

Multi-Criteria Decision Making with Analytical Hierarchy Process (AHP) Education for Business Priorities at PT. Krakatoa Baja Konstruksi

Deidin Agung Sapta Noviawan¹, Sahat Hutajulu¹

¹Master of Business Administration Program, Institut Teknologi Bandung, Indonesia

Corresponding author e-mail: deidin_noviawan@sbm-itb.ac.id

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Abstract: This study aims to optimize the strategic direction of PT Krakatau Baja Konstruksi (KBK), a subsidiary of PT Krakatau Steel, by determining which of its five business lines Manufacturing, Tolling, Fabrication, Importation, and Joint Operation should be prioritized to enhance focus, efficiency, and profitability. A mixed-methods approach was applied, combining the Analytical Hierarchy Process (AHP) with thematic analysis and strategic management tools (SWOT, PESTEL, and Porter's Five Forces). Qualitative insights from Focus Group Discussions and interviews were integrated into the AHP framework to generate a structured prioritization of business lines. The findings highlight Manufacturing as the most strategic area to pursue, with market demand and growth potential emerging as the key consideration for decision-making. The novelty of this research lies in its comprehensive integration of AHP with multiple strategic analysis tools, offering a replicable decision-making model for companies in Indonesia's steel industry and beyond. This model provides a clear framework for resource allocation, enabling management to focus on high-impact initiatives and support long-term sustainability.

Keywords: Management, Decision, Criteria, Priority, Business

A. Introduction

Steel has long been recognized as the backbone of modern industrialization, supporting key sectors such as construction, automotive, shipping, electronics, oil and gas, energy, telecommunications, and manufacturing. Since the Industrial Revolution in the 18th century, the development of the steel industry has been inseparable from the progress of advanced economies. Today, steel continues to play a vital role, not only in traditional industries but also in driving technological advances in renewable energy, smart transportation, and digital infrastructure.

Despite its strategic importance, the global steel industry faces pressing challenges. Overcapacity and oversupply largely driven by China's massive production and dumping practices have disrupted global markets, prompting many countries to impose protective measures such as tariffs and safeguard policies. In 2023, for example, global steel production exceeded consumption by more than 100 million tons, creating structural imbalances that continue to pressure national industries.

Indonesia experiences a similar dilemma. Although it is the largest steel producer in Southeast Asia, domestic production capacity far exceeds demand, leading to underutilized facilities. At the same time, imports many of which do not comply with the Indonesian National Standard (SNI) continue to enter the market, undermining local producers and construction quality. To address this, the government has implemented a range of interventions, including anti-dumping duties, mandatory SNI certification, and the P3DN (Increasing the Use of Domestic Products) program, while also expanding fiscal and non-fiscal incentives to strengthen competitiveness. The prospects remain positive, with national steel consumption projected to grow to 18.3 million tons in 2024, supported by infrastructure spending, property growth, and automotive expansion (Le Monde, 2024).

In this dynamic environment, PT Krakatau Baja Konstruksi (KBK), a subsidiary of PT Krakatau Steel (Persero) Tbk, holds a strategic role in advancing the domestic steel industry (Hannon, 2024). As a subholding established to strengthen consolidation, efficiency, and downstream integration, KBK operates across multiple business lines manufacturing, tolling, fabrication, importation, and joint operation (KSO). However, managing such a diverse portfolio presents challenges, especially in allocating resources effectively amid market uncertainties and intensifying competition. While KBK has pursued initiatives such as tolling schemes for rebar, downstream fabrication, and importation to meet specific project needs, the company still faces the critical question of which business lines should be prioritized to ensure long-term profitability and sustainability.

Existing studies on strategic management in the steel industry often focus on macroeconomic dynamics, policy interventions, or competitive strategies, but few have examined decision-making at the business line level within a steel company subholding in Indonesia. Moreover, limited research has integrated structured decision-making methods such as the Analytical Hierarchy Process (AHP) with strategic analysis tools (SWOT, PESTEL, Porter's Five Forces) in this context. This study seeks to fill that gap by developing a comprehensive prioritization model for KBK's business lines. The contribution lies in providing both theoretical and practical insights: theoretically, by integrating AHP with multiple strategic management frameworks; and practically, by offering KBK a structured decision-making tool for effective resource allocation, enhanced focus, and sustainable competitiveness in Indonesia's steel industry.

B. Methods

This study employed a mixed-methods approach to comprehensively analyze and prioritize the strategic business lines of PT Krakatau Baja Konstruksi (KBK). The research design began with the identification of strategic issues, followed by the formulation of research questions and objectives. Data collection drew on both primary and secondary sources. Primary data were obtained through Focus Group Discussions (FGDs) with directors and senior managers, and semi-structured in-depth interviews with selected board members. Secondary data were gathered from internal reports, industry publications, and academic literature (Creswell & Creswell, 2018; Tashakkori & Teddlie, 2010).

A purposive sampling technique was applied to select 11 experts, chosen for their strategic decision-making authority, industry experience, and familiarity with KBK's operations (Yüksel & Dagdeviren, 2007; Guest et al., 2006). This expert panel size aligns with methodological recommendations for Analytical Hierarchy Process (AHP) studies, where

the use of a small but highly qualified group ensures credible and consistent outcomes (Saaty, 2008; Ho, 2008).

Data analysis was carried out in three integrated stages (Krueger & Casey, 2014). First, thematic analysis of qualitative data was conducted using coding techniques in NVivo software to identify key decision-making criteria such as market demand, operational feasibility, and financial contribution. Second, these findings were contextualized through narrative analysis that incorporated strategic management frameworks including SWOT, PESTEL, and Porter's Five Forces, providing a comprehensive understanding of KBK's internal and external environment (DiCicco-Bloom & Crabtree, 2006; Kallio et al., 2016). Third, AHP was applied to quantitatively prioritize business lines based on the identified criteria. Pairwise comparisons were conducted using Expert Choice software, and the Consistency Ratio (CR) was calculated for each judgment matrix to ensure logical consistency, with all values maintained below the recommended threshold of 0.10 (Triantaphyllou & Mann, 1995; Gibbert, Ruigrok, & Wicki, 2008).

