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THE ROLE AND CONTRIBUTION OF WOMEN FARMERS TO CASHEW FARMING INCOME ON MADURA ISLAND

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Abstract. Women in farming activities have the same role as men, but their role is often ignored. Women are considered not to have a significant impact on farming activities. The aim of this research is to determine the role and contribution of women cashew farmers, determine cashew farming income, and determine the relationship between the involvement of women farmers and cashew farming income. The approach to understanding women's contributions in cashew farming uses the Harvard Method perspective (activity, marketing, access, control and benefits). This research used a mixed-method approach carried out on Madura Island, especially in Sampang and Sumenep Regencies. The qualitative approach used in-depth interviews with six key informants from the Agriculture and Agricultural Extension Services in the two districts. Furthermore, quantitative research involved a sample of 40 women cashew farmers from Sampang and Sumenep Regencies. The analysis stage uses distribution frequency, farming income analysis, and chi-square analysis. The results of this research show that in general women are involved in all categories (activities, marketing, access, control and benefits) with an average income of IDR 18,909,474. However, there is no relationship between the involvement of women farmers and cashew farming income. Therefore, further exploration of gender-sensitive research on women farmers is needed for the development of the cashew sector.

Keywords: Cashew, Contribution, Income, Role, Women farmers

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INTRODUCTION

The role of women in Indonesia's agricultural sector needs greater attention to support gender-sensitive sustainable agricultural development. The involvement of women farmers in farming activities is not limited to merely assisting in cultivation processes—such as planting, weeding, harvesting, and post-harvest handling—but also extends to decision-making (Rahmaniah et al., 2022). Most farmers engage in agricultural activities to obtain additional household income (Machieu et al., 2023); thus, the role of women farmers functions as a complementary contribution to family income. Essentially,

women have the same role as men in earning a livelihood (Afrizal & Kunci, 2021). Gender refers to differences in roles, rights, functions, responsibilities, and behaviors between men and women that are shaped by social, cultural, and customary values and may change over time (Shaliha & Fadlia, 2019). Agricultural labor in Indonesia generally comes from family members (husbands, wives, and children), which actively involves women in farming activities (Hidayati et al., 2023).

Caroline Moser, as cited in (Alie et al., 2023), categorizes gender roles into three types: productive roles, reproductive roles, and social roles. Productive roles refer to activities carried out by women to generate income. Since women are capable of performing similar work to men, they possess productive roles, which are driven by the need to meet household necessities and are often influenced by low household income levels (N. Wulandari et al., 2022). Reproductive roles relate to women's responsibilities in managing household affairs, including cooking, cleaning, childcare, and other domestic tasks, which are traditionally viewed as women's obligations (Purbowo et al., 2024). According to Wulandari et al., (2022), in addition to fulfilling reproductive roles, women also undertake productive roles to support household needs. Social roles refer to women's participation in community activities, such as religious gatherings, women's organizations (PKK), cooperatives, and other social institutions. As social beings, women are expected to actively contribute to community life through such engagements (N. Wulandari et al., 2022).

Women's productive roles are directly linked to their contribution to household income. Female participation in the agricultural sector contributes to farm households by increasing income and helping meet daily needs (Heldawati et al., 2023). According to Heldawati et al., (2023), the Harvard Analytical Framework views women's productive roles through four profiles:

1. Activity profile, which examines the division of labor and working hours between men and women in farming;
2. Access profile, which assesses opportunities for men and women to access natural resources, opportunities, and other inputs;
3. Control profile, which analyzes decision-making authority over resources and benefits derived from farming activities;
4. Benefit profile, which evaluates women's opportunities to receive benefits from farming activities.

(Heldawati et al., (2023) further state that the role of women farmers is associated with individual characteristics influencing income contribution, including age, education level, household dependents, and farming experience. Therefore, women, as a potential resource, need to be involved in every decision-making process (Rahmaniah et al., 2022).

Women's participation in agriculture is often overlooked. According to Danso-abbeam et al., (2020), women face limitations in accessing agricultural resources, technological training, credit facilities, farmer group membership, and equitable income distribution. Women are frequently perceived as having an insignificant impact on farming activities, as they are considered merely companions to their husbands. Consequently, women's aspirations, decision-making opportunities, access to information, participation in farmer organizations, and income from farming remain limited. Furthermore, women's involvement in income-generating agricultural activities results in dual roles, requiring them to manage household responsibilities while also supporting farm labor (Gintiyani & Lenggono, 2021). Despite these constraints, women continue to assist their husbands in earning a livelihood to meet household needs (Tindangen et al., 2020).

One farming system in which women's roles and contributions are particularly important is cashew farming. Cashew farming activities are carried out not only by men but also by women. Although women's involvement accounts for only about 30% of labor participation, cashew commodity development should actively involve women, as they contribute to household income (Pudjiastuti et al., 2017). Research by Hidayati et al., (2021) shows that women are actively involved in various cashew

farming activities, including processing. Women often develop cashew-based home industries to support household livelihoods (Sulastri, 2022). Cashew nuts also have significant potential for market expansion (Maharani, 2023). According to Statistics Indonesia, cashew nut exports reached 62,472.785 tons, with a transaction value of approximately USD 118 million.

