

SUBCONTRACTOR COMPETENCY MANAGEMENT STRATEGY IN HEAVY EQUIPMENT RENTAL AND COAL HAULING SERVICE COMPANIES USING A THEMATIC APPROACH AND EXPLORATIVE SWOT (Case Study at PT Mutiara Tanjung Lestari)

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Abstract

Purpose – This study aims to formulate an effective and sustainable subcontractor competency management strategy at PT Mutiara Tanjung Lestari, a heavy equipment and hauling services company in Kalimantan. **Methodology** – The research approach used was descriptive qualitative with thematic analysis and exploratory SWOT analysis methods. Data were obtained through in-depth interviews with five key informants from management and subcontractors. **Findings** – The results of the thematic analysis indicate that the main obstacles lie in suboptimal onboarding, irregular technical training, weak supervision of SOP-K3, and the lack of consistent evaluation and feedback mechanisms. The SWOT results indicate that the company's strategic position is in Quadrant II (Weakness-Opportunity), so the recommended strategy is diversification, namely utilizing external opportunities to overcome internal weaknesses. This study produces four alternative strategies for managing subcontractor competencies that can be implemented in an integrated manner. **Originality** – These findings are expected to be a practical reference in developing subcontractor management in the mining services sector

Keywords: *Subcontractor competencies; management strategies; SWOT; mining industry.*

INTRODUCTION

The coal mining industry in Indonesia is a strategic sector that makes a significant contribution to the national economy (Rauzana et al., 2022; Christin et al., 2025; Ibrahim & Fadillah, 2021; Rahman & Raphael, 2025; Rismawati et al., 2024). In 2023, the mineral and coal sector contributed approximately IDR 2,198 trillion or 10.5% of the national Gross Domestic Product (GDP) (HumasMinerba, 2025). National coal production even reached more than 802.74 million tons in 2024, making it one of the mainstay export commodities and the largest source of non-tax state revenue (PNBP) in the energy and mineral resources sector (Anggraeni, 2025). In their operational practices, mining companies are highly dependent on external service providers, especially subcontractors such as heavy equipment rental companies and coal hauling services (Calzada Olvera, 2022; Frankowski et al., 2023). This dependence emerged as a strategy to increase cost efficiency and flexibility in project implementation in the field (Saputra et al., 2023; Sulaksono & Hamdi, 2023). Subcontractors play an important role in providing heavy equipment, labor, mechanics, and logistical facilities to support mining operations (Khan et al., 2022; Sherafat et al., 2020; You & Feng, 2020). However, the high dependence on subcontractors also poses a number of serious challenges in mining operations (Söderholm, 2023). One of the main problems that often arises is the inconsistent quality of subcontractor performance, which has become a weak point in the industry's supply chain (Road et al., 2020). The generally short-term nature of work contracts, around one to three years, and the high frequency of subcontractor turnover contribute to suboptimal training, occupational safety induction, and ongoing supervision (Valluru, 2023). The lack of formal training and weak oversight of the implementation of occupational safety and health (OHS) standards among subcontractors result in an increased risk of workplace accidents, decreased productivity, and even damage to the reputation of the main company (Jackson & Quinlan, 2024). In addition, the subcontractor performance audit and evaluation system is often not effective because not all parent companies set performance indicators based on quality, occupational safety, and compliance with environmental regulations (Al-kasasbeh et al., 2021; Raouf & Al-Ghamdi, 2023).

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This situation is exacerbated by the fact that most subcontractors in the mining industry lack technical and managerial competencies, as well as an adequate understanding of occupational safety procedures (Litvinenko, 2020; Monazzam & Crawford, 2024). This lack of preparedness not only impacts the quality of work results but also increases overall operational risk (Iyanda et al., 2024). Valluru et al., (2020) emphasized that the lack of safety training and weak supervision of subcontractor workers contribute to high rates of workplace accidents, heavy equipment damage, and project delays. This is in line with the findings of Amalina & Larasati, (2020), who stated that many subcontractors do not yet have occupational safety systems that comply with parent company standards, resulting in a mismatch between policies and implementation in the field. Therefore, evaluations based on final project performance are no longer sufficient. A comprehensive and sustainable subcontractor competency management strategy is needed, starting from the initial selection stage, intensive training, and systematic performance monitoring. Research by Wu et al. (2022) shows that this approach has been proven to reduce workplace accidents and increase mine operational productivity. Therefore, mining companies need to develop subcontractor management systems that focus not only on end-results but also strengthen human resource capacity development and compliance with occupational safety standards.

