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The Risk Factors Affecting the Performance of Durian Farmers: A Case Study in Thailand

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Abstract
This research aims to investigate the effects of farmer characteristics and risk factors on the performance outcomes of durian growers in Nakhon Si Thammarat province. Data were collected from 400 farmers using questionnaires, and the analysis employed inferential statistics, including Independent t-tests and One-way ANOVA. The findings indicate that gender, age, and average monthly income significantly affect performance outcomes (e.g., income: $F = 4.92$, $p = 0.008$). Similarly, plantation area ($F = 3.71$, $p = 0.013$) and farming experience ($F = 5.46$, $p = 0.001$) also show significant effects. However, soil characteristics, land type, and planting distance do not demonstrate statistically significant differences. Furthermore, weather-related risks ($F = 6.20$, $p = 0.002$) and policy-related risks ($F = 3.98$, $p = 0.021$) significantly influence performance outcomes, while other risk factors do not. The results highlight the importance of targeted and tailored risk management strategies that align with the specific characteristics of farmer groups to sustainably enhance performance in terms of quality, productivity, and income.

Keywords: Farmer characteristics, risk, performance outcomes, durian, Nakhon Si Thammarat

1. Introduction

Thailand is an agricultural country endowed with abundant natural resources and rich biodiversity, enabling Thai farmers to engage in a wide variety of agricultural activities, including crop cultivation, animal husbandry, and fisheries (Office of Agricultural Economics, 2023) [18]. Among its key economic crops, durian stands out as the "king of fruits" due to its unique flavor and export-standard quality (Department of Agriculture, 2023) [8]. Thailand is a major exporter of both fresh and processed durian to international markets, with China being the largest importer (Department of Foreign Trade Promotion, 2022) [9]. Despite rising competition from countries such as Vietnam and Malaysia, Thailand continues to maintain a competitive edge through its advanced production knowledge, high-quality outputs, standardized control systems, and efficient transportation networks (Department of Agriculture, 2023) [24].

Nakhon Si Thammarat province is a major production area for off-season (early and late-harvest) durians in southern Thailand, with key cultivation zones located in Thasala, Sichon, Nopphitam, Lansaka, Phipun, Phrom Khiri, Chawang, Ron Phibun, Chulabhorn, and Cha-uat districts (Department of Agricultural Extension, 2023) [7]. The province's topography, characterized by lowland foothills and favorable climatic conditions, supports large-scale durian cultivation. As of 2024, the total cultivated area reached 109,776 rai, with 72,882 rai in fruit-bearing stage, yielding a total output of 84,784 tons, an average productivity of 1,163 kilograms per rai, and an average selling price of 146.52 baht per kilogram. A distinctive feature of durian production in this region is the relatively even distribution of yields throughout the year, with peak output in July (22.72%) followed by December (20.09%).

This study aims to analyze the risk management practices of durian farmers in Nakhon Si Thammarat by applying the conceptual framework proposed by Jaffee *et al*. (2010) [11], which classifies risks in agricultural supply chains into seven categories: weather risk, environmental and biological risk, food safety and occupational health risk, market and price risk, logistics and infrastructure risk, operational and management risk, and policy and regulatory risk. The findings will support the development of context-specific, systematic risk management approaches that enable farmers to effectively respond to challenges, mitigate potential impacts, and promote the long-term sustainability of durian farming in the region.

2.Literature Review

This study on the impact of risks on the performance of durian farmers in Nakhon Si Thammarat province reviews relevant literature, including books, academic articles, and official documents, to establish a theoretical and conceptual foundation for the research. The review is organized into the following subsections:

2.1 General information about durian

Thailand is one of the world's major producers and exporters of durian, particularly the Monthong variety, which is highly popular in markets such as China and neighboring countries due to its distinctive taste and high quality (Department of Agriculture**,** 2023) [24]. In addition to fresh durian, various value-added products such as fried and frozen durian have been developed (National Bureau of Agricultural Commodity and Food Standards, 2023) [16]. Nakhon Si Thammarat is a key off-season durian production area in southern Thailand, with favorable environmental conditions and government support for production under GAP (Good Agricultural Practices) standards and the promotion of farmer groupings (Nakhon Si Thammarat Provincial Agricultural Office, 2023) [15]. However, the durian industry still faces challenges such as plant diseases, high production costs, and price volatility, all of which require effective management for long-term sustainability (Department of Agricultural Extension, 2023) [15].