One of Indonesia's main cashew production centers is East Java Province (Nurdiansah et al., 2022). Within East Java, the largest cashew plantations are located on Madura Island, particularly in Sampang and Sumenep Regencies. According to Statistics Indonesia of Sampang Regency (2023) cashew plantation areas cover approximately 4,100 hectares with a production output of 3,300 tons. Meanwhile, Sumenep Regency has the largest cashew plantation area in East Java, covering 11,301 hectares with a production of 33,420 tons (Yuniastri et al., 2021). Given these conditions, cashew farming on Madura Island must be developed effectively by actively involving women's roles and contributions. Women's participation in cashew farming is expected to contribute to increased farm income. Based on this background, the objectives of this study are: (1) to identify the roles and contributions of women farmers, (2) to analyze income from cashew farming, and (3) to examine the relationship between women farmers' involvement and cashew farm income on Madura Island. The novelty of this study lies in the application of the Harvard Analytical Framework (activity, access, control, and benefits) to understand women's roles in cashew cultivation, enabling more targeted recommendations not only regarding participation in farming activities but also concerning the distribution of access, control, and benefits in cashew farming systems.

METHOD

This study was conducted on Madura Island, specifically in Sampang and Sumenep Regencies. The study locations were selected purposively, considering that both regencies are the largest cashew-producing centers in East Java Province. The research was carried out from September to December 2024. This study employed a mixed-methods approach, combining qualitative and quantitative methods. The mixed-methods approach provides more comprehensive data, greater flexibility, and a wider range of analytical alternatives (Waruwu, 2023). The data used in this study were primary data, collected through observations, questionnaires, and direct interviews with cashew farmers in Sampang and Sumenep Regencies. The qualitative approach utilized in-depth interviews with six key informants from the Agricultural Offices of Sampang and Sumenep Regencies, as well as agricultural extension officers in both regencies. Meanwhile, in the quantitative approach, respondents were selected using purposive sampling, meaning that each individual included in the sample was intentionally chosen based on predetermined characteristics (R. D. Wulandari & Iskandar, 2018). The total number of respondents in this study was 40 women farmers, consisting of 20 women farmers from Sampang Regency and 20 women farmers from Sumenep Regency. To analyze the roles of women cashew farmers on Madura Island, this study applied the Harvard Analytical Framework for gender analysis, examining women's productive roles in cashew farming across five categories: activities, marketing, access, control, and benefits, as shown in Table 1.

Table 1. Productive Roles of Women Farmers in Cashew Farming

	Roles	Involved	Not Involved
A.	**Production Category**		
	1. Seed Preparation		
	2. Weeding		
	3. Fertilization		
	4. Pest Control		
	5. Pruning		
	6. Harvesting		
B.	**Marketing Category**		
	1. Drying		
	2. Quality Selection		
	3. Sales		
	4. Price Information Search		
C.	**Access Category**		
	1. Access to Facilities		
	2. Access to Training		
	3. Access to Capital		
	4. Access to Information		
D.	**Control Category**		
	1. Decision on Capital Use		
	2. Decision on Land Use		
	3. Decision on Equipment Use		
	4. Decision on Labor Use		
	5. Decision on Crop Type Selection		
E.	**Benefit Category**		
	1. Knowledge Benefits		
	2. Skill Benefits		
	3. Income Benefits		

Source: Data Processed, 2024

Furthermore, to determine cashew farm income on Madura Island, the analysis was conducted using farm income analysis. The initial stage involved identifying the use of production factors and associated costs. Farm production costs were calculated using the following formula (Amal et al., 2022):

$$TC = FC + VC \quad (1)$$

Where:
TC = Total Cost of Cashew Farming (IDR)
FC = Fixed Cost of Cashew Farming Mete (IDR)
VC = Variable Cost of Cashew Farming (IDR)

After determining the total cost used in cashew farming, the next step was to calculate total revenue using the following formula (Amal et al., 2022):

$$TR = P \times Q \quad (2)$$

Where:
TR = Total Revenue of Cashew Farming (IDR)
P = Price of Cashew Output (IDR)
Q = Quantity of Cashew Production (Kg)

Subsequently, **cashew farm income** was calculated using the following formula (Amal et al., 2022):

$$I = TR - TC \quad (3)$$

Where:
I = Income from Cashew Farming (IDR)
TR = Total Revenue of Cashew Farming (IDR)
TC = Total Cost of Cashew Farming (IDR) (IDR)

The final step was to examine the relationship between women farmers' involvement and cashew farm income, which was analyzed using the chi-square analysis. The chi-square test is a non-parametric comparative test conducted on two variables (Annisa et al., 2020). This study applied a 95% confidence level or $\alpha = 0.05$. The testing criteria used in this study were as follows (Latif et al., 2022):

1. If the p-value ≤ 0.05, there is a relationship between the variables.
2. If the p-value > 0.05, there is no relationship between the variables.

The hypotheses formulated in this study were:

1. H_0: There is no relationship between women farmers' involvement and cashew farm income on Madura Island.
2. H_1: There is a relationship between women farmers' involvement and cashew farm income on Madura Island.