The integration of qualitative and quantitative methods was central to this research (Braun & Clarke, 2006). The qualitative stage ensured that the evaluation criteria were grounded in contextual insights from industry experts and strategic frameworks, while the quantitative AHP stage provided a structured, mathematical model to derive business line priorities (Riessman, 2008). This sequential integration not only enhanced the rigor and validity of the analysis but also produced a decision-making framework that is both empirically robust and practically applicable for KBK's strategic planning (Jemi, 2023; Chikalov et al., 2015; Turskis & Zavadskas, 2012).

C. Result and Discussion

Result

The selection of criteria and sub-criteria was derived from the qualitative stage of the research, specifically through Focus Group Discussions (FGDs) with KBK's leadership team. Using NVivo software, the discussions were coded and analyzed, allowing dominant themes to emerge naturally. As illustrated in Figure 1 (Word Cloud), the most frequently occurring terms such as *business* and *financial* highlight the central role of financial performance in the prioritization process. Other recurring terms *capital*, *profitability*, *growth*, and *demand* point to the importance of market attractiveness, investment prospects, and growth potential as key sub-criteria. Meanwhile, references to *manufacturing*, *tolling*, *fabrication*, *import*, and *KSO* represent the five alternative business lines under consideration.

Beyond financial considerations, the word cloud also shows a concentration of terms related to *operations* and *marketing*, reflecting their prominence as additional criteria in the evaluation framework. The recurring emphasis on *priority* underscores the sense of urgency expressed by participants to align strategic decisions with scarce financial and human resources. Taken together, the findings suggest that the FGDs provided a structured, data-driven foundation for identifying relevant criteria. These were subsequently refined and formalized into four main categories Financial, Marketing & Sales, Operations, and Human Capital & Organization along with their supporting sub-criteria.

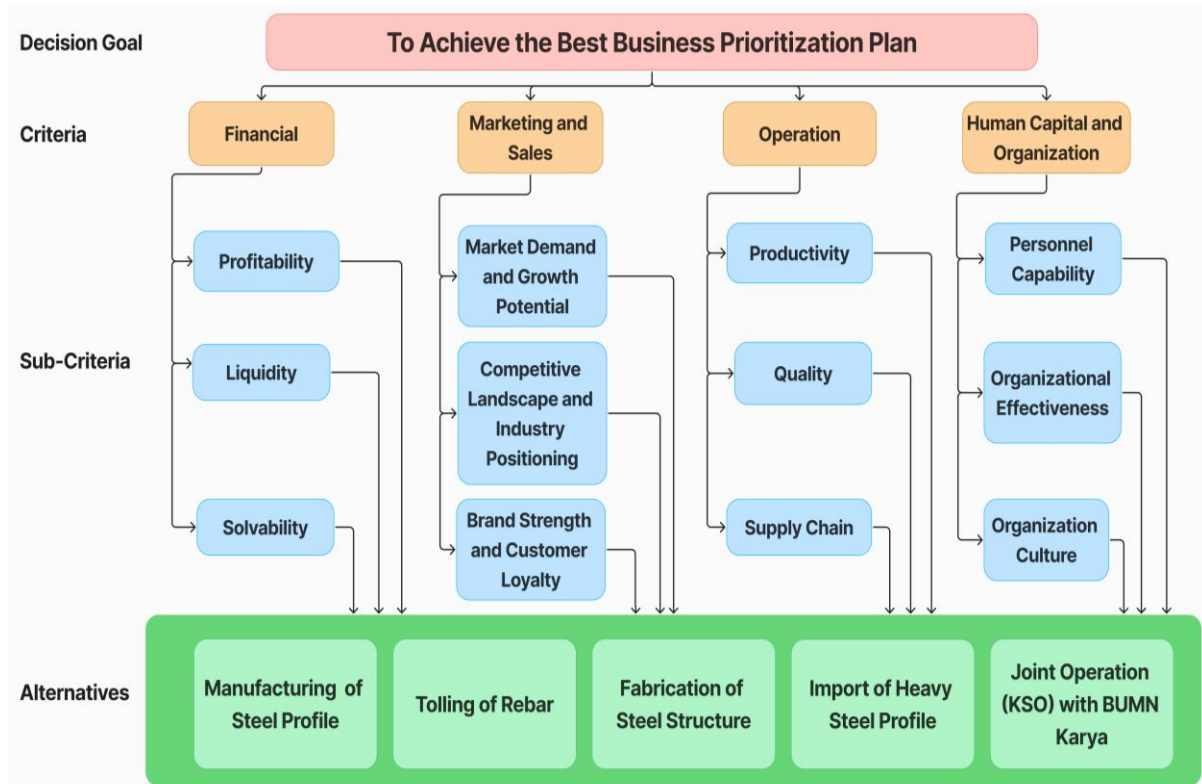


Figure 2. AHP Decision Hierarchy Structure

To ensure the robustness of the Analytic Hierarchy Process (AHP) model, the weighting of criteria and sub-criteria relied on expert judgment from 11 selected stakeholders within PT Krakatau Baja Konstruksi (KBK). These experts were purposively chosen to represent strategic, commercial, operational, and financial functions, with backgrounds ranging from mid-level managers to board-level executives and professional experience spanning 15–28 years. Their diverse perspectives, drawn from finance, HR, production, maintenance, and procurement, provided a comprehensive foundation for evaluating KBK’s business lines. The experts’ insights were collected through structured pairwise comparisons, ensuring that both strategic considerations and operational realities were reflected in the model.

