Pak. j. life soc. Sci. (2024), 22(2): 7501-7513 E-ISSN: 2221-7630;P-ISSN: 1727-4915

Pakistan Journal of Life and Social Sciences
www.pjlss.edu.pk

https://doi.org/10.57239/PJLSS-2024-22.2.00565

RESEARCH ARTICLE

An Analysis of Factors Contributing to Thailand's Chumphon Province Farmer Livelihood

Papangkorn Suwannao[1], Watcharin Sutthisai[2], Somkiet Kietjareon[3], Ratchanida Saiyaros[4*], Sathitkoon Boonruan[5]

[1,2,3,4] Faculty of Political Science and Public Administration, Rajabhat Maha Sarakham University, Thailand

[5] Office of the Basic Education Commission (OBEC), Ministry of Education, Thailand

ARTICLE INFO

Received: Aug 22, 2024

Accepted: Oct 4, 2024

Keywords

Chumphon Province

Farmer Adaptation

Farmer Livelihoods

Landbridge

Thailand

***Corresponding Author**

ratchanida.sa@rmu.ac.th

ABSTRACT

This study aims to (1) assess the post-COVID-19 livelihoods and adaptation levels of farmers in Thailand's rural Chumphon Province, and (2) identify key factors influencing their livelihoods. A five-point Likert scale questionnaire was administered to 399 agricultural household heads, and data were analyzed using descriptive statistics and stepwise multiple regression. The findings revealed that farmers rated their livelihoods and adaptation strategies at the highest level, with distribution channels and marketing promotion being the most influential factors. Additional factors such as group cohesion, work and services, pricing, and product quality also positively affected livelihoods, with mutual dependence having a negative impact. These factors explained 43% of the variance in farmers' livelihoods (R^2 = 0.426). The research addresses a gap in understanding how COVID-19 specifically impacted rural agricultural communities in Thailand, an area that has received limited attention in previous studies. By identifying the most critical adaptation factors, this study contributes to the literature on rural livelihoods and post-pandemic agricultural resilience. The findings suggest that effective marketing, strong distribution networks, and group cooperation are essential for enhancing farmer livelihoods in post-crisis environments. These insights can inform future policy interventions aimed at supporting farmers' adaptive capacities in similar rural contexts.

INTRODUCTION

Today, the agricultural sector is a vital pillar of the economy in the Gulf of Thailand's coastal Chumphon Province, Thailand, shaped by various factors that influence farmers' livelihoods (Boonnual & Boonnual, 2024; Subongkod & Lalaeng, 2021). As development strategies are formulated at the national, regional, and provincial levels (Figure 1), it is crucial to understand the factors that contribute to the resilience and adaptability of farmers in this region (OTP, 2023). While the COVID-19 pandemic presents significant challenges to the world's agricultural community (Salma et al., 2024; Tyllianakis et al., 2024; Yoshida, 2024), it also highlights the necessity of investigating the underlying factors that govern the livelihoods of farmers, independent of the crisis context.

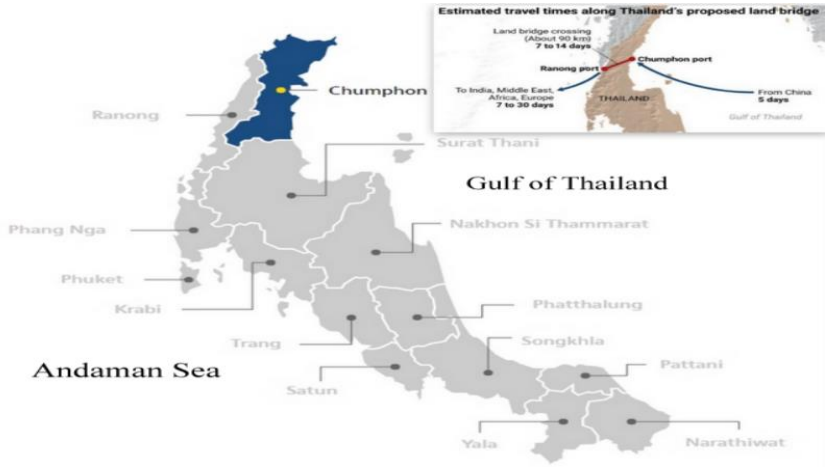

Figure 1: Thailand's Kra Isthmus and Southern provinces

Source: Regalado (2024)

Chumphon's economy is primarily based on agriculture, particularly the production of durian, oil palm, and rubber (Boonnual & Boonnual, 2024), with 80% of the people in Chumphon province being farmers (Subongkod & Lalaeng, 2021). The potential for tourism and integrated industries is ever increasing, with pre-COVID 19 2019 Gross Provincial Product (GPP) data showing that the province's agriculture made up 48.77%, while tourism and services accounted for 41.40%. Additionally, as of November 29, 2020, Chumphon had 120 community enterprises certified by the Thailand's Office of Industrial Standards. These enterprises also contribute to the local economy and the quality of life (Nguyen et al. 2024).

