

BUSINESS STRATEGY PRIORITIZATION FOR A FOOD TESTING LABORATORY: AN INDONESIAN CASE STUDY

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Abstract:

Background: Food testing laboratories operate at the intersection of regulatory compliance, food-safety assurance, and competitive service markets. In Indonesia, mandatory testing requirements for processed-food licensing and laboratory accreditation create stable demand, while increasing competition requires laboratories to strengthen their strategic positioning.

Purpose: This study identifies internal and external factors affecting the business performance of an Indonesian food testing laboratory, formulates alternative business development strategies, and determines priority strategies for implementation.

Design/methodology/approach: A case study approach was employed using expert judgment, interviews, observations, questionnaires, and company performance records. Internal resources and capabilities were assessed using the VRIO framework and evaluated through the Internal Factor Evaluation (IFE) Matrix. External conditions were examined using PESTEL and Porter's Five Forces and evaluated through the External Factor Evaluation (EFE) Matrix. The laboratory's strategic position was mapped using the Internal-External (IE) Matrix, alternative strategies were generated using SWOT analysis, and strategic priorities were assessed using the Quantitative Strategic Planning Matrix (QSPM).

Findings/Results: The laboratory demonstrates moderate internal strength and operates within a moderately favorable external environment. The IE Matrix places the laboratory in a hold-and-maintain position, indicating market penetration and service development as appropriate strategic directions. SWOT analysis generated eight alternative strategies. QSPM results identify market differentiation through more comprehensive and specialized testing parameters as the highest-priority strategy.

Conclusion: The laboratory should prioritize parameter-based differentiation, supported by operational efficiency, customer reactivation, retention initiatives, and value-based marketing to strengthen competitiveness in a regulated service market.

Originality/value: This study contributes to strategic management research in laboratory-based services by integrating resource-based, industry-based, and strategy-prioritization frameworks into a sequential and implementable strategy-setting process for a regulated food testing business.

Keywords: business development, differentiation, food testing laboratory, QSPM, strategic management

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INTRODUCTION

The food testing laboratory industry plays a strategic role in ensuring food safety, quality assurance, and regulatory compliance within the food supply chain. The growth of the food and beverage industry has increased demand for laboratory testing services, driven by rising consumer awareness, stricter regulations, and the need for reliable analytical evidence in food-related decision-making (Kim & Jung, 2018; Jercinovic, 2022). In Indonesia, food testing laboratories serve not only as technical service providers, but also as supporting industries that protect public health and strengthen the credibility of food products in domestic and international markets (Munandar et al. 2011).

Regulation is a major driver of this industry. BPOM Regulation No. 27/2017 requires processed food products distributed in Indonesia to obtain distribution permits supported by certified test results from accredited external laboratories (BPOM, 2017). This makes laboratory testing essential for food product commercialization and creates stable demand for testing services (Mulyadi et al. 2020). In addition, accreditation under SNI ISO/IEC 17025:2017 and procedures enforced by KAN shape competition by limiting participation to laboratories that meet strict technical and managerial standards (Dina & Wastra, 2013; KAN, 2025).

However, favorable regulation and market growth have also intensified competition. The increasing number of accredited laboratories in Indonesia has strengthened rivalry and created pressure on pricing, service differentiation, turnaround time, and operational efficiency (KAN, 2025). In competitive service industries, firms must continuously refine their strategies to sustain performance (Harisudin et al. 2022; Suprpto et al. 2017). For food testing laboratories, technical competence and accreditation alone may no longer be sufficient when customers compare providers based on testing scope, speed, price, and relationship quality.

This pressure is reflected in the performance of an Indonesian food testing laboratory, hereafter referred to as PT ABC for confidentiality purposes. Although regulation ensures baseline demand, internal data show a declining contribution of food testing services to total service revenue. As shown in Figure 1, the proportion decreased from 68.83% in 2020 to 56.25% in 2024, while non-food testing services increased steadily. This trend indicates a gradual erosion of PT ABC's food testing business dominance and suggests that regulatory-driven demand alone is insufficient to sustain growth without effective strategic management.

