

# The Financial Efficiency of the Organic Mango Production Model in the Mekong Delta Vietnam

Khong Tien Dung<sup>1\*</sup>, Vo Nguyen Hong Chau<sup>2</sup>, Vu Thuy Duong<sup>3</sup>, Nguyen Thanh Thuy<sup>4</sup>

<sup>1,3</sup>School of Economics, Can Tho University, Vietnam

<sup>2</sup>BSc in Agricultural Economics, Can Tho University, Vietnam

<sup>4</sup>Vinh Long Department of Agriculture and Rural Development

\*Corresponding Author

DOI: <https://dx.doi.org/10.47772/IJRISS.2024.808049>

Received: 13 July 2024; Revised: 22 July 2024; Accepted: 26 July 2024; Published: 30 August 2024

## ABSTRACT

This research aims to evaluate the financial efficiency of the organic mango production model in Dong Thap province and compare it with the conventional model. The data employed in this research were collected by surveying organic and traditional mango farming households in Dong Thap province Vietnam. The results of comparing the production costs of the two models reveal that organic mangoes' production costs are higher than traditional mango production costs, with the difference in cost items used for chemicals and fruit bags, these differences are both significant at the 1% level. Comparing the financial indicators of the two models indicates that the indicators of revenue/cost, income/cost, profit/cost, and profit/family labor in the two models all have a statistical significance level of 1%, except for the profit/cost section which has a significance level of 10% and the profit/family labor index which is not statistically significant. The results of analyzing factors affecting farmers' profits in the model show that 4 variables affect farmers' profits including working days, age, education, and experience while age is not statistically significant in the traditional model. Surprisingly, training does not affect the profit in the regression model in both models. Based on the results of the analysis, the author proposes some recommendations to improve the financial efficiency of the organic mango growing model in the Mekong Delta.

**Keywords:** organic, organic mango production model, financial efficiency, Mekong Delta

## INTRODUCTION

Mango is a tropical fruit with high economic value that is very popular in domestic and international markets (Truong Hong Vo Tuan Kiet and Duong Ngoc Thanh, 2014), has high competitiveness in the market, and is widely used. Mango is one of the main fruit trees in the Mekong Delta region, accounting for about 48% of the total mango area in the country. Among them, Dong Thap is the province with the largest mango-growing area in the Mekong Delta (Le Hoang Vu and Ngoc Thang, 2021).

The mango growing area in Dong Thap province is about 12,000 hectares, with an annual output of nearly 113,000 tons. With efforts to develop the province's mango industry, the area of mangoes certified by Viet GAP and Global GAP is increasing, specifically the area of mangoes produced meeting Viet GAP standards is more than 353 hectares, Global GAP is 55 hectares (Newspaper Dong Thap, 2022). However, there are still many farming households that produce in the traditional style, applying a lot of chemical fertilizers, pesticides, and especially excessive use of flower and seed stimulants during the main and off-season seasons, etc. Not only does it cost a lot of money for fertilizers, but it can also easily cause poisoning for consumers, and above all, the use of a lot of fertilizers and pesticides will cause environmental pollution, affecting the production of mango. Utilize production resources to develop sustainable agriculture. Therefore, orienting mango production according to quality standards, organic production, and reducing investment costs in chemical fertilizers and

pesticides is necessary, in order to increase the value of goods and meet demand. Current consumer demand and environmental protection are also among the factors of concern for the province. Currently, consumer demand for clean and quality products is increasing due to improved living standards, which has led to increased demand for organic products. As one of the province's key fruit products, mangoes also need to change their production methods towards organic. In addition to economic efficiency, in the long run, this model is expected to improve productivity, awareness, and traditional production habits of farmers from using chemicals to using organic fertilizers, will limit pollution, thereby increasing the reputation and competitiveness of Dong Thap mangoes in domestic and international markets.

Therefore, the research on the financial efficiency of organic mango growing models in Dong Thap province was carried out to compare the financial efficiency of organic and traditional mango production models. The results of this research were then used to propose some solutions to improve mango production farming in the Mekong Delta.