The decision criteria applied in this study were:

1. Accept H_0 and reject H_1 if the p-value > 0.05, indicating no relationship between women farmers' involvement and cashew farm income on Madura Island.
2. Accept H_1 and reject H_0 if the p-value < 0.05, indicating a relationship between women farmers' involvement and cashew farm income on Madura Island.

The data used in the chi-square analysis were categorical data. The categories of women farmers' involvement in cashew farming on Madura Island are presented in the following Table 2.

Table 2. Category Codes for Women Farmers' Involvement in Cashew Farming

No.	Women Farmers' Involvement	Category Codes
1.	**Production Activities (PR)**	
	a. Involvement of 1PR	1
	b. Involvement of 2PR	2
	c. Involvement of 3PR	3
	d. Involvement of 4PR	4
	e. Involvement of 5PR	5
	f. Involvement of 6PR	6
2.	**Marketing Activities (PM)**	
	a. Involvement of 1PM	1
	b. Involvement of 2PM	2
	c. Involvement of 3PM	3
	d. Involvement of 4PM	4
3.	**Access (A)**	
	a. Involvement of 1A	1
	b. Involvement of 2A	2
	c. Involvement of 3A	3
	d. Involvement of 4A	4
4.	**Control (K)**	
	a. Involvement of 1K	1
	b. Involvement of 2K	2
	c. Involvement of 3K	3
	d. Involvement of 4K	4
	e. Involvement of 5K	5
5.	**Benefits (M)**	
	a. Involvement of 1M	1
	b. Involvement of 2M	2
	c. Involvement of 3M	3

Source: Data Processed, 2024

The income categories used in this study were derived from various previous studies. Research conducted by Molebila et al., (2022) reported that the average income from cashew farming was less than IDR 5,000,000. Meanwhile, Kaharuddin et al., (2019) found that the average cashew farm income was IDR 5,000,000, which differs from the findings of Alfian et al., (2020), who reported that cashew farm income was greater than IDR 10,000,000. Therefore, this study applies income categories based on a combination of findings from these previous studies. The income categories of cashew farming on Madura Island are presented in Table 3.

Table 3. Category Codes for Cashew Farming Income

No.	Farming Income	Category Codes
1.	< IDR5.000.000	1
2.	IDR5.000.000-IDR10.000.000	2
3.	> IDR10.000.000	3

Source: Data Processed, 2024

RESULT AND DISCUSSION

Characteristics of Women Cashew Farmers on Madura Island

The characteristics of women farmers provide a general description of their background conditions related to cashew farming activities. The characteristics of women cashew farmers on Madura Island are presented in Table 4.

Table 4. Characteristics of Women Cashew Farmers on Madura Island

No	Characteristics Category	Frequency	
		Number of Samples	Percentage (%)
1.	**Age (Years)**		
	a. Productive Age (15-64)	37	92,5
	b. Non-Productive Age (> 64)	3	7,5
	Total	**40**	**100**
2.	**Education**		
	a. Higher Education	1	2,5
	b. Senior High School	5	12,5
	c. Junior High School	4	10
	d. Elementary School	20	50
	e. No Formal Education	10	25
	Total	**40**	**100**
3.	**Farming Experience**		
	a. < 5 Years	1	2,5
	b. 5-10 Years	6	15
	c. > 10 Years	33	82,5
	Total	**40**	**100**
4.	**Farmer Group Membership**		
	a. Yes	2	5
	b. No	38	95
	Total	**40**	**100**
5.	**Farming Objective**		
	a. Main Source of Income	18	45
	b. Additional Source of Income	22	55
	Total	**40**	**100**
6.	**Farm Ownership Status**		
	a. Inherited	37	92,5
	b. Self-Established	3	7,5
	Total	**40**	**100**
7.	**Land Ownership Status**		
	a. Owned	40	100
	b. Rented	0	0
	Total	**40**	**100**
8.	**Cropping Pattern**		
	a. Intercropping	33	82,5
	b. Monocropping (Cashew)	7	17,5
	Total	**40**	**100**
9.	**Land Area**		
	a. < 5 Plots	29	72,5
	b. 5-10 Plots	10	25
	c. > 10 Plots	1	2,5
	Total	**40**	**100**
10.	**Number of Trees**		
	a. < 5 Trees	5	12,5
	b. 5-10 Trees	14	35
	c. > 10 Trees	21	52,5
	Total	**40**	**100**

Source: Data Processed, 2024

Table 4 shows that the majority of women cashew farmers on Madura Island are within the productive age group (15–64 years), totaling 37 respondents or 92.5%. According to Statistics Indonesia

(Badan Pusat Statistik, 2018), the productive age range is classified as individuals aged 15 to 64 years. Women farmers in the productive age group tend to have better physical and emotional capacity (Ridwan et al., 2019). This indicates that women farmers of productive age are able to achieve more optimal farming outcomes compared to those below or above the productive age range (Sholeh et al., 2020). The remaining three respondents (7.5%) were aged over 64 years.