The mining industry relies heavily on subcontractors for critical operations such as heavy equipment and coal hauling services. However, subcontractor competency often remains inconsistent, leading to significant challenges that directly affect operational efficiency, occupational safety, and company reputation. Weaknesses in competency management particularly in selection, training, performance evaluation, and continuous development pose potential risks that can result in both material and non-material losses. Although research on supply chain management in the mining sector has been widely conducted, most studies focus on technical, financial, or logistical aspects, while the human resource dimension of subcontractors has received limited attention. In particular, there is a lack of comprehensive studies that address how subcontractor competency management strategies can be systematically designed and implemented to enhance safety and operational performance. This gap highlights the urgency of developing a structured and sustainable approach to managing subcontractor competencies. To address this gap, the present study takes PT Mutiara Tanjung Lestari, a company engaged in heavy equipment and coal hauling services, as a case study. The objectives are threefold (1) to identify the key factors influencing subcontractor competency, (2) to analyze weaknesses in the current competency management system, and (3) to propose a more effective and sustainable competency management strategy. By doing so, this research contributes both academically and practically. Academically, it enriches the literature by offering a managerial model that integrates human resource perspectives into mining supply chain management. Practically, it provides actionable insights for companies in similar industries to strengthen subcontractor competency, thereby improving operational efficiency and occupational safety standards. In this way, the study addresses a critical gap in the literature and demonstrates the importance of integrating subcontractor competency into broader discussions of mining management.

METHOD

This study employed a mixed-methods exploratory approach, dominated by descriptive qualitative approaches and supported by a weighted SWOT analysis (IFAS and EFAS) as a strategic exploratory tool (Putri et al., 2024). This approach was chosen to explore the phenomena, experiences, and perspectives of stakeholders directly and contextually within the PT Mutiara Tanjung Lestari work environment. Data were collected through three main techniques: in-depth interviews, direct observation, and documentation studies. Interviews were conducted semi-structured to allow flexibility in information exploration. Observations were conducted at the worksite to capture actual subcontractor management practices, while documentation included analysis of internal company documents such as SOPs, training reports, and cooperation contracts. Research informants were selected using purposive sampling, based on the consideration that they have knowledge, experience, and direct roles in subcontractor management. Key informants consisted of the HSEQ Compliance Supervisor, field supervisor, HRD staff, and representatives from the subcontractor. The number of informants was adjusted to the principle of data saturation, which is when the data obtained no longer shows new findings. Data analysis in this study was conducted using a qualitative thematic analysis approach with reference to the model from Miles & Huberman, (2022), which includes three main stages, namely (1) data reduction, namely the process of simplifying, sorting, and selecting important information from the results of in-depth interviews that have been transcribed verbatim; (2) data presentation, where the data is arranged in the form of a thematic matrix and concept map to facilitate the identification of meaning patterns; and (3) drawing conclusions and verification, namely the stage of interpreting the meaning of the data based on patterns and relationships between thematic categories. This process involves coding important quotes, grouping codes into subthemes, and finally formulating the main theme that describes the overall

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subcontractor competency management strategy. To maintain data validity, researchers used triangulation of sources and methods by comparing data from various sources (project managers, field supervisors, and subcontractors), as well as methods (in-depth interviews, documentation, and field observations). In addition, member checking was also carried out by returning the results of temporary interpretations to key informants to ensure the accuracy and consistency of the captured meaning. After the thematic data was consolidated, researchers conducted a strategic analysis using the SWOT (Strengths, Weaknesses, Opportunities, Threats) approach. Each internal and external factor was given a weight and rating in the form of IFAS (Internal Factors Analysis Summary) and EFAS (External Factors Analysis Summary) to obtain a mapping of the company's strategic position and formulate an optimal and contextual subcontractor competency management strategy.