## LITERATURE REVIEW

Analytical research on financial efficiency on factors affecting model profits has been conducted in several studies such as Pham Thanh Hien and Pham Cong Huu (2020) who have analyzed financial efficiency and identified factors affecting the profitability of specialized chive and basil growing models of farmers in Vinh Long province. Research results show that in both models the cost range is quite high, causing model costs to increase, affecting the profits of both models to decrease. Therefore, research is needed to find solutions to reduce production costs and control factors that affect profits to improve the efficiency of the chive and basil growing model in the future. Duong Ngoc Thanh and Nguyen Vu Phong (2014) evaluated the financial efficiency of two mango production models according to GAP and traditional with the goal of analyzing financial efficiency and influencing factors in the production of Cat mangoes from GAP standards and traditional models. The results of the study show that mango production according to the GAP standard model has higher revenue, profit, and financial indicators than the traditional model. In addition, the authors also used the SWOT matrix to synthesize factors from both internal and external sources. Because mango is one of the main fruits of Dong Thap province, the results of the research are very important, aiming to propose development solutions for the mango industry in Dong Thap province in particular and the agricultural industry in general. The study still has some limitations, which is that the study has not shown a direct relationship between implementing corporate social responsibility and the financial performance of the business. According to research by Khong Tien Dung (2020) on analyzing the current production situation and calculating the financial efficiency of conventional rice production models and organic rice models in Vinh Long province. The analysis results show that there are long-term financial efficiency when farmers convert rice production from traditional models to organic models.

Research on methods of comparing financial indicators of farming by Nguyen Quoc Nghi et. al. (2017) compared the financial efficiency between ecological and traditional farming methods. Traditional livestock farming of livestock households in Phong Dien district, Can Tho city. The study clarifies that the benefits of ecological livestock farming are higher than traditional ones through specific financial ratios such as Revenue, costs, profit, profit/revenue ratio, revenue/cost ratio, and profit-to-cost ratio, by using these ratios, the study has reflected that the profitability of the group of households raising livestock according to the ecological model is almost higher than the group of households raising livestock using the traditional form. The research results are an important database that contributes to affirming the effectiveness of ecological livestock restructuring in the locality. Besides, the research still has limitations in not being able to statistically test the difference in financial efficiency according to each criterion and each group of farmers. After reviewing the research analyzing the financial performance of rice-producing households following the model of linking with businesses in An Giang province by La Nguyen Thuy Dung and Mai Van Nam, the study compared the financial indicators of farmers participating in the linkage model and not participating in the linkage model of rice production households and businesses in An Giang province. It can be seen that the association of business households in rice production and consumption helps reduce costs, increase profits, limit risks, and increase the competitiveness of products, thereby improving the financial efficiency of rice farming households.

Research results indicate that mango production according to new models such as GAP, high-tech models shows revenue, profit, and other financial indicators, ... are higher than the traditional model (Duong Ngoc Thanh and Nguyen Vu Phong, 2014; Do Thi Nhai and Tran Nguyen Thanh, 2021). The application of mango growing models according to GAP standards has higher production costs than traditional mango production models (Duong Ngoc Thanh and Nguyen Vu Phong, 2014). Besides, the linkage between production and consumption is still difficult, the production scale of mango farmers is still small (Truong Vo Hong Kiet et al., 2015) and research results also show that the level of intensive use of agricultural chemicals is quite high (Tran Quoc Nhan et al., 2021). It is necessary to apply scientific and technical models to reduce costs in production (Do Thi Nhai and Tran Nguyen Thanh, 2021). Thus, research on financial efficiency is still necessary to conduct, especially in the case of organic to reveal the benefits and differences between this model and the traditional model.

## RESEARCH METHODOLOGY

### Data collection method:

Primary data was collected from interviews with 108 organic mango farming households and 59 traditional farming households during the period from 2022 to 2023 with data from the most recent crop of the year. The farmers were chosen to be interviewed based on the list provided by local authorities and then, randomly chosen from the list.

### Data analysis method:

*Descriptive statistics:* related to collecting data, summarizing, presenting, calculating, and describing various characteristics to generally reflect the research object. Survey data after the survey is encrypted and entered into the computer, using Excel and Stata software for processing.

*Financial indicators to evaluate efficiency:* revenue, profit, cost, income, profit-cost ratio, profit-sales ratio, revenue-cost ratio, and income-cost ratio.

*Regression model:* to find certain factors that affect important economic indicators such as productivity and profits. From there, know the factors that positively affect the model to promote and find solutions to overcome negative factors.