Livestock and fisheries also play significant roles in the economy of the province. The coastal area of Chumphon stretches approximately 222 km, and the province's industries are mostly related to agricultural processing such as palm oil refining, frozen seafood, processed fruit, and canned fruit juice.

Chumphon has also been identified as an entry point for the proposed cross-peninsula transport Landbridge connecting the Gulf of Thailand and the Andaman Sea/Indian Ocean. Chumphon, located in southern Thailand, has historically served as a significant transit and logistical rail hub owing to its geographic position (Amornvivat et al., 2015). Its importance is heightened by its proximity to the Gulf of Thailand and the Andaman Sea. The concept of the Chumphon Landbridge emerged from strategic interests in developing a cross-peninsula transport corridor that could facilitate the movement of goods between the Indian and Pacific Oceans, bypassing the congested Malacca Strait.

Historically, Chumphon's role as an entry point for such transport projects has been tied to Thailand's ambition to strengthen its regional trade connectivity. The idea of a Landbridge in this region gained prominence during discussions on reducing reliance on shipping lanes and offering faster and more efficient alternatives for freight transit. The proposed route connects Chumphon to the Andaman Sea via Ranong, positioning Chumphon as a vital gateway for transnational logistics (Regalado, 2024). The proposed $28 billion Landbridge megaproject, if ever completed, is expected to bolster Thailand's position in global trade, especially between Southeast Asia, South Asia, and beyond. This concept has seen renewed interest in recent years owing to shifts in global supply chains and increasing regional cooperation in Southeast Asia.

To address local issues, Chumphon Province has identified five key strategic areas in its development plan: (1) strengthening the provincial economy through agriculture, commerce, community services, and grassroots economic development (Soicjit et al., 2022; Thanapaet et al., 2023); (2) enhancing the tourism industry to become a leading destination connected to the Gulf of Thailand, the Andaman Sea, ASEAN, and international markets (Ngernthuam et al., 2024); (3) developing a livable city with modern infrastructure, transportation, and logistics (Irvine et al., 2022); (4) building a quality society

and peaceful communities based on the philosophy of a sufficiency economy; and (5) sustainable management of natural resources to support quality of life and environmental protection (OTP, 2023).

Rural farmers in Thailand are often characterized by their awareness and understanding of market dynamics and their mutual dependence on community networks (Rado et al., 2021; Wongadisai et al., 2020). This interdependence is crucial as it fosters collaboration and resource sharing among agricultural stakeholders (Methamontri et al., 2022), enhancing community access to essential services and information. Effective media and communication strategies play a pivotal role in disseminating vital market information (Dechapongpun 2024), thereby empowering farmers to make informed decisions that impact their production and marketing efforts.

Product factors, including the quality and type of agricultural goods, significantly influence marketability and pricing (Boonnual and Boonnual, 2024). Additionally, distribution channels and marketing promotions are instrumental in connecting farmers to broader markets, enabling them to achieve fair product prices (Boonnarakorn et al., 2022; Malisuwan & Jeharrong, 2021). Moreover, group cohesion among farmers can lead to collective bargaining power and shared knowledge, thereby enhancing overall productivity and income stability (Maulu et al., 2021; Methamontri et al., 2022).

The physical characteristics of the region, such as soil quality and climatic conditions, further affect agricultural output and sustainability (Rizzo et al., 2024). Furthermore, the availability of work and services, including access to technology and agricultural support services (Dube, 2017), plays a critical role in enhancing productivity and improving farmers' livelihoods. By examining these variables, we can gain insight into the multifaceted challenges and opportunities faced by farmers in Chumphon, ultimately contributing to strategies that foster sustainable development.

The post-COVID-19 environment presents an opportunity to reassess the adaptation strategies employed by farmers and identify factors that facilitate resilience in the face of ongoing challenges. Understanding the level of livelihood of farmers in Chumphon Province post-pandemic, their adaptation measures, and the various factors influencing these adaptations are essential for developing policies that enhance agricultural sustainability and food security (Yoshida, 2024). This study aims to comprehensively investigate these dynamics to provide a framework for future agricultural development initiatives in the region.

Research questions

RQ1: What is the level of livelihood of farmers in Chumphon Province after the COVID-19 pandemic?
RQ2: What is the level of adaptation of farmers in Chumphon Province after the COVID-19 pandemic?
RQ3: Which adaptation factors after the COVID-19 pandemic influence the Chumphon Province Farmer Livelihood?

Research objectives

RO1: To study the level of livelihood of farmers in Chumphon Province after the COVID-19 pandemic.
RO2: To study the level of adaptation of farmers in Chumphon Province after the COVID-19 pandemic.
RO3: To examine the adaptation factors after the COVID-19 pandemic that influence the Chumphon Province Farmer Livelihood.

Study's hypotheses

This study hypothesizes that the following adaptation factors have a significant impact on

Chumphon province farmer livelihood:

H1: Awareness and understanding (X1) positively influence farmers' livelihoods by improving their ability to adapt to changes in agricultural practices and market conditions. H2: Mutual dependence (X2) negatively influences farmers' livelihoods, as excessive reliance on external or interdependent systems may reduce individual autonomy and economic resilience.

