

Identification of Strategies Based on Local Content in The Procurement Process: A Case Study of PT Stainless Steel Primavalve

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Abstract

In formulating policy recommendations to increase the use of the local content, called *Tingkat Komponen Dalam Negeri* (TKDN), the Government makes special regulations in the scope of the procurement of goods and services related to the local content elements specified in Articles 85, 86, 87, and 88 of Law no. 3 of 2014 on Industry. The main objectives of this research paper are to study Cost Leadership strategies, Differentiation strategies, and Focus strategies. Porter's generic strategy was chosen as a theoretical method to analyze the benefits of adopting these strategies at PT Stainless Steel Primavalve. We collected data on the certificate items (product, type, specifications, and local content), which are from the PT Stainless Steel Primavalve Certificate on the website of the P3DN Ministry of Industry. Through the analysis, it can be seen that with the coverage of Local Content values we can identify the strategy used of PT Stainless steel Primavalve. From the identification results, we can conclude that the Company implements the Porter Strategy in the Business Strategy which involves the mechanism for procuring goods and services in utilizing Local Content as price preferences during the tender process in increasing competitiveness as a form of a strategy used.

Keywords

Cost Leadership Strategy, Differentiation Strategy, Focus Strategy, Competitive Advantage, and Local Content.

1. Introduction (12 font)

Oil and gas are natural resources that have a broad range of utilization such as for cooking, generating electricity in power plants, and as raw material for the processing of fertilizer. Indonesia is a country that has very abundant natural resources, including oil and natural gas, (Hakim et al., 2018). The valve is an important part of the equipment oil and gas pipeline, (Peng et al., 2021). Therefore, in the procurement of goods and services in the oil and gas industry sector, in formulating policy recommendations to increase the use of the local content, called *Tingkat Komponen Dalam Negeri* (TKDN), the Government makes special regulations in the scope of the procurement of goods and services related to the local content elements specified in Articles 85, 86, 87, and 88 of Law no. 3 of 2014 on Industry.

To increase the competitive advantage in the oil and gas industry in Indonesia, strategy is very important to help a company secure its position in industrial competition. It also supports the company in challenging its competitors and achieving superior performance, (Štefan and Branislav, 2016). Technological advancement is an important factor in manufacturing development. It also exposes all sectors, companies, and other institutions to intense competition.

Cost Leadership, Differentiation, and Focus Strategies are the basic competitive advantages made by Porter (1980). According to Barney (1991), a company that wants to be competitive must implement a value creation strategy that is different from other competitors. The Cost Leadership Strategy is classified as temporary and in the long term is not possible, (Eisenhardt and Martin, 2000). Porter (1985) also asserts that focus can be based on (1) differentiation targeting specific market segments with unique needs that are not met by others in the industry or (2) cost focus where firms have access to specialized production equipment and operations to save costs of a smaller production or production line. On the other hand, a competitive advantage is created from the Differentiation Strategy in which more sustainable products and unique facilities are offered to the market and are very difficult for competitors to imitate,

(Grant, 1991). Focus Strategies are most effective when consumers have different preferences or competitors ignore a market niche.

1.1 Objectives

The main objectives of this research paper are to study Cost Leadership strategies, Differentiation strategies, and Focus strategies. Porter's generic strategy was chosen as a theoretical method to analyze the benefits of adopting these strategies at PT Stainless Steel Primavalve Company. PT Stainless Steel Primavalve is a manufacturing company engaged in upstream oil and gas, in this context the equipment to be analyzed is specifically for oil and gas valve equipment only. This research involves the mechanism for procuring goods and services in utilizing local content as price preferences during the tender process in increasing competitiveness as a form of a strategy used. The contribution in this paper is expected to be used as a basis for other companies in determining marketing strategies to be implemented in a tender process for the procurement of goods and services, and also by the provisions of the mechanism for the procurement of goods and services as a form of increasing the use of domestic products so that it increases equity between local brand players and foreign brands in terms of production, as well as supply chains with a good ecosystem.

2. Literature Review

2.1 Competitive Advantage

The economic development of national competitiveness is highly dependent on the influence of the competitiveness of companies or organizations. To be able to achieve organizational competitiveness, there have been many studies on management strategy, one of the objectives in its application is competitiveness (Wibowo and Rahmat, 2020). After that Porter (1990) introduced the concept of competitive advantage, which states that industry will succeed in competition if it is determined by differences in national values, culture, economic structure, institutions, and history. Competitiveness can also be seen from various perspectives. Interpreted from an economic perspective, political concepts, and business strategy of a company or industry. Competitiveness is defined as the ability of an industrial sector or company to compete successfully to achieve sustainable growth (Wibowo and Nurcahyo, 2020). According to Porter (1990), companies must have competitiveness to become industry leaders and be successful. Competitive advantage comes from implementing strategies in integrating, building, and configuring various internal and external competencies of the company for wealth creation or growth over time (Aji, 2015).