For the organic mango production model, farmers receive support from cooperatives, and cooperative groups to create conditions for farmers to participate in training. Production training follows a defined process with the same dosage of seeds, fertilizers, and chemicals. Therefore, relying on the variables that are farmers' costs in the model will not have much difference and will not affect profits. Therefore, in the regression model, the factors affecting the profits of mango farmers following the organic model are determined to be variables belonging to socio-economic characteristics such as number of employees, age, and education, training, area, experience.

The regression equation has the following form:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + e_i$$

In which Y (dependent variable) is the profit achieved by mango farmers (VND/1000m<sup>2</sup>), X<sub>i</sub> is the independent variable, β<sub>i</sub>: (with i = 1,2,3,4,5,6) is the regression coefficient, β<sub>0</sub> is regression constant, also known as the intercept coefficient; e<sub>i</sub> is the error of the model.

Table 1. Interpretation of independent variables in the profit model

Name	Sign	Description	Expected sign	Source
Family	X <sub>1</sub>	Family labor days are calculated	+	Nguyen Van Nhieu Em,

mandays		based on the number of days that family members participate in mango production (VND/ 1000m2)		Cao Quoc Nam (2020)
Area	X <sub>2</sub>	Total area of mango production households (1000m2).	+	Cao Van Hon and Nguyen Lan Duyen (2020), Tran Quoc Nhan et. al., (2021)
Edu	X <sub>3</sub>	Education level of the head of household	+	Abdulai và Huffman (2000)
Age	X <sub>4</sub>	Age of household head (years)	+	Tran Quoc Nhan et. al., (2021)
Ex	X <sub>5</sub>	Experience represents the number of years of growing mangoes of the farmer (years).	+	Abdulai và Huffman (2000)
Training	X <sub>6</sub>	Indicates whether the farmer participated in the training (participated = 1, did not participate = 0)	+	Cao Van Hon and Nguyen Lan Duyen (2020), Tran Quoc Nhan et. al., (2021)

Source: Literature review

Note: The “+” sign represents a positive relationship with the dependent variable; The “-” sign represents a negative relationship with the dependent variable

X1: family labor is the number of labor rights that the number of people in the household family used in the process of cultivation of organic mango, because this is an available force, easy-to-control labor results, in the production process, the more family labor a farm household has, the cost of hiring outside labor will be somewhat reduced, thereby saving a part of production costs and increasing profits for farm households. Therefore, in this model, the author expects that the family labor day variable will have a positive sign.

X2: The area variable is the total area of land that farmers use to cultivate mangoes (1000m2). The larger the area of cultivated land, the higher the output and productivity of mangoes, thereby helping farmers' profits. household income will increase. However, research by Cao Van Hon and Nguyen Lan Duyen (2020), shows that scale of production land area of farming households has a negative impact on the profits of production households.

X3: Education variable describes the education level and schooling period of the head of the household. Education level will reflect the ability of farmers to absorb new scientific and technical advances. A higher level of education will have a positive impact on the mango growing model of farmers, because high education will help household heads quickly access and adapt to new production techniques, changing market trends, etc. That way, farmers will use inputs appropriately to ensure productivity and quality in mango production. Therefore, this variable is expected to have a positive impact on farm household profits.

X4: Variable age is the age of the head of the production household (years). The older the age of the household head will largely reflect his understanding of mango growing, so the household head will know how to use appropriate inputs at prices. In addition, the older the household head is, the better the ability to recognize and handle situations, thereby increasing production efficiency. The reason is that the older household head will have more stable facilities. At the same time will have a certain number of years of experience and will be the person who directly decides what plants to produce, and where to buy seeds, fertilizers, and medicines. Therefore, in this study, the effect of the age variable on farm household profits is expected to be positive.

X5: Experience variables are the number of years of mango planting of farmers, older farmers often have a long experience, higher experience, the more farmers are able to identify pests and diseases, timely treatment, and yes. Proper farming techniques will help the trees bear more fruit and bring higher yields, so production will be more efficient. And therefore, this variable is expected to have a positive impact on farmer households' profits.

X6: Training (dummy variable: 1 = participated in training; 0 = did not participate in training) is the situation of farmers participating in training with the guidance of agricultural extension officers, increasing income of farmers when they provide and information about new technology to farmers, positive effects of training were observed on farmers' profits. Training has a positive impact on the financial performance of farming households, regular participation in training helps improve productivity and increase income. Training so that farmers have more farming knowledge, from this knowledge farmers can apply it in production to improve efficiency (Li et al., 2013).