The education levels of women cashew farmers on Madura Island vary. As shown in Table 4, the largest proportion of women farmers attained only elementary school education, with 20 respondents (50%). This finding is consistent with the study by Sholeh et al., (2020), which reported that 56.76% of women farmers had an elementary school education. Furthermore, 10 respondents (25%) of women farmers on Madura Island had no formal education. These results indicate that the average education level remains relatively low; however, this does not hinder women farmers from engaging in cashew farming, as they already possess basic farming knowledge and experience (Asnawati et al., 2022).

In terms of farming experience, most women cashew farmers on Madura Island had more than 10 years of experience, accounting for 33 respondents (82.5%). This is because many women cashew farmers have been involved in farming activities since childhood, assisting their parents. Longer farming experience contributes to broader knowledge and skills related to agricultural practices (Sidu et al., 2021). This finding suggests that the longer the farming experience of women cashew farmers, the higher their level of knowledge and skills. This result is in line with Maulana et al., (2019), who found that greater farming experience enhances women farmers' ability to manage risks in agricultural activities.

Participation of women cashew farmers in farmer groups on Madura Island remains very low, with only two respondents (5%) being members of farmer groups, while 38 respondents (95%) were not affiliated with any farmer group. This condition is largely due to the fact that most farmer group members are men. This finding is consistent with Wati et al., (2020) who reported that nearly all members of farmer groups were men, with only one woman participating.

Cashew farming undertaken by women farmers on Madura Island primarily serves as a source of additional income. As shown in Table 4, 22 respondents (55%) reported that cashew farming is used as a supplementary income source. Based on interview results, cashew farming is considered an additional income activity because cashew is a perennial crop, and its cultivation system commonly applies an intercropping pattern. Khoirunisa & Santhyami (2023) stated that intercropping is utilizing the vacant spaces between crops for planting other crops. Thus, the remaining land space is used to cultivate seasonal crops, which serve as the main source of income for women farmers on Madura Island.

The ownership status of cashew farming enterprises on Madura Island is predominantly inherited. As indicated in Table 4, 37 respondents (92.5%) reported that their cashew farming activities originated from family inheritance. Consequently, land ownership status for cashew farming on Madura Island is also inherited, with all respondents (100%) owning their land. This finding is consistent with the study by Hidayati et al., (2021), which states that cashew farming is generally a family-based enterprise passed down from generation to generation.

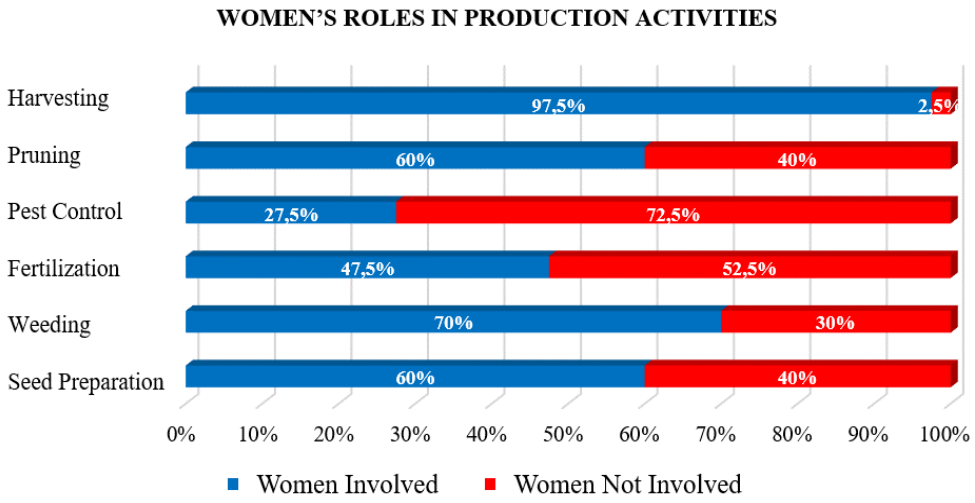
On the same plots of land, women cashew farmers on Madura Island also cultivate other crops. As shown in Table 4, 33 respondents (82.5%) applied an intercropping system. Based on interview findings, the crops commonly grown alongside cashew include seasonal crops such as maize, cassava, and peanuts. This finding is in line with Khoirunisa & Santhyami (2023), who reported that spaces between cashew trees are utilized to plant turmeric, maize, cassava, and peanuts.

The number of land plots owned by women cashew farmers on Madura Island is generally less than five plots, equivalent to less than 0.3 hectares. As presented in Table 4, 29 respondents (72.5%) owned less than five plots (< 0.3 ha), while 10 respondents (25%) owned between five and ten plots (0.3–0.6 ha). Only one respondent (2.5%) owned more than ten plots (> 0.6 ha). According to Amal et al., (2022), larger land areas are associated with higher production levels and greater income.

The average number of cashew trees owned by women farmers on Madura Island is more than ten trees. As shown in Table 4, 21 respondents (52.5%) reported owning more than ten cashew trees. This condition is influenced by the size of land owned. On average, cashew trees are planted along land boundaries; some trees grow irregularly within the plots, while others are cultivated intensively on specific plots.