H3: Media and communication (X3) positively influence farmers' livelihoods by facilitating access to crucial information, such as market trends, weather forecasts, and agricultural innovations.

H4: Community access (X4) positively influences farmer livelihoods by enhancing participation in local networks, services, and markets.

H5: Product quality (X5) positively influences farmers' livelihoods by increasing the marketability and profitability of agricultural produce.

H6: Pricing (X6) positively influences farmers' livelihoods by ensuring fair and stable returns on agricultural products, thereby improving income levels.

H7: Distribution channels (X7) positively influence farmer livelihoods by providing efficient pathways to the market, reducing postharvest losses, and expanding market reach. H8: Marketing promotion (X8) positively influences farmers' livelihoods by increasing the demand for their products through enhanced visibility and marketability.

H9: Group cohesion (X9) positively influences farmers' livelihoods by fostering collective action, resource sharing, and cooperative decision-making.

H10: Physical characteristics (X10) such as land and climate conditions positively influence farmer livelihoods by supporting agricultural productivity.

H11: Work and services (X11) positively influence farmers' livelihoods by providing access to agricultural support, extension services, and efficient labor practices.

Each of these factors is expected to significantly shape the overall livelihood outcomes (Y) of farmers in Chumphon Province (Figure 2).

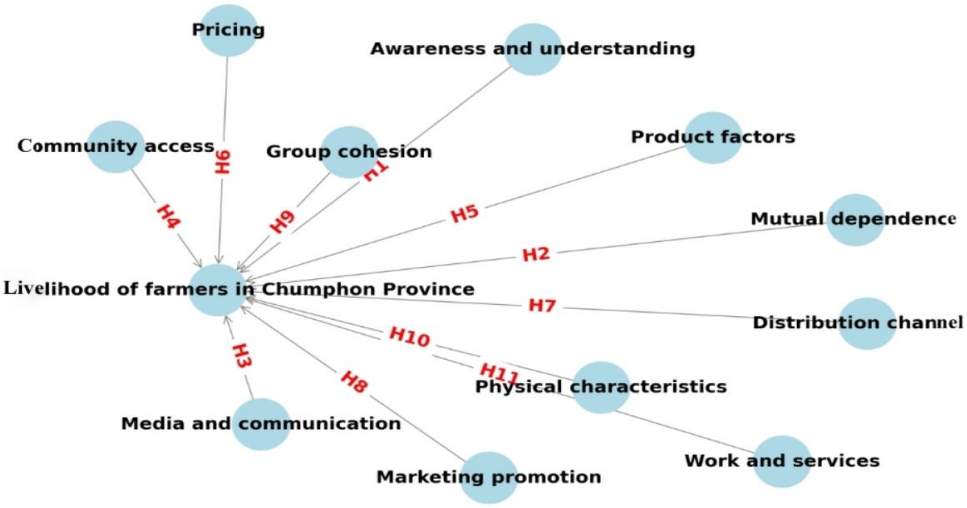

Figure 2: Conceptual model

MATERIALS AND METHODS

Population and sample

The target population for this study consisted of the heads of agricultural households in Chumphon Province in 2023, totaling 93,932 households (Chumphon Provincial Agricultural Extension Office, 2023). The sample size was determined using Yamane's (1973) formula with a 5% margin of error, yielding a sample size of 399 households. A systematic random sampling method was employed to ensure that the sample was representative of the population. The sample was stratified by district to reflect the distribution of agricultural households across the province, as shown in Table 1. This

approach ensures that the sampling process is both structured and unbiased, allowing for more reliable generalization of the findings.

Table 1: Population and sample groups of people in Chumphon Province, selected by district

No.	District	Population	Sample
1	Mueang Chumphon District	17,126	73
2	Tha Sae District	20,931	89
3	Pathio District	9,840	42
4	Lang Suan District	13,275	56
5	Lamae District	6,104	26
6	Phato District	6,593	28
7	Sawi District	14,922	63
8	Thung Tako District	5,141	22
	Totals	93,932	399

Source: Chumphon provincial agricultural office (30 April 2023)

Instrument development

A structured questionnaire was designed as the primary data collection tool, comprising three sections:

1. General Information: This section captured demographic details such as gender, education level, age, and the type of agricultural group (e.g., farming, fishing).
2. Adaptation Factors: This section assessed 11 key adaptation factors following the COVID-19 pandemic (Islam et al., 2024), using a 5-point Likert scale ranging from "very low opinion" (1) to "very high opinion" (5) (Siripongdee et al., 2021). The mean values for the scale used '5' (4.21 - 5.00), '4' (3.41 - 4.20), '3' (2.61 - 3.40), '2' (1.81 - 2.60), and ''1' (1.00 - 1.80).
3. Farmer Livelihoods: This section evaluated eight dimensions of farmer livelihood, including economic, social, health, and environmental aspects (Sapbamrer et al., 2024), also measured using a 5-point Likert scale.