## RESULTS AND DISCUSSION

### Reasons why farmers choose organic mango production methods

In Dong Thap province, mango trees are classified as one of the five industries selected to implement the province's agricultural sector restructuring project.

Table 2. Organic farming households' reasons for growing mangoes

Reason	Ob. number	Proportion (%)
High selling price	108	100
Get technical support	106	98.14
Easy to sell	40	37.03
Helps improve soil quality	108	100
Protect the health of producers and consumers	108	100
Contribute to reducing environmental pollution	108	100
Cost savings	53	49.07

Source: Survey, 2023

Through Table 2 we can see that the reason why farmers choose to switch to organic mango farming is due to high prices, the products produced will be consumed by businesses and protect the health of producers and people consumption accounts for 100%. According to a field survey in the research area, 53/108 surveyed farmers believe that producing mango trees using organic processes will be more resilient than producing according to traditional models. Some farmers said that the reason they participate in the organic model is to provide clean mango sources, accounting for 61.67% and 6/10 farmers choose high quality, accounting for 10%. In addition, 14/60 farming households chose to grow mango organically due to technical support and capital.

Through the data, we can see that the main reasons that farmers choose to participate in the organic farming model are because organic mangoes will sell at high prices, help improve the soil environment, and protect the environment. The health of producers and consumers of these choices is 100%. In addition, by participating in the organic model, farmers will receive technical support. 106/108 admitted that they can learn many organic mango growing techniques through joint models and training sessions when participating. Participating in the

organic model, this number accounts for 98.14%. Regarding the consumption of output products, 40/108 farming households said that by participating in the organic model, they will be able to purchase their products. Regarding the consumption of products, in the past, farmers received high prices, but in recent years, the number of businesses purchasing for farming households has been greatly reduced, due to the impact of the Covid-19 epidemic. According to farmers' sharing, organic production somewhat saves on fertilizer costs, the reason is that farmers can compost their compost and compost biological products to replace some of it. The cost of purchasing agricultural chemicals was agreed by 53/108 farmers, accounting for 49.07%.

### Financial Efficiency Of Organic Mango Cultivation Model

Compare the revenue, income, and profit of the traditional model and the organic model in both crops to get a more general view of the revenue, income, and profit of the whole year.

Table 3. Comparison of revenue, income, profit of both models in 2 models (1,000 đồng/1,000m<sup>2</sup>)

Items	Model	Mean	Std. Dev.	Min	Max	Diff.
<b>Revenue</b>	Conventional	18,228.32	4,334.60	8,616.67	29,400	- 13,761.18***
	Organic	31,989	5,182.03	21,040	45,908	
<b>Income</b>	Conventional	15,770,91	4,121.71	6,850	27,830	- 3,270.13***
	Organic	19,041	4,460.31	8,903	29,876	
<b>Profit</b>	Conventional	6,960.93	3,458.60	-2,054.13	18,037.87	- 8,236.09***
	Organic	15,197	4,213.62	5,558	25,819	

Source: Survey, 2023

Note: \*, \*\*, and \*\*\* represent statistical significance levels at 10%, 5%, 1%, and not statistically significant, respectively.

When comparing revenue, income, and profit, we can see that for the organic model, the economic indicators are larger than for the traditional mango production model. Specifically, in the revenue section, the traditional model has an average value of 18.2 million VND/1,000m<sup>2</sup>/year, lower than the average revenue of the organic model of nearly 32 million VND/1,000m<sup>2</sup>/year. with the largest value of nearly 46 million VND/1,000m<sup>2</sup>/year and the smallest value of 21 million VND/1,000m<sup>2</sup>/year. In the income section, the traditional model has the largest value of 29.88 million VND/1,000m<sup>2</sup>/year, larger than the largest value of the traditional model of 27.83 million VND/1,000m<sup>2</sup>/year, and at the same time has income. The average income is 15.77 million VND/1,000m<sup>2</sup>/year, smaller than the average value of the organic model which is 19.041 million VND/1,000m<sup>2</sup>/year. The difference is 3.3 million VND/1,000m<sup>2</sup>/year and has a statistical significance of 1%.