The Role of Women Cashew Farmers on Madura Island

The roles and contributions of women cashew farmers on Madura Island in cashew farming are examined in this study across five categories: production activities, marketing activities, access, control, and benefits. Women farmers' involvement in production activities is presented in Figure 1. Production activities in cashew farming include seed preparation for planting, weeding, fertilization, pest control, pruning, and harvesting.



Source: Data Processed, 2024

Figure 1. Role of Women in Production Activities

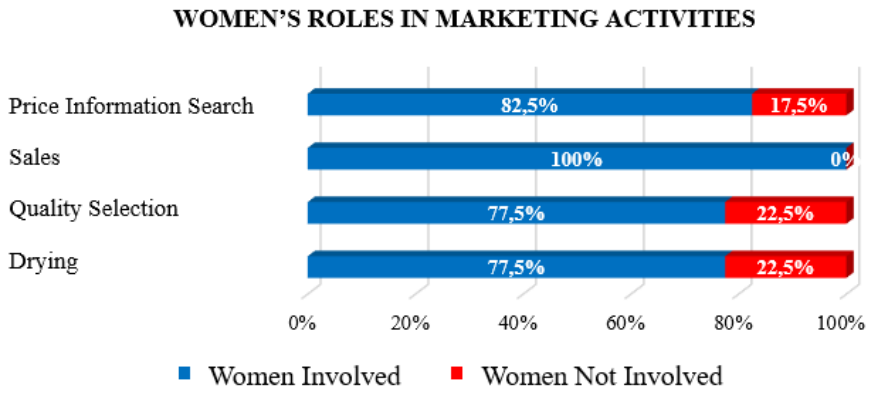
Overall, women farmers' involvement in cashew cultivation is very high, as many production activities are carried out by women, ranging from seed preparation to harvesting. However, women farmers participate in all production activities at varying levels of involvement. The highest level of involvement is observed in harvesting activities, accounting for 97.5%. During harvesting, women farmers collect cashew fruits from the trees by climbing or using bamboo poles fitted with hooks. After the fruits fall, they are gathered and separated into cashew apples and cashew nuts. Women farmers also show relatively high involvement in weeding activities, with a participation rate of 70%. In weeding activities, women farmers remove weeds or wild plants growing beneath cashew trees using simple tools such as hoes and sickles.

In seed preparation and pruning activities, women farmers exhibit the same level of involvement, each at 60%. During seed preparation, women farmers are responsible for transferring young cashew seedlings to planting sites, using simple tools such as hoes. In pruning activities, women farmers trim dry and damaged branches using tools such as bamboo poles, axes, and sickles.

Lower levels of involvement are observed in fertilization (47.5%) and pest control (27.5%) activities. Fertilization is largely not practiced by farmers; however, among those who apply fertilizers, women farmers are involved in applying manure fertilizer derived from livestock waste. Pest control activities show the lowest level of women's involvement. Nevertheless, this condition represents a positive initial step toward sustainability, as the majority of farmers (72.5%) do not engage in pest

control practices. Reduced use of chemical pesticides supports sustainable cashew farming practices (Hidayati et al., 2023).

Furthermore, the roles of women cashew farmers on Madura Island were also examined based on marketing activities. Figure 2 illustrates that women cashew farmers on Madura Island are involved in all marketing activities, although with varying degrees of participation.

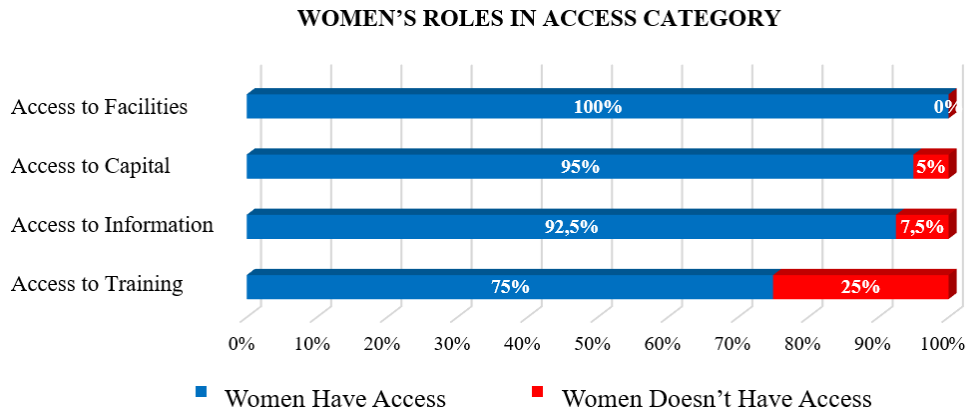


Source: Data Processed, 2024

Figure 2. Role of Women in Marketing Activities

Women farmers show full involvement (100%) in selling activities. They also demonstrate high participation in price information seeking, reaching 82.5%. In selling activities, women are responsible for selling harvested cashew nuts to local collectors. Similarly, women actively seek price information, which is typically obtained from collectors and fellow farmers. Furthermore, women farmers are also involved in drying activities (77.5%) and quality sorting (77.5%). In drying activities, women dry cashew nuts by placing them under direct sunlight. In quality sorting activities, women select cashew nuts based on size and shape to determine their market quality prior to sale. These findings indicate that marketing activities in cashew farming require substantial involvement from women farmers. Women's participation in agricultural marketing activities contributes to farm household livelihoods and has the potential to increase income and support the fulfillment of household needs (Heldawati et al., 2023).

