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# The Guidelines for Developing Competitiveness of Thai Agricultural Products: A Case Study of Durian Production in 14 Southern Provinces, Thailand



**Abstract:** - This study explores ways to make Thai durian production more competitive, concentrating on sustainable practices and difficulties experienced by durian growers. Multiple techniques were used. A thorough grasp of the market dynamics was gathered through in-depth interviews with 30 industry stakeholders, including durian producers, exporters, distributors, government officials, and industry professionals. 200 responders from 14 southern regions of Thailand, where durian production is crucial because of traditional farming practices and a favourable climate. Examining quality control practises, distribution effectiveness and sustainable farming methods revealed areas that might be improved to increase industry competitiveness. The study also revealed difficulties, including losses from post-harvest handling, barriers to entry into the market, regulatory limits, and inconsistent quality. The study also examined consumer preferences for sustainable products and their willingness to pay more. The findings reveal a sustainably produced durian goods market since they show an increasing consumer trend towards eco-friendly alternatives. Future recommendations call for incorporating technology into the supply chain, doing in-depth customer preference research, conducting a comparative analysis, and conducting long-term evaluations of sustainable practices. Policymakers, businesspeople, and researchers working to improve the competitiveness and sustainability of the Thai durian industry will find this study helpful.

**Keywords:** Guidelines, Developing Competitiveness, Thai, Agricultural Products, Durian.

## I. INTRODUCTION

Agriculture is critical to Thailand's economic growth, with agricultural goods accounting for a large portion of local consumption and export profits. Among these items, durian is a crucial commodity with significant growth and worldwide market penetration potential. Analyse the Current Situation of Durian Production: Evaluate the current state of durian production in Thailand's 14 southern provinces, considering aspects such as yield, quality standards, and market penetration [23]. Thai agriculture and the food processing sector have grown for several reasons: public investment in infrastructure and education, farmer and agribusiness investment, and technology. Thai agriculture's long-term success is ascribed to increased Total Factor Productivity (TFP) due to investment in agricultural research and development (R&D). Because the rate of return on investment in agricultural research is relatively high, the government underinvests in R&D. The article also addresses some of the problems and possibilities that Thai agriculture faces and some policy implications [20].

Thai durian export value reached a new peak in May 2021. According to the report, a new record is projected for 2021, with an increased growth rate of 35-40%. The article has some significant points: Thai durian export value peaked in May 2021. With an increased growth rate of 35-40%, the entire year 2021 is likely to establish a new record. Thai durian is becoming more popular in several nations, including China, Hong Kong, and Singapore. The Thai government promotes durian exports by building a durian research centre and organising durian festivals [11].

Due to its unusual flavour and cultural importance, durian is highly valued among agricultural goods. The durian business, predominantly concentrated in Thailand's 14 southern provinces, has attracted interest due to its economic potential and export prospects. Due to durian's appeal among local and foreign customers, cultivation and production have expanded. However, the sector has various constraints that limit its capacity to compete worldwide [15]. Durian, known as the "King of Fruits," is a popular local delicacy and a significant export commodity. However, to fully realise its potential, addressing the difficulties and possibilities that impact Thai

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durian's competitiveness worldwide is critical [2].

Consumer tastes and trade restrictions are changing, and environmental concerns are increasing in the global agricultural trade scene. Thai durian producers need help with quality control, supply chain efficiency, branding, innovation, and sustainable production practices. To overcome these issues, it is critical to create a complete set of rules that may boost the competitiveness of Thai agricultural goods, with a particular emphasis on durian [5].

This research intends to give practical insights towards increasing the sector's competitiveness by researching the durian industry in Thailand's 14 southern regions. The study's reasoning stems from its ability to generate sustainable growth, boost market share, and support the economic development of the southern provinces. This research benefits the durian sector and a more extensive knowledge of measures to improve the competitiveness of other agricultural goods in a rapidly changing global market.

Stakeholders in the durian sector should build strategies to solve issues and capitalise on possibilities by implementing practical recommendations based on the study's results. Finally, the success of the durian industry may be used to improve the competitiveness of other Thai agricultural goods, allowing Thailand to continue its position as a vital participant in the global agricultural trade arena.

## II. OBJECTIVES

To examine the current state of durian production, identify key challenges and opportunities, and offer actionable guidelines for increased competitiveness in Thailand's 14 southern regions.

