

## THE STUMBLING BLOCK OF NET PROFIT MARGIN: A CASE STUDY OF PT PLN BATUBARA

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**Abstract:** PT PLN Batubara is a subsidiary of PT PLN (Persero), which has the role of Security of Supply for PLTU and Contributing to cost efficiency. The company shows a positive trend about securing business sustainability by an upward trend of coal delivery year by year. However, the increase in revenue was not followed by a remarkable increase in profit margin. Based on the last three years of financial statement data, the company never meets the net profit margin target, which has planned on its corporate planning. This research objective is to answer the root cause of this problem, develop possible solutions to improve net profit margin and choose the optimum alternative to be implemented. This research is based on rational decision-making framework combined with internal and external analysis to define factor impacting net profit margin of PT PLN Batubara. This research is conducted using Mixed-Method, both qualitative and quantitative methods. Research shows that there are some internal and external factors that deterrent the increasing of profit margin. Regarding to internal factors, business model which relies on suppliers made the company struggling in controlling the cost production. Furthermore, it is getting worse with the Domestic Market Obligation (DMO) policy. Therefore, in order to address those stumbling factors, the company should optimize supply chain management by looking for an alternative supplier.

**Keywords:** net profit margin, rational decision, decision analysis, coal, potential problem analysis

**Abstrak:** PT PLN Batubara merupakan anak perusahaan PT PLN (Persero) yang berperan sebagai Pengamanan Suplai PLTU dan Berkontribusi pada efisiensi biaya. Perusahaan menunjukkan tren positif dalam menjaga kelangsungan bisnis dengan tren peningkatan pengiriman batubara dari tahun ke tahun. Namun, peningkatan pendapatan tersebut tidak diikuti dengan peningkatan margin laba yang signifikan. Berdasarkan data laporan keuangan tiga tahun terakhir, perusahaan tidak pernah memenuhi target margin laba bersih yang telah direncanakan dalam perencanaan perusahaan. Tujuan penelitian ini adalah untuk menjawab akar penyebab masalah tersebut. Penelitian ini bertujuan untuk mencari akar permasalahan, mengembangkan alternatif solusi dan memilih solusi yang paling optimum untuk diimplementasikan. Penelitian ini menggabungkan metode kerangka berfikir rasional yang digabungkan dengan analisis internal dan eksternal. Penelitian ini menggunakan metode penelitian campuran. Hasil penelitian memperlihatkan bahwa ada beberapa faktor baik internal maupun eksternal yang menghambat perusahaan dalam meningkatkan pendapat seperti model bisnis, sumber daya manusia, kebijakan ekonomi dan politik. Dalam konteks model bisnis, perusahaan merupakan perusahaan trading sehingga sangat bergantung pada supplier, akibatnya perusahaan susah mengontrol biaya produksi. Hal ini diperparah dengan kebijakan Domestic Market Obligation (DMO). Oleh karena itu, guna menghilangkan keterbatasan yang ada, perusahaan sebaiknya mengoptimalkan supply chain yang ada dan mencari alternatif supplier.

**Kata kunci:** net profit margin, keputusan rasional, analisis keputusan, batubara, analisis potensi permasalahan

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## INTRODUCTION

PT PLN (Persero) (PLN), as a sole state electricity company, is responsible for supplying electricity to all areas in Indonesia. The Government of Indonesia (GoI) assigned PLN to fulfil the 100% electrification ratio in 2021. As of 2019, the electrification ratio was 98.89% with 95.75% of PLN contribution, slightly below the government's target of 99% (PLN, 2020). To achieve that goals, PLN assigned to supply coal to Power Plant.

PT PLN Batubara ("PLNBB") is one of the subsidiaries of PLN. The company was established in order to secure coal supply for Coal-Fired Power Plant (CFPP/PLTU) and Independent Power Producer (IPP). Additionally, the company also aims to supply at the lowest possible cost and provide a sufficient amount of coal in a supply crisis in PLTU.

