending both primary and secondary school. While 31 respondents' households have two children attending either elementary or high school, 25 respondents' households have one child attending school, and those households with three or more children attending elementary or high school have a value of less than 10% of the total population.

Non-schooling children are those aged 3-5 who are not yet permitted to attend school but are already receiving informal education from their parents. With a value of 74.44 percent, it indicates that the majority of respondents' households have no child who is not yet attending school. Then, those with one non-schooling child have a value of 17.12 percent, and those with two or more

children have a value of less than eight percent. This implies that it will have a smaller impact on women's participation, as the average is 0.52, which is almost equal to zero (Table 3).

Table 3. Number of school aged dependent of women farmers in Cabintan, Ormoc City, Leyte

		Women's Participation					
		Less Active		Active		Total	
		Count	%	Count	%	Count	%
<b>No.of College Student</b>	0	19	82.61	107	87.00	126	86.30
	1	2	8.70	12	9.76	14	9.60
	2	1	4.35	1	0.81	2	1.37
	3	1	4.35	2	1.63	3	2.05
	4	0	0.00	1	0.81	1	0.68
	Total	23	100.00	123	100.00	146	100.00
	Mean	0.21		0.38		0.42	
<b>No of Elementary and High school Student</b>	0	10	43.48	46	37.4	56	38.36
	1	5	21.74	20	16.26	25	17.12
	2	4	17.39	27	21.95	31	21.23
	3	3	13.04	14	11.38	17	11.64
	4	1	4.35	13	10.57	14	9.59
	5	0	0	2	1.63	2	1.37
	7	0	0	1	0.81	1	0.68
	Total	23	100	123	100	146	100
Mean	1.05		0.98		0.76		
<b>No of non-schooling children</b>	0	16	69.57	93	75.61	109	74.66
	1	5	21.74	20	16.26	25	17.12
	2	1	4.35	10	8.13	11	7.53
	3	1	4.35	0	0	1	0.68
	Total	23	100	123	100	146	100
Mean	0.34		0.67		0.52		

The farmland ownership is categorized into 2 classifications primarily: farm owner (she owns the farm herself), and non-farm owner (Table 4). Out of one hundred forty-six respondents, eighty-seven (74.36%) of them are farm owners, while fifty-nine (25.64%) remaining are non-farm owners. This indicates being a

farm owner has a huge impact on participating in small-scale vegetable farming since one won't have to worry about where to plot their seeds.

Table 4 also shows the household size of the respondents. Most of the households have an average of 5 members. For married women respondent (n = 106), we asked the information about their husbands. The results indicate whether the husband works on a farm or as an off-farm worker. As the family head of the household, husbands are expected to be more active in the labor force than wives. According to the data (Table 4), 97.17 percent of the overall 106 spouses of married women are farmers, while 2.83 percent work off-farm. This will impact women's participation because they will be encouraged to be more involved in farm work if their spouses are also farmers.

Table 4. Farm ownership and household characteristics of women farmers in Cabintan, Ormoc City, Leyte

		Women's Participation					
		Less Active		Active		Total	
		Count	%	Count	%	Count	%
<b>Farm land Ownership</b>	Farm Owner	15	88.24	72	72.00	87	74.36
	Nonfarm owner	8	11.76	51	28.00	59	25.64
	Total	23	100.00	123	100.00	146	100.00
<b>Household Size</b>	1-5	15	65.22	100	81.30	115	78.78
	6-10	7	30.34	18	14.63	25.00	17.12
	11-15	1	4.35	8	6.50	9	6.16
	Total	23	100.00	123	100.00	146	100.00
	Mean (member)		4		5		5
<b>Husband Farmer</b> <i>*for married respondent</i>	Yes	16	100.00	87	96.70	103	97.17
	No	0	0.00	3	3.30	3	2.83
	Total	16	100.00	90	100.00	106	100.00
<b>Household Structure</b>	Nuclear	21	91.30	106	86.18	127	86.99
	Extended	2	8.70	17	13.82	19	13.01
	Total	23	100.00	123	100.00	146	100.00

The data on household structure relates to the type of members within the household. The nuclear type, with the highest percentage value of 86.99 percent (127), is made up entirely of family members (mother, father, and children). While nineteen out of 146 (13.01 percent) are extended families which include core family members and relatives, in laws or grandparents (Table 4).