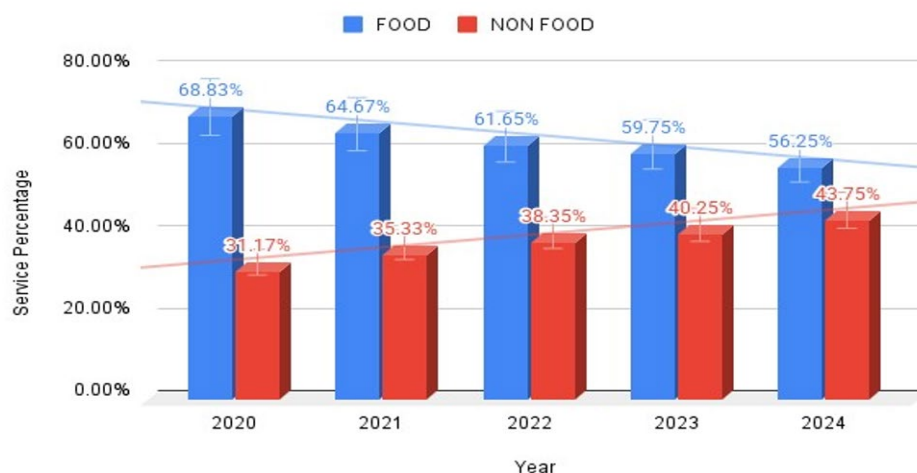


Figure 1. Trend in the revenue contribution of food and non-food testing services at PT ABC, 2020–2024

Similar conditions have been found in other laboratory-based service organizations, where technical competence and accreditation are necessary but insufficient for sustainable competitiveness (Mulyadi et al. 2020; Kehek et al. 2022). Recent studies also emphasize that food safety testing requires reliable testing programs, validated methods, continuous performance evaluation, and adaptive use of emerging technologies to support credible decisions (OECD, 2021; Jia et al. 2024; Mosso et al. 2025; Balakrishnan et al. 2025). Therefore, food testing laboratories must maintain technical compliance while transforming their capabilities into differentiated, market-relevant, and strategically prioritized services.

However, research on food testing laboratories from a strategic management perspective remains limited. Most studies focus on accreditation, technical quality management, method validation, or performance systems, while few examine how laboratory businesses formulate and prioritize business development strategies under regulatory and competitive pressure (Munandar et al. 2011; Mulyadi et al. 2020; Kehek et al. 2022). Although tools such as internal and external analysis, SWOT, and QSPM are widely used in service and manufacturing contexts (Hutahaeen et al. 2017; Puryani et al. 2019; Ramdhani et al. 2021; Harisudin et al. 2022), their application in food testing laboratory businesses remains underexplored.

Two research gaps are identified. First, food testing laboratories are rarely examined as regulated professional service businesses where accreditation, analytical capability, regulatory change, customer requirements, and competitive differentiation interact simultaneously. Second, previous strategy studies often identify strategic alternatives without clearly prioritizing them for implementation, creating a gap between strategic diagnosis and managerial decision-making, especially for laboratories with limited resources.

This study addresses these gaps by integrating resource-based, industry-based, and strategy-prioritization perspectives in an Indonesian food testing laboratory. Internal analysis examines resources and capabilities, while external analysis captures regulatory, market, and competitive dynamics. These findings are translated into alternative strategies and prioritized to determine the most attractive strategy for implementation.

The novelty of this study lies in integrating VRIO, PESTEL, Porter's Five Forces, IFE, EFE, IE Matrix, SWOT, and QSPM into a sequential strategic decision-making framework for a food testing laboratory business. The study integrates resource-based and industry-based perspectives with quantitative strategy prioritization in a single sequential decision framework. Empirically, it enriches evidence on food testing laboratory business development in Indonesia. Managerially, it provides guidance for selecting priority strategies aligned with internal capabilities, external opportunities, and competitive pressures.

Accordingly, this study aims to: (1) identify internal and external factors affecting the business performance of the food testing laboratory at PT ABC, (2) formulate alternative business development strategies, and (3) determine priority strategies to support sustainable business growth.

METHODS

This study employed a mixed-method case study approach to formulate prioritized business development strategies for PT ABC's food testing laboratory. Qualitative data were collected through observation and in-depth interviews, while quantitative expert assessments were obtained through structured questionnaires. The analysis followed David's (2020) three-stage strategy formulation framework: input, matching, and decision stages.

The study was conducted at PT ABC, a private testing laboratory in West Java, Indonesia, from July to September 2025. It used primary and secondary data. Primary data were obtained through observation, interviews, and questionnaires to identify existing strategies, internal and external strategic factors, alternative strategies, and strategic priorities. Secondary data were collected from company documents, performance records, revenue data, regulations, institutional reports, academic journals, and other credible sources.

Respondents were selected using purposive sampling with an expert sampling approach. The criteria included knowledge, experience, and authority in laboratory operations, business performance, marketing, finance, human resources, testing services, and food regulation. Seven expert respondents were involved, consisting of

four internal respondents, General Manager Laboratory, Sales and Marketing, Finance, and Human Resources, and three external experts in testing laboratories, food testing laboratories, and food regulation. Observation was used to understand business activities, interviews explored strategic issues and existing strategies, and questionnaires supported weighting, rating, and strategy prioritization.

