Business Strategy to Achieve the Target Time of Laytime Allowed for Coal Commodities

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ABSTRACT

This research aims to develop a business strategy to achieve the target laytime for coal loading operations. In the logistics process, the company often faces issues between planning and the actual coal loading process, resulting in demurrage costs due to exceeding the agreed laytime. The method used in this research was SWOT analysis, by evaluating internal and external factors. Data were analyzed using descriptive qualitative methods, supported by IFE, EFE, and SWOT matrices for strategy formulation. The results suggest that backward integration, through the acquisition of jetty facilities near the coal mines, is the most appropriate strategy to enhance stockpile capacity and expedite coal distribution. This strategy can be implemented using the additional revenue from the rising Indonesian coal price, enabling the company to reduce demurrage costs and improve logistics efficiency.

Keywords: business strategy, coal transportation, demurrage, laytime, logistics

A. Introduction

The object of this research is a coal mining company that operates a coal concession located in East Kalimantan, Indonesia. In today's competitive coal industry, the company aims to make larger production plans from year to year to increase the company's profitability. With production plans increasing from year to year, this also impacts the number of coal shipments. The company needs to ensure that each department a company works together effectively and creates innovation to improve the logistics activities. *Mahakam* river may not be deep enough to accommodate large vessels, which require deeper waters to avoid running aground so the logistics activities in East Kalimantan often use barges. Many coal mines in East Kalimantan are located in remote areas where building extensive road networks might be impractical or too costly. *Mahakam* river provide a more accessible transportation route for these areas that can be used to transport coal from mining sites to ports at *Muara Berau* Anchorage Point.

The company cannot rely on one jetty to load the barge for the entire shipment. Since the production increase it also impacts the shipment activities. The company needs to have multiple jetties to reduce congestion and waiting times. Increasing congestion at ports has caused land transportation systems around the world to increasingly rely on land terminals, but increased use of this mode of transportation will reduce the negative impacts of trucking (Fazi & Roodbergen,

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2018). However, because the jetty is leased, the company does not have full control over the use of the jetty, which causes the barge's loading schedule to be out of schedule. This is because the jetty rental users consist of several companies so the coal loading schedule is very tight and it is difficult to rearrange the barge loading schedule.

Barge loading which is out of the agreed schedule affects the coal unloading schedule on the vessel. The vessel laytime continues running even when there are no loading activities during the waiting time for the barge. The company needs to pay attention to the accuracy of the coal loading process to achieve the loading time agreed by the parties or the company will get penalties paid to the vessel owner when loading activity exceeds the agreed laytime which is called demurrage. Based on the background of the problem, the following is an identification of problems that occur in the Company, (1) for barge traffic, *Mahakam* bridge has scheduled openings to allow passage that affects the sailing schedule of barges; (2) coal loading carried out at the rented jetty cannot be controlled by the company so that the loading schedule often shifts; and (3) a type of spot contract that often has problems with coal supplies.

Theoretically, laytime according to Suhandi, (2012). is an agreed amount of time, between the charterer and the ship owner used to carry out loading and unloading activities at a specified port. Laytime is the amount of time allowed for the seller to load coal. If the seller loads coal beyond the time agreed in the contract, the seller will be charged a demurrage fee nd if the seller loads the coal less than the agreed time, the seller will get a dispatch fee. Laytime is calculated when the ship is ready in all respects. In theory, laytime and demurrage are not the exclusive domain of voyage charters (Baughen, 2016). Sales contracts according to Baughen, (2016), have laytime and demur-rage rules and have their own short-term provisions, and sales contracts can contain laytime and demur-rage provisions from a charterparty.

Anchorage Point is a place where the mother vessels securing mooring lines or anchoring equipment which in this case anchorage point is *Muara Berau*. If the vessel arrived at Anchorage Point in an unprepared stated then the Notice of Arrival will be cancelled and the time calculation will not start until the ship is ready in all respects. The calculation of the time used will end when the entire coal shipment has been loaded, placed and all loading and unloading equipment has been removed from the vessel. In case, after 12 hours of loading, it is completed, due to the seller's failure to provide the necessary documents to receive permission to leave the vessel to sail, the laytime will start to be calculated when the seller submits the necessary documents to the Anchorage agent. Laytime calculation will be summarized in a time sheet and will be confirmed and accepted by the other party within 30 days since the ship sailed from anchorage. From the time sheet, the seller will know how long it takes to load the coal.