## III. LITERATURE REVIEW

### A. *Agricultural Product Competitiveness*

Agricultural competitiveness is a multifaceted notion that includes elements influencing a product's capacity to prosper in home and international markets. Quality, pricing, branding, innovation, and sustainability are all elements that drive competitiveness. The power of a product to match customer wants while being economically viable is critical to its competitiveness [14].

Comparing the researched district's metrics to the top sections with the most significant proportion of production in the regional market. Developing a logistical infrastructure, including establishing a wholesale distribution hub, to boost agricultural product competitiveness (Ozerova et al., 2019).

Farmers' decisions to export their food into the international market are influenced positively by more extraordinary agricultural expenses and enhanced product competitiveness. The cost and competitiveness of farm products heavily influence farmers' decisions to export their goods. Farmers' profitability has decreased as the cost of farming has climbed, and the only realistic choice is to sell their produce in marketplaces with higher currency values to increase and retain their profitability [13].

### B. *Aspects Influencing Competitiveness*

Several factors have been recognised as important determinants of agricultural competitiveness. These are examples of production efficiency, technological adoption, quality control, supply chain management, market access, and regulatory frameworks. Post-harvest processing, shipping, and maintaining consistent quality appear as critical difficulties impacting competitiveness in durian production [1].

Considering their unique characteristics, the potential for enhancing agricultural competitiveness in coal-mining regions. Agriculture in coal-mining districts has both favourable and bad aspects, such as high technological and human resources, challenging environmental problems, and less appealing geographical settings. The importance of research and innovation in agriculture includes creating technology for the deep processing agricultural products and training highly skilled workers. Furthermore, the issue of financial competitiveness in agriculture and the relevance of regional food security are discussed [12].

The export competitiveness of Indonesia and the variables influencing the natural rubber export price. The present situation of Indonesia's raw rubber sector includes production, export, and competitiveness. Exchange rates,

global demand, and domestic policies are all variables that influence natural rubber export prices. Increased global natural rubber industry competitiveness through increased productivity, improved quality, and lower manufacturing costs [6].

### *C. Agricultural Competitiveness Case Studies*

The connection between agricultural competitiveness, fertiliser and chemical use on farms, and environmental quality. Alternative public policies and commercial practices can keep agricultural producers competitive while minimising the harmful effects of agricultural chemical use. The new ecological legislation, notably in the sector of agricultural chemical use, may have a substantial impact on farm production costs, which will have ramifications for agricultural competitiveness in global markets [21].

Certain agricultural goods, notably rice, rubber, spices, vegetable fats and oils, timber, fuel wood, fish, and crustaceans, are very competitive in ASEAN nations. Vietnam, Thailand, and Indonesia are the most competitive, whereas Brunei, Singapore, and Cambodia have the lowest. The ASEAN nations have convergent tendencies in agricultural competitiveness and effectively retain ranks in high-growth industries. ASEAN countries with solid competitiveness should specialise in and maintain their rankings to increase competitiveness and maximise social welfare. In contrast, countries with weak agricultural competitiveness should specialise in processed products and services based on economic resource advantages. Policymakers and businesses can gain from increased competitiveness [10].

Thailand's Small and Medium Enterprises (SMEs), notably Chinese SMEs, suffer several challenges that jeopardise their competitiveness. Both external and internal variables influence these SMEs' business competitiveness. Market rivalry, the legal and political environment, and the social and cultural environment are examples of external elements. In contrast, internal factors include enterprise management, brand management, marketing, human resource deployment, and innovation. Promoting Chinese SMEs and other ethnic subsidiaries' international competitiveness in Thailand. To improve their performance in the global economy, SMEs should focus on increasing their internal skills [26].

### *D. Thailand's Durian Industry*

From 2012 to 2016, the Malmquist index of Thai durian output showed an increasing trend, increasing productivity for the country's durian production. Among the 22 provinces, Chanthaburi had the highest production increase, followed by Suratthani. Farmers, planners, and government organisations must develop methods to boost the efficiency of Thai durian production in each province [19].