Table 5 shows the house and lot ownership of the respondents. According to the data gathered, the percentage of households that own a home is 93.15 percent, while only 6.85 percent of households do not own a home. They are those who share a home, rent, or live on the communal property. Because the values for active (93.39 percent) and inactive (92 percent) participants are so close, no firm conclusions can be drawn from the results.

Table 5 shows that 79.45 percent of households indicated that they own a lot, while 20.55 percent of households did not own the land. For those that did not own the lot where their house are located, they mostly those who live with others or on communal property. For comparison, women farmers who are considered active in farming participation have relatively higher percentage of the lot ownership (81.30 percent) than those who are less active in farm participation (69.57 percent).

Table 5. House and lot ownership characteristics of women farmers in Cabintan, Ormoc City, Leyte

		Women's Participation					
		Less Active		Active		Total	
		Count	%	Count	%	Count	%
<b>House Owner</b>	Yes	21	91.30	115	93.5	136	93.15
	No	2	8.7	8	6.5	10	6.85
	Total	23	100	123	100	146	100
<b>Lot Owner</b>	Yes	16	69.57	100	81.30	116	79.45
	No	7	30.43	23	18.7	30	20.55
	Total	23	100	123	100	146	100

### *Family Income and Expenditure*

Table 6 shows the distribution of family income for women. It shows that eighty-seven out of the one hundred forty-six (59.59%) respondents are earning PhP 25,000 and below. While thirty-one (21.23%) of the respondents are earning within 25,000 to 50,000 pesos range. While respondents whose income is above 50,000 is only around four percent. The average income for all households is

around PhP 25,000. For women who are considered active in farm activities, the average income is around 23,000 pesos while the less active the average income is around 24,000 pesos.

Table 6. Distribution of family income of women by participation in Cabintan, Ormoc City, Leyte

Other sources of income except for women's wage	Women's Participation					
	Less Active		Active		Total	
	Count	%	Count	%	Count	%
below 25,000	14	64.00	73	56.68	87	59.59
25,001 – 50,000	3	12.00	28	23.14	31	21.23
50,001 – 75,000	0	0.00	4	3.31	4	2.74
75,001 – 100,000	0	0.00	1	0.83	1	0.68
100 001 above	1	4.00	0	0.00	1	0.68
Total	23	100.00	123	100.00	146	100.00
Mean	24,000.00		23,000.00		25,000.00	

Table 7 shows the monthly expenditure of every respondent. The results indicate an average of 9,000 monthly expenses for all households, and it is not quite different between the average for inactive participants (8,000), and active participants (10,000). Their expenses are not quite huge because most households grow their own food supply, and some of them even indulge in raising poultry and piggery. It is also due to the distance of Cabintan and to the neighboring city that people provide their own needs.

Table 7. Distribution of total household monthly expenditure of women farmers by participation in Cabintan, Ormoc City, Leyte

Total Household Monthly Expenses	Women's Participation					
	Less Active		Active		Total	
	Count	%	Count	%	Count	%
below 10,000	18	72.00	98	80.99	116	79.45
10,001 – 20,000	5	20.00	19	15.70	24	16.44
20,001 – 30,000	2	8.00	3	2.48	5	3.42
Total	25	100.00	121	100.00	146	100.00
Mean	8,000.00		10,000.00		9,000.00	

### *Training participation, challenges and involvement of women in farming activities*

Table 8 shows that out of 146 respondents, 132 are actively attending government programme. Although the percentage of women's participation, it is still can be considered as irrelevant since, farmer sessions like this only happens at most twice a year in Cabintan.