After twelve years old, PLNBB shows a positive trend about securing business sustainability by an upward trend of coal delivery year by year. Moreover, PLNBB is now also developing its business in the coal mining business. Regarding cost efficiency, PLNBB should contribute more to PLN from its profit margin. The net profit margin gained by PLNBB indirectly becomes a cost reduction for PLN. It is important since PLN is also facing financial issues related to debt and investment on megaproject 35.000 MW.

In 2019, PLN's operational expenses were Rp. 315.44 Trillion. 43% of this cost or equivalent Rp. 136 Trillion is the primary energy cost. Primary energy cost is the expense for fuel (coal, oil, and gas) and lubricants. PLN is struggling to keep the operational cost lower. Meanwhile, PLN had to follow the electricity rates, which is controlled by the government.

On the other hand, PLNBB revenue has increased significantly in last three years but it was not followed by a remarkable increase in profit margin (net profit). As the consequence, PLNBB is not yet giving optimal added value to PLN to reduce the cost.

Net profit is a part of company's revenue after all of the production cost is paid. It is important to identify the net profit since it indicates what is happening with fixed costs either during certain or long time period (BBC, n.d.). Moreover, the net profit can be used as an indicator of company's financial health (Murphy, 2021).

Prior literature also shows that net profit has a prominent impact on profit margin where it can be caused either by increasing the profit or reducing cost (Nariswari & Nugraha, 2020). In addition, some literatures identify there are various factors that affect net profit namely cash and modal flow (Noratika, 2014), organisation size, type of investor, advertising, etc (Budiyanta, 2021).

Based on the explanation above, it explains that net profit has a prominent role in company's financial health. Therefore, this article attempts to identify factors that could contribute toward company's net profit margin by finding the root cause, develop possible solutions and select optimum solutions to be implemented. In addition, the research is needed to be examine since prior literature rarely explores various factors that can be obstacle in maximizing net profit. Most of the prior researches on net profit focus on finding the association between the profit and other variables such as profit growth, turnover, environmental performance, debt ratio, liquidity ratio, etc (Budiyanta, 2021).

This article will use some framework to find out the obstacle of the profit margin namely PESTEL, Porter's five force, and Business Model Canvas. On the other side, regarding to the root cause of the problem, this research uses Rational Decision-Making Framework, by doing Problem Analysis, Decision Analysis and following by Potential Problem Analysis (Kepner et al. 1981).

All of the framework has a different goal regarding to diagnosis the company's performance from to perspective either internal or external. Ideally, every company should be able to analyse the internal and external factors that can affect performance. The companies can employ Business Model Canvas to examine internal factors and the PESTEL Framework and Porter's Five Forces for identifying external factors.

Business Model describes the rationale of how an organization creates, delivers, and captures value, while the Business Model Canvas is a shared language for describing, visualizing, assessing, and changing business models. It could be used as tools to analyse the internal issues in organization (Osterwalder Pigneur, Yves., 2010). Furthermore, this tool consists of nine basic elements that covered four main areas of business such as customers, offer, infrastructure, and financial viability.

Customer segments, the first basic element, is a group or people which is being targeted or served by the company. At the initial stage, the company should choose which people or group or segment that will be reached than design business model based on this customer. The second element is value proposition which is important in order to create customer's loyalty. It can be product, services, or benefits. The other elements are channel, customers relationships, revenue streams, key resources, key activities, key partnerships, and cost structure (Osterwalder and Yves, 2010).

Meanwhile, related to external factors, company can use PESTEL Framework and Porter's Five Forces. Pestel framework was frequently used by the company in order to analyse and evaluating changes and trends in the environment specifically macro environment (Rothaermel, 2017). Pestel deploy six factors in analysing macro environment. They are political, economic, socio-cultural, technological, ecological, and legal.