The durian farmers applied durian farming technique elements and durian cultivation practises at the high-level Good Agricultural Practices: GAP components. Age, marital status, group membership, and area of durian planted were the most important demographic and economic determinants in implementing GAP. Furthermore, when using GAP in practises, the cultivation strategy, producing area selection, cultivation method, shade, post-planting, and pest control were identified as essential. GAP standards are required to encourage durian farmers to improve their continual practises and cultivation plans to ensure the quality of durian goods to market for a sustainable agricultural market in Thailand [24].

Financial supply chain management applies to agricultural product trading, notably Thai durian exports to China. This technique can enhance supply chain efficiency and transparency, lower transaction costs, and raise profitability for all parties involved. This strategy may also be extended to other agricultural goods and markets [22].

Due to its distinctive traits and rising worldwide demand, Thailand's durian sector has enormous potential. Durian is well-known for its unique flavour and perfume, making it a popular fruit in various foreign markets. Thailand is one of the world's major durian growers, with the 14 southern provinces playing an important role.

### *E. Durian Producers Face Difficulties*

The durian biomass waste generation and management system, the estimated potential energy available, and the conversion of durian biomass waste into biochar by pyrolysis and hydrothermal carbonisation. Durian biochar has

many uses, including catalysts, bio-sorbents, biocomposites, fertilisers, supercapacitor electrode material, and briquettes. In addition, the research addresses the possible benefits of biodegradable mulch film and supercapacitor electrode material obtained from durian biochar to address plastic waste and energy storage challenges. Production and use of bio-oil, methane, and other valuable substances derived from durian biomass waste [4].

Agricultural entrepreneurs' motivation is heavily impacted by their aims in managing the sites, as well as their financial status, health concerns, and want to share and preserve ethnic and agricultural expertise. The issues confronting agritourism enterprises include insufficient government and private sector assistance, difficulties hiring people, limited infrastructure, seasonal revenue, and encroaching urban growth [25].

The three selected durian producer-listed firms defined, recognised, measured, presented, and declared the growing agricultural produce – durian fruits and durian trees – in compliance with Malaysian Financial Reporting Standards, Plant and Equipment, respectively. The financial statements and notes to financial statements must recognise, measure, present, and disclose agricultural output and bearer plants and classify biological assets as current or non-current assets [17].

Agricultural competitiveness has several facets: quality, price, branding, innovation, and sustainability. Meeting client requests while maintaining financial sustainability is critical for competitiveness. Production efficiency, technological adoption, supply chain management, market access, and regulatory frameworks are all factors that influence competitiveness. These variables affect various agricultural sectors, including coal-mining areas, natural rubber exports, and particular goods such as rice and rubber. The significance of environmentally friendly practises and regional specialisation. Thailand's durian business emphasises its potential, such as problems with post-harvest processing, quality management, market access, and methods for increased production.

#### IV. METHODOLOGY

This study will concentrate on durian production in Thailand's 14 southern provinces to provide a thorough understanding of the variables impacting the competitiveness of Thai agricultural goods, with a specific emphasis on durian. The research will investigate several areas of the durian sector, including production practices, supply chain dynamics, marketing tactics, quality control procedures, and sustainability concerns. A mixed-methods strategy will fulfil the study objectives, including qualitative and quantitative data collection and analysis.

**In-Depth Interviews:** 30 in-depth interviews [7] with essential players in the durian sector, including durian growers, exporters, distributors, government officials, and industry experts, will be done. These interviews will give qualitative insights into durian production and competitiveness issues, opportunities, and solutions.

**Questionnaire Surveys:** A structured questionnaire will be constructed to collect quantitative data from a larger group of participants. 200 surveys (from 700 questionnaires) [8] will be delivered to durian producers, merchants, consumers, and other interested parties. The questionnaire will include questions on manufacturing practices, marketing plans, quality standards, and perceived obstacles. Quantitative data from questionnaires were evaluated using descriptive statistics such as frequency, mean, median, mode, variance, standard deviation, etc [9].

A Likert 5-point scale was used in this study to assess participants' attitudes, perceptions, and preferences across many variables related to the competitiveness of Thai durian production. A commonly used psychometric instrument, the Likert scale, provides a systematic technique to measure respondents' agreement or disagreement with a series of statements. The scale goes from "Strongly Disagree" to "Strongly Agree," allowing participants to express themselves along a spectrum of alternatives [16].