For the profit category, the organic model has a larger average value than the traditional model. Specifically, the average profit of the organic model is 15.2 million VND/1,000m<sup>2</sup>/year, higher than the traditional model of 6.96 million VND/1,000m<sup>2</sup>/year with a statistical significance level of 1%. From the above analysis, it can be emphasized more that the efficiency that the organic mango production model brings is a good result from which farmers can change production in this direction, to be able to bring mangoes to the world. develop in a sustainable and safe direction in the coming time.

Table 4. Comparison of financial indicators of 2 models (1,000 đồng/1,000m<sup>2</sup>)

Items	Conventional	Organic	Diff.
Expense	9,720.86	12,918.09	-3,197.229 ***

Revenue	18,454.86	31,989.49	-13,534.63 <sup>***</sup>
Income	15,949.56	19,041.03	-3,091.478 <sup>***</sup>
Profit	6,977.45	15,197.02	-8,219.572 <sup>***</sup>
Family labor (day/1,000m2)	8.33	12.81	-4.48 <sup>***</sup>
Revenue/cost (times)	1.90	2.48	-0.60 <sup>***</sup>
Income/expense (times)	1.64	1.47	0.14 <sup>**</sup>
Profit/cost (times)	0.71	1.17	-0.46 <sup>***</sup>
Profit/family labor (VND/workday)	837.6	1,186.03	944,776.7 <sup>***</sup>

Source: Survey, 2023

Note: \*, \*\*, and \*\*\* represent statistical significance levels at 10%, 5%, 1%, and not statistically significant, respectively

The results show that the revenue/cost index in the two models is significant at the 1% level. In the traditional model, the revenue/cost index is 1.9, meaning that for every 1 VND of production investment cost of a farmer, 1.9 VND of revenue will be recovered, and for the organic model, the figure is 1.9 VND. This is 12.81, which means that when farmers invest 1 VND in production, they will get back 12.81 VND in revenue. Organic production models show financial efficiency, opening up avenues for farmers with higher revenues than traditional models and lower production costs. By calculating the total of two crops, for the traditional model of one Dong spent on mango production, farmers will receive 1.64 dong in higher income than organic mango farmers, when farmers who spend 1 VND in costs to produce mangoes will receive 1.47 VND in income with a meaningful difference at the 1% level. In the organic model, the profit index is 1.17 times, which means that a farmer investing 1 VND in production costs will earn 1.17 VND in profit, higher than the traditional model. because it has a profit index of 0.71 times.

The profit/family labor index in both models is significant at the 1% level. In the traditional model, 1 day of labor invested by farmers will return 837.6 VND in profit, and in the organic model, 1 day of labor spent by farmers on production will bring in 1,186 VND. This shows that organic mango farmers will utilize domestic labor more effectively than the traditional model.

### Analysis Of Factors Affecting Farmhouse Profits in Mango Farming Model

Table 5. Results of estimating the profit function model

Variable	Organic		Conventional		Both	
	Coef.	Std. Err	Coef.	Std. Err	Coef.	Std. Err
Constant	4.548.396 <sup>***</sup>	1.735.083	5.931.506 <sup>***</sup>	1.581.895	10.000.000 <sup>***</sup>	2.336.788
Family mandays	587.952,9 <sup>***</sup>	164.310,1	-248.813,5 <sup>*</sup>	149.212,4	171.812,8 <sup>ns</sup>	113.371,9
Age	-53.111,57 <sup>**</sup>	23.040,43	-18.592,78 <sup>ns</sup>	19.836,58	-72.875,61 <sup>**</sup>	29.975,66
Edu	248.815,5 <sup>***</sup>	88.802,33	152.728,3 <sup>**</sup>	75.792,3	436.738,9 <sup>***</sup>	114.637,8

Area	-84.338,61 <sup>ns</sup>	52.587,02	-81.597,19 <sup>*</sup>	45.335,12	-171.176 <sup>**</sup>	72.195,58
Ex	103.940,8 <sup>***</sup>	39.346,15	99.768,12 <sup>***</sup>	33.675,91	221.994,3 <sup>***</sup>	50.821,71
Training	1.065.411 <sup>ns</sup>	727.639,4	181.529,7 <sup>ns</sup>	619.593,1	1.375.923 <sup>ns</sup>	941.887,7
Ob. No.	108		59		167	
Prob > F	0.0000		0.0013		0.0000	
R-squared	0.3347		0.1910		0.3704	
Adj R-Squared	0.2951		0.1429		0.3330	

Source: Survey, 2023

Note: \*, \*\*, and \*\*\* represent statistical significance levels at 10%, 5%, 1%, and not statistically significant, respectively

From the above results table, it can be seen that in 2 crops 1, 2 and the total of both crops, Prob < F is Prob < F = 0.0000, Prob < F = 0.0013 and Prob < F = 0.0000, respectively. It can be said that the model is statistically significant and the independent variables can explain the profit variable.