2.2 Strategic Management Definition

Strategic management is the process of managing the pursuit of organizational mission while managing the relationship of the organization to its environment, (Higgins and Vincze, 1993). Strategic management can be defined as the art and science of formulating, implementing, and evaluating cross-functional decisions that enable an organization to achieve its objectives, (David et al., 2013). Strategy is considered to be the core of the original operation because it defines the pattern that must be followed to achieve its goals and objectives. It can be seen as a long-term goal of the organization and also involves allocating the resources and capabilities available to achieve these goals. Strategy is essential to an organization's success in terms of setting the direction of the organization as a whole and enabling it to face challenges in a competitive environment. All steps in strategy formulation must be validated. Therefore, fundamental imperatives and strategies need to focus on the strengths of Porter's analysis to shape strategy and enable companies to consider comprehensively the structure of their industry.

2.3 Types of Strategies

At least, there are two main streams of management strategy, namely the main strategies (grand strategy) and generic strategies (generic strategy), (Porter, 1980). The main strategy is a set of corporate alternative strategies that are generally used as a 'benchmark' in determining the strategy to be taken by a company. While there are two generic strategies, namely: Porter's generic strategy and Glueck's generic strategy, the name of the author who introduced each of them. This paper will focus on Porter's Generic Strategy.

2.4 Porter's Generic Strategy

Based on competition theory in a research tradition that has guided public policy for decades, Porter's industry-based strategy greatly influenced emerging strategic management fields (Porter, 1980). Porter's competitive strategy framework states that the profitability of companies in an industry is identified by (1) the threat of new entrants, (2)

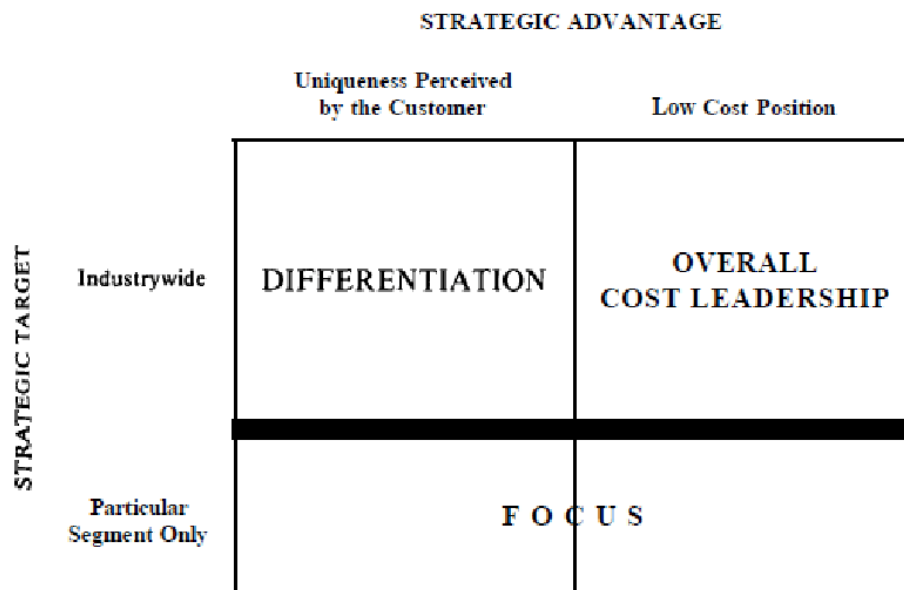


Figure 1. 3 types of generic strategies.

the threat of substitute products, (3) the bargaining power of suppliers, (4) the bargaining power of customers, and (5) the intensity of industrial competition (Porter, 1980). It determines the potential profitability of an industry and takes precautions against moves that threaten potential or new entrants, substitutes, competitors, customers, and suppliers to retain it. An analysis of a company's competitive strategy, Michael A. Porter (1980) introduces 3 types of generic strategies, namely: Cost Leadership, Differentiation, and Focus.