#### V. RESULTS

In-depth interviews with 30 durian industry players in Thailand provided various observations and viewpoints. Durian producers, exporters, distributors, government officials, and industry specialists were among those in attendance.

### *A. Overview of the Durian Industry*

Due to traditional farming and favourable weather and soil conditions, Thailand's 14 southern provinces provide a substantial portion of the country's durian production. The durian business is an important economic pillar that gives money to producers while also helping the local economy. Thai durian is well-known for its high quality and distinct flavour, making it a popular local and global delicacy. Thai durian demand has grown in international markets such as China, Singapore, and Malaysia, making Thailand an essential export commodity.

Producers want assistance in ensuring consistent quality across the durian supply chain. Maintaining fruit quality requires uniform size and appearance, post-harvest treatment and transportation, and managing variables such as ripeness, temperature, and humidity throughout transit. Due to variances in grading practices and market demands between countries, meeting high-quality standards for international export may take time. Coordinated efforts and efficient processes are required to maintain consistent quality across the supply chain.

### *B. Distribution and Supply Chain*

The supply chain confronts transportation bottlenecks and bad road conditions, which cause market delivery delays. Although reasonably efficient, bottlenecks exist during peak harvest seasons, necessitating suitable cold storage facilities. Coordination between phases needs improvement, delaying the supply of fresh durian to markets.

Investing in better transport infrastructure, such as upgraded roads and dependable logistical partners, would be beneficial. Furthermore, constructing extra cold storage facilities in production locations might increase the fruit's shelf life and overall quality. Efforts should be made to simplify the procedure. Establishing a centralised distribution centre where durian can be appropriately processed, stored, and delivered might minimise transit times and increase freshness. Improving cooperation among all parties, from farmers to wholesalers, is critical. This might be accomplished by tracking shipments and forecasting demand using technology. Educating farmers on correct post-harvest management procedures can also help to preserve fruit quality.

### *C. Quality Control Procedures*

Quality control procedures in durian fruit manufacturing include visual inspections and sensory assessments. To find faults, teams evaluate fruit look, size, and condition before and after harvesting. Selective pruning procedures limit tree growth and encourage consistent fruit production. Irrigation and nutrition supply are controlled to control fruit size. Farmers use specific harvesting criteria to ensure optimal ripeness. Aligning quality control procedures with worldwide export requirements is a problem. However, deviations may arise from natural variables and resource constraints. To close this gap, advanced technology and training programmes are being investigated.

### *D. Considerations for Sustainability and the Environment*

Farmers have implemented integrated pest management strategies, including using beneficial insects to reduce pests. They have lowered pesticide use and experimented with organic fertilisers to increase soil health and prevent environmental impacts. They have moved to organic farming and emphasised companion planting to avoid pests organically. Sustainability is critical for the industry's future since it preserves the environment and attracts environmentally concerned customers. Organic waste is managed in composting facilities and utilised as fertiliser. Farmers work with local organisations to plant trees, promote biodiversity, and install rainwater collection systems to decrease reliance on external water sources and impact local water supplies.

### *E. Market Entry and Challenges*

Due to the perishable nature of the fruit and the requirement for adequate transportation, durian farmers confront hurdles. Long-distance shipment might result in post-harvest losses, lowering fruit quality upon arrival. Due to preferences and unfamiliarity with durian's peculiar flavour and odour, establishing a footing in new markets and generating brand awareness can take time and effort. Regulations and trade obstacles also influence durian production and export. Tariffs, import limits, and trade agreements impact Thai durian's competitiveness in foreign markets.

To address these issues, investing in research and technology, collaborating with government agencies, industry stakeholders, and trade associations, educating international consumers about the unique qualities and health benefits of durian, and promoting sustainable cultivation practices can improve the industry's reputation and facilitate market access in regions with strict quality and environmental standards.

#### *F. Strategies for the Future*

Investment in post-harvest technology is critical for Thai durian because it ensures that fruit arrives in good condition worldwide. Farmers must work together to standardise quality and follow best practices, generating a strong brand identity and distinct flavour. Examples of booming exports include Chilean fruit exports, Vietnam's rice industry, and Thailand's success with Thai Hom Mali rice and seafood. Innovation is critical for preserving production, increasing yields and quality, and keeping current through sustainable practices, enhanced pest management methods, and creative agricultural techniques. Technology can expedite operations and assure compliance with international standards.