Furthermore, the roles of women cashew farmers related to access are presented in Figure 3. In general, women cashew farmers on Madura Island are involved in all forms of access or opportunities related to the management of resources and farming-related opportunities.

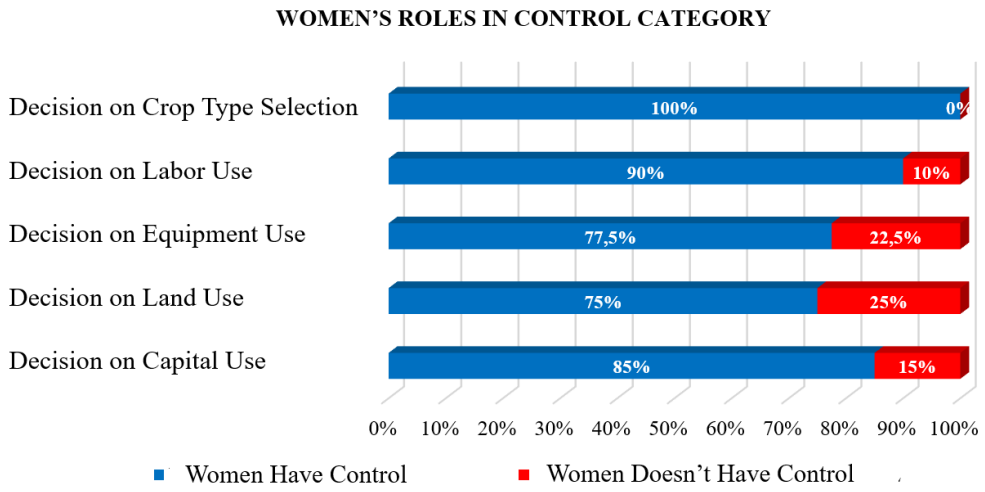


Source: Data Processed, 2024

Figure 3. Role of Women in the Access Category

Women farmers have full access to facilities, meaning that all facilities used in cashew farming activities can be managed by women. Women farmers also have more than 90% access to capital and information (92.5%). This indicates that women are able to manage the capital used and possess the capacity to obtain information related to cashew farming activities. The lowest level of access is found in training activities (75%). Based on interview results, training participation is predominantly undertaken by male farmers. In fact, in several areas in both Sampang and Sumenep Regencies, training activities have never been conducted. This finding is consistent with the study by Heldawati et al., (2023), which states that access to training is largely dominated by men.

Furthermore, the roles of women cashew farmers related to control are presented in Figure 4. Women cashew farmers on Madura Island are involved in all forms of control or decision-making, with participation levels exceeding 70%.

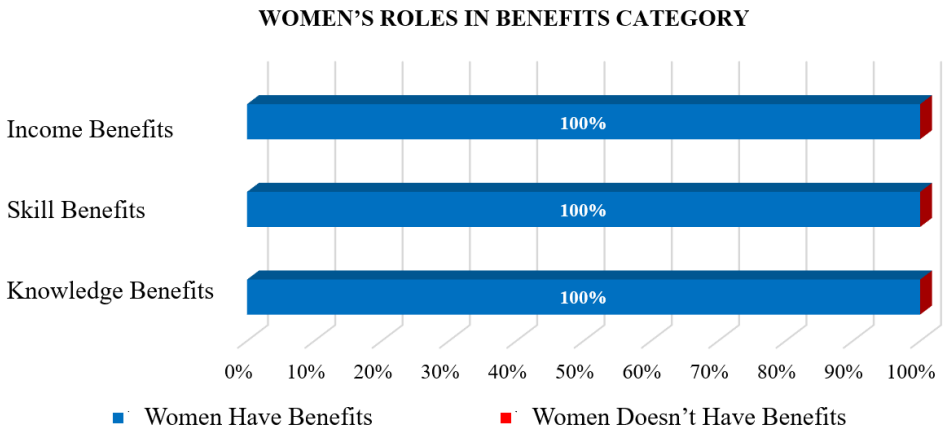


Source: Data Processed, 2024

Figure 4. Role of Women in the Control Category

Women farmers have full control over decisions related to crop selection, indicating that women are fully involved in determining which crops will be planted. Women are also involved in decisions regarding labor use (90%) and capital use (85%). This indicates that women participate in determining the amount of labor and capital allocated in cashew farming activities. Furthermore, women are involved in decisions related to the use of equipment and land, with participation levels above 70%, indicating that decisions concerning equipment and land utilization involve women's roles.

The final role of women farmers in cashew farming is reflected in the benefit category. Figure 5 shows that women cashew farmers in Madura Island receive 100% of the benefits in terms of knowledge, skills, and income obtained from cashew farming activities.