Building on this foundation, the AHP execution involved distributing standardized comparison forms to all experts, covering the four main criteria Financial, Marketing & Sales, Operations, and Human Capital & Organization along with their sub-criteria. Responses were processed using Expert Choice software to derive the relative weights of each criterion. The results indicated that Marketing & Sales was considered the most decisive factor (58%), followed by Financial (21%), Operations (15%), and Human Capital & Organization (6%). These weights highlight the importance of aligning KBK’s business strategy with external market opportunities while maintaining financial strength and operational efficiency. Detailed calculations are presented in the Appendices, while the consistency of the judgments was validated through the Consistency Ratio (CR) test, further ensuring the reliability of the prioritization framework. Table 1 shows Pairwise Comparison Matrix of Main Criteria and Figure 3 shows Weighting of Main Criteria

Table 1. Pairwise Comparison Matrix of Main Criteria

	Financial	Marketing and Sales	Operation	Human Capital and Organization
Financial	1,00000000	0,21215582	1,60039484	5,40426993
Marketing and Sales	4,71351672	1,00000000	3,56734957	4,39799528
Operation	0,62484580	0,28032016	1,00000000	3,20577093
Human Capital and Organization	0,18503887	0,22737632	0,31193745	1,00000000

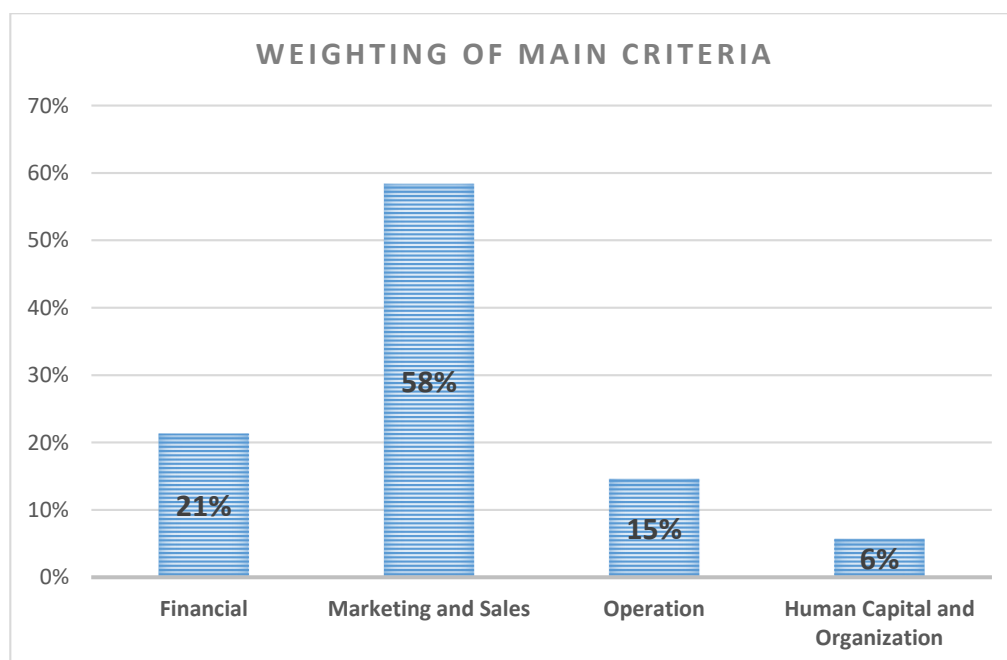


Figure 3. Weighting of Main Criteria

Weighting of Financial Sub Criteria

Based on the pairwise comparison survey done by the experts using form, we can find that among 3 Sub criteria in the Main Criteria of Financial, Liquidity was identified as the most important Sub-criteria by 56% followed by Profitability 35%, and the last is Solvability by 9%. The detail of calculation for these Sub-criteria of financial is attached in Appendices.

Table 2. Pairwise Comparison Matrix of Financial Sub Criteria

	Profitability	Liquidity	Solvability
Profitability	1,000000000	0,524897413	4,627528770
Liquidity	1,905134176	1,000000000	5,235638235
Solvability	0,216098062	0,190998682	1,000000000

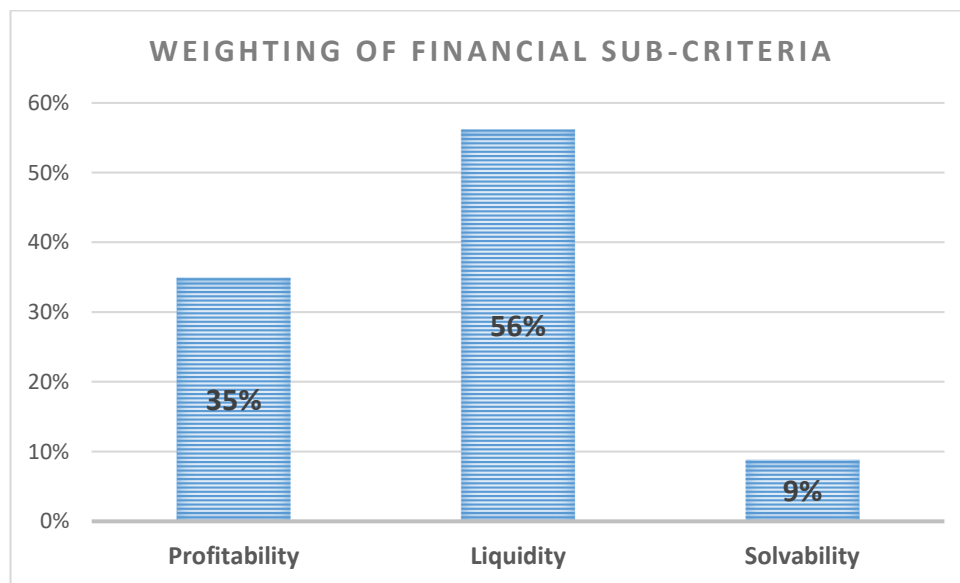


Figure 4. Weighting of Financial Sub Criteria

Weighting of Marketing & Sales Sub Criteria

Based on the pairwise comparison survey done by the experts using form, we can find that among 3 Sub criteria in the Main Criteria of Marketing and Sales, Market Demand and Growth Potential was identified as the most important Sub-criteria by 67% followed by Brand Strength and Brand Loyalty 20%, and the last is Competitive landscape and Industry positioning 13%. The detail of calculation for these Sub-criteria of Marketing and Sales is attached in Appendices.