RESULTS AND DISCUSSION

This study aims to gather information in an effort to understand the factors that influence the low competence of subcontractors in the coal mining sector. The researcher conducted a thematic analysis of in-depth interview data with several key informants, such as field supervisors, project managers, and training and safety staff. The results of this analysis provide a comprehensive overview of critical aspects of the subcontractor management process that contribute to their work performance in the field. The thematic analysis shows that one of the main factors affecting subcontractor competence is the less than optimal onboarding system provided by the company. Several informants stated that the initial introduction process to the work system, quality standards, and company values is still carried out generally and is limited in time. One informant said, " *The onboarding time is only one day, at most just a brief introduction and introduction to the project. There is no in-depth SOP or detailed work procedures* " (INF-05). This has an impact on subcontractors' lack of initial understanding of work expectations and company standards. In addition, technical training has not been provided regularly and comprehensively. A supervisor stated, " *They were told about the work system, but not everyone understood it. Technical training should be made routine, not waiting for a problem to arise before providing training* " (INF-02).

Another factor is the unequal understanding of OHS procedures and Standard Operating Procedures (SOPs) among subcontractors. Although the company has provided daily socialization and briefings, their implementation has not been sufficient to ensure in-depth understanding in the field. " *Yes, they attend safety meetings, but sometimes it's just a formality. In the field, many still neglect to use PPE or work not according to procedures* " (INF-03). Furthermore, a performance evaluation mechanism is in place, but it is not fully accompanied by ongoing coaching. A project manager added, " *We have evaluated through monthly KPIs, but the feedback to them is not consistent. There should be direct assistance or mentoring after the evaluation* " (INF-04). This finding is reinforced by another informant's statement that hoped for performance awards as a form of motivation: " *If there are rewards for subcontractors who produce good work, they will definitely be more enthusiastic and disciplined* " (INF-05).

Based on various informant statements, it can be concluded that several dominant factors influence subcontractor competency, particularly in terms of understanding work procedures, technical training, and evaluation mechanisms. To clarify the structure of this research's findings, a thematic analysis was then presented in table form, summarizing the main themes and related issues, sources of informant quotes, and their impact on subcontractor performance. This presentation is intended to systematically and in-depth understand the patterns of emerging problems.

Table 1. Analysis of Main Factors Influencing Subcontractor Competence at PT Mutiara Tanjung Lestari

No	Factor	Description of Field Findings	Data source
1	Onboarding Quality	Onboarding is still brief and does not touch on the core aspects of the job.	INF-05, INF-04
2	Availability of Technical Training	Technical training has not been carried out routinely and systematically.	INF-02, INF-04
3	Understanding SOP & K3	Socialization has been carried out, but understanding in the field is still not evenly distributed.	INF-03, INF-05
4	Performance Based Evaluation (KPI)	Evaluations exist, but they are not always accompanied by consistent coaching feedback.	INF-02, INF-03
5	Direct Supervision & Feedback	Daily briefings and field reports are the main tools for work evaluation and correction.	INF-03

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6	Adaptation to Internal Procedures	Some subcontractors have difficulty adjusting to the company's operational standards.	INF-04
7	Track Record and Initial Selection	Recruitment takes into account project track records and certifications, but work quality still varies.	INF-01
8	Performance Incentives and Awards	The hope is that there will be incentives that motivate increased competence and work commitment.	INF-04
9	Mentoring for New Subcontractors	New subcontractors require direct assistance in the early stages of the assignment.	INF-05
10	Two-Way Communication	Feedback mechanisms are not yet fully open and responsive to subcontractor needs.	INF-04, INF-05