Data were analyzed using a structured strategic management process. In the input stage, VRIO was used to identify internal strengths and weaknesses, while PESTEL and Porter's Five Forces were used to identify external opportunities and threats. These factors were evaluated through the IFE and EFE matrices by assigning weights, normalizing total weights to 1.00, giving ratings, and calculating weighted scores.

In the matching stage, total IFE and EFE scores were mapped into the IE Matrix to determine PT ABC's strategic position, followed by SWOT analysis to formulate alternative strategies. In the decision stage, QSPM was used to prioritize strategies by assigning Attractiveness Scores, calculating Total Attractiveness Scores, and ranking strategies based on the Sum Total Attractiveness Score.

Data validation was conducted through source triangulation, method triangulation, expert confirmation, and consistency checks. Source triangulation compared information from respondents, company documents, regulations, institutional reports, and previous studies. Method triangulation combined observation, interviews, and questionnaires. Expert confirmation ensured that strategic factors and alternatives reflected actual business conditions, while Consistency checks were conducted to verify the internal coherence of weighting, rating, and scoring procedures across the strategic matrices and aligned with expert judgment.

The research framework begins with identifying business performance issues and existing strategies in PT ABC's food testing laboratory. Internal factors are analyzed using VRIO and evaluated through the IFE Matrix, while external factors are analyzed using PESTEL and Porter's Five Forces and evaluated through the EFE Matrix. The IFE and EFE results are integrated into the IE Matrix to determine strategic position. Alternative strategies are formulated using SWOT and prioritized using QSPM, resulting in business development strategy recommendations (Figure 2).

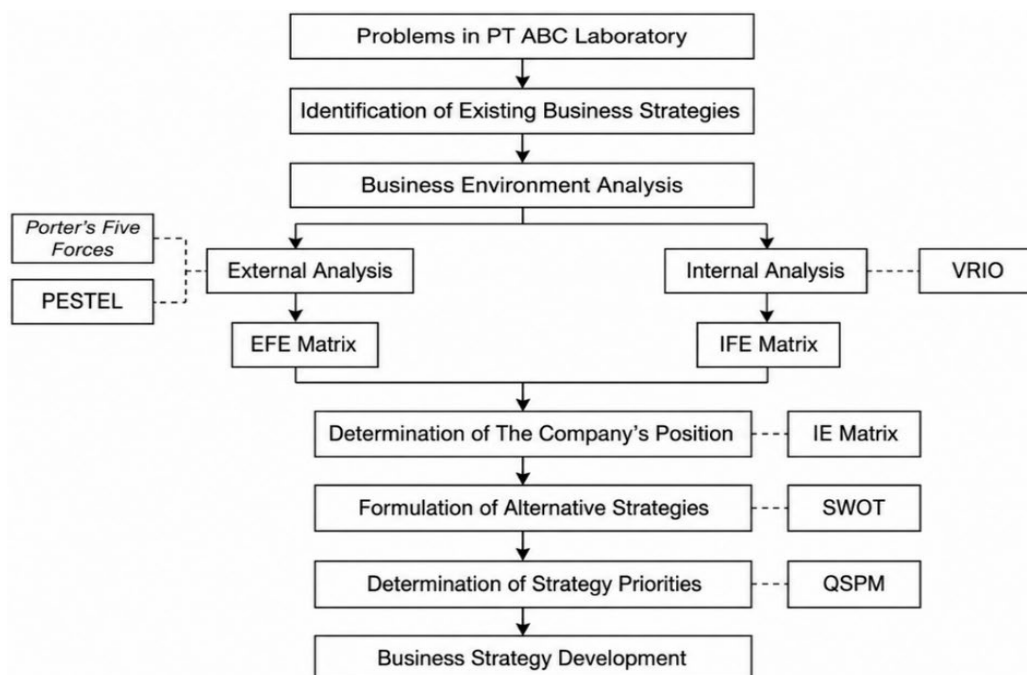


Figure 2. Research framework for formulating and prioritizing business development strategies for PT ABC's Food Testing Laboratory

RESULTS

Identification of Existing Business Strategies

The food testing laboratory of PT ABC has implemented a range of business strategies to support its growth and operational continuity. Several approaches have been retained because they remain aligned with market dynamics and customer needs, while others have been adjusted to respond to a more competitive testing-services landscape. Some initiatives have also been discontinued when they were perceived as less effective or no longer aligned with industry demands. This stage mapped existing practices to ensure that subsequent strategy formulation represented refinement or advancement rather than duplication. The identification also provides an operational baseline to ensure that future strategic recommendations remain feasible and consistent with the laboratory's capabilities.

