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Optimization of Oyster Mushroom Business Development Through SWOT and QSPM

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ABSTRACT

This research was conducted at CV. Asa Agro Corporation, Cianjur, West Java, Indonesia, is a region with optimal climatic conditions for oyster mushroom cultivation. Despite the sector's potential, challenges such as product quality instability and fluctuating productivity hinder business growth. This research employs an integrated SWOT analysis strengthened by IFAS, EFAS matrices, and Quantitative Strategic Planning Matrix (QSPM) to systematically identify critical internal and external factors and formulate prioritized strategies. Unlike previous studies that predominantly rely on descriptive SWOT frameworks, this research integrates quantitative weightings and empirical prioritization through QSPM, thereby addressing a significant methodological gap in mushroom agribusiness decision-support literature and enhancing objectivity in managerial strategy formulation. Data were gathered through structured questionnaires, field observations, and secondary reports from 30 purposively selected respondents. This analysis revealed strong internal factors, including strategic location and superior spawn quality (IFAS score 2.95). In addition, there are several significant external opportunities, such as increasing consumer health awareness and government support (EFAS score 2.78). The positive relationship between time and production ($r = 0.95$; $p < 0.05$) suggests a trend of steady expansion from 2020 to 2024. This quantitative integration allows for measurable improvement in strategic decision-making precision, with QSPM scores providing clear prioritization metrics (SO strategy: 3.2; WO: 3.1; ST: 3.0; WT: 2.6). This study offers SO strategies with a QSPM score of 3.2 by utilizing strategic priorities and quantitative approaches to optimize long-term sustainable competitive advantages in the oyster mushroom agricultural sector.

1. INTRODUCTION

The agricultural sector worldwide is experiencing a substantial shift propelled by technological innovations, sustainable development, and the imperative for increased productivity (FAO, 2023; Rizkita et al., 2023). Oyster mushroom (Pleurotus ostreatus) farming is the second fastest-growing subsector of agriculture because these mushrooms are economically and nutritionally valuable, ecologically friendly and can grow in various environmental conditions (Faturachman & Riny Kusumawati, 2024) This commodity thrives in the hot and damp regions of tropical countries like Indonesia, especially as it's grown regionally in Cianjur, West Java. Cianjur contributed around 15% of the oyster mushroom, with a production scale of approximately 25.430 tons in West Java Province (Ratule et al., 2022).

Regardless, the oyster mushroom cultivation industry still struggles with some challenges, such as product quality variability and inconsistent productivity (Hunter Manson et al., 2022; Amir et al., 2023). Issues pertaining to the contamination of substrate bags (baglogs) exhibit prevalence rates of up to 38.18%, variance in mycelial growth patterns, and adherence to standard operating procedures all add to remarkable production inadequate and have a detrimental impact on the marketability of the product (Reihan et al., 2024; Hadiprayitno et al., 2018) Elucidate that contamination is caused by fungi of the genus Trico derma, which leads to green mold disease marked by green discoloration on the surface of the baglog. This infection is the primary factor in the decline of white oyster mushroom (Pleurotus ostreatus) production. Between 16% and 25% of baglogs are contaminated, causing irregular mycelium growth and production losses. These challenges are exacerbated by limitations in controlling temperature and humidity in the growing medium, availability of raw materials, and human resource and production management factors (Dwi Kuryanto, 2025).

The novelty of this research lies in its rigorous integration of qualitative SWOT insights with quantitative analytical tools, specifically IFAS, EFAS, and QSPM, to systematically prioritize strategic alternatives in oyster mushroom agribusiness. While traditional SWOT analyses provide valuable qualitative perspectives, they often lack the empirical rigor necessary for objective decision-making in resource-constrained SMEs. Matrices orating weighted scoring matrices and attractiveness assessments, this study enhances strategic clarity and enables measurable improvements in managerial decision accuracy. This methodological advancement directly addresses the identified gap in empirical, quantitative decision-support studies within the mushroom cultivation sector, thereby contributing actionable frameworks for sustainable business development in similar agribusiness contexts.