*Family Labor Day:* For family labor days, the coefficient in organic of this variable has a positive impact on the profits of the organic production model and this effect coincides with the author's initial expectations for the study, and the estimated coefficient of this labor day variable has a statistical significance of 1%, which means that if the farmer adds 1 more labor day in the first crop, the profit will increase by 587,952.9 VND./1000m2. But for conventional, the coefficient of the working day variable shows that the variable has a negative impact on the profit of the organic production model. Specifically, in traditional, the estimated coefficient of the significant working day variable is 10%, meaning that when a farmer increases 1 day of family labor, it will decrease by 248,813 VND/1000m2, under the condition that other factors are equal. change. In both cases, this coefficient is not statistically significant. This means that farmers investing labor in organic mango production in the first season will help improve farmers' profits.

*Age:* The estimated coefficient of the age variable has a negative impact on the profitability of the production model and this effect is not by the initial expectations of the study. Specifically, in organic, this estimated coefficient is statistically significant at the 5% level, which means that if a farmer's age increases by 1 year, the farmer's profit will decrease to 53,111.57 VND/1000m2 in the condition that other factors remain unchanged. As for the total of both crops, if the farmer's age increases by 1 year, the farmer's profit will decrease to 72,875.61 VND/1000m2 under the condition that other factors remain unchanged and this coefficient is statistically significant in 5% level. In case 2, this coefficient is not statistically significant. According to actual surveys, the average age of local organic mango farmers is quite high, so in this age variable, the older the household head is, the lower the production efficiency, the reason being the head of the household. As the people who directly decide on production, most will have more experience in traditional mango production. At the same time, they will be familiar with the traditional farming style, so they will have many difficulties in following the new process. At the same time, because the transition process takes a long time for mango trees to get used to organic farming, and because they are older, they will be less flexible in applying new farming techniques than other farmers.

*Education:* The research results show that the coefficient of the education variable has a positive impact on the profits of farming households, this influence is in the same direction as the initial expectations of the study. In organic, this effect is statistically significant at the 1% level and the influence coefficient of this variable is 248,815.5, meaning that when education increases by 1 grade, the farmer's profit will increase to 248,815.5 VND/1000m2 under the condition that other factors remain unchanged. Similarly, this impact coefficient in



conventional crop is equal to 152,728.3, meaning that when education increases by 1 grade, the profit of the farmer will increase to 152,728.3 VND/1000m<sup>2</sup> under the condition that other factors remain unchanged and the system. This number is also statistically significant at the 5% level. As for the total of both crops, the coefficient of the education variable is statistically significant at the 1% level and when education increases by 1 unit, the farmer's profit will increase to 436,738.9 VND/1000m<sup>2</sup> under the conditions of these factors remains unchanged. From the above analysis, it can be seen that the higher a farmer's education is, the easier it is to absorb, learn, and apply advanced science and technology into production, thereby promoting increased productivity, reduced input costs, and increased profits compared to farmers with lower qualifications.

*Acreage:* The results show that the coefficient of the area variable has a negative impact on the profits of farmers and this influence is not as expected as the initial expectations of the study. Specifically, in traditional, this coefficient is -84,338.61, meaning that when the area increases by 1000m<sup>2</sup>, the farmer's profit will decrease by 84,338.61 VND/1000m<sup>2</sup> under the condition that other factors remain unchanged and this coefficient is statistically significant at the 10% level. In both cases, this coefficient is also statistically significant at the 5% level and when the area increases by 1000m<sup>2</sup>, the farmer's profit will decrease by 18,442.8 VND/1000m<sup>2</sup> under the condition that other factors remain unchanged. In case 1, the coefficient of the area variable is not statistically significant. The reason is that the organic mango farming model is still quite new. Managing and taking care of organic mango gardens requires quite a lot of labor, so when the area increases, farmers may face difficulties in the work. Good management and care if problems arise. Therefore, farmers will have to spend more on rental costs and reduce productivity, so farmers' profits will decrease.