Instrument validation

To ensure the reliability and validity of the questionnaire, a multi-step process was followed:

1. Expert Review: Five experts in agricultural economics and survey methodology were consulted to assess the content validity of the questionnaire. Feedback was incorporated to refine the questions, ensuring clarity and relevance.
2. Content Validity: The questionnaire was evaluated using the Index of Item-Objective Congruence (IOC) to verify the alignment between the items and the research objectives. Only items with an IOC score above 0.60 were retained for the final instrument, ensuring sufficient content validity.
3. Reliability Testing: A pilot test was conducted with 30 heads of agricultural households, who were not part of the final sample, to assess the internal consistency of the questionnaire. Cronbach's Alpha was calculated, yielding a reliability coefficient of 0.82, indicating high internal reliability.

Data collection

Data were collected between November and December 2023, using both online (Google Forms) and field surveys administered by trained research assistants. Systematic random sampling was applied to the population list of household heads, ensuring a proportional representation from each district. To increase response rates and ensure accuracy, the research team engaged with local agricultural leaders to facilitate communication with respondents.

Data analysis

The data were analyzed using both descriptive and inferential statistics. Descriptive statistics, including frequency, percentage, mean, and standard deviation (SD), were used to summarize the demographic data and adaptation factors. Hypothesis testing was conducted using stepwise multiple linear regression analysis to determine the impact of the 11 adaptation factors on the farmer livelihoods. The stepwise method was chosen to identify the most significant predictors and to control for multicollinearity. This approach allowed for a more refined understanding of the key factors influencing farmer livelihoods in the context of post-pandemic recovery.

RESULTS AND DISCUSSION

General information of respondents

Table 2 shows that the majority of respondents were female (56.90%), with the highest education level being secondary school or equivalent (52.90%). Most respondents were aged between 41-50 years (38.10%), and the largest group was orchard farmers (42.10%).

Table 2: General information of respondents (*n*=399)

Characteristic	Sample Number	Percentage
Gender		
1. Male	172	43.10
2. Female	227	56.90
Education Level		
1. Primary or equivalent	103	25.80
2. Secondary or equivalent	211	52.90
3. Bachelor's degree or higher	85	21.30
Age Group		
1. 18-30 years	39	9.80
2. 31-40 years	93	23.30
3. 41-50 years	152	38.10
4. 51-60 years	66	16.50
5. 61 years and above	49	12.30
Farmer Type		
1. Rice farming	34	8.50
2. Field farming	72	18.00
3. Orchard farming	168	42.10
4. Fisheries	75	18.80
5. Livestock	41	10.30
6. Other agricultural sectors	9	2.30

Adaptation levels of farmers in Chumphon province

Table 3 reveals the opinions of how farmers in Chumphon Province rated their overall livelihood and adaptation factors. The factor with the highest average score was distribution channels, followed by physical characteristics, while the lowest was mutual dependence.

Table 3: Average, standard deviation (SD), level, and ranking of livelihood and adaptation factors of Thailand's Chumphon Province farmers

	M	SD.	Level	Ranking
Farmer's livelihood	4.59	0.16	highest	-
Adaptation factors				
Awareness and understanding (X1)	4.50	0.35	highest	9
Mutual dependence (X2)	4.38	0.43	highest	11
Media and communication (X3)	4.46	0.34	highest	10
Community access (X4)	4.57	0.28	highest	7
Products (X5)	4.58	0.30	highest	6
Pricing (X6)	4.59	0.22	highest	5
Distribution channels (X7)	4.70	0.22	highest	1
Marketing promotions (X8)	4.62	0.22	highest	4
Group cohesion (X9)	4.63	0.29	highest	3
Physical characteristics (X10)	4.69	0.21	highest	2
Work and services (X11)	4.55	0.31	highest	8
Overview	4.57	0.12	highest	-

Multiple linear regression analysis of factors influencing the livelihood of farmers in Chumphon province

The results of the Multiple Linear Regression Analysis, as presented in Table 4, highlight several key factors that influence the livelihoods of farmers in Chumphon Province. The analysis used stepwise regression to determine the relative importance of various adaptation factors, each with significant contributions to the overall livelihood outcomes. The R value of .608 and the Adjusted R^2 value of .415 indicate that these variables account for approximately 41.5% of the variation in the livelihood outcomes, signifying a substantial predictive power of the model.

The most significant factor influencing farmers' livelihoods is "Marketing promotions" (X8), with a beta coefficient of .351. This means that marketing strategies are paramount in shaping farmers' economic success. Strong marketing initiatives likely help farmers reach a broader audience, increase sales, and enhance product visibility, all of which directly contribute to improving their livelihoods. The high significance level (p=.000) further reinforces the crucial role of marketing in this context.