A significant research gap is the lack of comprehensive data-driven strategic approaches to addressing quality control issues. Strengths, Weaknesses, Opportunities, Threats (SWOT) analysis, as a method for evaluating strengths, weaknesses, opportunities, and threats, has been widely used in various business sectors (Amelia et al., 2022). Even though, in the scope of oyster mushroom farming, especially regarding the industrial and core-plasma partnership tiers, the application of SWOT has a more narrative quality in the absence of detailed numerical assessments like the Internal Factor Analysis Summary (IFAS) matrix, the External Factor Analysis Summary (EFAS) matrix, and the Quantitative Strategic Planning Matrix (QSPM (Sitompul et al., 2022). This leads to poorly defined formulative strategies and hinders implementation, thus failing to aid in driving sustainable productivity and quality improvements (Hayyina et al., 2024).

Literature pertaining to oyster mushroom cultivation in Indonesia has gaps pertaining to the defining and prioritizing of the strategic issues and planning frameworks (Nur Rohmah, 2024). This poses a great challenge for companies like CV Asa Agro Corporation in strategically identifying key areas to structure and pivot decisions around quality control and business growth due to the absence of this defining core. Such absence of structured strategic frameworks can be detrimental to the firm's competitive edge, thus hindering the ability to effectively compete in the domestically and increasingly globalized markets.

This study responds to existing challenges by thoroughly examining the internal and external factors that influence the business environment. The goal is to create practical business development strategies using SWOT analysis, supported by the detailed compilation of Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS) matrices. To determine the most appropriate strategic priorities, a quantitative assessment is conducted using the Quantitative Strategic Planning Matrix (QSPM). This comprehensive methodology is expected to deliver strong, action recommendations that boost product quality, enhance process efficiency, and ensure the long-term sustainability of business operations.

2. RESEARCH METHODS

This research was conducted with principles that adhere to strict ethics. Prior to data collection, participants were fully informed of the research objectives and gave their informed consent to participate. The collected data is anonymized and used only for scientific research purposes (Sugiyono, 2023; Davison & Chatterjee, 2023).

This research was conducted using mixed methods, combining qualitative descriptive data with quantitative measurements, some of which were conducted through field observations. With this combination, it is hoped that this method can uncover internal and external factors that are important for business strategy. The research framework refers to the model developed by Basso et al. (2023) as a basis for designing a business development plan at CV Asa Agro Corporation. Data was obtained in Cianjur Regency, West Java, using a purposive sampling technique by selecting 30 respondents who could provide relevant and reliable information (Creswell & J. David Creswell, 2018).

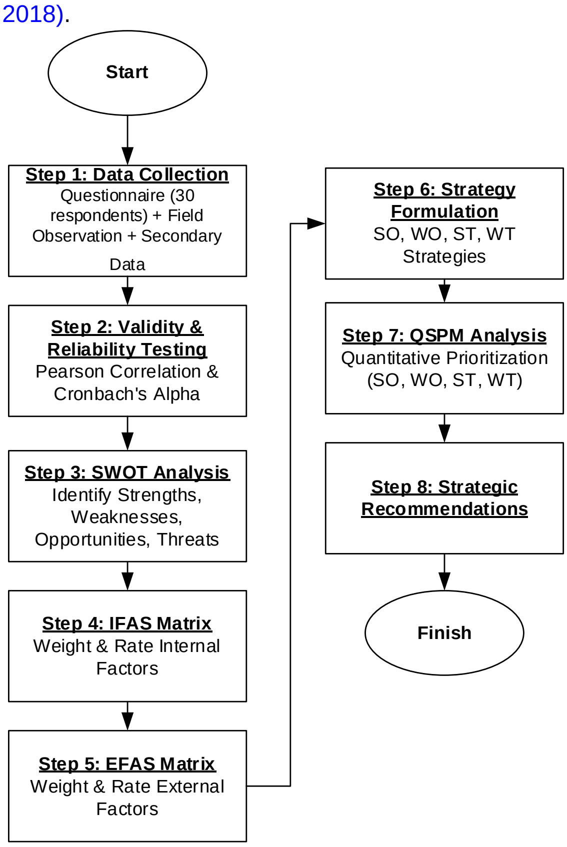

Fig.1. Research framework flowchart

Fig. 1 illustrates the sequential research framework employed in this study, from primary data collection through validity testing, SWOT analysis, matrix construction (IFAS/EFAS), strategy formulation, and quantitative prioritization using QSPM, culminating in actionable strategic recommendations for CV Asa Agro Corporation.