Table 8. Women's participation in farmer's training and seminar

<b>Attending Farm Trainings &amp; Seminars</b>	<b>Frequency</b>
Yes	132
No	14
Total	146

Table 9 shows the problems encountered by women farmers. Out of 146 respondents, 79 of them states that their usual concern is mainly related to weather problem, since the location of the area is prone to typhoons.

This usually results in drowning of vegetable and will lead to early harvest to try to salvage the remaining vegetables. The second largest value of constraints count is medical conditions. Since the average age of women farmer is 42, it is no surprise that most of them are vulnerable to diseases, such as fatigue, fever and pain in different body joints.

Some of the problems faced by women farmers is no babysitter available, this is for the respondents that still have children below 3 years old. This enables women to participate in farming, since no one else will take care of their kids, that is why they would rather stay at home or most likely will bring their child in the farm location.

We also have problems due to old age, less job opportunities especially for farm workers, and financial problems where respondents who owned the land but are lacking of financial capability to plant their own vegetable that is why they are asking other people for financial aid. Then we have failed production, damaged crops, pesticides, time constraints, rainy season, and the overflow of supply especially when the same harvesting season of vegetable occurs.

Figure 3 summarizes the women's level of participation in different vegetable farming sector. These activities were categorized into 5 classifications: Land Cultivation, Planting, Maintaining of Vegetable Condition, Harvesting, and Marketing Management.



Table 9. Problems/constraints encountered by woman farmers in small-scale vegetable farming

<b>Problems encountered by women farmers</b>	
<b>Constraints</b>	<b>Count</b>
Weather Problems	79
Failed Production	7
Medical Conditions	16
No baby sitter	13
Job Opportunities	8
Failed Production	7
Financial Problem	6
Pesticides	3
Time Constraints	2
Overflow of supply	1
Raining Season	1
Damage Crops	1
<b>Total</b>	<b>146</b>

As shown in Figure 3, husbands participate the most in cultivating land with a rate of 57.31 percent, while joint participation between a wife and a husband equals 27.85 percent. The overall level of participation for single women and married women is just 9.13 percent, with results of 5.48 percent and 3.65 percent, respectively, while the participation rate for their children is 5.71 percent. This suggests that only a small number of female farmers in Cabintan engage in laborious tasks including trellising, seedbed preparation, and land preparation.

Women’s level of participation in the classification of planting, which includes pollination, fertigation of vegetables, using different methods in seedling planting, and the transplantation of seeds. The findings show that the husband participates in planting activities at the highest percentage, while the husband and wife together achieve participation rates of 27.12 percent, which is listed as the second-highest percent. The participation rate for women, both single and married, is next with a total of 11.78 percent, followed by the participation rate for children with 6.03 percent. Thus, it implies that women’s involvement in planting activity is a on low level of participation.

The results of women's participation level in the classification of maintaining vegetable conditions are shown in the table below. Pest and weed control, fertilizer application, pruning, irrigation, and other activities fall into this

category. It exhibits that the husband has the highest rate of engagement, with a value of 57.63 percent. Meanwhile, the rate of both husband-and-wife involvement is 23.97 percent, and the rate of women's participation, both single and married, is 13.7 percent, with values of 4.31 and 9.39 percent, respectively. However, the percentage of children participating is the lowest, at 4.7 percent.

The results of women's level of participation in the classification of harvesting. It indicates that out of 146 respondents, the rate of participation for both husband and wife obtained the highest value of 60.27(88) percent. The husband's involvement ranks second with a value of 18.49 percent, while women's participation is 7.59 percent for both single and married women, equivalent to 2.06 and 7.53 percent, respectively. And then there are children, who obtained 11.65 percent.