The second most influential factor is *distribution channels* (X7), with a beta of .281. Effective distribution ensures that products reach the right markets in a timely and cost-efficient manner, thus enhancing profitability. This finding indicates that improving supply chain networks or ensuring better logistics would be a valuable strategy for farmers to increase their income.

Group cohesion (X9) follows as the third most significant factor, with a beta of .212. This suggests that the collective effort of farmers working together, possibly in cooperatives or informal networks, plays a vital role in their economic resilience. Shared resources, knowledge exchange, and mutual support are likely the mechanisms through which group cohesion positively affects livelihoods.

Work and services (X11) and *pricing* (X6) are also prominent factors, with beta values of .194 and .188, respectively. The importance of fair pricing mechanisms and access to reliable work and services is evident here, as these factors ensure that farmers receive adequate compensation for their efforts and can maintain stable economic activity.

Other factors, such as *products* (X5) with a beta of .117 and *mutual dependence* (X2) with a negative beta of -.146, play relatively smaller but still significant roles in shaping farmers' livelihoods. The negative coefficient for mutual dependence could suggest that excessive reliance on external entities may hinder farmers' capacity for self-sustenance, thereby adversely affecting their livelihood.

In summary, marketing promotions and distribution channels emerge as the most critical components in improving farmers' livelihoods in Chumphon Province. Factors related to group cohesion, work, services, and pricing also contribute significantly. By focusing on these elements,

policies and initiatives can be tailored to support agricultural communities more effectively, fostering sustainability and economic well-being for farmers.

Table 4: Multiple linear regression analysis of key factors influencing farmer livelihoods in Thailand's Chumphon province

Adaptation factors	Stepwise Regression Coefficient			
	B	**beta**	**t**	**Sig**
Awareness and understanding (X1)	-	-	-	-
Mutual dependence (X2)	-.054	-.146)6(	-3.738	.000**
Media and communication (X3)	-	-	-	-
Community access (X4)	-	-	-	-
Products (X5)	.062	.117)7(	2.904	.000**
Pricing (X6)	.136	.188 (5)	4.615	.000**
Distribution channels (X7)	.200	.281 (2)	7.220	.000**
Marketing promotions (X8)	.251	.351 (1)	9.052	.000**
Group cohesion (X9)	.160	.212 (3)	5.344	.000**
Physical characteristics (X10)	-	-	-	-
Work and services (X11)	.100	.194 (4)	4.779	.000**
R=.608, R^2=.426, Adjusted R^2=.415, R^2 Change=.012, F=41.389				

Sig. < .01

The prediction equations provided are derived from the multiple linear regression analysis, indicating the relationship between various independent variables (X1 to X11) and the dependent variable, which is the Chumphon Province farmer livelihoods. These equations demonstrate how specific factors contribute to predicting the livelihood outcomes.

Prediction equations:

- **Unstandardized**:
  Y = .608 + .251X8 + .200X7 + .160X9 + .100X11 + .136X6 - .054X2 + .062X5 (1)
- **Standardized**:
  Zr = .351Z8 + .281Z7 + .212Z9 + .194Z11 + .188Z6 - .146Z2 + .117Z5 (2)

In the unstandardized equation, the variables are expressed in their original units, showing the direct effect of each factor on farmers' livelihoods. For instance, marketing promotion (X8) has the largest positive unstandardized coefficient (.251), meaning that every unit increase in marketing promotion results in a .251 increase in farmers' livelihood score, holding all else constant. The standardized equation, however, shows the relative importance of these factors without the influence of unit scales. In this equation, marketing promotion (Z8) has the highest standardized coefficient (.351), indicating it has the strongest impact among all the factors, followed by distribution channels (Z7) and group cohesion (Z9).

The importance of these equations lies in their ability to quantify the specific contributions of various factors, both positively and negatively, to farmers' livelihoods. They provide a predictive model that explains 43% of the variance in livelihoods (R^2 = .426), which is a significant portion but leaves room for other unexplored factors.

MULTIPLE LINEAR REGRESSION ANALYSIS RESULTS

The multiple linear regression analysis presented in Table 5 provides critical insights into the factors influencing the livelihoods of farmers in Chumphon Province. The study highlights that marketing promotion (X8), distribution channels (X7), group cohesion (X9), work and services (X11), pricing (X6), and product quality (X5) have significant positive effects on the well-being of farmers. Among these, marketing promotion has emerged as the most influential factor, suggesting that efforts to enhance farmers' access to markets and promote their products can substantially improve their livelihoods.

Distribution channels also play a key role in underlining the importance of efficient logistics and accessibility to markets for agricultural products. Conversely, the negative influence of mutual dependence (X2) suggests that overly strong interdependencies among farmers may create vulnerabilities or inefficiencies that harm economic stability. This finding offers an important counterpoint, implying that, while cooperation and networks are crucial, they need to be balanced with individual agency and resilience.

The regression results not only confirm several hypotheses, but also offer practical insights for policymakers and agricultural stakeholders. By focusing on enhancing marketing efforts, streamlining distribution channels, and fostering group cohesion without over-reliance on mutual dependence, stakeholders can more effectively support farmers' livelihoods in Chumphon Province.