Primary data was collected through interviews using a validated questionnaire. This validity of the instrument was assessed using correlation analysis with a minimum significance of $p < 0.05$, and Cronbach's alpha coefficient was used as a measure of reliability, with a limit value of $\alpha \geq 0.7$, this value was used as a reference for acceptable internal consistency (Meidianti & Saputra, 2024).

$$\alpha = \left(\frac{K}{K-1}\right)\left(1 - \frac{\sum_{i=1}^{K} \sigma_i^2}{\sigma^2 \text{total}}\right) \quad (1)$$

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where α = Cronbach's Alpha; K = Questionnaire items; $\sum \sigma_i^2$ = Variance of each item; and σ^2total = Total variance of the scale

Direct field observations allow us to observe how things are made and how the business is run. We obtain secondary data, such as marketing records, production reports, and other company documents, that are useful for analysis. Inferential statistical techniques such as regression analysis, Pearson correlation, significance, correlation and t-test computations, and Microsoft Excel 2021 for IFAS, EFAS, and QSPM matrix calculations. Validity testing utilized item-total correlation analysis, while reliability was assessed via Cronbach's alpha coefficient. We use inferential statistics such as regression analysis, Pearson correlation, and significance tests. We use regression analysis to determine how much the independent variable influences the dependent variable. The regression coefficient indicates how strong and in which direction the influence moves. We use Pearson correlation to determine if there is a significant relationship between variables before conducting regression analysis. The significance test examines the correlation or regression coefficient found to determine whether it is statistically significant. This confirms the suspected relationship.

The regression model used is expressed as follows:

$$Y = a + bX \tag{2}$$

where Y = Dependent variable (predicted or outcome variable); a = Intercept (value of Y when X = 0); b = Slope coefficient (change in Y for a one-unit change in X); and X = Independent variable (predictor).

Pearson correlation coefficient is calculated by:

$$r = \frac{n\sum XY - \sum X \sum Y}{\sqrt{(n\sum X^2 - (\sum X)^2 - (n\sum Y^2 - (\sum Y)^2)}} \tag{3}$$

where r = Pearson correlation coefficient, ranging from -1 to 1 (r= 1 is a perfect positive correlation; r=-1 is a perfect negative correlation, and r= 0 is no linear correlation); n = number of observations; $\sum XY$= Sum of the products of the pairs X and Y; $\sum X$ = Sum of the values of X; $\sum Y$ = Sum of the values of Y; $\sum X^2$ = Sum of the squares of each value of X; and $\sum Y^2$ = Sum of the squares of each value of Y

The test statistics for significance are given by:

$$t = \frac{\bar{X} - \mu 0}{SE} \tag{4}$$

where t= calculated t-value; $\bar{X}$= sample mean; μ0= hypothesized population mean; and SE = standard error.

In the first step, internal and external factors are identified and analyzed using the Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS) matrices (Wardana et al., 2022). Factor weights were assigned on a scale between 0 and 1, and ratings ranged from 1 to 4; a weighted score was then computed by multiplying weight by rating, the total value of IFAS and EFAS is then mapped to the Internal-External (IE) matrix which has 9 quadrants to determine the company's strategic position; then, a SWOT analysis is used to formulate alternative strategies based on the results of IFAS and EFAS (David & David, R., Fred R, 2017) Third, the Quantitative Strategic Planning Matrix (QSPM is used to evaluate and prioritize strategies that have been formulated quantitatively to produce effective strategic decisions. (Wahmil et al., 2024). Strategies with the highest total scores were recommended for implementation.

The assignment of weights and attractiveness scores in the QSPM followed a structured expert judgment procedure. Factor weights (ranging from 0 to 1, summing to 1.0) were determined through consensus among five experts: the company's operations manager, two senior cultivation technicians, an agribusiness consultant, and an academic specialist in agricultural strategy.

For overall research process began with preliminary surveys and interviews to map the company's current conditions. It was followed by two months of field data collection, including distributing questionnaires and performing direct observations. The data collected were systematically analyzed through both quantitative and qualitative methods. Final reporting integrated empirical findings with strategic recommendations aimed at enhancing the sustainability of oyster mushroom cultivation enterprises.