Table 3. Pairwise Comparison Matrix of Marketing and Sales Sub Criteria

	Market Demand and Growth Potential	Competitive Landscape & Industry Positioning	Brand Strength and Customer Loyalty
Market Demand and Growth Potential	1,000000000	4,810110499	3,508709182
Competitive Landscape & Industry Positioning	0,207895432	1,000000000	0,571956526
Brand Strength and Customer Loyalty	0,285005097	1,748384630	1,000000000

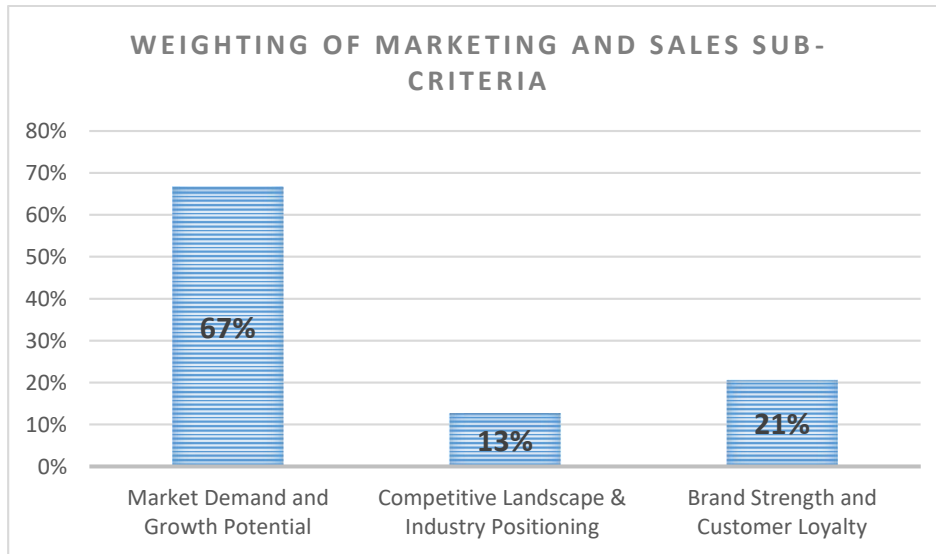


Figure 5. Weighting of Marketing and Sales Sub Criteria

Weighting of Sub Criteria Operation

Based on the pairwise comparison survey done by the experts using, we can find that among 3 Sub criteria in the Main Criteria of Operation, Productivity was identified as the most important Sub-criteria by 39% followed by Quality 37%, and the last is Supply Chain 13%. The detail of calculation for these Sub-criteria of Operation is attached in Appendices.

Table 4. Pairwise Comparison Matrix of Operations Sub Criteria

	Productivity	Quality	Supply Chain
Productivity	1,00000000	0,857846777	1,967995093
Quality	1,165709340	1,00000000	1,267889001
Supply Chain	0,508131348	0,788712576	1,00000000

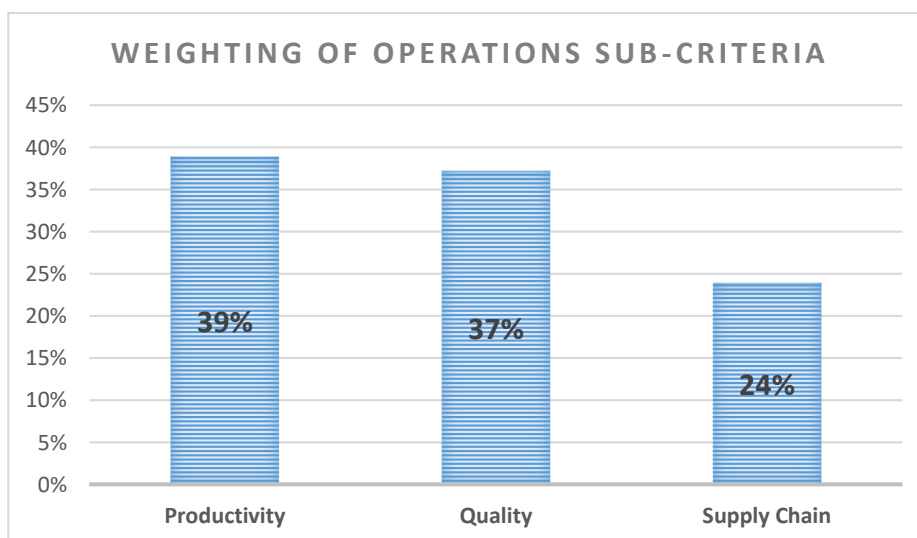


Figure 6. Weighting of Operations Sub Criteria

Weighting of Human Capital and Organization Sub Criteria

Based on the pairwise comparison survey done by the experts using form, we can find that among 3 Sub criteria in the Main Criteria of Human Capital and Organization, Organizational Effectiveness was identified as the most important Sub-criteria by 50%, followed by Personal Capability 29%, and the last is Organizational Culture 21%. The detail of calculation for these Sub-criteria of Human Capital and Organization is attached in Appendices.