Previous research has been conducted related to coal loading in Indonesia. The method of ship berthing according to Sutrisno et al., (2019). has a direct positive and very significant effect on the performance of the supply of goods at the Suralaya Steam Power Plant. Meanwhile, the relationship between coal supply and the actual coal loading rate according to Sakdillah, (2016) is relatively strong, and what causes demurrage is a decrease in the actual coal loading rate. In the study by Dewi & Majid, (2020), explains the need for coordination between ship owners and charterers, fast and precise ship positioning, implementation of ship-to-ship loading and unloading and proper implementation of tank cleaning. Efforts to reduce free time and increase demurrage costs will improve intermodal transportation (Storms et al., 2023). This research supports the Diamar & Chandrawulan, (2020) opinion, that transporting goods by sea has a high probability of time indiscipline which can result in huge losses, one of which is demurrage

caused by the end of laytime.

This study aims to produce strategies to improve the achievement of coal loading and unloading targets, including finding out what internal factors are faced, finding out what external factors are faced and creating strategies to improve the achievement of coal loading and unloading targets based on the formulated factors.

B. Methods

The object of this study was a contractor appointed by the Government of the Republic of Indonesia to conduct coal mining activities, including exploration and production operations. The study area was located in East Kalimantan Province, 60 km southwest of Samarinda, crossing *Mahakam* river. Data collection used purposive sampling to select specific informants based on their roles and knowledge related to the study. Informants included the port team, logistics team, and business process team, all of whom were involved in the company's coal logistics operations. The data were gathered using three primary methods; (1) interviews: Structured interviews were conducted with key informants such as logistics, port, and business process team members to gather qualitative insights. The interviews followed a pre-designed interview guide to ensure all relevant aspects of the company's operations were covered, (2) observation: The researchers conducted direct observations of port and logistic operations to understand the practical challenges faced in the coal transportation and loading processes, and (3) document review: Various company documents and reports related to coal loading operations, performance metrics, and logistics procedures were reviewed to collect quantitative data. These documents provided supporting evidence for the qualitative findings. The data collected were both qualitative and quantitative. The qualitative data were analyzed using descriptive qualitative methods, and the quantitative data were evaluated using Internal Factors Evaluation, External Factors Evaluation, and SWOT analysis. This combination was used to develop a strategy for improving the company's logistics efficiency and achieving the targeted laytime for coal loading.

C. Result and Discussion

1. SWOT Result

Looking at the statement above, it can be seen that in an effort to achieve achievement, there are important factors in achieving achievement that influence each other. Where the SWOT analysis is classified as all the factors of strength (strength), weakness (Weakness), opportunities (opportunity), threats or obstacles (threats). To get a broad picture of the Company's strengths, weaknesses, opportunities, and threats or obstacles, the researcher will analyze strengths, weaknesses, opportunities, and threats (SWOT). In accordance with the formulation of the problem and research objectives, the results of research on SWOT analysis are obtained as follows:

The first SWOT analysis result is Opportunity, with several factors that strengthen the business such as; (1) An increased Index (Referral Coal Price) can increase the company's income and can have an impact on the addition of company facilities that support logistics activities, (2) The company's mine location is in Samarinda City, (3) the relationship between the company and the government is quite good, (4) currently, there are many new technologies that companies can use to support coal logistics activities, and (5) candidate employees who will work have a good level of education. the second is threat, with several factors that weaken efforts such as; (1) the barge nominated that was rented was not in good condition. (2) because many companies are loading in the same jetty, the barge loading schedule is very flexible, (3) people who live around the mine often demonstrate, (4) must follow the schedule of bridge opening and closing for barge traffic,

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and (5) barge and vessel clearance documents have a lot of time consumption. The third SWOT analysis result is strength, with several factors that strengthen the business such as; (1) the crusher capacity is 1,500 mt/hour and the company's stockpile is quite large, (2) having high-quality employees, (3) the company supports employee performance by having a lot of training development, and (4) the office facilities provided by the company for employees are very supportive of employee needs during office hours.

Meanwhile, the fourth SWOT analysis result is weakness, with several factors that weaken the business such as; (1) having no integrated database system that connects data between departments, (2) does not own the barge and loading and unloading equipment, which means the company needs to enter a lease for the barge and equipment and rely it the activities of third parties, (3) the company only has one jetty, so the company must lease a jetty, (4) frequent changes to the loading plan close to the loading time, and (5) a lot of contracts are under spot agreement, and it can cause frequent changes to the barge loading plan.