3. RESULTS AND DISCUSSION

3.1. The SWOT Questionnaire Data Analysis

Questionnaire data were obtained from 30 respondents comprising oyster mushroom farmers, consumers, cultivation experts, and distributors. The instrument contained 25 items measured on a five-point Likert scale designed to assess internal factors (strengths and weaknesses), external factors

Table 1. Respondent score data

Resp.	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Total
1	4	3	3	4	3	5	3	5	4	3	3	3	4	4	4	4	3	5	4	5	5	4	3	5	3	96
2	4	4	5	4	4	3	4	5	4	3	4	5	5	5	5	3	4	3	4	4	5	4	3	4	4	102
3	5	3	4	4	3	3	4	4	5	4	3	3	3	4	5	4	4	4	5	5	4	3	4	4	5	99
4	4	5	5	5	5	4	4	4	5	4	3	4	5	3	3	3	3	4	4	4	3	3	3	4	5	99
5	4	3	4	4	4	5	5	4	3	3	4	4	5	4	4	5	5	4	4	3	3	4	5	4	4	101
6	3	3	3	4	4	4	4	5	4	3	4	4	3	3	5	5	4	5	3	3	3	4	5	5	4	97
7	4	3	4	4	4	4	5	5	4	3	4	5	5	4	3	4	3	5	4	4	4	4	4	5	4	102
8	5	4	5	5	4	4	5	4	5	4	3	3	4	4	4	4	5	4	5	4	4	5	5	4	5	108
9	4	3	4	3	4	5	4	4	4	3	3	4	3	4	5	3	4	4	5	3	3	4	4	4	3	94
10	3	3	4	4	4	5	5	5	5	4	5	3	3	5	3	3	4	5	3	3	4	5	4	5	5	102
...																										
30	3	3	3	3	3	4	3	3	4	4	5	4	3	3	3	3	3	3	3	3	3	3	3	3	3	81

(opportunities and threats), production performance, and consumer preferences. Validity testing confirmed that all items were valid (calculated r > critical r value of 0.361). Reliability analysis yielded a Cronbach's alpha (α) coefficient of 0.742, indicating good internal consistency of the instrument, as summarized in Table 1.

3.2. Production and Revenue Trends

Historical data reveal fluctuating production levels over the period, with the most significant increase observed in 2023, representing 70% growth. This was subsequently followed by a 61% increase in revenue in 2024. Linear regression analysis yielded the equation Y =775 + 225X, where Y denotes the production volume (kg), and X represents time in years. The analysis produced a Pearson correlation coefficient of r = 0.81 ($p < 0.05$), indicating statistical significance. The coefficient of determination (R^2 = 0.659) reveals that approximately 65.9% of the variance in production volume is explained by the temporal trend, confirming sustained growth momentum and the effectiveness of business expansion strategies implemented by CV Asa Agro Corporation from 2020 to 2024. The regression slope (b = 225) indicates an average annual production increase of 225 kg, while the intercept (a = 775) represents the baseline production level in 2020 **(**Table 2), and Production and Revenue with Regression Trend (Fig. 2).

Table 2. Monthly production and revenue

Year	Production (Kg)	Revenue (million IDR)	Production Growth (%)	Revenue Growth (%)
2020	1000	250	-	-
2021	1450	340	45	36
2022	1000	250	-31	-26,5
2023	1700	465	70	86
2024	2000	750	18	61

Production started at 1000 kg in 2020 and increased to 2000 kg by 2024. Revenue grew from 250 million IDR in 2020 to 750 million IDR in 2024. Notably, production and revenue dropped in 2022 but recovered strongly in 2023, with production growing 70% and revenue 86%. The data highlights overall strong growth in both production and revenue over five years.