At the time of the study, these business strategies were not formally documented in the company's internal database. Accordingly, strategy identification was conducted using a qualitative approach through direct observation of company activities and in-depth interviews with relevant internal stakeholders. The results indicate that PT ABC's existing strategies can be grouped into six strategic areas that jointly shape service reliability and competitiveness. These areas include quality and performance management, cost efficiency and cost control, human resource development, customer service and satisfaction, service expansion and innovation, and marketing and business networking. The mapped strategies and their operational manifestations are summarized in Table 1.

Identification and Analysis of Internal Strategic Factors

Internal strategic factors were identified by mapping the laboratory's resources and capabilities and assessing their strategic contribution using the VRIO framework. The resource base includes tangible assets such as calibrated laboratory instruments, adequate laboratory space, and an integrated digital customer service system, as well as intangible assets including validated testing methods, a defined decision-making structure, and brand awareness among customers.

The capability set reflects both operational and managerial strengths, covering competitive pricing with profit optimization, efficiency in equipment and chemical usage, visionary leadership, service speed and accuracy, annual expansion of accreditation scope, performance-based incentives, the development of new testing parameters aligned with market demand, expert-led educational promotion, and responsiveness to regulatory and testing trends. Several market-facing and managerial capabilities remain less differentiated, particularly customer reactivation, data-driven decision-making, quality-based performance evaluation, and customer retention, indicating internal gaps that constrain competitive advantage despite strong technical foundations.

Identification and Analysis of External Strategic Factors

External strategic factors were identified using PESTEL analysis to capture macro-environmental dynamics. The macro scan indicates opportunities driven by policy shifts toward higher nutritional standards, growth in the food and beverage industry, increasing public awareness of food safety, healthy lifestyle trends, heightened concern over food poisoning and non-compliant products, advances in laboratory instrumentation, digital transformation, and regulatory requirements that mandate external testing for BPOM-related licensing and laboratory accreditation. It also highlights threats associated with fiscal tightening, exchange rate volatility affecting imported chemicals, inflation and interest-rate pressure on customer purchasing power, and environmental risks related to laboratory waste management.

Industry-level conditions were assessed using Porter's Five Forces to examine structural competitive pressure. The analysis indicates strong rivalry reflected in competitors' broader testing parameter coverage and competitive pricing, reinforced by an increasing number of laboratories and entry patterns that include subcontracting practices. Substitution pressure emerges from customers' potential in-house testing using advanced instruments and the use of rapid test kits. Supplier power remains a concern due to limited alternatives for imported chemical distributors, while buyer pressure is evident in discount demands for high-volume orders and stringent expectations for result quality and turnaround time.

Evaluation of Internal Strategic Factors

Internal strategic factors were evaluated using the Internal Factor Evaluation (IFE) Matrix to assess relative importance and PT ABC's current response. The evaluation covered 19 internal factors, consisting of 11 strengths and 8 weaknesses, and generated a total weighted IFE score of 2.55, indicating moderate internal strength. To keep subsequent strategy formulation focused and implementable, expert judgment was used

to refine the internal set into five key internal factors that exert the greatest influence on competitiveness. As summarized in Table 2, the selected key factors are dominated by efficiency and adaptive capability, particularly market aligned parameter development and responsiveness to regulatory dynamics, suggesting that PT ABC's provide a sufficient foundation for differentiation, provided they are translated into more targeted service offerings and market execution.

Table 1. Existing business strategies implemented by PT ABC's food testing laboratory prior to strategy reformulation

Strategy Type	Existing Strategy Details
Quality and Performance Management	Implementation of the ISO/IEC 17025 quality management system as the main reference; establishment of individual Key Performance Indicators; monthly evaluation meetings; annual internal audits to maintain service consistency
Efficiency and Cost Control	Control of equipment and chemical usage to prevent inefficiency; maximization of equipment utilization through routine maintenance schedules; careful pricing calculation to remain competitive while maintaining profitability; routine monitoring of operating cost structure
Human Resource Development	Periodic technical training and soft-skill development; implementation of a reward system through monthly bonuses aligned with roles and responsibilities; career development through competency certification and external training opportunities
Customer Service and Satisfaction	Systematic complaint handling through root-cause analysis and rapid solutions; customer retention programs for contracted customers (special pricing, sample pickup services); digital delivery of test results to improve speed, accuracy, and transparency; periodic customer gatherings to strengthen relationships and collect feedback
Service Expansion and Innovation	Addition of new testing parameters aligned with market needs (microbial testing, food additives, chemical residues); online and offline seminars for public education and promotion of new services
Marketing and Business Networking	Digital promotion via website, newsletters, webinars, and social media; weekly customer visits by the sales team; development of strategic partnerships with private and public institutions