2.2 Concepts and theories related to risk

Risk management is a vital component in agriculture, especially for durian growers in the southern region who face uncertainties related to climate, market conditions, and government policies. Knight (1921) [13] laid the foundational distinction between "risk" — situations where probabilities can be estimated — and "uncertainty," which involves unpredictable outcomes. This distinction has shaped modern risk management theory.

Jaffee *et al*. (2010) [11] categorized agricultural risks into seven types: weather risk, environmental and biological risk, food safety and occupational health risk, market and price risk, logistics and infrastructure risk, operational and managerial risk, and policy and regulatory risk. These categories are particularly relevant to the context of durian cultivation, which is affected by multiple external factors. Baquet *et al*. (1997) [2] and Anderson *et al*. (1977) [1] also grouped risks faced by farmers into five primary types: production, market, financial, operational, and legal risks. These risk types are often linked to farmers' characteristics such as land use, farm size, and years of experience. Meanwhile, Vaughan (1997) [27] and the Committee of Sponsoring Organizations of the Treadway Commission (2004) proposed systematic strategies for managing risk: avoidance, reduction, transfer, and acceptance. They also emphasized the importance of risk assessment frameworks in supporting strategic planning, which can improve production quality, output, and income for farmers.

From these theoretical perspectives, it is evident that risk management in agriculture plays a critical role in the survival and progress of farmers. This is especially true for off-season durian farmers in southern Thailand, who are vulnerable to climatic fluctuations, price instability, labor shortages, and regulatory uncertainties. Therefore, this study adopts the aforementioned theories as a framework to analyze how demographic factors, farm characteristics, and risk factors influence performance outcomes — including quality, quantity, and income — with the aim of proposing appropriate and sustainable risk management strategies. Based on the reviewed literature, the observable variables and their definitions are summarized in Table ***1***.

Table 1: Summary of Observable Variables and Their Definitions.

Variable	Component	Indicators	Source
Risk Factors	Weather Risks	Shortages or surpluses of rainfall or temperature (seasonal or annual), hailstorms, storms, droughts, floods	Jaffee *et al*. (2010)
	Price Risks	Changes in demand, supply, product quality, and delivery timing that lead to market fluctuations domestically and internationally	
	Food Safety & Occupational Health	Contaminations during production that affect consumer safety, and unsafe working conditions that harm farmers' or workers' health	
	Policy Risks	Changes or uncertainties in government policies such as taxation, insurance, trade laws, land rights, and other state or institutional directives	
	Labor Risks	Shortages of skilled labor, rising wages, and job insecurity, all of which affect the production and harvesting processes	

2.2 Concepts and theories related to the performance of durian farmers

Performance refers to the measurement of success in achieving set objectives, reflecting the efficiency, competitiveness, and sustainability of economic activities (Neely *et al*., 1995) [3]. Sink and Tuttle (1989) [23] proposed seven dimensions of performance, including efficiency, effectiveness, quality, and profitability. In the agricultural sector, Bourne *et al*. (2000) [3] categorized performance indicators into reliability, flexibility, cost, and asset management. Similarly, Kay *et al*. (2004) [12] introduced farm-level evaluation criteria such as profitability, liquidity, and debt repayment ability.

In the context of durian farming, Chittithaworn *et al*. (2011) [4] identified four key performance dimensions: production and quality, marketing, finance, and management.

Laosirihongthong and Dangayach (2009) [14] emphasized qualitative indicators such as customer satisfaction and sustainability. Hassanullah *et al*. (2021) [10] further developed indicators tailored to perennial fruit production, including variety development, orchard management, and climate adaptation. These indicators align with the specific characteristics of off-season durian farming. Thus, performance measurement serves as a vital tool for durian farmers to assess their capacity, plan for development, and enhance long-term competitiveness.

2.4 Hypothesis development and related research

2.4.1 Differences in performance based on demographic factors of durian farmers

Previous studies have shown that demographic factors such as gender, age, education level, income, and marital status significantly influence farmers' production and management capabilities. Farmers with higher education and income levels tend to achieve better production outcomes and income from durian sales compared to other groups (Sravootiahan, 2020; Wongthong, 2017; Sirrasarn, 2018; Siriprasertchok & Panyagometh, 2024) [25, 28, 22]. These findings support the hypothesis that performance may differ based on the demographic profiles of farmers.