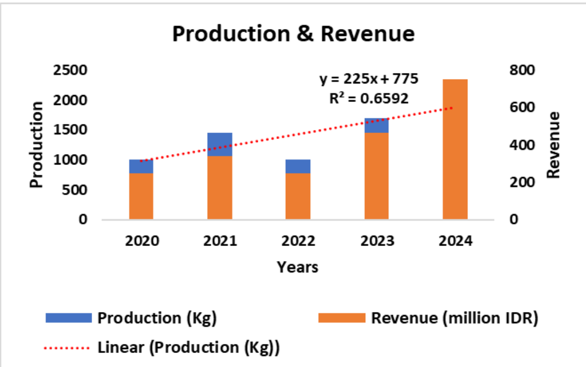

Fig. 2. Production and revenue with regression trend

3.3. Measurement of Production Factors

Daily measurements of five primary production factors, including spawn quantity, substrate quality, temperature, humidity, and worker skill level, were conducted over 30 days, revealing optimal conditions with an average daily production of 10.5 kg. Statistical analysis demonstrated that the variance of these production factors and the variability in daily production were relatively low, indicating stable production performance throughout the observation period (Table 3).

Table 3. production factor measurements over

Days	Production (Kg)	Number of Substrate Bags (thousands)	Substrate Quality (1–5)	Temperature (°C)	Humidity (%)	Worker Skill Level (1–5)
1	10.5	15	4	24	80	4
2	11	15	3	23	82	4
3	10.3	15	4	25	85	3
4	10.3	15	5	24	88	5
5	10.4	15	4	22	90	4

Table 4. Correlation and significance test

Variable	r	t	Significances (α = 0.05)
Substrate Quality	-0.85	-2.78	Not Significant
Temperature	-0.38	-0.70	Not Significant
Humidity	-0.54	-1.12	Not Significant
Worker Skill	0.00	0.00	Not Significant

None of the above factors showed a statistically significant correlation with production (all p-values > 0.05). Although substrate quality exhibited a relatively strong negative correlation (r = –0.85), this relationship was not statistically significant, possibly due to the limited sample size (n = 5). These findings highlight the need for a larger data set to draw more robust conclusions regarding the impact of environmental variables on production (Table 4). Production factor measurement data is used to detail operational factors that need attention and have the potential to improve production performance.

3.4. IFAS and EFAS Matrices

The weighting of the IFAS matrix yielded a total score of 2.95, highlighting key internal strengths such as a strategic location, utilization of superior spawn, extensive cultivation experience, and a well-established distribution network. Conversely, significant weak-nesses identified include limited production capacity and suboptimal digital marketing efforts, serving as critical references for the company in formulating strategic decisions.

The EFAS matrix produced a total score of 2.78. Principal opportunities identified comprised increasing consumer awareness of healthy foods, government support, and export potential. Meanwhile, notable threats stemmed from raw material price volatility, competitive pressures, and the impacts of climate change (Table 5, Table 6, Table 7, and Table 8).

The weight assigned to each factor reflects its

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Table 5. IFAS matrix: internal factors (strength)

No	Internal Factor	Weight	Rating	Score
	Strengths			
1	Strategic location and ideal temperature	0.11	4	0.42
2	Superior spawn	0.11	4	0.42
3	Certified organic product	0.08	3	0.24
4	Five years of experience	0.11	4	0.42
5	Adequate and modern facilities	0.05	2	0.11
6	Trained and experienced team	0.08	3	0.24
7	Well-established distribution network	0.08	3	0.24
	Total of Strengths	0.61		2.08

Table 6. IFAS matrix: internal factors (weaknesses)

No	Internal Factor	Weight	Rating	Score
	Weaknesses			
1	Limited production capacity	0.05	2	0.1
2	Dependence on raw material suppliers	0.05	2	0.1
3	Suboptimal promotion and digital marketing	0.05	2	0.1
4	Limited capital	0.05	2	0.1
5	Post-harvest technology still conventional	0.05	2	0.1
6	Relatively short product shelf life	0.08	3	0.24
7	Lack of processed product diversification	0.05	2	0.1
	Total of Weaknesses	0.39		0.87
	Total (Strengths & Weaknesses)	1		2.95

Table 7. EFAS matrix: external factors (opportunities)

No	Internal Factor	Weight	Rating	Score
	Opportunities			
1	Increasing public awareness of healthy food	0.11	4	0.43
2	Export potential in regional markets	0.05	2	0.11
3	Government support for agribusiness SMEs	0.08	3	0.24
4	Advances in mushroom cultivation technology	0.05	2	0.11
5	Collaboration with the culinary and hospitality industries	0.08	3	0.24
6	Vegetarian and vegan consumption trends	0.05	2	0.11
7	Development of oyster mushroom derivative products	0.05	2	0.11
	Total of Opportunities	0.49		1.35