Additionally, the positive impact of work and services (X11) highlights the value of improving local labor conditions and service infrastructure, contributing further to economic sustainability. Overall, this analysis provides a comprehensive framework for understanding the key drivers of farmers' livelihoods, with the predictive model accounting for 43% of the variance in livelihood outcomes. This information is critical for designing targeted interventions to boost the economic well-being of farmers in the region.

Table 5: Hypotheses testing results

Research Hypotheses	Result	Conclusion
Awareness and understanding (X1) influences farmers	Insignificant influence	Not Supported
Mutual dependence (X2) influences farmers	Significant negative influence at .01	Supported
Media and communication (X3) influences farmers	Insignificant influence	Not Supported
Community access (X4) influences farmers	Insignificant influence	Not Supported
Product (X5) influences farmers	Significant positive influence at .01	Supported
Pricing (X6) influences farmers	Significant positive influence at .01	Supported
Distribution channels (X7) influences farmers	Significant positive influence at .01	Supported
Marketing promotion (X8) influences farmers	Significant positive influence at .01	Supported
Group cohesion (X9) influences farmers	Significant positive influence at .01	Supported
: Physical characteristics (X10) influences farmers	Insignificant influence	Not Supported
: Work and services (X11) influences farmers	Significant positive influence at .01	Supported

The findings revealed that several adaptation factors, including marketing promotion, distribution channels, group cohesion, work and services, pricing, mutual dependence, and products, had a

significant influence on farmers' livelihoods. These factors impact farmers' livelihoods in the following ways.

Marketing promotion: The positive impact of marketing promotion on farmer livelihoods can be attributed to increased visibility and demand for agricultural products (Boonnarakorn et al., 2022; Malisuwan & Jeharrong, 2021). Farmers who receive better marketing support are likely to reach broader markets, thereby improving their income and stability (Van et al., 2024).

Distribution channels: The availability and effectiveness of distribution channels using information communication technology and social media significantly influence farmers' ability to sell their products efficiently (Pimdee et al., 2023; Sheng & Lu, 2020). Better distribution systems ensure that agricultural goods reach markets in a timely manner, thereby reducing losses and enhancing profitability (Nchimbi et al., 2021).

Group cohesion: Working within cohesive groups allows farmers to share resources, knowledge, and support (Boonnual & Boonnual, 2024). This enhances collective bargaining power and provides a more resilient structure that positively affects livelihoods.

Work and services: Effective services and support systems, such as agricultural extension services, contribute to better farming practices and productivity (Mapiye et al., 2021; Thi Hoa Sen et al., 2024). Access to services allows farmers to improve their work efficiency, leading to improved living standards.

Pricing: Fair and stable pricing of agricultural products directly affects farmers' income. When farmers sell their produce at competitive prices, their economic situation improves, leading to enhanced livelihoods.

Mutual dependence: While mutual dependence was found to have a negative influence, this could be due to over-reliance on external or interdependent systems that might not always be reliable, potentially limiting individual farmer progress.

Products: The quality and variety of agricultural products significantly impact how well farmers can meet market demand. High-quality products help farmers achieve better sales and economic return.

SUGGESTIONS AND RECOMMENDATIONS

Based on the findings of this study, several recommendations can be made to enhance the livelihood of farmers in Chumphon Province. First, it is essential to strengthen marketing promotion efforts because this factor has the most significant positive influence on livelihoods. This can be achieved by increasing farmers' access to market information and resources (Mapiye et al., 2021) as well as by improving branding and marketing strategies for local agricultural products. Second, improving the distribution channels is crucial. Streamlining logistics and enhancing market accessibility can boost efficiency and profitability. Encouraging the development of local and regional distribution networks can reduce transportation costs and increase the reach of farmer products. Group cohesion should also be fostered as it plays an important role in improving livelihoods. Promoting cooperative networks while ensuring a balance between collaboration and individual independence can enhance collective bargaining power and resource-sharing. Finally, efforts to improve work and service conditions in the agricultural sector should be prioritized. Access to better tools, infrastructure, and support services will directly contribute to farmers' increased productivity and economic stability.

LIMITATIONS

This study had several limitations. First, data were collected only from lower secondary school students in Bangkok, which may not fully represent the diversity of farmers across other regions in Thailand. Additionally, while the regression model explains 43% of the variance in livelihoods, other unmeasured factors may play a significant role in determining farmers' well-being. Further research should consider a broader range of variables, including external economic conditions and environmental factors, to develop a more comprehensive understanding of the factors that influence farmers' livelihoods.

Declarations

Funding statement: This research received no financial support.

Acknowledgments: The researchers would like to extend their sincere thanks to the agricultural household heads in Chumphon Province for their cooperation in responding to the questionnaires. Their valuable input has provided useful data that will contribute to improving the quality of life for farmers in the future. The authors also wish to thank Ajarn Charlie for his English language editing and final proofing assistance.