Table 1. Pairwise Comparison Matrix of Human Capital & Org. Sub Criteria

	Personal Capability	Organizational Effectiveness	Organizational Culture
Personal Capability	1,000000000	0,502000319	1,530582364
Organizational Effectiveness	1,992030605	1,000000000	2,102221442
Organizational Culture	0,653346088	0,475687280	1,000000000

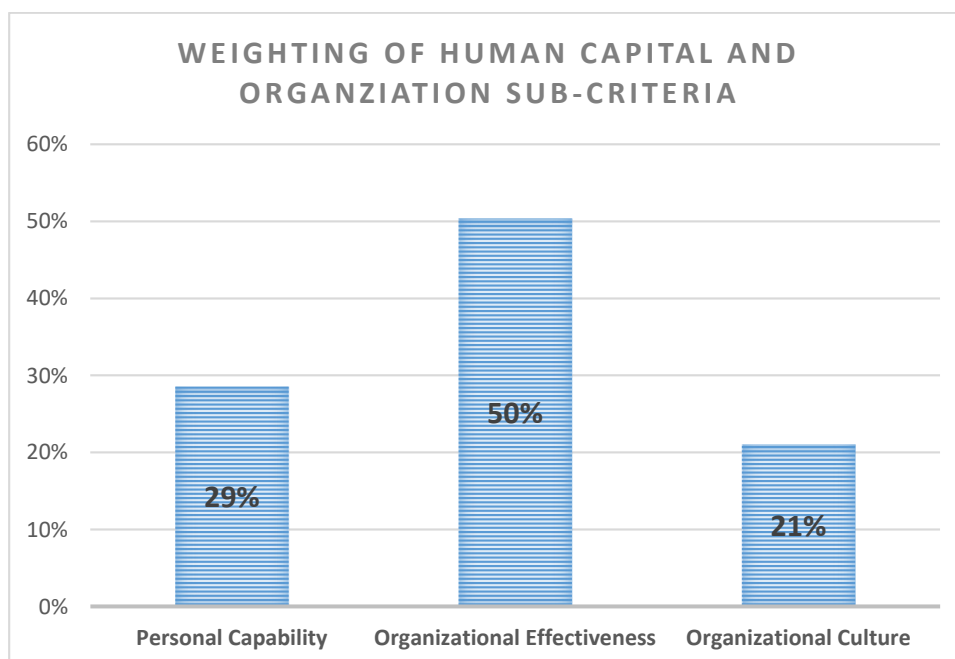


Figure 7. Weighting of Human Capital and Organization Sub Criteria

Calculation of Consistency Ratio

After all criteria and sub-criteria weight are obtained, the next step is to calculate the Consistency Ratio to ensure the validity and consistency of the expert opinion on the pairwise comparison survey. The result shows that all of the weights of the main criteria and sub-criteria are consistent since the Consistency Ratio is below the Maximum CR Value.

Table 2. Consistency Ratio of Main Criteria and Sub Criteria

Aspect	Matrix Order	N	RI	CR Target (Max)	Max Eigenvalue	CR Actual	Conclusion
Main Criteria	4	4	0,90	0,10	4,144968331	0,048322777	Consistent
Sub-Criteria 1	3	3	0,58	0,42	3,017194359	0,00859718	Consistent
Sub-Criteria 2	3	3	0,58	0,42	3,004169211	0,002084606	Consistent
Sub-Criteria 3	3	3	0,58	0,42	3,037395578	0,018697789	Consistent
Sub-Criteria 4	3	3	0,58	0,42	3,01353602	0,00676801	Consistent

Weighting Results of Main Criteria and Sub-Criteria

After obtaining the weights of Main Criteria and Sub-Criteria, next step is multiplying the weight of main criteria and sub-criteria to obtain the global weight for each sub-criteria. These global weight later will be used to be multiplied with the quantitative rating for each alternative.

Table 3. Global Weight Result of All Sub Criteria

No.	Main Criteria Description	Main Criteria Weight	Sub-criteria Description	Sub-criteria Weight	Global Weight
1,1	<i>Financial</i>	21,33%	<i>Profitability</i>	34,95%	7,46%
1,2	<i>Financial</i>	21,33%	<i>Liquidity</i>	56,19%	11,99%
1,3	<i>Financial</i>	21,33%	<i>Solvability</i>	8,86%	1,89%
2,1	<i>Marketing and Sales</i>	58,32%	<i>Market Demand and Growth Potential</i>	66,68%	38,88%
2,2	<i>Marketing and Sales</i>	58,32%	<i>Competitive Landscape & Industry Positioning</i>	12,75%	7,43%
2,3	<i>Marketing and Sales</i>	58,32%	<i>Brand Strength and Customer Loyalty</i>	20,57%	12,00%
3,1	<i>Operation</i>	14,62%	<i>Productivity</i>	38,87%	5,68%
3,2	<i>Operation</i>	14,62%	<i>Quality</i>	37,20%	5,44%
3,3	<i>Operation</i>	14,62%	<i>Supply Chain</i>	23,92%	3,50%
4,1	<i>Human Cappital and Organization</i>	5,73%	<i>Personal Capability</i>	28,55%	1,64%
4,2	<i>Human Cappital and Organization</i>	5,73%	<i>Organizational Effectiveness</i>	50,37%	2,89%
4,3	<i>Human Cappital and Organization</i>	5,73%	<i>Organizational Culture</i>	21,08%	1,21%
Total Weight					100,00%



Figure 8. Global Weight Ranking of All Sub Criteria

Porter’s Five Forces

Porter’s Five Forces framework is applied to provide a structured view of the competitive pressures facing Indonesia’s steel industry, particularly as they affect PT Krakatau Baja Konstruksi (KBK). The analysis shows that the threat of new entrants is assessed as medium (Rothaermel, 2021). While steel manufacturing is highly capital-intensive, Indonesia’s relatively open investment policies and incentives for industrial estates have encouraged foreign-backed players, especially from China, to enter the market with economies of scale that intensify competition. The bargaining power of suppliers is medium to high, largely due to limited domestic billet production, which forces KBK to rely on imports under often unfavorable terms. On the demand side, the bargaining power of buyers is high. Contractors and distributors demonstrate strong leverage in a commoditized steel market by demanding competitive pricing, SNI compliance, and flexible payment terms.