Table 2. Key Internal Strategic Factors of PT ABC's Food Testing Laboratory Based on the IFE Matrix

Internal Strategic Factors	Weight	Rating	Score
Strengths			
Competitive testing costs with optimal profit margins	0.10	3.50	0.34
Cost efficiency in equipment and chemical usage	0.10	3.50	0.36
Performance based employee incentive system	0.10	3.75	0.36
Development of new testing parameters based on market demand	0.11	4.00	0.45
Responsiveness to testing trends and regulatory changes	0.11	3.75	0.40
Weaknesses			
Brand awareness among customers	0.10	1.25	0.13
Ability to reactivate inactive customers	0.11	1.25	0.13
Utilization of data to support business decision making	0.08	1.50	0.13
Quality based employee performance evaluation system	0.08	1.75	0.14
Customer retention strategy	0.11	1.00	0.11
Total	1.00		2.55

Evaluation of External Strategic Factors

External strategic factors were evaluated using the External Factor Evaluation (EFE) Matrix to assess the attractiveness of the external environment and the organization's responsiveness to opportunities and threats. The evaluation covered 23 external factors, consisting of 12 opportunities and 11 threats, and produced a total weighted EFE score of 2.81, indicating a moderately favorable external environment. Expert judgment was applied to refine the external set into five key external factors that best represent the primary demand drivers in the near term. As presented in Table 3, the selected factors are strongly shaped by regulation and food safety concerns, as well as heightened customer expectations for quality and turnaround time, implying that growth potential is highly substantial when PT ABC positions its service development around regulatory compliance, safety assurance, and speed of delivery.

Strategic Position of the Firm

The strategic position of the food testing laboratory of PT ABC was determined using the Internal–External (IE) Matrix, which integrates the results of the Internal Factor Evaluation (IFE) score of 2.55 and the External Factor Evaluation (EFE) score of 2.81. The combined scores place the laboratory in Cell V, indicating a hold and maintain posture and reflecting a condition where internal capability is adequate while the external environment remains moderately attractive (Figure 3).

This position suggests that strategic efforts should emphasize consolidating current performance and strengthening competitiveness through market penetration and product development rather than pursuing aggressive expansion. In practical terms, PT ABC is encouraged to leverage its operational strengths, particularly cost efficiency, service reliability, and responsiveness to regulatory dynamics, while addressing constraints that limit market traction. Strengthening customer-facing execution, including customer engagement and retention mechanisms, becomes important to protect market share under intensifying competition and to ensure that technical advantages are translated into sustained demand. The IE Matrix outcome therefore provides a clear strategic direction and serves as the basis for formulating and prioritizing alternative business development strategies in subsequent stages.

Formulation of Alternative Business Development Strategies

The formulation of alternative business development strategies was conducted using a SWOT matrix analysis to integrate internal strengths and weaknesses with external opportunities and threats. SWOT analysis is widely applied as a managerial tool to generate strategic alternatives by aligning organizational resources and capabilities with environmental conditions, thereby supporting strategic decision-making (Pearce & Robinson, 2009).

Table 3. Key External Strategic Factors Affecting PT ABC's Food Testing Laboratory Based on the EFE Matrix

External Strategic Factors	Weight	Rating	Score
Opportunities			
Government policy changes on processed food with higher nutritional standards	0.11	4.00	0.45
Rising public awareness of food safety	0.09	3.50	0.32
Food poisoning issues and concerns over non compliant product quality	0.11	4.00	0.42
Mandatory external testing for BPOM related licensing	0.10	3.75	0.37
High demand for testing quality and faster turnaround time	0.09	3.25	0.29
Threats			
Environmental impact and compliance risks related to laboratory waste	0.10	2.50	0.24
Competitors broader range of testing parameters	0.09	2.25	0.20
Competitors competitive pricing	0.10	2.75	0.27
Increasing number of food testing laboratories	0.11	1.00	0.11
New entrants using subcontracting arrangements	0.11	1.25	0.13
Total	1.00		2.81