2.4.2 Differences in performance based on basic farm characteristics

Farm characteristics such as land size, farming experience, soil type, and topography directly affect farm management efficiency and influence the quantity, quality, and income derived from durian production. Relevant studies suggest that farmers with favorable land conditions or extensive experience tend to perform better in terms of production management (Thonginta, 2022; Somsri, 2017; Pongvinyoo, 2015) [26, 24, 19]. This supports the hypothesis that differences in basic farm characteristics lead to varying performance outcomes.

2.4.3 Differences in performance based on risk factors in durian farming

Risk factors such as climate variability, product price fluctuations, labor shortages, policy uncertainty, and safety in production influence performance across multiple dimensions. Research by Thonginta (2022) [26] and Prasopchok and Supavasri (2019) [20] found that farmers exposed to high levels of risk often face rising costs and lower yields, while those with effective risk management enjoy more stable income and performance. Therefore, it can be hypothesized that different levels of exposure to risk contribute to performance variability.

Based on the reviewed literature, the research on "Risk Factors Affecting the Performance of Durian Farmers in Nakhon Si Thammarat Province, Thailand" can be conceptually illustrated in Figure 1

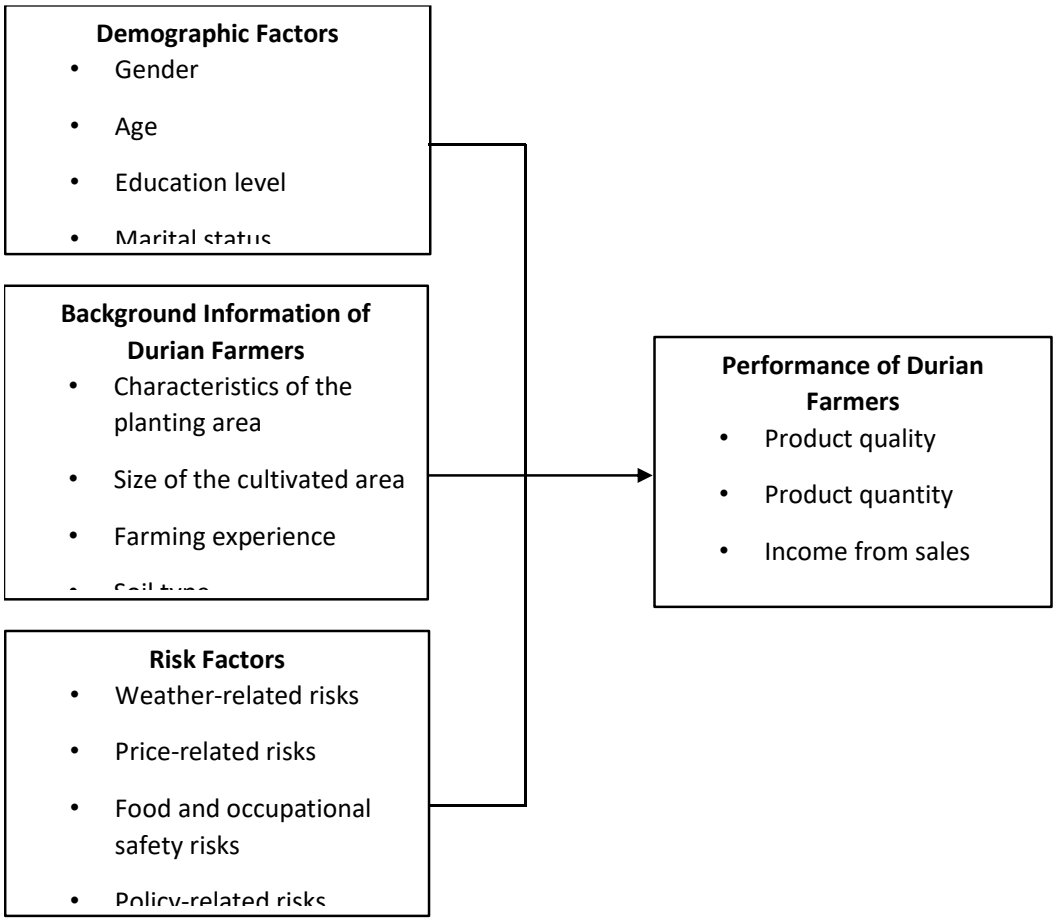

Fig 1: Conceptual Framework of the Study

Based on the synthesis of relevant theories and literature, the researcher formulated three comparative research hypotheses as follows:

Hypothesis 1 (H1): Differences in demographic factors significantly affect the performance of durian farmers.