The results of the analysis based on the assessment of weights, ratings, and scores on each external and internal factor show the mapping position presented in tables and figures with the analytical tools that the author uses as follows:

2. Analysis based on Internal-External Matrix

From the External Factor Evaluation data, it can be seen that the total external evaluation factor result is 3.59 which is obtained from the accumulated sum of opportunities of 2.04 and threats of 1.56. So, the author states that the company responds to opportunities and threats quite well and that the opportunities the company has can overcome threats from outside the company. From the Internal Factor Evaluation data, it can be seen that the total internal evaluation factor results is 3.40 which is obtained from the accumulated strength of 2.04 and the weakness of 1.36. So, the author indicates that the company has greater strengths than the company's weaknesses. So it can be concluded that the company's strengths can overcome weaknesses within the company. Based on the total score for each known factor, it is known that the location of the Company's strategy in the IE matrix based on the SWOT analysis is as Figure 1.

From the Figure 1, the company is in cell I, where this cell is included in the recommendation for growth and development

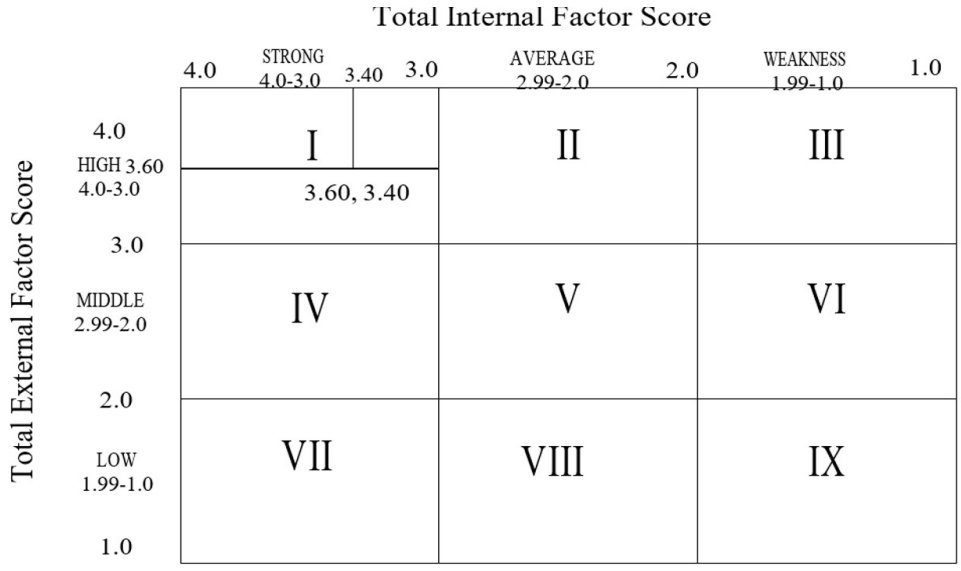

Figure 1 The Internal-External (IE) Matrix

strategies. This means that in carrying out logistics operations, companies can use integrative strategies, namely: forward integration, backward integration, and horizontal integration.

3. SWOT Analysis

Based on the analysis of the calculation of the opportunity variable table the weighted total value is 3.84, while the analysis of the calculation of the threat variable the weighted total value is 3.31 which is obtained from the result of multiplying the weight with the average rating. Based on the analysis of the calculation of the strength variable table the weighted total value is 3.85, while the analysis of the calculation of the weakness variable for the weighted total value is 3.00 which is obtained from the result of multiplying the weight with the average rating.

4. Grand Strategy Diagram Analysis

After analyzing internal and external factors, strategy analysis is continued by finding the company's weighted difference from internal and external factors. Here is the calculation: Horizontal Axis (X) = NT Strength – NT Weakness is 3.84 – 3.31 is 0.53 and Vertical Axis (Y) is NT Opportunity – NT Threat is 3.85 – 3.00 is 0.85.

Based on the calculation of the data above, the strategy diagram for the company to increase the target loading and unloading time (laytime) for coal commodities is in quadrant I, where the weighted value of strengths is greater than the weighted value of the company's weaknesses and at the same time the weighted value of opportunities is greater than the weighted value of threats. For companies in this quadrant I, continuous concentration in the current market is forward integration, backward integration, and horizontal integration are appropriate strategies. Thus, according to the diagram, the company is advised to carry out forward integration, backward integration, and horizontal integration as appropriate strategies.