#### *G. Preferences for Sustainability and Consumer Trends*

According to the 30 in-depth interviews, consumers' growing knowledge of sustainability has resulted in a noteworthy preference shift within the durian industry. More people are looking for items that correspond with their beliefs, such as those created sustainably and environmentally friendly. The market dynamics are being influenced by the demand for sustainably produced durian, leading farmers to explore implementing eco-friendly practices to meet this need.

According to an observable trend, consumers are prepared to pay a premium for durian items that satisfy better sustainability criteria. Some customers are concerned about their purchases' environmental and social consequences and are ready to spend extra money on things that reflect their ideals. According to their statements, consumers are prepared to pay extra for durian items that are certified as sustainable or ecologically friendly.

Due to traditional farming practices and favourable climatic and soil conditions, Thailand's 14 southern provinces are critical for durian production. The industry is vital to local economies and has extended globally to China, Singapore, and Malaysia. Improved transportation infrastructure and cold storage facilities are suggested to increase efficiency. Critical quality control procedures include visual and sensory inspections, selective pruning, and controlled irrigation and feeding. Farmers have adopted environmentally friendly practices such as integrated pest management, reduced pesticide use, organic fertilisers, and rainwater collection systems. Post-harvest losses, market footholds, and trade rules are all challenges in durian cultivation. Investing in post-harvest technology, standardising quality, and creating a distinct brand identity is critical. Consumers are moving their preferences towards sustainably produced durians and are willing to pay a premium for items that satisfy more significant sustainability requirements.

The demographic information provided by the 200 respondents reflects a varied spectrum of research participants. The age range is from 18 to 55, with the most incredible group between 35 and 44. The gender breakdown is mainly male (60%), with females accounting for 34.5% and a minor portion preferring not to declare. Most of the respondents were durian producers/farmers (31%), exporters and distributors (29.5%), government officials (3.5%), industry specialists/consultants (3%), researchers/academics (3%), traders/wholesalers/retailers (3%), packaging and logistics experts (3%), consumer representatives (8%), environmental experts (4%), and local community representatives (12%).

The study included participants from 14 provinces, with notable participation from Chumphon (25%), Narathiwat (9%), Pattani (14.50%), and Yala (10.50%). Similar to the Bureau of Agricultural Economic Research [3] pointed out that most durian producing is from Chumphon, Surat Thani and Nakhon Si Thammarat Provinces. This diversity assures a complete representation of various industry perspectives, which contributes to a well-rounded study conclusion.

**Table 1:** *Enhancing Competitiveness of Thai Durian Production: Supply Chain Efficiency*

| <i>Supply Chain Efficiency</i>  | SD   | Mean | C.V.<br>(%) | Result |
|---|------|------|-------------|--------|
| The distribution of durians uses an adequate transportation infrastructure. | 1.02 | 2.38 | 42.87       | L*     |
| Storage facilities effectively maintain the durian's quality.               | 0.89 | 2.22 | 40.18       | L*     |
| The distribution network makes sure that markets are delivered on time.     | 0.96 | 2.81 | 34.11       | M*     |
| In general, current supply chain procedures work well.                      | 0.89 | 3.30 | 27.00       | M*     |
| Total   | 0.43 | 2.68 | 16.12       |        |

**Note:** \* Low, \*Medium

The findings from Table 1 show how supply chain efficiency is perceived in the context of boosting Thai durian production's competitiveness. With a standard deviation (S.D.) of 1.02 and a coefficient of variation (C.V.) of 2.38, demonstrating considerable variability, the participants rate the distribution of durians as utilising appropriate transportation infrastructure. The quality of durians is also thought to be efficiently maintained by storage facilities (S.D.: 0.89, C.V.: 2.22). It is also stated that the distribution network is timely, with an S.D. of 0.96 and a C.V. of 2.81. With an S.D. of 0.89 and a C.V. of 3.30, showing reasonably low variability, the current supply chain practises assessed positively overall. Distribution infrastructure and storage quality are rated "Low" in the results, while network effectiveness and supply chain practises are rated "Medium." These results inform researchers about the durian supply chain's perceived effectiveness in boosting competitiveness.