Source: Data Processed, 2024

Figure 5. Role of Women in the Benefit Category

In general, women cashew farmers on Madura Island play an important role and make significant contributions to production activities, marketing activities, access, control, and benefits. Women's roles are also highly needed in post-harvest activities. However, in practice, most activities, including control or decision-making, are often carried out jointly by both men and women. This is because men and women collaborate in managing cashew farming activities (Hidayati et al., 2023). Therefore, women's roles in control and decision-making need to be explored further in future studies to better understand the division of involvement between men and women. In addition, the limited post-harvest activities have resulted in women farmers' roles not yet being maximized in cashew farming. Post-harvest activities need to be developed to increase women farmers' income. Women's involvement in post-harvest activities has the potential to enhance income levels (Nurhidayati, 2018)

Income of Cashew Farming Managed by Women Farmers in Madura

Furthermore, the income of cashew farming managed by women farmers on Madura Island was analyzed to determine the profitability of the farming activities carried out by women farmers. This analysis begins by identifying the costs incurred in cashew farming activities. The fixed costs of cashew farming are presented in Table 5. The average fixed cost of cashew farming (per hectare per year) on Madura Island amounts to IDR 424,403. The highest allocation of fixed costs is for harvesting poles, amounting to IDR 237,338. This is because most cashew farmers own more than one pole to facilitate the harvesting process. Similarly, a relatively high allocation of fixed costs is also spent on sickles, amounting to IDR 104,891, as farmers generally own more than one sickle used for weeding, pruning, and other farming activities. Meanwhile, the lowest allocation of fixed costs is for land tax, amounting to IDR 5,000. Based on interview results, land tax costs are borne by the village government, resulting in farmers generally not incurring expenses for land tax payments.

Table 5. Average Fixed Costs of Cashew Farming (Ha/Year)

No.	Type of Fixed Cost	Cost and Depreciation (IDR)
1.	Land Tax	5,000
2.	Hoe	41,138
3.	Sickle	104,891
4.	Axe	22,617
5.	Machete	13,418
6.	Harvesting Pole	237,338
	Total Fixed Cost	**424,403**

Source: Data Processed, 2024

Table 6 shows that the average variable cost of cashew farming (Ha/ year) on Madura Island is IDR 2,798,119. The only variable cost incurred in cashew farming is labor. Labor is required for various farming activities such as rejuvenation, weeding, fertilization, and harvesting, which on average require one to two workers. The labor used in cashew farming on Madura Island mostly comes from within the farmer's own family. In carrying out farming activities, labor can originate from family members themselves (Kawengian *et al*., 2019). Based on interview results, it is known that, on average, cashew farmers do not incur costs for seedlings, fertilizers, or pesticides. This is because most cashew farmers on Madura Island do not carry out new planting, as cashew farming is an inherited farming activity. They also do not spend on fertilizers and pesticides because fertilization and pest control are largely not practiced by farmers. However, for those who do apply fertilizer, the fertilizer commonly used is manure obtained from the farmers' own livestock waste.

Table 6. Average Variable Costs of Cashew Farming (per Ha/Year)

No.	Type of Variable Costs	Cost (IDR)
1.	Labor	2,798,119
	Total Variable Costs	**2,798,119**

Source: Data Processed, 2024

Table 7 shows that the average total cost of cashew farming (per hectare per year) is IDR 3,222,522. It can be seen that the total variable costs are higher than the fixed costs.

Table 7. Average Total Costs of Cashew Farming (Ha/Year)

No.	Total Cost	Amount
1.	Fixed Costs (IDR)	IDR424.403
2.	Variable Costs (IDR)	IDR2.798.119
	Total Cost	**IDR3.222.522**

Source: Data Processed, 2024

Table 8 shows that the average cashew production on Madura Island is 1,182 kg/year, with an average wet cashew price of IDR 18,720/kg. Therefore, by multiplying production and price, the average revenue (per hectare per year) is IDR 22,131,996.

Table 8. Average Revenue of Cashew Farming (Ha/Year)

No.	Description	Total
1.	Produksi (Kg/tahun)	1,182
2.	Harga Mete Basah (IDR/Kg)	18,720
	Total of Revenue (IDR)	**22,131,996**

Source: Data Processed, 2024

Further, based on Table 9, the average income of cashew farming (per hectare per year) on Madura Island is IDR 18,909,474. Farming income is obtained from the calculation of the difference between total revenue and total costs of cashew farming per year.

Table 9. Average Income of Cashew Farming (Ha/Year)

No.	Income	Total
1.	Revenue	IDR 22,131,996
2.	Cost	IDR 3,222,522
	Total of Income	IDR **18,909,474**

Source: Data Processed, 2024

Thus, cashew farming by women farmers generates annual profits that can contribute to household income. This income can help women farmers meet household needs as well as other personal or family requirements.

Relationship between the Role of Women Farmers and Cashew Farming Income

lthough cashew farming is profitable, the involvement of women farmers and cashew farming income need to be evaluated in order to further examine the relationship between the two. In theory, a high level of women farmers' involvement is expected to influence the income generated (Heldawati et al., 2023). However, the results of this study show the opposite.