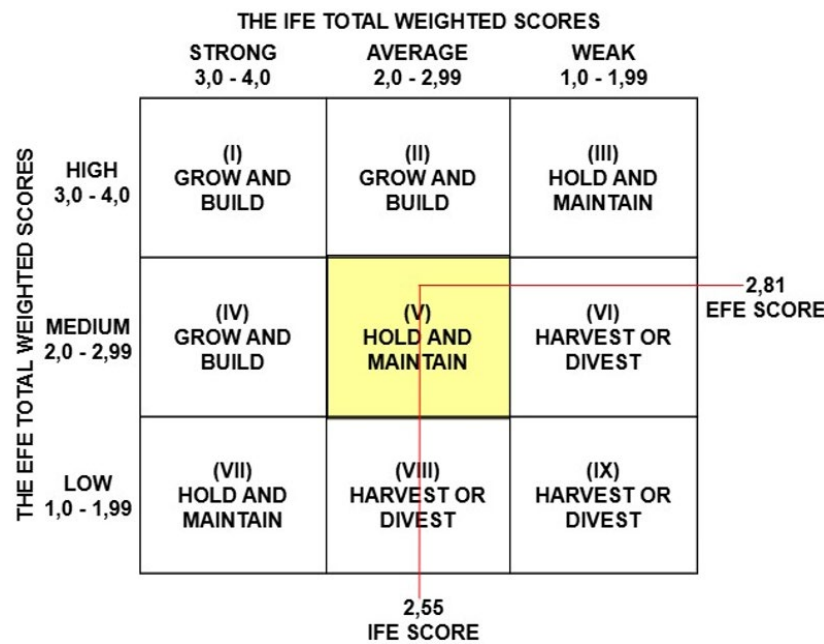


Figure 3. Internal–External Matrix Position of PT ABC’s Food Testing Laboratory Based on IFE and EFE Scores

In this study, the SWOT matrix was developed based on the results of the Internal–External (IE) Matrix analysis. The IE Matrix positioned the food testing laboratory of PT ABC in Cell V, corresponding to a Hold and Maintain strategic posture. This position indicates that appropriate strategic directions emphasize market penetration and service development rather than aggressive expansion or retrenchment strategies (David, 2020). Accordingly, the SWOT matrix was used to derive alternative strategies that are consistent with this strategic posture.

The SWOT analysis generated four groups of alternative strategies: Strength-Opportunity (SO), Weakness-Opportunity (WO), Strength-Threat (ST), and Weakness-Threat (WT). The complete set of alternative strategies formulated in this study is presented in Table 4.

The SO strategies focus on leveraging PT ABC’s operational efficiency, regulatory responsiveness, and capability to develop new testing parameters in order to capture regulatory-driven opportunities and increasing demand for high-quality and fast testing services. These strategies emphasize service bundling, accelerated turnaround time, and value-added offerings aligned with regulatory requirements and market expectations. The WO strategies are directed toward addressing market-facing weaknesses by utilizing external opportunities. These strategies highlight the importance

of strengthening customer engagement, reactivating inactive customers, and improving brand visibility through partnership programs, automated reminder systems linked to regulatory cycles, and data-driven digital education campaigns.

The ST strategies aim to use internal strengths to mitigate competitive and environmental threats. Strategic emphasis is placed on differentiation through specialized testing parameters, operational efficiency, cost optimization, and environmentally responsible laboratory practices, which collectively serve as both competitive advantages and risk mitigation measures. The WT strategies represent defensive actions designed to minimize internal weaknesses and reduce vulnerability to external threats. These strategies prioritize the implementation of customer relationship management systems and structured retention programs to enhance customer loyalty and prevent switching behavior in an increasingly competitive laboratory testing market.

Overall, the SWOT analysis provides a structured set of alternative business development strategies that are aligned with the laboratory’s strategic position and operational capabilities. These strategies serve as the basis for subsequent evaluation and prioritization to identify the most feasible and impactful strategic options for implementation.

Table 4. SWOT Matrix for formulating business development strategies for PT ABC's Food Testing Laboratory

	Strengths 1. Competitive testing costs with optimal profit margins 2. Cost efficiency in equipment and chemical usage 3. Performance based employee incentive system 4. Development of new testing parameters based on market demand 5. Responsiveness to testing trends and regulatory changes	Weaknesses 1. Brand awareness among customers 2. Ability to reactivate inactive customers 3. Utilization of data to support business decision making 4. Quality based employee performance evaluation system 5. Customer retention strategy
Opportunities 1. Government policy changes on processed food with higher nutritional standards 2. Rising public awareness of food safety 3. Food poisoning issues and concerns over non compliant product quality 4. Mandatory external testing for BPOM related licensing 5. High demand for testing quality and faster turnaround time	SO Strategies 1. Develop BPOM registration and comprehensive nutrition testing packages with faster turnaround time than regular services (S4, S5, O1, O4, O5) 2. Develop super-express chemical and physical testing services with competitive pricing, supported by incentive schemes for analysts achieving speed and accuracy targets (S1, S2, S3, O4, O5)	WO Strategies 1. Establish long-term partnership programs with incentives such as free sample delivery, priority testing queues, and conditional discounts (W5, O1, O4, O5) 2. Develop an automated reminder system based on BPOM licensing cycles to reactivate inactive customers whose distribution permits are nearing expiry (W2, W3, W5, O4) 3. Launch targeted digital education campaigns on the importance of laboratory testing to prevent non-compliant food quality, focusing on specific industry segments using customer data analytics (W1, W3, O1, O2, O3)
Threats 1. Environmental impact and compliance risks related to laboratory waste 2. Competitors broader range of testing parameters 3. Competitors competitive pricing 4. Increasing number of food testing laboratories 5. New entrants using subcontracting arrangements	ST Strategies 1. Create market differentiation by developing more comprehensive and specialized testing parameters compared to competitors (S4, S5, T2, T4) 2. Optimize equipment and chemical usage to improve cost efficiency and minimize waste as a value-added differentiator and environmental risk mitigation (S1, S2, S5, T1, T3, T4)	WT Strategies 1. Implement Customer Relationship Management to manage customer satisfaction and strengthen retention programs to prevent switching to competitors (W3, W5, T3, T4)