Declaration of conflicting interests: The authors declare no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

Informed consent statement: Informed consent was obtained from all individual participants included in the study.

Disclosure statement: The authors declare that they have no conflicts of interest.

REFERENCES

Amornvivat, S., Homchampa, T., Kantaumong, I., Ratanapinyowong, T., & Srisamran, S. (2015). *Insight: Thai transport mega-projects pave way for countless business opportunities.* SCB Intelligence Unit. https://tinyurl.com/tpyr7vd2

Boonnarakorn, S., deebhijarn, S., & Saengmanee, W. (2022). A causal relationship model of factors influencing one Tambon one product (OTOP) snack food product quality in Thailand. *The Journal of Asian Finance, Economics and Business*, *9*(8), 123-134. https://doi.org/10.13106/jafeb.2022.vol9.no8.0123

Boonnual, C., & Boonnual, T. (2024). Social capital and corporate social responsibility: Pathways to the sustainability of community enterprises in Chumphon Province. *International Journal of Professional Business Review*, *9*(1), e04174-e04174. https://doi.org/10.26668/businessreview/2024.v9i1.4174

Chumphon Provincial Agricultural Extension Office. (2023). Important agricultural statistics. https://chumphon.doae.go.th/province/?page_id=1214

Dechapongpun, W. (2024). Empowering Thai dairy farmers: Overcoming challenges and enhancing competency through integrated communication strategies. *Journal of Business, Innovation and Sustainability*, *19*(2). https://tinyurl.com/23x4add5

Dube, L. (2017). Farmer to farmer extension approach: Analysis of extent of adoption by smallholder farmers in Manicaland and Masvingo provinces of Zimbabwe. *Journal of Agricultural Economics and Rural Development*, 3(1), 149–160. https://doi.org/10.1080/23311932.2021.1886663

Irvine, K. N., Suwanarit, A., Likitswat, F., Srilertchaipanij, H., Ingegno, M., Kaewlai, P. & Janpathompong, S. (2022). Smart City Thailand: Visioning and design to enhance sustainability, resiliency, and community wellbeing. *Urban Science*, *6*(1), 7. https://doi.org/10.3390/urbansci6010007

Islam, S. A., Islam, M. M., & Ahmed, M. B. (2024). Impact of the Corona pandemic on the livelihoods of rural farmers in some selected areas of Khulna district in Bangladesh. *Fundamental and Applied Agriculture, 9*(1), 10-21. http://dx.doi.org/10.5455/faa.170674

Malisuwan, C., & Jeharrong, P. (2021). Marketing communication of OTOP entrepreneurs in the three southernmost provinces. *Academy of Entrepreneurship Journal, 27*(Special Issue 5). https://tinyurl.com/uk8sdyrx

Mapiye, O., Makombe, G., Molotsi, A., Dzama, K., & Mapiye, C. (2021). Towards a revolutionized agricultural extension system for the sustainability of smallholder livestock production in developing countries: The potential role of ICTs. *Sustainability*, *13*(11), 5868. https://doi.org/10.3390/su13115868

Maulu, S., Hasimuna, O. J., Mutale, B., Mphande, J., & Siankwilimba, E. (2021). Enhancing the role of rural agricultural extension programs in poverty alleviation: A review. *Cogent Food & Agriculture*, *7*(1), 1886663. https://doi.org/10.1080/23311932.2021.1886663

Methamontri, Y., Tsusaka, T. W., Zulfiqar, F., Yukongdi, V., & Datta, A. (2022). Factors influencing participation in collective marketing through organic rice farmer groups in northeast Thailand. *Heliyon*, *8*(11). https://doi.org/10.1016/j.heliyon.2022.e11421

Nchimbi, S., Dida, M., Marwa, J., & Michael, K. (2021). MAGITS: A mobile-based information sharing framework for integrating intelligent transport system in agro-goods e-commerce in developing countries. *International Journal of Advanced Computer Science and Applications*. https://dx.doi.org/10.14569/IJACSA.2021.0120684

Ngernthuam, R., Soonthorn, S., Sutthisai, W., Saiyaros, R., & Boonruan, A. (2024). Evaluating Key Determinants of Balanced Development in Thailand's Eastern Economic Corridor of Rayong Province. *Pakistan Journal of Life and Social Sciences, 22*(2), 822-840. https://doi.org/10.57239/PJLSS-2024-22.2.0060

Nguyen, G. T., Tran, T. B., Le, D. D., Nguyen, T. M., Van Nguyen, H., Ho, P. U., ... & Watanabe, T. (2024). Determining the factors impacting the quality of life among the general population in coastal communities in central Vietnam. *Scientific Reports, 14*(1), 6986. https://doi.org/10.1038/s41598-024-57672-0

OTP. (202X). A Study on Transport Network Development Model in the Central and Southern Provinces Linking with the Economic Corridors under the Greater Mekong Subregion (GMS) Framework to Support Economic and Tourism Development, https://tinyurl.com/2u24nvyk