5. Strategy Formulation

After conducting several stages of analysis using the IE matrix and Grand Strategy, the resulting strategy is a SWOT matrix. In the SWOT matrix, the S-O strategy is a strategy that is made based on the company's thinking, which is to take advantage of all the company's internal strengths to seize and take advantage of great opportunities that exist outside the company. Here are some strategies that resulted from the S-O strategy; (1) provide training to employees related to technology which is currently growing rapidly to support the ease of communication between departments, (2) added a barge loading conveyor as a tool

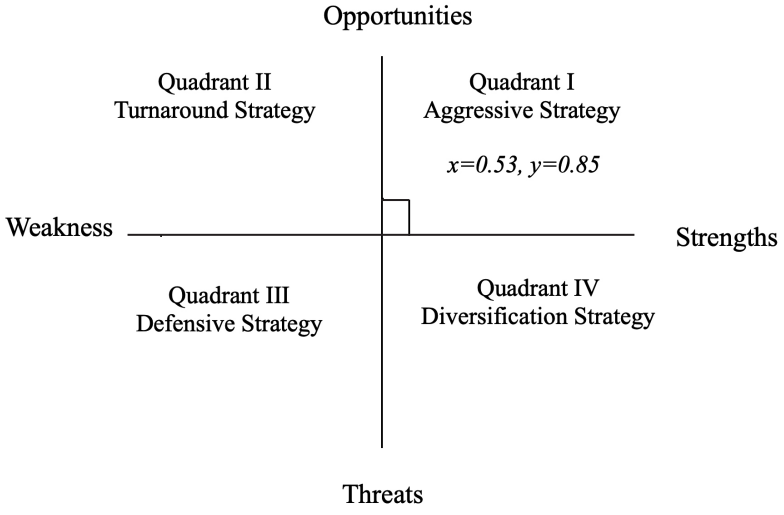

Figure 2 Grand Strategy Diagram

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for loading coal that has accumulated in the stockpile by utilizing the increasing price, (3) improve employee education by taking advantage of the increased income caused by the increased price and the mine location in Samarinda City, and (4) Acquired jetties around coal mines by taking advantage of the increasing reference coal prices so that coal in a stockpile that can accommodate large quantities of coal can be distributed faster. Several previous studies related to the coal industry in Indonesia, especially those using SWOT analysis by increasing the use of clean, efficient and low carbon coal (Muflihhamim,

Table 1 SWOT Matrix

	Strengths (S)	Weaknesses (W)
	1. The crusher capacity is 1,500 mt/hour and the company's stockpile is quite large, 2. Having high-quality employees, 3. The company supports employee performance by having a lot of training development, and 4. The office facilities provided by the company for employees are very supportive of employee needs during office hours	1. Having no integrated database system that connects data between departments, 2. Does not own the barge and loading and unloading equipment, which means the company needs to enter a lease for the barge and equipment and rely it the activities of third parties, 3. The company only has one jetty, so the company must lease a jetty, 4. Frequent changes to the loading plan close to the loading time, and 5. A lot of contracts are under spot agreement, and it can cause frequent changes to the barge loading plan.
Opportunities (O)	SO Strategy	WO Strategy
1. An increased Index (Referral Coal Price) can increase the company's income and can have an impact on the addition of company facilities that support logistics activities, 2. The ompany's mine location is in Samarinda City, 3. The relationship between the company and the government is quite good, 4. Currently, there are many new technologies that companies can use to support coal logistics activities, and 5. Candidate employees who will work have a good level of education	1. Provide training to employees related to technology technology which is currently eveloping increasingly rapidly to support ease of communication between division 2. Adding barge loading conveyor as a tool to coal that has been accumulated in the stockpile by utilizing the HBA which is is increasing. 3. Improving employee educationeducation of employees by utilizing the increased income caused by the increasing HBA increase and the location of the mine located in Samarinda City 4. Acquiring jetties around coal mine by utilizing the benefits of the increasing benchmark coal price so that the coal in the stockpile that stockpiles that can accommodate large large quantities can be distributed quickly	1. Utilize the rapid advancement of technology to integrate between departments. 2. Adding a company-owned jetty so that barge loading activities can be given more attention by utilizing the increasing reference coal price. 3. Owning a private barge, tug boat and floating crane by utilizing the increasing reference coal price.