Updating Business Development Strategies

The identification of existing business strategies shows that PT ABC's food testing laboratory has primarily relied on foundational practices to sustain service quality and operational continuity. These practices include ISO/IEC 17025-based quality management, cost control, human resource development, routine customer service mechanisms, general digital outreach, and service expansion through the addition of new testing parameters that follow regulatory requirements

and emerging market requests. While this portfolio supports reliability and baseline competitiveness, several initiatives remain broad in scope, with customer engagement tools largely general in nature and partnership mechanisms still centered on basic incentives such as sample pickup and discounts.

Building on this baseline, the SWOT analysis produced eight alternative strategies that represent a transformation of the laboratory's strategic approach through two pathways. Several alternatives refine and

sharpen strategies that already exist by converting general practices into more targeted and value-added actions. This includes shifting from regular testing packages to BPOM-oriented and comprehensive nutrition packages with faster turnaround time, strengthening cooperation schemes into long-term partnership programs with more structured incentives, and repositioning general food-safety education into targeted digital campaigns aimed at specific customer segments. Importantly, the existing practice of adding new testing parameters is also elevated into a clearer competitive lever by creating market differentiation through the development of more comprehensive and specialized testing parameters compared to competing laboratories, moving beyond incremental additions toward a more deliberate differentiation agenda.

The remaining alternatives introduce new initiatives that were not previously implemented, including super-express testing services supported by incentive mechanisms to sustain speed and accuracy, automated reminder systems linked to BPOM licensing cycles to reactivate inactive customers, optimization of equipment and chemical usage to strengthen efficiency while reducing waste exposure, and the adoption of customer relationship management to improve satisfaction monitoring and retention. Overall, the transformation ensures that strategies derived from

SWOT do not duplicate existing practices, but instead upgrade what is already in place while adding new instruments aligned with current market demands and competitive pressure.

Strategy Prioritization Using QSPM

Strategy prioritization was conducted using the Quantitative Strategic Planning Matrix (QSPM) to evaluate the relative attractiveness of the alternative strategies derived from the SWOT analysis. The evaluation was based on strategic weights and Attractiveness Scores obtained through expert judgment, and the resulting Sum Total Attractiveness Scores (STAS) were used to rank the strategies, as presented in Table 5.

The results identify market differentiation through more comprehensive and specialized testing parameters as the highest-priority strategy, with the highest STAS value of 6.98. This reflects the highest aggregate attractiveness assessment among the evaluated alternatives. The result aligns with internal strengths in testing innovation and regulatory responsiveness, as well as external pressures from increasing competition, broader competitor testing scopes, and rising customer demand for quality and speed.

Table 5. QSPM priority ranking of alternative business development strategies for PT ABC's food testing laboratory

Alternative Strategies	Score	Priority Rank
Create market differentiation by developing more comprehensive and specialized testing parameters compared to competitors	6.98	1
Optimize equipment and chemical usage to improve cost efficiency and minimize waste as a value-added differentiator and environmental risk mitigation	6.77	2
Develop an automated reminder system based on BPOM licensing cycles to reactivate inactive customers whose distribution permits are nearing expiry	6.50	3
Establish long-term partnership programs with incentives such as free sample delivery, priority testing queues, and conditional discounts	6.32	4
Launch targeted digital education campaigns on the importance of laboratory testing to prevent non-compliant food quality, focusing on specific industry segments using customer data analytics	6.12	5
Develop super-express chemical and physical testing services with competitive pricing, supported by incentive schemes for analysts achieving speed and accuracy targets	5.42	6
Develop BPOM registration and comprehensive nutrition testing packages with faster turnaround time than regular services	5.06	7
Implement Customer Relationship Management to manage customer satisfaction and strengthen retention programs to prevent switching to competitors	4.29	8

From a resource-based perspective, PT ABC's ability to develop new testing parameters can create competitive advantage when translated into clear, market-relevant services. From an industry-based perspective, parameter-based differentiation is also appropriate because competing mainly on price may weaken long-term competitiveness, especially in an industry shaped by rivalry, regulatory compliance needs, food safety assurance, and demand for complete analytical services.