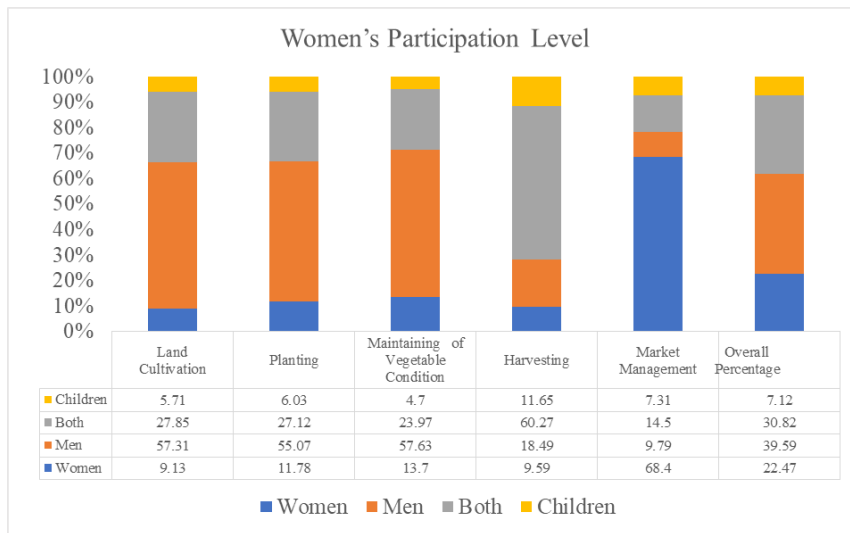


Figure 3. Women's level of participation in small-scale vegetable farming.

For marketing management, this includes making decisions about where to sell the vegetables, calculating profit, keeping track of vegetable production, and so on. Marketing management has the highest level of women's participation in vegetable farming, at 68.4 percent, for both single and married women, with values of 6.05 and 62.35 percent, respectively (Figure 3). Meanwhile, the participation rate for both husband and wife is 14.50 percent, 9.79 percent for the husband, and 7.31 percent for the children. This implies that women manage the

money more than their husbands, as they are also the ones who budget their monthly income

### ***Factors Affecting Women's Level of Participation in Small-scale Vegetable Farming***

Multiple regression was used to determine the factors influencing women's participation rate in small-scale vegetable farming in Cabintan, Ormoc, City in Leyte. Average working hours were regressed to various social and economic factors such as age, educational attainment, civil status, number of children, farmland ownership, total family income, household structure, farmers' access to training, husbands' occupation, and house ownership.

Table 10 shows the relationship between women's participation in small-scale vegetable farming and the various social and economic factors considered in the analysis. It demonstrates that the only significant variable in the model is whether or not the husband is a farmer (husfarmer), which indicates a positive relationship with women's participation, and farmland ownership (farmowner), which implies a negative relationship.

If the husband is a farmer, women's participation in vegetable farming is relatively higher than those whose husbands are not farmer. On average, women spend 1.031 more hours in vegetable farming compared to other women whose husband are not farmers. This is because, it will encourage women more to participate in farming if their husband is a farmer as well. In that way, they can both help each other out. The financial aspect will put things into perspective if both women and her spouse are working together. Having your spouse working together with you would also mean a shoulder to lean on when things get tough. Since both are aware of each other's work environment and situation, one can always offer support in times of a stressful situation.

Farmland ownership is associated with a lower rate of female participation. Results show that on average the number of hours spent in farming is reduced by 0.878 if they own the farm compared to non-owners of the farm.

According to (Twyrna,2015), women farm owners are generally involved in agricultural decision-making, mainly on the decision process on what to cultivate, which to input, and marketing management.

Ownership of land gives women the confidence to value their own role, irrespective of prevailing social norms that defies agriculture as a male occupation (Twyman,2015). This implies that women farm owner has a higher percentage of

participation in farming activities that does not necessarily need muscular strength.