Hypothesis 2 (H2): Differences in farmers' background

information significantly affect the performance of durian farmers.

Hypothesis 3 (H3): Differences in risk factors significantly affect the performance of durian farmers.

3. Research Methodology

3.1 Research Design

This study employed a quantitative research approach with the objective of examining differences in the performance of durian farmers in Nakhon Si Thammarat Province, based on demographic factors, farmer background, and risk factors. Data were collected from durian farmers in the ten districts with the highest cultivation areas: Tha Sala, Sichon, Nopphitam, Lansaka, Phipun, Phrom Khiri, Chawang, Ron Phibun, Chulabhorn, and Cha-uat.

The sample size was calculated using Cochran's (1953) [5] formula, with a 95% confidence level and a 0.05 margin of error, resulting in a sample size of 385. To account for incomplete responses, the sample was increased by 5%, yielding a final total of 400 respondents. The sampling technique used was quota sampling, with 40 respondents selected from each district. Additionally, purposive sampling was employed to ensure the participants were actual durian farmers, aligning with the study's objectives.

The independent variables included demographic factors (gender, age, education level, marital status, and average monthly income), background information (land characteristics, land size, farming experience, soil type, and planting distance), and risk factors (climate, pricing, food safety and occupational health, policy, and labor). The dependent variable was the performance of durian farmers, measured by product quality, production quantity, and income from sales.

3.2 Research Instrument

The instrument used for data collection in this study was a questionnaire, which was developed based on a comprehensive review of relevant concepts, theories, and previous research. The questionnaire was divided into four sections. The first section gathered demographic information of the respondents, including gender, age, educational level, marital status, and average monthly income, using closed-ended checklist questions. The second section focused on the background information of durian farmers, such as land characteristics, land size, farming experience, soil type, and planting distance—also presented in closed-ended format.

The third section assessed agricultural risk factors using a five-point rating scale ranging from "Very Low" to "Very High." This section covered risks related to climate, price volatility, food safety and occupational health, policy, and labor. The fourth section measured the performance of durian farmers in three dimensions: quality of produce, quantity of yield, and income from sales. This section also utilized a five-point rating scale.

To ensure the quality of the instrument, the researcher assessed content validity using the Item-Objective Congruence (IOC) index evaluated by three experts. Only items with IOC values of 0.5 or higher were retained. Reliability was further examined through a pilot test, and internal consistency was measured using Cronbach's alpha coefficient. The results showed acceptable reliability with alpha values of 0.67 or higher. The final version of the questionnaire was distributed to 400 respondents in both paper-based and online (Google Forms) formats.

3.3 Data Analysis Methods

All completed questionnaires were checked for accuracy before data coding and statistical analysis using SPSS (Statistical Package for the Social Sciences). The analysis was conducted using both descriptive and inferential statistics. Descriptive statistics, including frequency and percentage, were used to summarize demographic characteristics and farmer background information. Mean and standard deviation were used to analyze the levels of risk perception and the performance outcomes of the farmers.

Inferential statistics were applied to test for differences in performance based on various independent variables. Independent t-tests were used for variables with two groups, while One-way Analysis of Variance (ANOVA) was applied for variables with more than two groups. When significant differences were found at the 0.05 level, pairwise comparisons were conducted using the Least Significant Difference (LSD) method to identify where the differences occurred.

4. Result

4.1 General information of the respondents

The demographic analysis of the 400 durian farmers revealed the following characteristics. The majority of the respondents were male (60.75%), aged between 40 and 50 years (41.25%), and had attained an education level below a bachelor's degree (60.75%). Most were married (68.25%) and reported an average monthly income ranging between 15,000 and 30,000 baht (45.75%). These findings are summarized in Table 2.