Political factors look at government's action or policy that could affect company. The company can use nonmarket strategies to overcome this situation such as lobbying, public relations, etc. Meanwhile, economic factors examine macroeconomic such as growth rates, levels of employment, interest rates, price stability, and currency exchange rates in identifying opportunity and threat toward company. Other factors are socio-cultural which focus on society's culture, norms, and value, technological factors which look at adoption towards new technology, and ecological factor which examined about environment issues (Rothaermel, 2017).

In order to optimal external environment analysis, company could combine PESTEL framework with Porter's Five Forces. The five forces model is a framework that identifies five forces that determine the profit potential of an industry and shape a firm's competitive strategy (Rothaermel, 2017). Moreover, those five forces are threat of entry, power of suppliers, power of buyers, threat of substitutes, and rivalry among existing competitors.

There are four basic thinking patterns that could be used for the company appraise the situation, finding the cause and effect, making choices from possible solution and anticipating the future. One of tools to do Problem Analysis is Root Cause Analysis. Root Cause Analysis (RCA) process for identifying the causal factors that underlie variation in performance (Andersen

& Fagerhaug, 2013). Using RCA tool to determine the causes of problems, starting from first level causes that directly affect the problem, to higher-level causes, the things that cause first level causes.

One of the inherent dangers of attempting to solve problems without a process as the backbone is that these efforts tend to broaden the amount of information that needs to be analysed rather than narrow the focus (Snee, 2018). To select the optimum choices, in this research author use Impact Effort Matrix. Impact Effort Matrix is matrix to decide which possible solutions to be implemented (Andersen & Fagerhaug, 2013). Potential Problem Analysis is used to analyse potential problem that likely appear in the future (Kepner et al. 1981). This tool enables us to improve planning and mitigate potential problem from now.

Based on the explanation above, in general, the research aims to identify factor that detain PLN BB in increasing the number of the net profit. Meanwhile, particularly, the research consists of three objectives namely identifying internal, external factors, and formulating the solutions based on rational decision making.

## METHODS

This research is conducted using Mixed-Method, both qualitative and quantitative methods, in PT PLN Batubara in Jakarta during November-December 2020. Mixed methods involve the collection and "mixing" or integration of both quantitative and qualitative data in a study (Creswell, 2014).

Quantitative methods are carried out through closed-ended questionnaires or surveys to decision-makers, while qualitative methods are managed through open-ended questionnaires or interviews. The interview is conducted to obtain data related to the root cause problem and possible alternative solutions. A closed-ended question is conducted to find the best possible solution that will be plotted in Impact Effort Matrix.

Informant was chosen based on some criteria i.e.: have worked at least the last two years at PLNBB; located in the division of Procurement, Mining & Production and Operation Planning; being in a structural position as a decision-maker. Based on those criteria, the number of informants in this study was three people for interview and ten people for survey.

The data was analysed by employing two type of analysis namely quantitative descriptive and thematic analysis for qualitative data. Descriptive analysis aims to describe the preferred policy which was chosen by the management. However, the thematic analysis was utilised to code the information from informant which was collected from interview. To sum up, the research process is illustrated by the Figure 1.

## RESULTS

This section will be divided into three parts. The first part will discuss about monitoring and identifying internal factors that affect company's net profit margin. The next part will discuss about scanning external factors with PESTEL framework and Porter's Five Force, and the last part Rational Decision Analysis framework to find optimum solutions to be implemented in order to improve net profit margin of the company.

As mention earlier, Business model canvas was utilized in recognizing internal factors. There are nine elements that had been being analysed in this research. The first elements are customer segment. PLN Batubara already have a specific segment by selling coals to Coal-Fired Power Plant (CFPP/PLTU). It could be categorized as niche and segmented market (Osterwalder Pigneur, Yves., 2010). It is niche market since PLN Batubara (PLNBB) focus on sell coals to PLTU which owned by PLN. At the same time, it is also segmented because each PLTU has different and specific needs.