Pimdee, P., Ridhikerd, A., Moto, S., Siripongdee, S., & Bengthong, S. (2023). How social media and peer learning influence student-teacher self-directed learning in an online world under the 'New Normal'. *Heliyon*, *9*(3), e13769. https://doi.org/10.1016/j.heliyon.2023.e13769

Rado, I., Lu, M. F., Lin, I. C., & Aoo, K. (2021). Societal entrepreneurship for sustainable Asian rural societies: A multi-sectoral social capital approach in Thailand, Taiwan, and Japan. *Sustainability*, *13*(5), 2747. https://doi.org/10.3390/su13052747

Regalado, F. (2024, March 22). Thai ports bemoan competitive decline as Srettha pushes 'land bridge': Shipping industry questions potential demand for $28bn megaproject. *Nikkei Asia*. https://tinyurl.com/mrxtz597

Rizzo, G., Migliore, G., Schifani, G., & Vecchio, R. (2024). Key factors influencing farmers' adoption of sustainable innovations: A systematic literature review and research agenda. Organic Agriculture, 14(1), 57-84.

Salma, U., Alam, M. J., Begum, I. A., Sarkar, M. A. R., Jackson, T., Mastura, T., ... & Kishore, A. (2024). The impact of COVID-19 on livelihood assets: A case study of high-value crop farmers in North-West Bangladesh. *Scientific Reports, 14*(1), 20121. https://doi.org/10.1038/s41598-024-71242-4

Sapbamrer, R., Sittitoon, N., Thongtip, S., Chaipin, E., Sutalangka, C., La-Up, A., ... & Srisookkum, T. (2024). Socio-demographic, agricultural, and personal protective factors in relation to health literacy among farmers from all regions of Thailand. *Frontiers in Public Health, 12*, 1364296. https://doi.org/10.3389/fpubh.2024.1364296

Sheng, J., & Lu, Q. (2020). The influence of information communication technology on farmers' sales channels in environmentally affected areas of China. *Environmental Science and Pollution Research*, *27*(34), 42513-42529. https://doi.org/10.1007/s11356-020-10203-6

Siripongdee, K., Tuntiwongwanich, S., & Pimdee, P. (2021). Blended Learning Model with IoT-based by Smartphone. *International Journal of Interactive Mobile Technologies, 15*(11), 166-182. https://doi.org/10.3991/ijim.v15i11.22441

Soicjit, N., Chaiyaphum, A., Kahaban, T., Khuenkhaew, Y., Singhapat, S., Saenpakdee, N., & Kahaban, N. (2022). Fostering Grassroots Economy of the Local Community: A Lesson Learned Study. *Journal of Educational Issues*, *8*(2), 845-854. https://doi.org/10.5296/jei.v8i2.20461

Subongkod, M., & Lalaeng, C. (2021). Causal factors influencing business performance effectiveness of community enterprises in Chumphon Province. *Journal of Management Information and Decision Sciences. 24*(Special Issue 1). https://tinyurl.com/2ytxj75n

Thanapaet, W., Sutthisai, W., Soonthorn, S., Saiyaros, R., & Boonruan, S. (2023). Provincial government agency public services: An analysis of their internal competency, internal and external environment factors. *Journal of Governance & Regulation, 12*(2), 136–146. https://doi.org/10.22495/jgrv12i2art12

Thi Hoa Sen, L., Chou, P., Dacuyan, F. B., Nyberg, Y., & Wetterlind, J. (2024). Barriers and enablers of digital extension services' adoption among smallholder farmers: the case of Cambodia, the Philippines and Vietnam. *International Journal of Agricultural Sustainability*, *22*(1), 2368351. https://doi.org/10.1080/14735903.2024.2368351

Tyllianakis, E., Otokiti, K. V., Shahvi, S., & Martin-Ortega, J. (2024). Farmers' perceived effect of the COVID-19 pandemic and its relationship to preparedness and risk perception. *Journal of Rural Studies, 109,* 103318. https://doi.org/10.1016/j.jrurstud.2024.103318

Van, V.H., Quynh, N.N., & Doanh, N.K. (2024). Factors affecting farmers' intention to use ECEs in Covid-19 pandemic: combining the technology acceptance model (TAM) and barrier factors. J*ournal of Agribusiness in Developing and Emerging Economies, 14*(2), 129-145. https://doi.org/10.1108/JADEE-01-2022-0008

Wongadisai, W., Chanchalor, S., & Murphy, E. (2020). Rural community enterprises in Thailand: a case study of participation. *World Review of Entrepreneurship, Management and Sustainable Development*, *16*(3), 276-298. https://doi.org/10.1504/WREMSD.2020.107255

Yamane,T. (1973). Statistics an Introductory Analysis (3rd ed.). Harper & Row.

Yoshida, S. (2024). Impact of sustainability integrating environmental and social practices on farm resilience: a quantitative study of farmers facing the post-COVID-19 economic turbulence in Japan. *Frontiers in Sustainable Food Systems, 8*, 1341197. https://doi.org/10.3389/fsufs.2024.1341197