Table 1 above illustrates that the main challenges in improving subcontractor competency stem from a weak onboarding system, unequal understanding of OHS procedures and SOPs, and minimal technical training and ongoing coaching. These themes emerged consistently from interviews with various key informants, highlighting limitations in knowledge transfer, irregular training, and inconsistent evaluation and feedback. These three aspects are interrelated and illustrate that competency improvement efforts cannot rely solely on performance evaluations but must be accompanied by a structured training strategy, effective procedural communication, and a fair motivation system. This serves as the basis for developing future improvement strategies through a SWOT analysis. After identifying the various internal and external factors that influence subcontractor competency, the next step is to weight and rate each factor. This step aims to obtain a quantitative overview of the company's strategic position as a basis for formulating relevant and targeted strategies. (Fuertes et al., 2020; Namugenyi et al., 2019) . Weights are assigned on a scale of 0 to 1 and are the sum of all strengths and weaknesses (internal factors) and opportunities and threats (external factors). Weighting is based on in-depth interviews between researchers and company management. Meanwhile, ratings are based on the level of influence each factor has on company performance. Ratings range from 1 to 4, with 4 indicating the most influential factor and 1 representing the least influential factor (Banihashemi & Rejaei, 2016; Phadermrod et al., 2019; Stefan et al., 2021) . These ratings are determined through discussions with company owners to ensure that each factor is assessed objectively within the actual operational context. The final result of this process is a total score calculated using the following formula:

$$Score = Weight \times Rating ,$$

which is then used as the basis for SWOT analysis and strategy mapping.

A. IFAS Matrix (Internal Strategic Factors Analysis Summary)

Strengths

Table 2. Calculation of Strengths Weight and Rating

No	Factor	Weight	Rating	Score
1	Experienced and skilled workforce in construction projects	0.15	4	0.60
2	Good working relationship with main contractor	0.10	3	0.30
3	High commitment to quality of work	0.08	3	0.24
4	Operational flexibility in project implementation	0.07	2	0.14
Total Strength Score			1.28	

Weaknesses

Table 3. Calculation of Weight and Rating of Weaknesses

No	Factor	Weight	Rating	Score
1	Limitations of own construction equipment	0.12	3	0.36
2	Undigitized project management system	0.10	3	0.30
3	Limited capital in business development	0.08	4	0.32
Total Weakness Score			0.98	

B. EFAS Matrix (External Strategic Factors Analysis Summary)

Opportunities

Table 4. Calculation of Opportunities Weight and Rating

No	Factor	Weight	Rating	Score
1	Increasing need for subcontractor services on government projects	0.15	4	0.60
2	Development of industrial and property areas	0.12	3	0.36
3	Access to technical competency training and certification	0.10	3	0.30
Total Chance Score			1.26	

Threats

Table 5. Calculation of Threats Weight and Rating

No	Factor	Weight	Rating	Score
1	Fierce competition between subcontractors with low prices	0.15	4	0.60
2	Unstable increase in building material prices	0.10	3	0.30
3	Changes to procurement regulations that impact tender eligibility	0.08	2	0.16
Total Threat Score			1.06	

After obtaining the total score for each internal and external factor displayed in the IFAS and EFAS matrix tables, the next step is to determine the company's position in the SWOT Matrix. This process involves two main calculation stages. The first stage is to add up the total scores for strengths and weaknesses. In this calculation, the strengths score is assumed to be positive, while the weaknesses score is assumed to be negative. The result of this subtraction indicates the dominance of internal factors, whether strengths or weaknesses are more prominent in the company's current context. The second stage is to add up the opportunity and threat scores, assuming that opportunities have a positive value and threats a negative value. The results of this calculation illustrate the tendency of external factors, whether the company is faced with more opportunities or is facing significant challenges. Based on the coordinates resulting from these two calculations, the company's position in the SWOT quadrant is determined, and four main alternative strategies are then developed:

- *SO Strategy (Strengths – Opportunities)*
This strategy is designed to optimize internal strengths to seize and capitalize on available external opportunities. The primary focus of SO strategy is growth and expansion.
- *WO Strategy (Weaknesses – Opportunities)*
This strategy attempts to address a company's internal weaknesses by exploiting existing external opportunities. This strategy is suitable for companies facing internal constraints but facing broad market opportunities.
- *ST Strategy (Strengths – Threats)*
This strategy relies on a company's internal strengths to confront and mitigate potential threats from the external environment. This approach is often defensive yet proactive.
- *WT Strategy (Weaknesses – Threats)*
This strategy is a defensive effort that focuses on minimizing internal weaknesses and avoiding or reducing risks from external threats. This strategy tends to be conservative and focuses on stability.

All strategies developed from this SWOT analysis should be implemented in an integrated and complementary manner, resulting in adaptive and sustainable strategic decisions (Đalić et al., 2020; Yu & Wang, 2022). After analyzing internal factors (IFAS) and external factors (EFAS), the next step is to formulate alternative strategies based on the SWOT matrix approach. The SWOT analysis aims to identify various strategies that can be pursued by combining strengths, weaknesses, opportunities, and threats. By combining these factors, it is hoped that appropriate strategies can be obtained in responding to internal and external conditions of the organization. The strategy development process is carried out by grouping into four main categories, namely SO (Strengths–Opportunities) strategies that aim to utilize internal strengths to seize external opportunities; WO (Weaknesses–Opportunities) strategies that focus on minimizing weaknesses by utilizing existing opportunities; ST (Strengths–Threats) strategies that are used to overcome external threats with existing strengths; and WT (Weaknesses–Threats) strategies that are more defensive in facing challenges and weaknesses simultaneously. The following is a table of alternative strategies based on the results of the SWOT analysis.

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Table 6. Analysis of Alternative Strategies

No	Strategy Category	Alternative Strategy
1	SO (Strengths – Opportunities)	- Expanding cooperation networks with large companies through digital-based promotions. - Optimizing the availability of heavy equipment fleet to meet high demand as mining production increases.
2	WO (Weaknesses – Opportunities)	- Develop standard operating procedures (SOPs) and technical training to improve the quality of internal and subcontractor human resources. - Taking advantage of the increasing trend in coal prices as a momentum to improve the project control system.
3	ST (Strengths – Threats)	- Leverage the advantages of heavy equipment flexibility to anticipate market fluctuations and rental prices. - Establish long-term work contracts with strategic partners to reduce the risk of market uncertainty.
4	WT (Weaknesses – Threats)	- Conduct regular performance audits of subcontractors to reduce the risk of delays and work accidents. - Establish a periodic performance evaluation system to reduce dependence on incompetent external service providers.

To gain a clearer picture of the organization's strategic position based on internal and external factors, the results of the IFAS and EFAS analyses were mapped onto a SWOT diagram. This graph shows the coordinates of the sum of the weighted scores and ratings for each factor, thus helping to determine the most appropriate strategy for the current situation. The following is a SWOT strategy point graph obtained from the calculations:

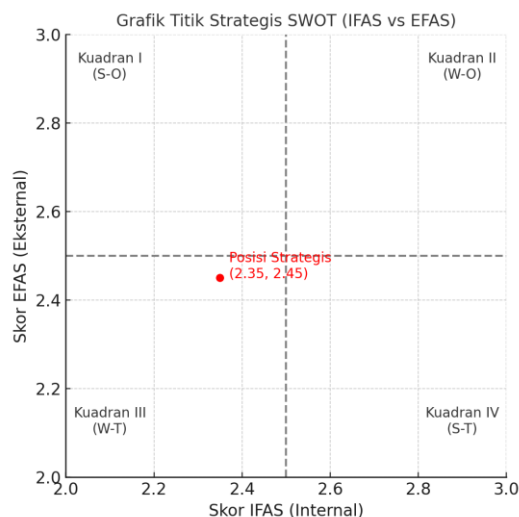


Chart 1. Company Position

Based on the SWOT graph that plots the IFAS (Internal Factor Analysis Summary) and EFAS (External Factor Analysis Summary) scores, it is known that the organization's strategic position is located at the coordinate point (2.35;2.45). An IFAS score of 2.35 indicates that the organization's internal conditions are in the fairly strong category, although not yet optimal. Meanwhile, an EFAS score of 2.45 reflects external conditions that are relatively supportive, although not very favorable. The coordinate point from this mapping result is between Quadrant I (Strength–Opportunity) and Quadrant II (Weakness–Opportunity/W–O), with a position closer to Quadrant II. In the interpretation of the SWOT model, Quadrant I indicates an aggressive strategy that utilizes internal strengths to

maximize external opportunities, while Quadrant II reflects a diversification strategy that emphasizes efforts to minimize weaknesses in order to continue to take advantage of available opportunities. Quadrant III (Weakness–Threat/W–T) refers to defensive strategies to mitigate weaknesses and avoid threats, while Quadrant IV (Strength–Threat/S–T) relates to competitive strategies that utilize strengths to address environmental challenges. As the organization's position approaches Quadrant II, it is strategically more advisable to implement a diversification strategy. The main focus of this strategy is directed at exploiting external opportunities in the market or organizational environment, while simultaneously making improvements to internal aspects, particularly in reducing weaknesses that have been obstacles to the development and achievement of organizational goals more optimally.

Based on the results of the SWOT analysis that combines internal factors (IFAS) and external factors (EFAS), this study shows that the organization or entity is in a strategic coordinate position (2.35 ; 2.45). This means that internal conditions are in the category of quite strong, although not yet optimal, while external conditions are classified as quite supportive, although not yet completely favorable. A strategic position closer to Quadrant II (Weakness–Opportunity) indicates that the most appropriate strategy to implement is a diversification strategy, namely focusing on utilizing available opportunities while gradually minimizing various internal weaknesses that hinder development. Recommended alternative strategies include improving the quality of human resources, strengthening organizational governance, expanding partnership networks, and optimizing service innovations that support performance growth.

CONCLUSION

Based on the findings of the thematic analysis and exploratory SWOT analysis, this study concludes that the competency of subcontractors at PT Mutiara Tanjung Lestari still faces various fundamental challenges, including a weak onboarding system, minimal ongoing technical training, low understanding of SOPs and K3, and a lack of comprehensive evaluation and coaching mechanisms. These findings were obtained through in-depth interviews with various key informants such as field supervisors, project managers, HRD, and subcontractor representatives. The competency strengthening strategy resulting from the SWOT analysis indicates that the company is in a strategic position approaching Quadrant II (Weakness–Opportunity), which means the company should implement a diversification strategy by utilizing external opportunities while reducing existing internal weaknesses.

Furthermore, four main alternative strategies are formulated, namely (1) SO Strategy which focuses on optimizing internal strengths to capture market opportunities; (2) WO Strategy to overcome internal weaknesses by utilizing external opportunities; (3) ST Strategy to use strengths to face external threats; and (4) WT Strategy which is defensive in nature to suppress weaknesses and avoid external risks. All of these strategies form the basis for planning a long-term and sustainable subcontractor competency management system. The practical implications of this research show the importance of structured technical training, a performance-based evaluation system with direct coaching, and strengthening two-way communication aspects with external work partners. However, this study has limitations, particularly in its data coverage, which focused only on a single case study in one company, and the dominance of qualitative approaches that have not been fully tested quantitatively. Therefore, further research is recommended to adopt a quantitative approach with a broader population to obtain more generalizable results. Furthermore, the development of a valid and reliable subcontractor competency measurement instrument could be an academic contribution to future research.

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SUBCONTRACTOR COMPETENCY MANAGEMENT STRATEGY IN HEAVY EQUIPMENT RENTAL AND COAL HAULING SERVICE COMPANIES USING A THEMATIC APPROACH AND EXPLORATIVE SWOT

(Case Study at PT Mutiara Tanjung Lestari)

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