Table 10. Multiple Regression of Women's Participation using average working hours as an indicator of economic factors and other variables

Variables	Coefficient	Std Error
Age	0.00322	(0.0116)
Education	0.0290	(0.0386)
Farm owner	-0.878***	(0.310)
Number of children	0.0138	(0.0577)
Husband is farmer	1.031***	(0.369)
Nuclear household	0.297	(0.382)
House owner	0.860	(0.764)
Total income	1.97e-06	(2.31e-06)
Constant	4.189***	(0.803)
Observations	146	
R-squared	0.126	

Note: Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 6. SUMMARY, IMPLICATION AND RECOMMENDATION

### Summary

The research was carried out in Cabintan, Ormoc City, Leyte. It aims to identify the factors that influence women's participation in small-scale vegetable farming. The study sought to do the following: (i) determine the level of participation of women in small-scale vegetable commercial farming; (ii) identify the factors in women's participation in small-scale vegetable commercial farming; (iii) identify the constraints that limit women's involvement in vegetable commercial farming; and (iv) draw recommendations to increase and encourage women's participation in vegetable commercial farming.

Primary and secondary data were employed in the study. Secondary data was gathered in the barangay hall of Cabintan, Ormoc City, Leyte, while the primary was obtained through an interview survey of the respondents. The variables that were included in the model are age, educational attainment, farmer's training, husband farmer, household income, household structure, civil

status, number of children dependent on income, farmland ownership, and house ownership. Multiple regression analysis was done using STATA to determine the relationship between women's participation in small-scale vegetable farming and the explanatory variables included in the model.

One hundred and twenty-three (83.7%) out of one hundred forty-six women farmers are active participants in small-scale vegetable farming in Cabintan. And twenty-three respondents (15.6%) are those who are less active participants. The reason why women who is participating less in small-scale vegetable farming is that most of them are farm owners.

Based on the regression, only the husband's farmer (positive), and farm owner (negative) has a significant effect to women's participation in small-scale vegetable farming. The results also shows that the variable age, education, civil status, number of children, total income, household structure, house and lot owner have no significant effect on women's level of participation.

### ***Implication***

Results show that 22.47 percent of women, either single or married, participate in small-scale vegetable farming. Their participation rate was determined by their involvement in five categories of vegetable farming, namely: land cultivation, planting, vegetable condition maintenance, harvesting, and marketing management. These were the indicators used to calculate the level of female participation. Because these activities require muscular strength, thus results to low participation of women.

Multiple regression results show that having a farmer husband have a positive relationship with participation, as it encourages women to participate in small-scale vegetable farming. Working with your husband provides you with a supportive factor in your daily endeavors. It will also aid in the production decision-making process in vegetable farming.

Farm land ownership indicates a negative relationship with women's participation in small-scale vegetable farming. Women who own farmland would prefer to have less participation in vegetable farming because they can still earn more money with less engagement. Some of them would delegate responsibility for growing vegetables on their farm to their spouses or children, with little supervision from them.

The implication of this results is that women who are more secure in their property rights who may opt for a gender division of labor, where farm

management is left to the husband or children (Twyman,2015). Whereas, to those who aren't will engaged more in farming, as a means for income.

Since the model explained barely 13% of the variation in the women's participation level, this study would recommend future research to examine additional variables that may explain women's participation rate in small-scale vegetable farming.

### ***Recommendations***

Results in the regression that could have some policy implications. Results show that women are more likely to participate in vegetable farming if their husband is a farmer as well. This major finding can guide the government in implementing programs and trainings for both husband and wife. The government may consider livelihood options that entice women's interest into involving more in small-scale vegetable farming that doesn't necessarily need heavy labour such as seminars for budgeting agricultural decision-making, approximating profit during harvest, and agri-business ventures. Most of those trainings that mainly involve in farming management.

This study recommends that programs centered in improving the level of women's participation such as access to seminars, access to farm training, and access to livelihood program are feasible options to boost participation in vegetable livelihood. Extension services must be reformed to better accommodate both men and women farmers and should increase their availability for consultations. The government must also implement policy that establish and strengthen farmers association support in Cabintan to increase their level of participation, particularly women.

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