*Experience:* the coefficient of the experience variable in this study is statistically significant at the 1% level in both cases and the total of 2 cases. The coefficient of experience variable has a positive impact on farm household profits and this is exactly as expected of the study's initial expectations. Specifically, in organic, when a farmer's experience increases by 1 unit, the farmer's profit will increase by 103,940.8 VND/1000m<sup>2</sup> under the condition that other factors remain unchanged. For farmers in traditional, when farming experience increases by 1 unit, farm household profit will increase by 99,768.12 VND/1000m<sup>2</sup>. In both total crops, when a farmer's experience increases by 1 unit, the farmer's profit will increase by 221,994.3 VND/1000m<sup>2</sup> under the condition that other factors remain unchanged. From the above results we can conclude that farmers with more experience will achieve higher production efficiency than other farmers; the more experience they have, the more knowledgeable they will be about the characteristics of their garden and mango, at the same time farmers will be able to choose farming techniques suitable for their garden, as well as use seeds, fertilizers and agricultural chemicals effectively. In addition, having more experience will show that they have more relationships in production and consumption, so it will be convenient to sell mangoes at a higher price.

## RECOMMENDATIONS AND POLICY IMPLICATIONS

*Technical solutions:* For organic mango farmers, compliance with prescribed production processes is necessary to ensure that the farmer's products are of good quality and meet the requirements needs of businesses and purchasing stores. That is the reason why farmers need to proactively learn and actively participate in training sessions to have more opportunities to access new farming methods and scientific and technical advances that farmers have. In addition, by participating in groups of members in production association models such as cooperatives, farmers can exchange more information with experienced farmers in organic production. Such as participating in training sessions, having tested methods and being able to observe their impact, reading published publications... From there, improving production skills, and having more sources of information about the market. At the same time, this connection will be the basis for the formation of concentrated fruit production areas, associated with the development of planting area codes to trace the origin and consumption of fruit tree products.

According to the assessment of farmers in the area, organic mango cultivation in conventional will be more convenient and easier than in organic. To gradually familiarize themselves with the organic production process, farmers should focus on producing yield in the second season. Especially for organic farming, farmers are required to comply with prescribed rules and at the same time, apply technical factors in the farming process.

*Organizational solutions, production links:* Develop new business models based on core values that are formed from farmers' desire to cooperate and connect, similar to business models on digital technology platforms such as "My mango tree", sharing economic models such as cooperatives. Although in a short time it is impossible to confirm the inevitable rule, the results have been achieved in terms of scale, speed, number of members, and the intellectual and property values that the association brings to the members. members, can confirm the reasonable factors of these models, and also demonstrate that the association models are the basis from which to form production areas for indigenous, unique products with potential. to build brands and geographical indications of products to invest in organic mango production, gradually developing a sustainable economy.

In addition, the construction of demonstration models is intended to be replicated in similar ecological regions, so that people can follow directly, thereby making objective assessments of the model and making decisions based on it. Currently, this is one of the good measures to transfer technology to farmers. On the other hand, to effectively apply popular production techniques, farmers must rely on the needs of farmers and their compatibility with the production, ecological, and intellectual conditions of each region. to be able to apply the most effective production techniques.

Strengthen brand promotion, associated with commitments to quality and safety, and enhance the reputation of cooperatives to ensure output for participating members. Localities need to synchronously implement solutions to support the development of Cooperatives in both breadth and depth, especially focusing on supporting new establishments and enhancing the capacity of cooperative members. Regarding the household links model, the initial step shows the necessity from both economic content to cultural and social aspects, so it is necessary to develop an environment, a space, and an institution that is favorable for this type of linkage model and developed in the current conditions and context.

*Information and market solutions:* Form a product trading platform on the internet, and carry out trade promotion activities so that domestic consumers have enough information about organic mango products in the province. To grasp market information well, investing in building an information network is necessary. The network will be a reliable source of market information so farmers can grasp price information. market needs, ... thereby helping farmers prepare to cope with adverse changes.

## ACKNOWLEDGMENT

This study is funded in part by the Vietnam Ministry of Education and Training, Code: B2023-TCT19

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