Table 8. EFAS Matrix: External Factors (Threats)

No	Internal Factor	Weight	Rating	Score
	Threats			
1	Raw material price fluctuations	0.05	2	0.11
2	Competition from mushroom producers in other regions	0.08	3	0.24
3	Climate change is affecting production quality	0.08	3	0.24
4	Pest and disease outbreaks in mushroom cultivation	0.08	3	0.24
5	Substitution of alternative mushroom products in the market	0.05	2	0.11
6	Changes in government policies related to agribusiness	0.08	3	0.24
7	Transportation and distribution challenges	0.08	3	0.24
	Total of Threats	0.51		1.43
	Total (Opportunities & Threats)	1		2.78

perceived relative importance to the firm's overall strategic success. The Sum of all weights within each matrix (both IFAS and EFAS) is normalized to 1.00, ensuring a proportional representation of each factor's influence.

The rating is assigned on a four-point Likert scale, ranging from 1 to 4. For internal factors (IFAS), a rating of 4 indicates a major strength, while 1 signifies a major weakness. Similarly, for external factors (EFAS), a rating of 4 denotes a major opportunity, and 1 represents a major threat. This scale allows for a nuanced evaluation of each factor's impact.

The score for each factor is derived by multiplying its assigned weight by its corresponding rating. This calculated score quantifies the weighted significance of each internal strength/weakness or external opportunity/threat, providing a quantitative basis for strategic analysis. IFAS results of 2.95 and EFAS 2.78, which place the company in Quadrant V according to David et al. (2017), which means Hold and maintain.

3.5. The SWOT Matrix and Strategic Recommendations

Based on the results of the IFAS and EFAS matrices, the following recommended strategies were formulated:

1. Strengths-Opportunities Integration Strategy
   Location advantages should be maximized, along with high-quality seeds and the potential for organic certification to enter the rapidly growing health-focused food market segment.
2. Weaknesses-Opportunities Transformation Strategy
   Digital marketing is a solution to mitigate weaknesses and leverage government agricultural incentives to overcome current business limitations.
3. Strengths-Threats Defence Strategy
   Increase knowledge, focus on products and distribution partnerships, to effectively combat market competition and raw material price volatility.
4. Weaknesses-Threats Mitigation Strategy
   Increase production capabilities and use modern post-harvest technologies to minimize external vulnerabilities and operational risks (Table 9).

3.6. Evaluation of Priority Strategies Using QSPM Matrix

The QSPM weights (W) this represent the relative importance of each factor, with a total score of 1. The (AS) score is used to measure each strategy for each factor, ranging from 1 (not attractive) to 4 (very attractive). The (AS) score is calculated as the product of the weight and the AS, indicating each factor's contribution to the strategy's overall attractiveness. Results of QSPM indicate that the (SO) is the strategy achieved with the highest total score of 3.2, followed by WO with 3.1, ST with 3.0, and WT with 2.6 (Table 10). The results indicate that this business development must prioritize leveraging internal strengths to seize existing market opportunities.

3.7. Sensitivity Analysis of QSPM Results

We tested the QSPM results by adjusting key factor weights by ±20%. The SO strategy remained dominant across all scenarios with scores between 3.0 and 3.4, confirming its strategic advantage. The (WO) strategy showed moderate variation (2.9 to 3.3), mainly affected by digital marketing and production capacity factors. Meanwhile, (ST) and (WT) strategies stayed relatively stable at 2.8 and 3.2 and 2.4 and 2.8, respectively. Although this weight adjustment changes the absolute score results, the strategic ranking (SO, WO, ST, WT) stayed consistent throughout. This validates QSPM as a reliable decision-making tool for strategy formulation.

3.8. Discussion

These findings indicate that CV Asa Agro Corporation's internal conditions are relatively resilient, particularly regarding its strategic location and utilization

Table 9. SWOT strategy formulation matrix

	Opportunities (O)	**Threats (T)**
Strengths (S)	SO (Strengths-Opportunities): Leverage the strategic location, superior spawn quality, and organic certification to capitalize on the healthy food market and export opportunities.	ST (Strengths-Threats): Utilize production experience and distribution network to address competition and price fluctuations.
Weaknesses (W)	WO (Weaknesses-Opportunities): Improve digital marketing and diversify product offerings to exploit healthy food trends and government support.	WT (Weaknesses-Threats): Enhance production capacity and postharvest technology to mitigate risks posed by external threats and distribution challenges.