PLNBB propose their value preposition in favour of creating customer loyalty. Their value preposition is the guaranteed supply of coal in terms of quality, price, on-time delivery, and continuous supply on a long-term basis. In general, PLNBB offers performance, price, and risk reduction values (Osterwalder and Yves, 2010). In order to deliver the value preposition, PLNBB utilize direct communication with customers through supply coordination meetings, as well as assigned a dedicated person in charge of each PLTU. Furthermore, the company also has strategic agreements with PLN and monthly coordination meetings regarding to customer relationships. This strategy is categorized as service strategy which is a direct relationship to help customers with provides all their needs (Osterwalder and Yves, 2010).

The next elements are revenue streams which discuss company's opportunity to gain revenue (Osterwalder and Yves, 2010). In PLNBB context, the revenue streams come from selling revenue. As the buying agent of PLN, PLNBB got a margin from trading from the difference between buying and selling price.

There are two company's key activities regarding to gain revenue. They are coal sourcing (seeking coal supply from mining partners) and coal supply management (management of logistics supply and delivery of coal to PLTU). These activities could be categorized as production and problem-solving strategies. The company's activities provide a good quality product through designing effective production and provide new solution to address company's problems.

PLNBB has some resources that enable the company to carry out key activities and run its business model covering human resources at all competence, systems, and procedures, as well as the supply of coal itself as a traded commodity. Most of them are part of human and intellectual resources (Osterwalder and Yves, 2010). Moreover, the company also has key partners that support the company's business are Supplier (coal miners and trader), transportation provider company (such as shipping and trucking companies), and surveyor.

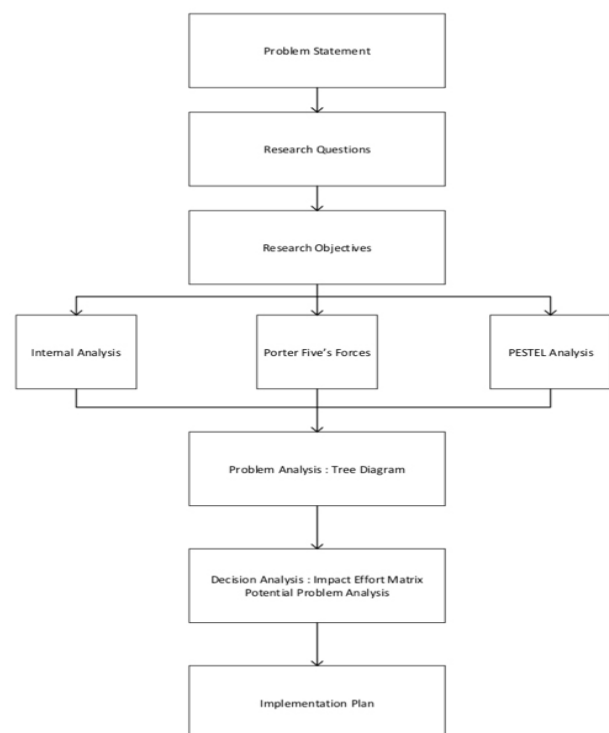


Figure 1. Research framework

The last elements in business model canvas are cost structure which identify the most important cost occur in business model (Osterwalder and Yves, 2010). The composition of the costs used to operate the company to realize its customer segments' value proposition are coal purchase costs, transportation or freight costs, coal quality survey costs, and operational costs, including human resource costs.

Regarding the business model explained above, there are several internal strategic issues related to the creation of value propositions, key resources, key activities, and key partners. Considering that the main activities of PLNBB is coal trading, the company is highly depending on its supplier or partners to get its main key resources, coal. Human resources capability, information systems and operational excellence is important resources that need to be developed.

The following part will describe about PESTEL framework regarding to PLNBB's context. As a subsidiary of state-owned company, PLNBB had also been impacted by political factor such as government initiative to improve utilization of coal mining production in the domestic market. This policy was called Domestic Market Obligation (DMO). The policy obligates each coal company to sell 25% of their product to domestic market. It will provide a massive opportunity to the company to absorb local production and distribute directly to customers. PT PLN Batubara, as a subsidiary of PT PLN (Persero), made the company have a primary market to sell its product.