The threat of substitutes is currently low to medium, as steel continues to dominate structural applications, but gradual shifts toward reinforced concrete and composites are visible in certain infrastructure projects. Finally, industry rivalry is very high, driven by excess supply, aggressive foreign imports, and limited product differentiation, all of which squeeze margins and intensify price-based competition. Taken together, these forces highlight a market environment where KBK must strengthen its core capabilities while managing high external pressures (World Steel Association, 2024).

Integration of AHP Results with SWOT, PESTEL, and Porter’s Five Forces to ensure that the prioritization of KBK’s business lines is both rigorous and strategically grounded, the results of the Analytical Hierarchy Process (AHP) were integrated with insights from SWOT, PESTEL, and Porter’s Five Forces analyses. The AHP provided a structured, quantitative ranking of KBK’s five business lines, while the complementary frameworks offered qualitative depth by linking internal capabilities with external opportunities and threats. This integration allows KBK’s management to interpret not only “which” business

lines should be prioritized, but also “why” such priorities matter in the broader strategic context.

The consolidated findings position Manufacturing as KBK’s top priority, supported by strong operational experience, brand recognition, and favorable demand from infrastructure growth, though requiring modernization to remain competitive. Importation ranks second, filling product gaps in the domestic market but vulnerable to policy risks and foreign supplier dependency (World Bank, 2024). Joint Operation (KSO) takes third place, offering access to government-backed projects but limited by cash flow and governance risks. Tolling follows in fourth position, providing capital-efficient revenues yet constrained by partner dependence and weak differentiation. Finally, Fabrication ranks lowest due to insufficient internal readiness, although it holds future potential if investments in technology and human capital are strengthened.

This integrated perspective confirms that KBK should, in the short term, consolidate and reinforce its core in manufacturing while maintaining importation as a buffer strategy. At the same time, KSO and tolling should be pursued selectively for opportunistic value, whereas fabrication should be treated as a long-term growth option requiring deliberate capability building. By aligning quantitative prioritization with qualitative industry insights, the company ensures that its strategic decisions are not only data-driven but also responsive to real-world challenges and opportunities in Indonesia’s evolving steel market.

Discussion

This section translates the results of the Analytical Hierarchy Process (AHP) into a practical implementation roadmap for PT Krakatau Baja Konstruksi (KBK). After evaluating the five business lines Manufacturing, Importation, Fabrication, Joint Operation (KSO), and Tolling using a structured multi-criteria decision-making framework, the proposed solution focuses on business refocusing and prioritization. The core recommendation is to reallocate strategic resources toward the highest-ranked business lines, particularly Manufacturing of Steel Profiles, followed by Importation and Fabrication, while managing KSO selectively and reconsidering Tolling as the least favorable option.

The implementation plan is guided by the 5W+1H framework *What, Why, Where, Who, and How* to provide clarity for decision-makers. As shown in Figure 9 (Implementation Plan of Business Solution), the strategy emphasizes concentrating execution in KBK’s main base in Cilegon, Banten, while strengthening partnerships for importation and fabrication activities across Java. Leadership roles are clearly distributed among the Board of Directors and functional managers, with the Commercial Director driving market expansion, the Operations team enhancing production and fabrication, the Finance team managing budget reallocation and working capital, and the HR team upgrading competencies to support downstream growth.

The justification for this plan rests on three pillars. First, quantitative validation from the AHP model confirms the prioritization results, supported by consistent judgments (CR < 0.1). Second, strategic alignment from SWOT, PESTEL, and Porter’s Five Forces reinforces manufacturing as KBK’s core strength, supported by government incentives, infrastructure demand, and lower exposure to buyer–supplier bargaining compared to Tolling. Third, stakeholder agreement from FGDs and interviews indicates consensus among directors and

managers that manufacturing offers the most controllable and profitable path, while Tolling presents significant dependency risks. Feasibility considerations, particularly KBK's limited working capital and HR capacity, further justify focusing on the top three business lines, which promise faster capital turnover and reduced risk exposure. Altogether, this roadmap provides a data-driven yet pragmatic guide for KBK's strategic execution.

D. Conclusion

This study demonstrates that the prioritization of PT Krakatau Baja Konstruksi's (KBK) business lines can be effectively optimized through the Analytical Hierarchy Process (AHP), complemented by qualitative insights and strategic frameworks such as SWOT, PESTEL, and Porter's Five Forces. The findings highlight the importance of aligning strategic choices with both internal capabilities and external market dynamics, where market demand and growth potential emerge as the most decisive factors.

The results indicate that manufacturing should remain KBK's core priority, supported by selective development of importation and joint operations, while tolling and fabrication require critical re-evaluation and capability strengthening. To ensure adaptive decision-making, KBK is encouraged to establish a monitoring system based on AHP criteria, enabling more responsive resource allocation in line with shifting market conditions.

For future research, broader methodological integration is recommended. Longitudinal studies and scenario-based financial modeling would provide deeper insights into the sustainability and ROI of each business line, while hybrid decision-making methods such as AHP-TOPSIS or Fuzzy AHP could strengthen the robustness of results under uncertainty. Comparative studies with other steel and construction supply companies would also offer valuable external validation, ensuring that the model remains relevant beyond KBK's organizational context.