**Table 2:** *Enhancing Competitiveness of Thai Durian Production: Quality Control Measures*

| <i>Quality Control Measures</i>   | SD   | Mean | C.V.<br>(%) | Result |
|---|------|------|-------------|--------|
| The quality of durian fruit regularly meets industry standards.                           | 1.03 | 2.86 | 36.10       | M*     |
| Throughout the entire production process, strict quality control mechanisms are in place. | 0.98 | 3.11 | 31.55       | M*     |
| The durian industry makes sure that fruit size and appearance are consistent.             | 1.08 | 2.94 | 36.67       | M*     |
| Practises for quality control are effective in preserving export quality.                 | 0.93 | 3.33 | 27.94       | M*     |
| Total   | 0.55 | 3.06 | 17.91       |        |

**Note:** \*Medium

Through Table 2, the quality assurance procedures for the Thai durian industry were evaluated. According to the findings, there is a fair amount of participant agreement on the quality control measures. The lowest standard deviation (S.D. = 1.03) indicated that the quality of durian fruit regularly met industry requirements, suggesting that participant opinions were generally consistent. Moderate agreement (S.D. = 0.98) was also observed using stringent quality control procedures throughout production. The standard deviation for ensuring

uniform fruit size and appearance was slightly larger (S.D. = 1.08), indicating somewhat more varied viewpoints. However, there is a fair consensus that export quality is efficiently maintained through quality control procedures (S.D. = 0.93). Overall, the coefficient of variation (C.V. = 17.91%) indicates a moderate level of dispersion between the replies.

Table 3: Enhancing Competitiveness of Thai Durian Production: Sustainability Practices

| <i>Sustainability Practices</i>   | SD   | Mean | C.V.<br>(%) | Result |
|---|------|------|-------------|--------|
| Sustainable farming methods, such as using fewer pesticides, are crucial.               | 0.96 | 3.18 | 30.03       | M*     |
| To produce durian, organic growing techniques must be used.                             | 0.78 | 3.75 | 20.84       | H*     |
| Environmentally friendly production methods are effectively incorporated.               | 1.14 | 3.17 | 36.07       | M*     |
| For long-term success, the durian sector should give priority to sustainable practices. | 0.73 | 4.12 | 17.64       | H*     |
| Total   | 0.45 | 3.56 | 12.79       |        |

**Note:** \*High, \*Medium

The study evaluated the sustainability of Thai durian farming practices (Table 3). With a mean of 3.18 and a moderate coefficient of variation (C.V.) of 30.03%, respondents generally agreed on the significance of sustainable farming practices, such as using fewer pesticides. Furthermore, organic growing methods had a high mean of 3.75 and a C.V. of 20.84%. A mean of 3.17 and a high C.V. of 36.07% indicated that environmentally friendly production practices were effectively integrated. Participants strongly stressed the importance of prioritising sustainable practises for long-term sector performance, as indicated by the high mean of 4.12 and the low C.V. of 17.64%. With a moderate total mean of 3.56 and a low C.V. of 12.79%, respondents' perceptions of sustainability practises in Thai durian production were generally favourable.

Table 4: Enhancing Competitiveness of Thai Durian Production: Challenges Faced by Durian Producers

| <i>Challenges Faced by Durian Producers</i>                 | SD   | Mean | C.V.<br>(%) | Result |
|---|------|------|-------------|--------|
| Losses caused by post-harvest handling and storage.         | 0.67 | 4.36 | 15.42       | H*     |
| Market entry restrictions have an impact on durian exports. | 0.82 | 4.08 | 20.13       | H*     |
| Regulation restrictions affect durian production.           | 0.67 | 4.42 | 15.11       | H*     |
| A variety of variables causes inconsistent quality.         | 0.66 | 4.43 | 14.93       | H*     |
| Total   | 0.38 | 4.32 | 8.72        |        |

**Note:** \*High

The findings in Table 4 make clear the difficulties durian growers confront in raising competitiveness. Losses resulting from post-harvest processing and storage were identified as the most significant issues, as evidenced by a relatively high mean score (4.36) and a low coefficient of variation (CV=15.42). Numerous variables creating varying quality and market entry limits affecting durian exports, production-related regulatory restrictions, and other issues appeared as significant obstacles, each with high mean ratings (4.08, 4.42, and 4.43, respectively).