Table 2: Demographic Characteristics of the Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	243	60.75
	Female	157	39.25
	Total	**400**	**100.00**
Age	Below 30 years	44	11.00
	30–40 years	77	19.25
	40–50 years	165	41.25
	Over 50 years	114	28.50
	Total	**400**	**100.00**
Highest Education Level	Lower than bachelor's	243	60.75
	Bachelor's or equivalent	154	38.50
	Higher than bachelor's	3	0.75
	Total	**400**	**100.00**
Marital Status	Single	120	30.00

	Married	273	68.25
	Separated/Divorced	3	0.75
	Widowed	4	1.00
	Total	**400**	**100.00**
Average Monthly Income (Baht)	Less than 15,000	58	14.50
	15,000–30,000	183	45.75
	30,001–45,000	96	24.00
	More than 45,000	63	15.75
	Total	**400**	**100.00**

4.2 Background information of durian farmers

The analysis of 400 durian farmers revealed the following characteristics. Most plantations were located in foothill areas (51.75%), followed by lowland areas (39.50%) and coastal plains (8.75%). The majority of respondents cultivated durian on land areas ranging from more than 10 to 15 rai (41.00%) and had between 10 to 15 years of farming experience (34.25%). Regarding soil type, most farmers planted durian in clay loam (32.75%) and loam soils (24.75%). In terms of planting distance, the most commonly used spacing was 8 x 8 meters (29.50%), followed by 10 x 10 meters (21.25%) and 8 x 6 meters (20.25%), as summarized in Table 3.

Table 3: Background Information of Durian Farmers

Variable	Category	Frequency	Percentage (%)
Planting Area Type	Coastal plain	35	8.75
	Lowland	158	39.50
	Foothill	207	51.75
	Total	**400**	**100.00**
Farm Size (Rai)	Less than 5	36	9.00
	More than 5 to 10	109	27.25
	More than 10 to 15	164	41.00
	More than 20	91	22.75
	Total	**400**	**100.00**
Farming Experience	Less than 5 years	64	16.00
	More than 5 to 10 years	98	24.50
	More than 10 to 15 years	137	34.25
	More than 20 years	101	25.25
	Total	**400**	**100.00**
Soil Type	Clay	61	15.25
	Loam	99	24.75
	Sandy	37	9.25
	Clay loam	131	32.75
	Sandy loam	72	18.00
	Total	**400**	**100.00**
Planting Distance (m)	6 x 6	61	15.25
	8 x 6	81	20.25
	8 x 8	118	29.50
	8 x 10	55	13.75
	10 x 10	85	21.25
	Total	**400**	**100.00**

4.3 Risks affecting the performance of durian farmers

The analysis revealed that the overall level of risk affecting the performance of durian farmers in Nakhon Si Thammarat province was moderate (overall mean = 3.112, S.D. = 0.241). The risk factor with the highest impact was weather-related risk, which was rated at a high level ($\bar{x}$ = 3.533, S.D. = 0.420). Other risk factors were rated at a moderate level, including labor risk ($\bar{x}$ = 3.274), price volatility ($\bar{x}$ = 3.271), policy risk ($\bar{x}$ = 2.815), and food safety and occupational health risk ($\bar{x}$ = 2.669), as shown in Table 4.

Table 4: Risks Affecting the Performance of Durian Farmers in Nakhon Si Thammarat Province

Risk Factors	Mean ($\bar{x}$)	Standard Deviation (S.D.)	Interpretation
Weather-related risk	3.533	0.420	High
Price-related risk	3.271	0.547	Moderate
Food safety and occupational health risk	2.669	0.486	Moderate
Policy-related risk	2.815	0.455	Moderate
Labor-related risk	3.274	0.485	Moderate
Overall	**3.112**	**0.241**	**Moderate**

4.4 Performance of durian farmers in nakhon SI thammarat province

The findings indicate that the overall performance of durian farmers in Nakhon Si Thammarat province was at a high level

($\bar{x}$ = 3.574, S.D. = 0.431). All dimensions of performance also demonstrated high average scores, including production quantity ($\bar{x}$ = 3.595, S.D. = 0.718), product quality ($\bar{x}$ = 3.578, S.D. = 0.679), and income from sales ($\bar{x}$ = 3.550, S.D. = 0.614). These results suggest that most durian farmers achieved satisfactory performance across all evaluated aspects, as shown in Table 5.