Table 10. Matrix QSPM

No	**Key Factor**	**Weight**	**SO (AS)**	**SO (TAS)**	**WO (AS)**	**WO (TAS)**	**ST (AS)**	**ST (TAS)**	**WT (AS)**	**WT (TAS)**
1	Key Factor	0.1	4	0.4	3	0.3	3	0.3	2	0.2
2	Superior spawn	0.1	4	0.4	3	0.3	3	0.3	3	0.3
3	Organic certification	0.1	3	0.2	3	0.2	2	0.1	2	0.1
4	Experience > 5 years	0.1	4	0.4	4	0.4	4	0.4	2	0.2
5	Distribution network	0.1	3	0.2	3	0.2	4	0.3	2	0.1
6	Limited production capacity	0.1	2	0.1	3	0.2	3	0.2	3	0.2
7	Digital marketing	0.1	2	0.1	4	0.2	2	0.1	3	0.2
8	Limited capital	0.1	2	0.1	3	0.2	2	0.1	3	0.2
9	Postharvest technology	0.1	2	0.1	3	0.2	2	0.1	3	0.2
10	Product shelf life	0.1	3	0.2	3	0.2	2	0.1	3	0.2
11	Product diversification	0.1	2	0.1	4	0.2	2	0.1	3	0.2
12	Healthy food awareness	0.1	4	0.4	3	0.3	3	0.3	2	0.2
13	Producer competition	0.1	3	0.2	2	0.1	4	0.3	3	0.2
14	Climate change	0.1	3	0.2	2	0.1	4	0.3	3	0.2
	Total QSPM Score			3.2		3.1		3		2.6

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of superior seed resources. These findings are consistent with a previous study by Rabbani et al. (2024) and Sylvia & Hayati (2023), which underscore the critical role of internal capabilities in effectively capitalizing on emerging market opportunities. Furthermore, several identified weaknesses, namely limited production capacity and suboptimal digital marketing, represent significant obstacles that must be addressed immediately to maximize the company's market potential. These findings are consistent with observations reported by Akbar et al. (2022), who found similar digital marketing gaps in small-scale agribusiness enterprises.

The methodological framework applied in this research combines (SWOT, IFAS, EFAS, and QSPM) for analyses, providing distinct advantages compared to other hybrid decision-making models such as SWOT-AHP (Analytical Hierarchy Process) and SWOT-TOWS (Threats-Opportunities-Weaknesses-Strengths). While the SWOT-AHP method offers accuracy through pairwise comparison, it often encounters challenges related to computational complexity and inconsistency in expert judgments, particularly within SMEs that have limited analytical capacity (Chien & Chan, 2021). In contrast, the QSPM approach used in this study enables a more straightforward evaluation of strategic attractiveness through weighted scoring, which enhances both transparency and managerial applicability. Supporting this view, Wang et al. (2024) found that QSPM-based assessments produce higher decision accuracy in agribusiness environments characterized by market dynamism and resource limitations, a pattern reflected in the strategic ranking obtained in this study (SO: 3.2; WO: 3.1; ST: 3.0; WT: 2.6). The fluctuations in past production data emphasize the need for robust risk management and increased operational capacity to achieve greater stability and sustainable business growth. This aligns with findings by Sri Wahyunawati (2023), which highlight the critical role of workforce skills in production success. Therefore, a strong emphasis on ongoing human resource training and development programs is crucial.

From an implementation feasibility perspective, SO is recommended to require a moderate capital investment of IDR 150–200 million over 12 months, most of which will be allocated to the organic certification process, distribution network expansion, and targeted marketing campaigns. Resource analysis shows that the company's current operational capacity can accommodate a 30% increase in production scale without requiring major infrastructure renovations, thereby minimizing financial risk. Capability assessment shows that the proposed strategy can be applied to similar small and medium-sized oyster mushroom businesses (MSMEs) in West Java, depending on quality seeds and favorable climatic conditions. From an industrial engineering standpoint, the prioritization of SO strategies aligns with lean production principles by optimizing resource utilization efficiency, specifically, leveraging existing strengths (strategic location, quality spawn, distribution network) to minimize waste and maximize value creation in target market segments.