The average challenge score across all challenges is 4.32, and the CV is 8.72. These results imply that durian farmers are concerned about the issues raised in their attempts to increase competitiveness.

According to the study, the 200 respondents spend more on durian items that satisfy better sustainability requirements. The results demonstrate that most respondents are highly willing to pay, as shown by the high mean score (Mean = 4.36) and the low standard deviation (S.D. = 0.73). The coefficient of variation (CV = 16.75) emphasises the trend's consistency and shows that respondents generally agree that they are willing to pay more for durian products that meet higher sustainability requirements.

## CONCLUSION

The outcomes of the in-depth interviews with 30 individuals from different facets of the Thai durian business provide insightful information on the difficulties and opportunities this sector faces. The industry review emphasises how important Thailand's 14 southern provinces are to producing durian, supporting the region's economy, and growing its influence internationally. There were issues with distribution constraints, maintaining uniform quality throughout the supply chain, and access to cold storage. It becomes apparent that better transit systems, centralised distribution hubs, and technology-driven cooperation are required. Visual inspections, selective trimming, and irrigation management were all investigated as quality control techniques, with the possibility of cutting-edge technology and training to resolve deviations. Farmers that saw the need to put sustainability first for long-term prosperity embraced sustainable practices, including organic farming and integrated pest management.

The difficulties of entering the market, like its perishability and consumers' need to know the unique attributes of durian, were listed. To overcome these obstacles, study, technology, and cooperation are required. The conversation also highlights how consumers are altering their preferences for sustainably produced durians and are willing to pay more. The 200 respondents' demographic data showed various participant characteristics, guaranteeing full representation. The supply chain efficiency, quality control procedures, sustainability practises, and difficulties experienced by durian growers are also examined and explored in the study's quantitative insights. The study also revealed customers' readiness to spend more on durian items adhering to higher sustainability criteria, highlighting a strong market trend towards eco-friendly choices.

The study's conclusions are consistent with previous research on consumer trends, supply chain effectiveness, quality control procedures, and agricultural competitiveness. The in-depth interviews with 30 stakeholders in the Thai durian industry confirm earlier studies that stress the importance of elements like quality, post-harvest handling, and distribution efficiency in boosting agricultural competitiveness [14], [18]. The problems described in previous research as affecting the competitiveness of agricultural products [13], [6] match the difficulties mentioned in the interviews, such as losses caused by post-harvest handling, market access limits, and regulation limitations. The study's focus on sustainable practises, such as integrated pest management, organic farming, and environmentally friendly production methods, also aligns with the global movement towards sustainable agriculture to ensure environmental preservation and consumer satisfaction [1], [12].

The observed consumer trends are connected to the study's conclusions and the literature evaluation. According to studies on sustainability preferences and consumer behaviour [26], [10] consumers' willingness to pay a premium for sustainably produced durian products reflects a broader shift in consumer preferences towards environmentally and socially responsible consumption. According to Chua et al. [4], the observations from the interviews are consistent with the growing significance of sustainability in influencing customer decisions and fueling market demand for environmentally friendly goods. Additionally, the discussion of the difficulties durian producers face, including inconsistent quality and regulatory limitations, correlates with the issues raised in various case studies on agricultural competitiveness, illuminating the problem of striking a balance between regulatory requirements and competitive production [21].

The study's compatibility with earlier research emphasises the findings' applicability and relevance to the larger context of agricultural competitiveness, supply chain management, and sustainability issues. The in-depth knowledge gained from the interviews confirms and adds to the body of knowledge already available in these fields, highlighting the necessity of stakeholder cooperation, technology investment, and sustainable practices to

promote the development and competitiveness of the Thai durian industry.

Based on the findings of this study, various directions for future research are suggested to comprehend better the competitiveness and sustainability of the Thai durian sector. The first step is to investigate the possibility of technical interventions, like sophisticated post-harvest technologies and data-driven supply chain management systems, to provide real solutions to the problems durian producers are facing. Investigating the use of blockchain technology for supply chain traceability and quality control may also be advantageous. Second, a more thorough investigation of consumer preferences and their readiness to pay for sustainably produced durian products may reveal insightful information about the market demand for eco-friendly products, allowing for more specialised pricing and marketing plans.

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