This priority strategy is consistent with the IE Matrix result, which places the laboratory in a hold-and-maintain position. Developing comprehensive and specialized testing parameters represents product development, while promoting these services through targeted communication supports market penetration.

The finding supports previous studies stating that strategy formulation should align internal strengths, external opportunities, and competitive threats (Hutahaean et al. 2017; Ramdhani et al. 2021; Harisudin et al. 2022). It also confirms that technical competence and accreditation are important but insufficient without service improvement and market-oriented strategy (Mulyadi et al. 2020; Kehek et al. 2022). This study extends prior findings by showing that food testing laboratories can convert technical capability into differentiated services that are comprehensive, specialized, and market-relevant.

The second and third priority strategies support the main differentiation strategy. Optimizing equipment and chemical usage strengthens cost efficiency and environmental risk mitigation, while an automated reminder system based on BPOM licensing cycles improves customer reactivation and retention. Therefore, differentiation should be reinforced by operational efficiency and customer relationship mechanisms to create sustainable business impact.

Managerial Implications

The results of this study provide both managerial and theoretical implications for PT ABC's food testing laboratory business. From a strategic management perspective, the findings show that internal capabilities, such as testing parameter development and regulatory responsiveness, become more valuable when aligned with external conditions, including regulatory demand, increasing competition, and customer expectations

for quality and speed. The sequential use of VRIO, PESTEL, Porter's Five Forces, IFE, EFE, IE Matrix, SWOT, and QSPM also demonstrates how strategic diagnosis can be translated into priority strategy selection in a regulated laboratory-based service industry.

From a managerial perspective, top management should prioritize differentiation through the development of more comprehensive and specialized testing parameters, supported by investment in method development, accreditation expansion, and performance monitoring. Laboratory operations should strengthen this strategy by improving turnaround time, maintaining testing accuracy, and optimizing equipment and chemical usage.

Marketing and business development units should emphasize value-based communication, highlighting specialized services, regulatory compliance, speed, and accuracy. Long-term partnerships, bundled services, and automated reminders based on BPOM licensing cycles can support customer retention and demand stability. Human resource management should also align employee competency development and performance evaluation with innovation, service quality, and customer-oriented outcomes.

Overall, differentiation should not be implemented as a stand-alone initiative, but reinforced through operational efficiency, customer relationship management, human resource development, and regulatory responsiveness to create sustainable business impact.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This study examined the internal and external strategic conditions of PT ABC's food testing laboratory, formulated alternative business development strategies, and identified priority strategies for improving competitiveness. The findings indicate that PT ABC possesses moderate internal strength, particularly in cost efficiency, testing-parameter development, regulatory responsiveness, and service reliability. However, weaknesses remain in customer reactivation, data utilization, brand awareness, performance evaluation, and customer retention.

Externally, the laboratory benefits from regulatory demand, increasing food-safety awareness, and growing customer expectations for testing quality and faster turnaround times. At the same time, it faces increasing competition, broader competitor testing scopes, pricing pressure, new market entrants, and environmental compliance risks.

The IE Matrix places PT ABC in a hold-and-maintain position, suggesting market penetration and service development as appropriate strategic directions. Based on the eight alternatives generated through SWOT analysis, QSPM identifies market differentiation through more comprehensive and specialized testing parameters as the highest-priority strategy. This priority is supported by operational efficiency and customer-reactivation initiatives, which together strengthen the feasibility of differentiation in a competitive and highly regulated laboratory-services market.

These findings indicate that technical capability and accreditation alone may be insufficient to sustain competitiveness unless they are translated into differentiated, market-relevant services. PTABC should therefore prioritize parameter-based differentiation, supported by efficient resource utilization, targeted customer reactivation, retention initiatives, and value-based marketing communication.

Recommendations

Future research may expand the scope of analysis by incorporating financial feasibility assessment, implementation performance measurement, or comparative studies across multiple laboratories. Further studies may also examine how differentiated testing services affect customer retention, revenue growth, and competitive positioning in regulated laboratory-based service industries. Future studies could extend this analysis by incorporating financial feasibility assessment, implementation-performance evaluation, and comparative analysis across multiple food testing laboratories.

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