Table 10 shows that there is no relationship between the involvement of women farmers in production activities and cashew farming income, as indicated by the p-value of 0.552 > 0.05. This indicates that although women are involved in various production activities, this does not necessarily mean that income will increase. Cashew crop maintenance activities in Madura are often not carried out routinely or periodically and are frequently neglected (Hidayati *et al*., 2023). Therefore, these various production activities have no relationship with the income generated.

Table 10. Relationship between the Involvement of Women Farmers in Production Activities and Cashew Farming Income

Category of Income	Production Activities						Number	*p-value*
	1PR	2PR	3PR	4PR	5PR	6PR		
< IDR 5,000,000	2	4	12	7	4	3	**32**	**0.552**
IDR 5,000,000- IDR 10,000,000	0	1	3	1	0	2	**7**	
> IDR 10,000,000	0	0	0	0	0	1	**1**	
Total							**40**	

Source: Data Processed, 2024

Table 11 shows the relationship between the involvement of women farmers in marketing activities and cashew farming income. The p-value obtained is 0.783 > 0.05, which means that the involvement of women farmers in marketing activities has no relationship with cashew farming income. Although, on average, women cashew farmers in Madura are involved in four marketing activities—namely drying, quality sorting, selling, and searching for price information—this involvement does not have an effect on income levels.

Table 11. Relationship between the Involvement of Women Farmers in Marketing Activities and Cashew Farming Income

Category of Income	Marketing Activities				Number	*p-value*
	1PM	2PM	3PM	4PM		
< IDR 5,000,000	2	7	4	19	**32**	
IDR 5,000,000- IDR 10,000,000	0	0	1	6	**7**	**0.783**
> IDR 10,000,000	0	0	0	1	**1**	
Total					**40**	

Source: Data Processed, 2024

Tables 12, 13, and 14 also show that the involvement of women farmers in access, control, and benefits has no relationship with cashew farming income. Table 12 shows the relationship between women farmers' involvement in access and cashew farming income, with a p-value of 0.504 > 0.05. Table 13 shows the relationship between women farmers' involvement in control and cashew farming income, with a p-value of 0.726 > 0.05, which means that women farmers' involvement in control has no relationship with cashew farming income. Table 14 shows that women cashew farmers obtain all benefits from cashew farming, namely knowledge, skills, and income.

Table 12. Relationship between the Involvement of Women Farmers in Access and Cashew Farming Income

Category of Income	Access				Number	*p-value*
	1A	2A	3A	4A		
< IDR 5,000,000	0	5	5	22	**32**	
IDR 5,000,000- IDR 10,000,000	0	0	0	7	**7**	**0.504**
> IDR 10,000,000	0	0	0	1	**1**	
Total					**40**	

Source: Data Processed, 2024

Table 13. Relationship between the Involvement of Women Farmers in Control and Cashew Farming Income

Category of Income	Control					Number	*p-value*
	1K	2K	3K	4K	5K		
< IDR 5,000,000	1	5	1	6	19	**32**	
IDR 5,000,000-IDR10,000,000	0	0	1	0	6	**7**	**0.726**
> IDR 10,000,000	0	0	0	0	1	**1**	
Total						**40**	

Source: Data Processed, 2024

Table 14. Relationship between the Involvement of Women Farmers in Benefits and Cashew Farming Income

Category of Income	Benefits			Number	*p-value*
	1M	2M	3M		
< IDR 5,000,000	0	0	32	**32**	
IDR 5,000,000- IDR 10,000,000	0	0	7	**7**	
> IDR 10,000,000	0	0	1	**1**	
Total				**40**	

Source: Data Processed, 2024

In general, there is no relationship between the involvement of women farmers and the income of cashew farming on Madura Island. Although women farmers are involved from production and marketing activities through to obtaining benefits, this involvement has no relationship with cashew

farming income. Therefore, H0 is accepted and H1 is rejected, meaning that there is no relationship between the involvement of women farmers in cashew farming and cashew income on Madura Island. This result is not in line with the study by Nurhidayati (2018), which stated that the involvement of women farmers can increase income. In this case, other studies have also mentioned that women and men work together to manage cashew farming enterprises (Hidayati *et al*., 2023). Thus, the involvement of women farmers in income generation is not considered significant. In addition, the largest activity in cashew farming is identified as harvesting compared to other activities. Maintenance activities are carried out only minimally and are not scheduled. Nevertheless, further research is needed to explore the role of women, especially in post-harvest activities and processing.

CONCLUSIONS

Based on the results of the study, it can be concluded that, in general, women cashew farmers on Madura Island (Sampang and Sumenep Regencies) are involved in all categories examined in this study, including production activities, marketing activities, access to opportunities, control or decision-making, and the benefits obtained. Furthermore, the average income earned from cashew farming on Madura Island amounted to IDR 18,909,474. However, the findings indicate that there is no relationship between women farmers' involvement and cashew farm income.

The recommendations of this study for stakeholders, particularly the government at both the local level (Sampang and Sumenep Regencies) and the national level, emphasize the need for interventions in post-harvest activities in cashew farming to maximize the role of women farmers and increase cashew farm income on Madura Island. Such interventions may include support for value-added processing training and marketing development for cashew nut products as part of efforts to empower women on Madura Island.

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