The second factor is economic factor which utilise macroeconomic in identifying opportunity and threat towards company (Rothaermel, 2017). In this article, economic growth rate was chosen to monitor company's external environment which also used by prior research (Komara et al. 2019). Indonesia's GDP annual rate growth from 2000 at around 5% (Trading Economics, 2020). It implies that economic growth usually in line with increasing energy demand, such as operating factories in industry and house electricity domestic consumption.

The coal products from coal mine sites in Sumatra and Kalimantan are delivered to dense population islands like Java, which potentially require higher energy consumption. PLN builds power plants and stockyards near the sea, considering the transportation mode of coals. Based on an internal report of PT PLN, the

projection of coal demand for power plants increased drastically from 96 million Ton in 2019 to 136 million Ton in 2023 (PT PLN Batubara, 2019). This could be massive opportunity for the company to expand its market and increasing the revenue.

PLN BB also faced a socio-cultural challenging since coal mining sites are operating and facing conflict with local communities due to Tanah Ulayat (Adat Land). PLN Batubara as stakeholders and become distributors of coal from producer to PLN also needs to consider this issue as a social responsibility to maintain the sustainability of supply.

In addition, technological challenges can also affect company's business. Many countries have been adopted new energy technologies such as wind power or nuclear power and it start to switch to renewable energy. Indonesia has some obstacles in adopting these new technologies for instance higher investment cost and the compatibility with country's nature. Based on prior study, solar and wind power plants do not match Indonesia's weather conditions (Brilio, 2017) and are technologically inefficient compared with coal-based power plants. Therefore, in the near future, PLNBB will not be facing challenges from technological factor. However, the company should be ready for adoption this new technology.

The next factors that should be considered by the company is ecological factor since global warming awareness is rising across society. As widely known that coals usage is against the renewable energy principle since it produces CO<sub>2</sub> (Fazrulloh & Soekarno, 2021). Therefore, in the upcoming years, PT PLN Batubara needs to prepare a contingency plan for long-term operations because coal-burning contributes to global warming.

The last factor is legal factor which consider laws, mandates, regulation, and court decision in order to identify opportunity or threat for the company. Regarding to coals industries, UUD 1945 Article 33 mandate for natural resource exploration and usage for Indonesia citizen prosperity and ESDM Minister Decree No. 34 / 2009 for DMO (Bappenas, 2016) to control domestic consumption and decrease coal export capacity have a positive impact to PLN BB. Moreover, the government issued a Decree of the Minister of Energy and Mineral Resources Number 1395 of 2018 concerning the selling price of coal for the supply of

electricity for the public interest is not more than \$ 70 per tonne also gives benefit to the company.

Those regulation has positive impact on PLNBB and PLN as the biggest coal consumers in Indonesia. With a ceiling price of USD 70/ton, the PLN and PLNBB got a chance to control its cost. The challenge is how to ensure the supply is sustainable when the coal price is going down. Some coal companies with significant production costs might suffer when the market price could not cover the operational cost.

This article also utilizes Porter is five force regarding to analysis the industry in order to portrait industry's profit potential (Rothaermel, 2017). The five forces model consists of bargaining power of suppliers, bargaining power of buyer, rivalry among existing competitors, the threat of new entrants, the threats of substitute products.

In PLNBB business model, the main parties included in the supplier are coal supply partner companies (both companies owning mining concessions coal, coal trading companies) and service providers' sea transportation (shipping company). Given that coal is a strategic commodity, both at the domestic and global levels, the behaviour of players in the coal industry is strongly influenced by market dynamics. Therefore, the coal supply company has the option to trade commodities according to market dynamics and have the opportunity to transact with prospective buyers to benefit them economically. This situation often fosters unfavourable conditions for PLNBB to obtain suitable supplies with the customer's volume and quality.

Moreover, in the PLNBB business model, buyers or customers include PLN with various PLTUs scattered throughout the archipelago. These customers' bargaining power is considered high due to volume and quality demands and the level of availability in all situations. Apart from this, PLN's position as the sole buyer of PLNBB's coal supply has also increased its bargaining power relative to the company.