Table 5: Performance of Durian Farmers in Nakhon Si Thammarat Province

Performance Dimensions	Mean ($\bar{x}$)	Standard Deviation (S.D.)	Interpretation
Quality of yield	3.578	0.679	High
Quantity of yield	3.595	0.718	High
Income from sales	3.550	0.614	High
Overall	**3.574**	**0.431**	**High**

4.5 Hypothesis Testing

The results of Hypothesis 1 testing revealed that demographic factors—specifically gender, age, and average monthly income—had a statistically significant effect on the performance of durian farmers at the 0.05 significance level. Therefore, the hypothesis was accepted. However, education level and marital status were found to have no significant impact on performance, and the hypothesis was thus rejected. For Hypothesis 2, the findings showed that farm characteristics, namely plantation size and years of experience, significantly influenced farmers' performance at the 0.05 level, supporting the hypothesis. In contrast, plantation location, soil type, and planting distance had no statistically significant effect, leading to the rejection of the hypothesis.

Regarding Hypothesis 3, climate-related and policy-related risks were found to significantly affect farmers' performance at the 0.05 significance level, thereby confirming the hypothesis. However, risks related to pricing, food and occupational safety, and labor showed no statistically significant effect, resulting in the hypothesis being rejected.

Table 6: Summary of Hypothesis Testing Results

Research Hypotheses	Result
Hypothesis 1: Differences in demographic factors influence the performance of durian farmers.	
1.1 Differences in gender influence performance.	Accepted
1.2 Differences in age influence performance.	Accepted
1.3 Differences in educational level influence performance.	Rejected
1.4 Differences in marital status influence performance.	Rejected
1.5 Differences in average monthly income influence performance.	Accepted
Hypothesis 2: Differences in farmers' background information influence performance.	
2.1 Differences in planting area characteristics influence performance.	Rejected
2.2 Differences in plot size influence performance.	Accepted
2.3 Differences in farming experience influence performance.	Accepted
2.4 Differences in soil type influence performance.	Rejected
2.5 Differences in planting distance influence performance.	Rejected
Hypothesis 3: Differences in risk factors influence the performance of durian farmers.	
3.1 Differences in weather-related risks influence performance.	Accepted
3.2 Differences in price-related risks influence performance.	Rejected
3.3 Differences in food and occupational safety risks influence performance.	Rejected
3.4 Differences in policy-related risks influence performance.	Accepted
3.5 Differences in labor-related risks influence performance.	Rejected

This study aimed to examine the risk factors influencing the performance of durian farmers in Nakhon Si Thammarat Province, considering demographic characteristics, farm-specific variables, and risk factors. The study also sought to investigate whether differences in these factors significantly affected performance outcomes, which included the quality of yield, quantity of yield, and income from sales.

The analysis revealed that most farmers cultivated durian on sloped hillside areas, with plots ranging from more than 10 to 15 rai. They possessed over 10 years of farming experience, primarily used clay loam soil, and adopted an 8 x 8 meter planting distance. The overall level of risk was found to be moderate ($\bar{x}$ = 3.112), with weather-related risks having the highest average score and being rated as high ($\bar{x}$ = 3.533). In terms of performance, the farmers' overall results were at a high level ($\bar{x}$ = 3.574), with the quantity of yield receiving the highest average score, followed by quality and income, respectively.

Hypothesis testing revealed that certain demographic factors—namely gender, age, and average monthly income—were significantly associated with performance outcomes at the 0.05 significance level. In contrast, education level and marital status did not show significant differences. Regarding farm-specific variables, plantation size and years of experience had a statistically significant impact, whereas land type, soil type, and planting distance did not. For risk factors, weather and policy-related risks significantly influenced performance, while price, food and occupational safety, and labor risks did not show statistically significant effects.

5. Discussion

The hypothesis testing revealed several key findings. For Hypothesis 1, which examined whether demographic factors influence the performance of durian farmers, it was found that gender, age, and average monthly income had statistically significant effects. These findings are consistent with the studies by Sravootiahan (2020) and Sirrasarn (2018), which reported that male farmers and those with higher

income levels tend to exhibit more efficient farm management practices. However, education level and marital status were not significantly associated with performance outcomes. This may be because agricultural skills are often developed through practical experience rather than formal education. This supports Knight's (1921) assertion that effective decision-making under risk does not necessarily depend on educational attainment, but rather on personal experience and risk perception.