REFERENCES

- Baja Konstruksi. (n.d.). PT Krakatau Baja Konstruksi. Retrieved May 15, 2025, from <https://www.bajakonstruksi.co.id>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Bappenas. (2025, March 13). Bappenas Outlines Strategy to Achieve Economic Growth Targets in Working Meeting with House of Representatives. <https://www.bappenas.go.id/en/berita/gelar-raker-bersama-komisi-xi-dpr-ri-bappenas-paparkan-strategi-capai-target-pertumbuhan-ekonomi-TrhmC>
- Chikweche, T., & Fletcher, R. (2012). Revisiting the Porter's Five Forces model: Case of steel industry in Sub-Saharan Africa. *Journal of Strategic Marketing*, 20(6), 521–535. <https://doi.org/10.1080/0965254X.2012.711345>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE.
- DDTCNews. (2023, November 21). RPJMN 2025–2029: Economy Targeted to Grow by 6.1% and Tax Ratio to Reach 14%. <https://news.ddtc.co.id/berita/nasional/1799486/rpjmn-2025-2029-ekonomi-ditarget-tumbuh-61-dan-tax-ratio-14>
- DiCicco-Bloom, B., & Crabtree, B. F. (2006). The qualitative research interview. *Medical Education*, 40(4), 314–321. <https://doi.org/10.1111/j.1365-2929.2006.02418.x>

- Ghazinoory, S., Abdi, M., & Azadegan-Mehr, M. (2011). SWOT methodology: A state-of-the-art review for the past, a framework for the future. *Journal of Business Economics and Management*, 12(1), 24–48. <https://doi.org/10.3846/16111699.2011.555358>
- Gibbert, M., Ruigrok, W., & Wicki, B. (2008). What passes as a rigorous case study? *Strategic Management Journal*, 29(13), 1465–1474. <https://doi.org/10.1002/smj.722>
- Goodwin, P., & Wright, G. (2004). *Decision analysis for management judgment* (3rd ed.). Wiley.
- Hannon, E. (2024, October 1). Backlash against Chinese steel gives preview of Trump trade tensions. *The Wall Street Journal*. <https://www.wsj.com/world/china/backlash-against-chinese-steel-gives-preview-of-trump-trade-tensions-8e5fb48f>
- Helms, M. M., & Nixon, J. (2010). Exploring SWOT analysis – Where are we now? *Journal of Strategy and Management*, 3(3), 215–251. <https://doi.org/10.1108/17554251011064837>
- Ho, W. (2008). Integrated analytic hierarchy process and its applications – A literature review. *European Journal of Operational Research*, 186(1), 211–228. <https://doi.org/10.1016/j.ejor.2007.01.004>
- Institut Industri Besi dan Baja Indonesia. (2024, April 29). Strengthening the national steel industry ecosystem to face global market dynamics. IISIA. <https://www.iisia.or.id/news/penguatan-ekosistem-industri-baja-nasional-untuk-menghadapi-dinamika-pasar-global>
- Indonesian Iron and Steel Industry Association. (2024, April 12). Penguatan ekosistem industri baja nasional untuk menghadapi dinamika pasar global. <https://www.iisia.or.id/news/penguatan-ekosistem-industri-baja-nasional-untuk-menghadapi-dinamika-pasar-global>
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47(2), 263–291. <https://doi.org/10.2307/1914185>
- Kahraman, C., Cebeci, U., & Ulukan, Z. (2003). Multi-criteria supplier selection using fuzzy AHP. *Logistics Information Management*, 16(6), 382–394. <https://doi.org/10.1108/09576050310503367>
- Kallio, H., Pietilä, A. M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological review: Developing a framework for a qualitative semi-structured interview guide. *Journal of Advanced Nursing*, 72(12), 2954–2965. <https://doi.org/10.1111/jan.13031>
- Ministry of Environment and Forestry (KLHK). (2023). Roadmap toward Net Zero Emissions 2060. <https://www.menlhk.go.id>
- Krueger, R. A., & Casey, M. A. (2014). *Focus groups: A practical guide for applied research* (5th ed.). SAGE Publications.
- Krakatau Steel. (n.d.). PT Krakatau Steel (Persero) Tbk. Retrieved May 15, 2025, from <https://www.krakatausteel.com>
- PT Krakatau Baja Konstruksi. (n.d.). Home. <https://www.bajakonstruksi.co.id>
- PT Krakatau Steel (Persero) Tbk. (n.d.). Official website. <https://www.krakatausteel.com>
- Le Monde. (2024, September 27). Trade barriers increase globally as the tone rises against China's massive surpluses. https://www.lemonde.fr/en/economy/article/2024/09/27/trade-barriers-increase-globally-as-the-tone-rises-against-china-s-massive-surpluses_6727389_19.html
- Mardani, A., Jusoh, A., & Zavadskas, E. K. (2015). Fuzzy multiple criteria decision-making techniques and applications – Two decades review from 1994 to 2014. *Expert Systems with Applications*, 42(8), 4126–4148. <https://doi.org/10.1016/j.eswa.2014.12.003>