In executing its business activities, by providing coal supplies for PLTU within the PLN Group, the company is also dealing with competitors and carrying out similar business activities with the same customers. The competitors mainly hold large scale mining concession (PKP2B), with a significant amount of coal reserves. The competitors' existence is one of the significant

threats to the company. Competitors' supply capacity and competence in coal mining and coal supply chain management are relatively higher than the companies. On the other hand, as a subsidiary of PLN, PLNBB has privileges to access to market, information regarding capacity requirement, quality standard, and forecast from its holding.

Indonesia's coal business is a highly regulated industry. Therefore, entry barriers can be considered high enough and will hinder potential new players (potential new entrants). It is line prior research which states that the number of actor in coal industries start to decline due to the environmental sustainability policy (Fazrulloh & Soekarno, 2021). However, the coal mining industry is remaining attractive. Regarding its potential market, high demand, and relatively low technology (compared to the other extractive industry such as oil and natural gas, mineral and metal), coal remains an attractive industry for newcomers, particularly those with large capital and high financial accessibility. It can be concluded that the threat of potential new entrants relative to the firm is low to moderate.

Furthermore, the main use of coal is the primary energy to generate electricity (PLTU). In Indonesia, the primary energy originating from coal reached 54%. The position of coal is only possible to be replaced by renewable energy. However, the utilization of renewable energy is still relatively minimal to generate electricity. It can be considered not a significant substitute product for coal, at least for a five-year period to come.

Based on analysis above, it can be concluded, to generate better net profit margin, PLNBB is influenced by internal factor which are, PLNBB position as subsidiary of PLN is an advantage for PLNBB regarding market and information. On other hand, considering that the main activities of PLNBB is coal trading, the company is highly depending on its supplier to get it main key resources, coal. Human resources capability, information systems and operational excellence is important resources that need to be developed. External resources that could be affected company's business are economic factor, which is determined demand for electricity as well as coal demand. Political and legal factor is other significant external factors. DMO regulation and regulated price of coal for electricity is important for PLNBB and PLN to control is cost and secure the supply for PLTU.

From the root cause analysis, there are several root causes of the problem why PLNBB was failed to achieve planned net profit margin, which are: High Dependability to Suppliers; Low productivity from owned coal mine; Change in market regulation, financial crisis, pandemic, and geopolitics; Additional fees to the trader; Inefficient supply chain management. From the five problems that has been identified, the problem Change in market, regulation, financial crisis, pandemic, and geopolitics that is not addressing directly to problem. This situation is general and applied to all of the company.

Based on the root causes, some solutions were generated to solve the issue:

1. Looking for alternative suppliers: the company should make a new partnership with another coal mine/IUP holder, which is reliable to supply coal with enough quantity, satisfactory quality, and timely delivery. The criteria for alternatives supplier: Mining's loading ports are located in South Sumatra and South Kalimantan areas; It has the ability to supply coal above 1 million tons so that it can guarantee the safety of coal supply to the PLTU; The potential Supplier is holding IUP OP or PKP2B license; The Supplier could provide a minimum margin of 3% to the company.
2. Investment in its owned coal mine: the company should invest in its coal mine to improve facility and infrastructure to increase productivity.
3. Optimizing supply chain management: The company's main activity is coal trading from Supplier to power plant. To satisfy the customer, the company is not only considering the price, but also coal quality, coal quantity, delivery time. Each power plant has different specification requirements, which is not always suitable with coal specifications from suppliers. The power plant has to keep sufficient inventory to ensure operational sustainability. To do so, The Supplier must warrant that coal is departed on time and sufficient to manage coal inventory. The main factors that should be evaluated are coal dispatch order, mode of transport, and transportation distance to optimize supply chain management. In order to do the evaluation, the research uses transportation Method of Linear Programming which is a special linear programming method (Jacobs Chase, Richard B., 2018). The linear programming method is used to minimize the cost of supplying

the company's coal by including the cost factor of supplying coal and transportation. The formula of linear programming can be shown below:

$Z = \text{Total Cost}$

$$\text{Minimizing } Z = \sum_{i=1}^a \sum_{j=1}^b C_{ij} X_{ij}$$

With constraints:

$$\text{Supply} = \sum_{j=1}^n X_{ij} = S_i ; (i = 1, 2, 3, \dots, M)$$

$$\text{Demand} = \sum_{i=1}^m X_{ij} = D_j ; (j = 1, 2, 3, \dots, N)$$

$X_{ij}$  (Decision Variable, Volume of Coal that is transported from Supplier  $i$  to PLTU  $j$ );  $S_i$  (Volume of Supply from Supplier);  $D_j$  (Demand of PLTU);  $C_{ij}$  (Landed cost to supply PLTU, which consists of Coal Purchase and Transportation Cost);  $m$  (number of Supplier);  $n$  (number of PLTU).

In this study, samples of coal shipments were taken for PLTU Suralaya and PLTU Indramayu. The data obtained from the Mining & Production Division describes the coal delivery lineup from several suppliers to the PLTU.

By using the linear programming method, the total cost of coal supply is optimized by taking into account the demand for PLTU and Supply from the Supplier. From the linear programming method program results, the total cost can be optimized to be Rp431,502,972,480, which saves Rp122,010,111,678.

Besides linear programming to make the Supply Chain more efficient, PLNBB should choose Time Charter Contract with shipping company for some PLTU with frequent shipments which more than 1.5 trip (departure-arrival-departure) a month.

The next step of the research was an impact Effort Matrix analysis (Andersen & Fagerhaug, 2013) which similar with PICK chart (Badiru & Thomas, 2013) method to find the best alternative from the alternative solutions formulated above. This matrix is used to determine the priority of the follow-up that will be carried out by considering the impact and efforts of the existing alternative solutions.

To quantify the Impact and Effort Matrix analysis, a survey was conducted through a questionnaire using a Likert scale (1-4) to show the level of impact and level of effort. The survey is conducted to decision-makers in the company, which level is BoD-1 (Vice President and Manager) to BoD-2 (Assistant Manager). Considering its experience and authority to make decision, BoD-1 (Vice President and Manager)'s survey value is assigned full (100% or 1), meanwhile BoD-2 (Assistant Manager) survey value is assigned half (50% or 0.5).

The result shows optimizing supply chain and looking for alternative suppliers were chosen by decision maker as solution regarding to the impact, while investment in own coal mine was chosen regarding to the effort (Table 1). However, for implementation, only possible alternatives that below the average line is prioritized (Figure 2). Whereas solution number 3, optimizing supply chain management, and solution number 1, looking for alternative suppliers, will be suggested to implement in the company.

### Managerial Implications

It is known that the three alternative solutions are in the blue quadrant, the High Effort – High Impact quadrant, where the solutions offered generate big impact but required significant efforts to increase net profit margin. Alternative solution 3, Optimization of Supply Chain Management, is the best alternative solution with the lowest effort and most significant impact. Optimizing

the company's supply chain management in delivering coal to the PLTU does not require a large investment and does not require extensive resource efforts to implement.

Linear programming, which is designed to minimize the total cost, can provide efficiency by considering supply and demand constraints. This linear programming enhances the existing merit order or dispatching order system. For continuous improvement, it is necessary to evaluate the variables that affect delivery decisions. Time Charter Contract with shipping company for some PLTU with frequent shipments which more than 1.5 trip (departure-arrival-departure) a month is also beneficiary for company to reduce supply chain cost.

The second-best alternative is solution number 1, looking for a new supplier is likely to apply in the company. The company has extensive internal and external data. Moreover, with procurement web-based application from PLNBB, the partnership process through digital procurement is convenient for suppliers. The challenge is how to ensure the suppliers meet the expected criteria.