Threats (T)	ST Strategy	WT Strategy
1. The barge nominated that was rented was not in good condition. 2. Many companies are loading in the same jetty, the barge loading schedule is very flexible, 3. People who live around the mine often demonstrate, 4. Must follow the schedule of bridge opening and closing for barge traffic, and 5. Barge and vessel clearance documents have a lot of time consumption	1. Provide training to employees related to the process of processing documents with related agencies quickly and accurately. 2. Having qualified and professional human resources to be able to determine the loading and unloading equipment that is suitable for use 3. Utilizing a barge loading conveyor with a capacity of 1,500 MT/hour at the company's jetty as the main jetty so that the loading schedule at the rental jetty does not collide with other coal companies loading at the same jetty.	1. Owning your own barge, tug boat and floating crane in order to be in control of the obsolescence of the loading and unloading equipment. 2. Adding an operating jetty to avoid concurrent coal loading schedules with other companies at the same rental jetty 3. Integrate inter-departmental technology to speed up the data collection process which is then used to process documents with the relevant agencies.

2022; Rahadian & Sumirat, 2022; Sugiyono et al., 2022).

Determination of the possible strategies generated based on the Grand Strategy Matrix. Where the Company is in quadrant I which is flanked by the Opportunities and Strength axes. Then the most suitable strategy is S-O. In the SWOT matrix, the S-O strategy is a strategy based on the company's thinking, which is to take advantage of all the company's internal strengths to seize and take advantage of the great opportunities that exist outside the company. Here are some strategies resulting from the S-O strategy: (1) provide training to employees related to technology which is currently developing more rapidly to support the ease of communication between divisions, (2) add a barge loading conveyor as a tool to enter coal that has accumulated in the stockpile by utilizing the increasing HBA, (3) improve employee education by utilizing the increased income caused by the increasing HBA and the location of the mine in Samarinda City, (4) acquiring jetties around coal mines by utilizing the benefits of the increasing reference coal price so that coal in stockpiles that can accommodate large amounts of coal can be distributed quickly, and (5) calculation Results of the IE Matrix and Grand Strategy Matrix.

Based on the results of the calculation of the IE Matrix in quadrant I and the Grand Strategy Matrix in quadrant I, the strategy formulation in this study is market penetration where according to David, (2022) in quadrant 1 the strategy used is an integrative strategy (forward strategy, backward integration and horizontal integration). As seen from the rating score multiplied by the most dominant weight on the opportunity and strength factors, the strategy taken by the company to increase the achievement of the target loading and unloading time (laytime) of coal commodities is to acquire jetties around coal mines by utilizing the benefits of increasing reference coal prices so that coal in stockpiles that can accommodate large amounts of coal can be distributed quickly. Where this strategy is a backward integration strategy which according to David, (2022) is a strategy that seeks greater ownership or control over the company's suppliers. In this case, the company is in quadrant 1 but still has to pay a fairly high demurrage fee because the loading and unloading activities that cause demurrage do not hamper the company's business activities. So, from the results of the strategy, the company can continue the business by taking better steps for operational activities so that the time for loading and unloading activities

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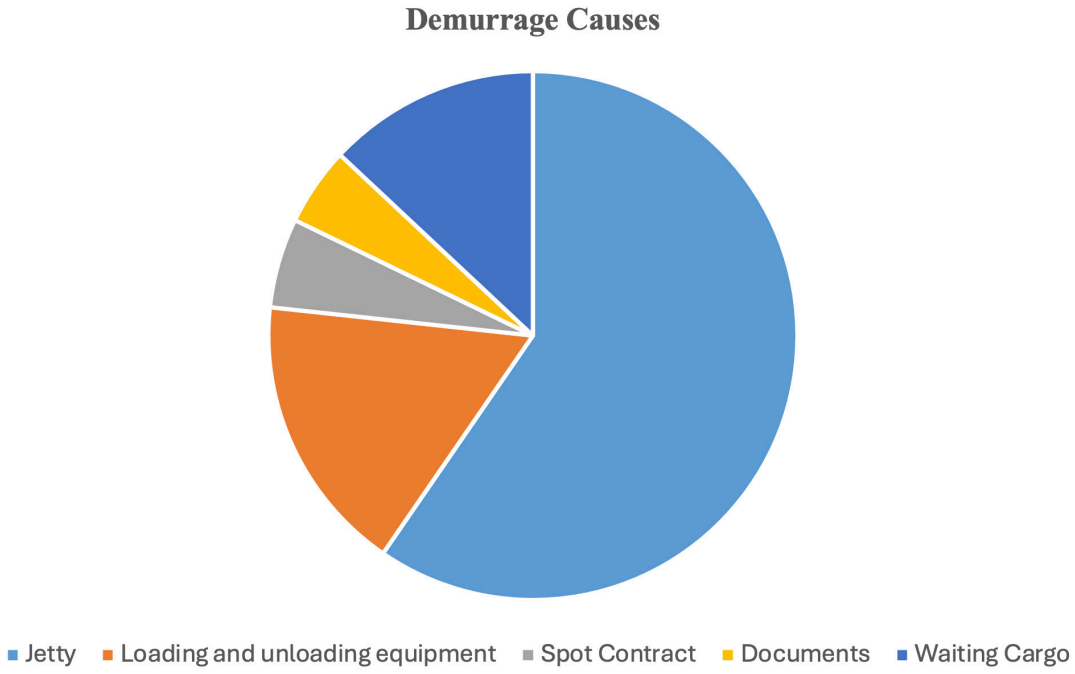