- Mardani, A., Jusoh, A., Zavadskas, E. K., Khalifah, Z., & Nor, K. M. D. (2015). Multiple criteria decision-making techniques and their applications – A review of the literature from 2000 to 2014. *Economic Research-Ekonomika Istraživanja*, 28(1), 516–571. <https://doi.org/10.1080/1331677X.2015.1075139>
- Mosadeghi, R., Warnken, J., Tomlinson, R., & Mirfenderesk, H. (2012). Uncertainty analysis in the application of multi-criteria decision-making methods in Australian strategic environmental decisions. *Journal of Environmental Management*, 109, 128–137. <https://doi.org/10.1016/j.jenvman.2012.05.034>
- Panagiotou, G. (2003). Bringing SWOT into focus. *Strategic Change*, 12(2), 63–77. <https://doi.org/10.1002/jsc.624>
- Partovi, F. Y. (2001). An analytic model for locating facilities strategically. *Omega*, 29(4), 429–442. [https://doi.org/10.1016/S0305-0483\(01\)00035-7](https://doi.org/10.1016/S0305-0483(01)00035-7)
- Porter, M. E. (1980). *Competitive strategy: Techniques for analyzing industries and competitors*. Free Press.
- Porter, M. E. (2008). The five competitive forces that shape strategy. *Harvard Business Review*, 86(1), 78–93.
- Porter, M. E. (2008). *The Five Competitive Forces That Shape Strategy*. Harvard Business Review.
- PwC Indonesia. (2023). *ESG and Regulatory Outlook for Indonesia's Industrial Sector*. <https://www.pwc.com/id>
- PwC Indonesia. (2023). *Indonesia Industrial Sector Outlook: Steel and Infrastructure*. <https://www.pwc.com/id>
- Riessman, C. K. (2008). *Narrative methods for the human sciences*. SAGE.
- Saaty, T. L. (1980). *The analytic hierarchy process: Planning, priority setting, resource allocation*. McGraw-Hill.
- Saaty, T. L. (1987). The analytic hierarchy process What it is and how it is used. *Mathematical Modelling*, 9(3–5), 161–176. [https://doi.org/10.1016/0270-0255\(87\)90473-8](https://doi.org/10.1016/0270-0255(87)90473-8)
- Saaty, T. L. (2008). Decision making with the analytic hierarchy process. *International Journal of Services Sciences*, 1(1), 83–98. <https://doi.org/10.1504/IJSSCI.2008.017590>
- Saaty, T. L., & Vargas, L. G. (2001). *Models, methods, concepts & applications of the analytic hierarchy process*. Springer. <https://doi.org/10.1007/978-1-4615-1665-1>
- Sahoo, S. K., & Goswami, S. S. (2023). A comprehensive review of multiple criteria decision-making (MCDM) methods: Advancements, applications, and future directions. *Decision Making Advances*, 1(1), 25–48. <https://doi.org/10.31181/dma1120237>
- Simon, H. A. (1957). *Models of man: Social and rational*. Wiley.
- Suryadi, T., Ratnaningtyas, S., & Hutajulu, S. (2025). Decision making framework in financial, risk and sustainability aspect for selecting business model in Delaware Group. *Asian Journal of Research in Business and Management*, 7(1), 21–35. <https://doi.org/10.55057/ajrbm.2025.7.1.3>, <https://mysitasi.mohe.gov.my/journal-website/journal/ajrbm/>
- Tashakkori, A., & Teddlie, C. (2010). *Mixed methodology: Combining qualitative and quantitative approaches*. SAGE Publications.
- Triantaphyllou, E., & Mann, S. H. (1995). Using the analytic hierarchy process for decision making in engineering applications: Some challenges. *International Journal of Industrial Engineering: Applications and Practice*, 2(1), 35–44.
- Widagdo, A. T., & Sunitiyoso, Y. (2020). Multi-criteria decision-making model on investment portfolio prioritization in PT Krakatau Steel (Persero), Tbk: An Analytic

- Hierarchy Process approach. In Proceedings of the 5th International Conference on Management in Emerging Markets (ICMEM) (pp. 893–902). Institut Teknologi Bandung. <https://www.researchgate.net/publication/345171863>
- World Steel Association. (2024). Steel Statistical Yearbook & Industry Reports. <https://www.worldsteel.org>
- World Steel Association. (2024). World steel in figures 2024. <https://worldsteel.org/media/publications/world-steel-in-figures-2024/>
- World Bank. (2024). Indonesia Country Climate and Development Report. <https://www.worldbank.org/en/country/indonesia>
- World Bank. (2024). Indonesia Investment Climate Update. <https://www.worldbank.org/en/country/indonesia>
- Yap, C. (2024, October 1). Backlash against Chinese steel gives preview of Trump trade tensions. *The Wall Street Journal*. <https://www.wsj.com/world/china/backlash-against-chinese-steel-gives-preview-of-trump-trade-tensions-8e5fb48f>
- Yüksel, I. (2012). Developing a multi-criteria decision making model for PESTEL analysis. *Procedia - Social and Behavioral Sciences*, 1(1), 1105–1114. <https://doi.org/10.1016/j.sbspro.2012.09.1011>
- Görener, A., Toker, K. and Ulucay, K., 2012. Application of combined SWOT and AHP: A case study for a manufacturing firm. *Procedia - Social and Behavioral Sciences*, 58, pp.1525–1534. <https://doi.org/10.1016/j.sbspro.2012.09.1135>
- Ghazinoory, S., Abdi, M. and Azadegan-Mehr, M., 2011. SWOT methodology: A state-of-the-art review for the past, a framework for the future. *Journal of Business Economics and Management*, 12(1), pp.24–48. <https://doi.org/10.3846/16111699.2011.555358>
- Jeston, J. and Nelis, J., 2014. *Business Process Management: Practical Guidelines to Successful Implementations*. 3rd ed. Oxford: Routledge. (Used here to support strategic alignment between analysis and implementation.)
- Ghazinoory, S., Abdi, M., & Azadegan-Mehr, M. (2011). SWOT methodology: A state-of-the-art review. *Journal of Business Economics and Management*, 12(1), 24–48. <https://doi.org/10.3846/16111699.2011.555358>
- Görener, A., Toker, K., & Ulucay, K. (2012). Application of combined SWOT and AHP: A case study. *Procedia - Social and Behavioral Sciences*, 58, 1525–1534. <https://doi.org/10.1016/j.sbspro.2012.09.1135>
- Porter, M. E. (2008). *The Five Competitive Forces That Shape Strategy*. Harvard Business Review, January 2008.
- Rothaermel, F. T. (2021). *Strategic Management* (5th ed.). McGraw-Hill Education.
- VOI. (2023, May 30). Bappenas Sets 5 Targets for Indonesia's Vision Of Gold 2045. <https://voi.id/en/economy/283368>