For Hypothesis 2, which focused on farmers' background characteristics, the results indicated that farm size and farming experience significantly influenced performance. This is in line with Wongthong's (2017) study, which emphasized the importance of farm size and experience in determining both the quantity and quality of yield. On the other hand, land type, soil type, and planting distance were not significantly related to performance. This may be due to farmers already adapting their practices to suit environmental conditions, thereby minimizing differences in outcomes across these factors.

Regarding Hypothesis 3 on risk factors, the study found that weather and policy-related risks significantly affected farmer performance. Weather risk, which had the highest average score, aligns with the framework of Jaffee *et al*. (2010) and the findings of Thonginta (2022), who emphasized that droughts, storms, and rainfall variability directly impact the yield and quality of durian. Policy-related risks were also statistically significant, corroborating Anderson *et al*.'s (1977) argument that shifts in policy—such as changes in crop insurance schemes or export regulations—can directly influence farmers' income. Conversely, risks related to price, food safety, and labor were not statistically significant. This may suggest that farmers are relatively familiar with managing these risks and have developed coping mechanisms to deal with them effectively.

In conclusion, this study confirms that demographic characteristics, certain background factors, and specific risk dimensions significantly influence the performance of durian farmers. The findings contribute to practical recommendations for supporting, promoting, and designing appropriate risk management strategies tailored to the context of durian farming in Southern Thailand.

5.1 Recommendations Derived from the Study

Based on the findings regarding the impact of risk factors on the performance of durian farmers in Nakhon Si Thammarat province, several key recommendations are proposed:

- Demographic Factors: Government agencies should design capacity-building programs tailored to farmers of different age groups and educational backgrounds. Training sessions should be aligned with the needs and capabilities of each segment—for instance, younger farmers should be encouraged to adopt agricultural technologies, while older farmers may benefit more from knowledge transfer through simplified instructional media.
- Farmer Background Information: There should be support mechanisms that encourage farmers to expand their cultivation areas in a sustainable manner. Additionally, intergenerational knowledge exchange between experienced and novice farmers should be promoted to improve orchard management and enhance productivity.
- Risk Management: As weather-related and policy-related risks were found to significantly affect farm performance, it is recommended that relevant authorities establish early warning systems for natural disasters, promote the cultivation of supplementary crops during high-risk periods, and formulate stable, consistent agricultural policies that enable farmers to adapt effectively.
- Farm Performance Enhancement: A model durian orchard learning center should be established to serve as a real-life training ground for farmers. Such centers can offer practical guidance on improving product quality, increasing yield, and managing costs efficiently—ultimately contributing to long-term income sustainability.
- Farmer Organization and Collective Action: The formation of cooperatives or community enterprises should be encouraged to increase farmers' bargaining power in the market and to mitigate risks associated with overdependence on middlemen.

5.2 Recommendations for future research

Based on the limitations of the present study, the following suggestions are proposed for future research:

- Geographic Expansion: Future studies should be conducted in other provinces or regions with durian cultivation to allow for comparative analysis and a deeper understanding of risk factors and performance outcomes across different geographical and socio-economic contexts.
- Incorporation of Qualitative Methods: To gain more comprehensive insights into the challenges, constraints, and risk management strategies employed by farmers, future research should incorporate qualitative approaches such as in-depth interviews and focus group discussions.
- Exploration of Risk Management Strategies: Additional investigation is recommended on the specific risk management practices employed by durian farmers, such as crop insurance schemes, the adoption of agricultural technologies, and strategic adaptations in response to environmental and market uncertainties.
- Inclusion of Sustainability Indicators: Future research should consider incorporating environmental and sustainability dimensions into the performance evaluation framework. This would provide a more holistic understanding of farmer outcomes by integrating economic, social, and ecological indicators.
- Improvement of Research Instruments: Research tools should be refined to better align with local contexts by using clear and culturally appropriate language. Furthermore, rigorous validation procedures should be conducted to ensure the reliability and accuracy of the instruments used in data collection.

6.Conclusion

In summary, the performance success of durian farmers in Nakhon Si Thammarat Province is influenced by multiple factors, particularly farming experience, land management capabilities, and the ability to effectively respond to climate-related and policy-related risks. The findings from this study can inform policy development, support targeted risk management strategies, and enhance the capacity of durian farmers to sustain and improve their performance over the long term.

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