Figure 3 Pie Chart of Demurrage Causes

can be achieved and the demurrage costs paid by the company are reduced.

6. Pie Chart of Demurrage Causes

Based on the results of the demurrage data, the causes of the Company's demurrage are as Table 2.

From the results of the causes regarding the occurrence of loading and unloading times that occur in excess of the agreed loading and unloading times that cause demurrage, totaling 146 shipments (Table 2). It is known that the cause of demurrage is due to jetty problems, namely 87 shipments or 60 percent, the cause of demurrage is due to problematic loading and unloading equipment, namely 25 shipments or 17 percent, the cause of demurrage is due to spot contracts, namely eight shipments or five percent, the cause of demurrage is due to documents, namely seven shipments or five percent, the cause of demurrage is due to 19 shipments or 13 percent. In previous research, Dewi & Majid, (2020) said that to reduce demurrage at PT Samudera Indonesia Jakarta is coordination between ship owners and charterers, fast and precise berthing of ships, implementation of ship-to-ship loading and unloading, and proper implementation of tank cleaning.

Demurrage and detention greatly affect transportation efficiency and limit

Table 2 Demurrage Causes

Demurrage Causes	Total
Jetty	87
Loading and unloading equipment	25
Spot Contract	8
Documents	7
Waiting Cargo	19

consolidation opportunities and force the use of trucks as buffers, and store containers at ports when not needed (Fazi & Roodbergen, 2018). According to Hilal, (2024) study, an important factor for companies facing a wave of demurrage is the need for strategic solutions such as vendor management, capacity optimization, technology integration and thorough documentation. Research related to coal transport and activities has been carried out previously, especially relating to demurrage, lay time (Belov et al., 2020; Kweon et al., 2022; Mangala et al., 2023; Rachman, 2023; Rosita, 2023). Meanwhile, laytime for coal mining activities and coal loading and unloading activities to ships has also been carried out previously (Bali, 2010; Mangala et al., 2023; Schofield, 2021; Ussalam et al., 2023). Finally, this research supports the coal industry in several countries with a SWOT analysis that prioritizes ensuring the safety of coal energy storage and increasing the level of safety supervision; increasing the use of clean, efficient and low carbon coal, also Implications of coal disappearance from the energy mix (Apostu et al., 2022; Muflihhamim, 2022; Sugiyono et al., 2022; Zhang & Ponomarenko, 2023).

D. Conclusion

The research above, entitled Business Strategy to Achieve the Target Time of Loading and Unloading (Laytime) of Coal Commodities, it can be seen from the research that has been done and the discussion that has been stated in the previous chapter, it is concluded that from the results of the IE matrix, it is explained that the company is in cell one, namely where this cell is included in the recommendations for growth and development strategies. This means that in carrying out logistics operations, companies can use integrative strategies, namely: forward integration, backward integration, and horizontal integration. The data calculation on the company's grand strategy diagram is in quadrant I position, where the weighted value of strengths is greater than the weighted value of the company's weaknesses and at the same time, the weighted value of opportunities is greater than the weighted value of threats. For companies in this quadrant I, continuous concentration in the current market is forward integration, backward integration, and horizontal integration are appropriate strategies. If it is associated with the SWOT matrix, this company is in the SO (Strength-Opportunity) strategy, where this strategy is a strategy that uses the strengths of the company to take advantage of existing opportunities. The formulation of the strategy that the author uses in this study is backward integration which according to Fred R. David is a strategy that seeks greater ownership or control over the company's suppliers. In its implementation in the form of Acquiring jetties around coal mines by taking advantage of the benefits of increasing reference coal prices so that coal in a stockpile that can accommodate large quantities of coal can be distributed faster.

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