The third alternative is solution number 2, investment in owned coal mine. Investing in mines could significantly impact the net profit margin. The challenge is, there is no guarantee to earn return on investment in the short term. In addition, the risks related to investment need to be mitigated.

Table 1. Decision maker's preference

	Informants									Weighted Avg.
	A	B	C	D	E	F	G	H	I	
Weighted Value	1	1	1	1	0.5	0.5	0.5	0.5	0.5	
<b>Impact</b>	<b>Weighted Score</b>									
Looking for Alternative Suppliers	4	3	4	4	3	2	1.5	2	0.5	2.67
Investment in Own Coal Mine	2	4	3	2	3	2	1.5	2	2	2.39
Optimizing Supply Chain Management	4	4	3	4	4	2	2	1.5	2	2.94
<b>Effort</b>	<b>Score</b>									
Looking for Alternative Suppliers	3	2	4	2	4	2	1	0.5	1	2.17
Investment in Own Coal Mine	4	4	4	4	3	1.5	1.5	2	2	2.89
Optimizing Supply Chain Management	3	3	3	3	3	1	0.5	1	1	2.06



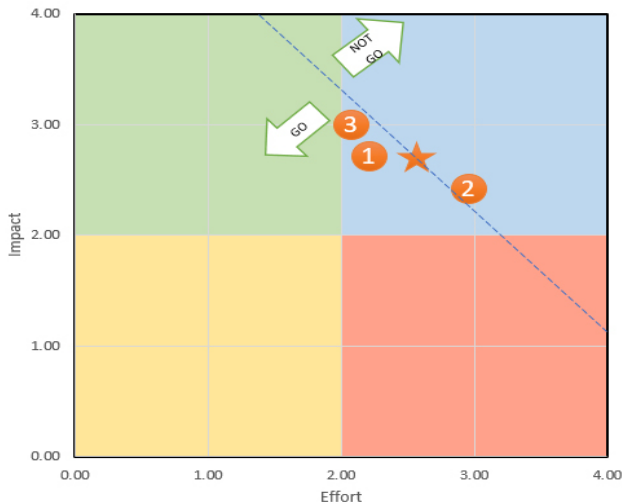


Figure 2. Impact effort matrix

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusion

PT PLN Batubara (“PLNBB”) is one of the subsidiaries of PLN. The company was established in order to secure coal supply for Coal-Fired Power Plant (CFPP/ PLTU) and Independent Power Producer (IPP). PLNBB revenue has increased significantly in last three years but it was not followed by a remarkable increase in profit margin.

There are some internal and external factors that deterrent the increasing of profit margin. Regarding to internal factors, PLNBB is influenced by internal factor such as PLNBB position as subsidiary is an advantage for PLNBB regarding market and information, on other hand, considering that the main activities of PLNBB is coal trading, the company is highly depending on its supplier to get it main key resources, coal. Human resources capability, information systems and operational excellence is important resources that need to be developed.

On the other hand, the external factors that affect net profit margin such as economic factor, which is determined demand for electricity as well as coal demand. Political and legal factor is other significant external factors. DMO regulation and regulated price of coal for electricity is important for PLNBB and PLN to control is cost and secure the supply for PLTU.

Based on the analysis, there are three alternative solutions to accelerate company’s net profit namely finding the alternative suppliers, investment in owned coal mine, and optimizing supply chain management. However, based on the decision analysis process (by using Impact Effort Matrix), this research suggests that the company should implement two prioritized solutions namely: optimizing supply chain management (First priority) and looking for alternative Supplier (Second priority).

On the other hand, the result also implies that root cause analysis can be used in finding coal company’s problem especially trading company. Moreover, the analysis should be accompanied by Impact and Effort Matrix to find the best solution for addressing problem which is found in root cause analysis.

### Recommendation

This research suggest that the management should implement two strategies regarding to net profit optimization. The first strategy is finding the alternative suppliers which can address some indicators as mention above. The second strategy is optimizing supply chain management. It is important to make cost production more effective.

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