Prioritizing strategic options using the QSPM method provides a solid foundation for managerial decision-making. The SO (Strength-Opportunity) strategy has been identified as the focus and requires practical implementation accompanied by continuous evaluation to ensure adaptability to dynamic market conditions and the ever-evolving external environment (Sunarsi, 2024).

Practical implementation of the SO strategy consists of time-bound actions designed to leverage internal strengths and capitalize on external opportunities. First, create strategic partnerships with health food retailers, organic supermarkets, and premium restaurants in Jakarta and Bandung within 3–6 months, as a major expansion. Second, expand the distribution network through e-commerce platforms like Tokopedia and Shopee by developing a digital store-front and a coordinated logistics system, achievable within 6–9 months with an estimated investment of IDR 30–50 million. Third, create promotions that highlight the nutritional benefits of oyster mushrooms, such as high protein, low fat, rich in antioxidants and the benefits of local sourcing. This can be done through social media and community engagement events.

Practical implementation of the WO policy includes: (1) Investment in professional social media marketing services and development of a user-friendly e-commerce website, to address digital marketing weaknesses while reaching the young, tech-savvy consumer segment; (2) Diversification of product offerings by introducing value-added products such as dried oyster mushrooms (shelf life: 12 months), mushroom powder for culinary applications, and ready-to-cook mushroom meal kits (budget: IDR 50–70 million for equipment and R&D, timeframe: 9–12 months); (3) Upgrade of production facilities with air-conditioned growing rooms and an automated temperature/humidity monitoring system to increase capacity from 2,000 kg/year to 3,000 kg/year (budget: IDR 100–150 million, timeframe: 12–18 months). These phased initiatives, if executed systematically with rigorous performance tracking, can enhance market competitiveness and operational resilience, thereby positioning CV Asa Agro Corporation for sustainable growth in the dynamic oyster mushroom agribusiness sector.

4. CONCLUSION

The results of this study identify and analyzed the key internal and external factors influencing the development of white oyster mushroom cultivation at CV Asa Agro Corporation through a SWOT analysis, complemented by the IFAS and EFAS matrices, and quantitative prioritization using QSPM. Resulted from the quantitative analysis in a total IFAS score of 2.95, confirming the company's internal strengths, such as its strategic location, high-quality seeds, five years of operational experience, and established distribution network. Meanwhile, notable internal weaknesses include limited production capacity, reliance on raw materials, and underdeveloped digital marketing, which collectively contributed to a score of 0.84. Externally, the EFAS matrix produced a total score of 2.78, highlighting substantial market opportunities driven by increased public awareness of healthy food consumption and growing governmental support. Nevertheless, significant threats, including raw material price volatility, intensifying competition, and climate change, remain challenges that require proactive mitigation strategies.

Production and revenue trends from 2020 to 2024 demonstrate significant growth, with production surging by 70% in 2023 and revenue increasing by 61% in 2024. The linear regression model has a strong positive Pearson correlation coefficient, underscoring a significant temporal relationship with increasing production, reflecting the effective and sustainable business expansion. The QSPM matrix corroborated that the SO strategy, leveraging internal strengths to capitalize on market opportunities, emerges as the top strategic priority with a score of 3.2. This strategy advocates exploiting competitive advantages such as superior location and spawn quality to capture the health-conscious and export markets. The second-ranked WO strategy (score: 3.1) emphasizes the enhancement of digital marketing and product diversification to mitigate internal weaknesses. Supporting strategies, ST and WT, scored 3.0 and 2.6 respectively, and are critical in addressing external threats and internal limitations to reinforce the company's strategic posture.

Based on these findings, it is recommended that the company prioritize an aggressive strategy by optimizing its internal strengths, such as experience, organic certification, and distribution networks to capitalize on emerging opportunities, particularly the growing trend of health-conscious consumption. While strategies aimed at addressing internal weaknesses and mitigating external threats should still be considered, they are not regarded as the primary focus in the present context.

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