2.4.1 Cost Leadership

The Cost Leadership Strategy is a strategy for companies to gain a competitive advantage by achieving low costs in the industry, (Hilman et al., 2009). Porter (1980) explained that cost leadership can lead to process innovation. Moreover, Frohwein and Hansjurgens (2005) suggested that to get a cost leadership advantage an organization must minimize costs and engage in process innovation activities. Organizations can follow a cost leadership strategy when customers are less concerned with brands, price sensitivity and buyers have significant bargaining power, (Porter, 1980). The Cost Leadership Strategy seeks to provide customers with a new product or service that is comparable to that offered by competitors but at a lower price. With this strategy, the company takes advantage of a cost advantage to match or beat an audience and still make a profit.

2.4.2 Differentiation

The differentiation strategy involves the company's efforts to introduce products or services that are different from competitors, thus encouraging companies to be able to find their uniqueness in the target market. Excellence through a differentiation strategy can be achieved through good product quality and by emphasizing innovation as the spearhead of the company. According to Porter (1990), innovation is the only way for companies to gain a sustainable competitive advantage and improve performance. Differentiation-based innovation is related to how companies innovate to differentiate their products from their competitors, (Bradley et al., 2012). Companies that follow a differentiation strategy tend to emphasize R&D and apply the latest technology in their new products, (Miller, 1988). By identifying market positions that provide a competitive advantage in maximizing differentiation strategies, the uniqueness of the product (goods or services) being put forward allows a company to attract the greatest possible interest from its potential customers. Ease of maintenance, additional features, legality, flexibility, convenience, and many other things that are hard to imitate are just a few examples of differentiation.

2.4.3 Focus

The focus strategy is used by a company is to target a specific market segment. This strategy is commonly used by "niche market" suppliers (a special segment in a particular market; also known as a niche market) to meet the needs

of particular goods and services. Porter (1980) argued that a successful focus strategy must be built to serve certain targets very well so that it has growth potential. In Porter's (1980) generic strategy, firms gain competitive advantage through identifying external opportunities in new and existing markets, then aligning the company with those opportunities. The companies that operate with this strategy are more concentrated to focus resources on a select group of customers (parents or teens) or a target niche, a specific product range, a geographic area (city or state), or a specific service procedure.

2.5 Local Content

TKDN is an entry value as a percentage of the components of domestic production, including the transportation costs offered in the item offering price for goods and services. The higher the value of local content of goods/services, it can be said that it means using more local products in the manufacturing process (Nurchahyo et al., 2019). TKDN is one of the preferences in determining the winner in the process of procuring goods/services in several Government agencies. According to Articles 85, 86, 87, and 88 of Law No. 3 of 2014 on Industry, the obligation to use domestic products is carried out according to the amount of the domestic component for each good/service shown, and the Government can provide facilities at least in the form of; (a) Price preference and administrative convenience in the procurement of goods/services; and (b) Domestic component level certification.

Price preference, according to Presidential Decree No. 16 of 2018, given to goods/services that have a TKDN of at least 25% (twenty-five percent). The government hopes that projects to be implemented in the procurement of goods/services use more domestic materials and services. So that it can reduce dependence on imports in the field of construction services through the dissemination of TKDN policies, in particular the procedures for implementing the calculation and supervision of TKDN for construction services, setting the minimum limit for TKDN for PUPR infrastructure, and procuring goods and services that require high TKDN in the supply of goods and services providers.

2.6 Benefits of TKDN Application

The company's goal in the certification process is to meet customer or related party needs, increase market share, or improve supply chain management. The importance of certification is to achieve customer needs and expectations where companies must be able to ensure the products and services offered can meet customer satisfaction (Nadira et al., 2019). As reported on the <https://kemenperin.go.id/> page, there are several advantages if the government implements the TKDN policy. These advantages are not only for industry players but also for the Indonesian Government;

- The creation of new employment opportunities. The domestic industry will continue to produce these goods or components, if the industry continues to operate, there will be the absorption of labor.
- Additional income tax (PPh) income for products made in Indonesia.
- The creation of a supply chain with a good ecosystem.
- Indonesia's potential as a production base and export country.
- The creation of equality between local brand players and foreign brands in terms of production.

The government should establish agreements with local suppliers to increase domestic purchases and discuss subsidies. Thus, we must pay attention to increasing the use of domestic products, the capacity of domestic industries in increasing local content, optimizing the transfer of knowledge and technology as well as the need for Local Content programs, so that the capabilities and capacities of the national manufacturing industry can be arranged in a complete and detailed record. This cooperation will create a stable and secure economic condition (Nurchahyo et al., 2019).

2.7 Work Guidelines Price Preferences (PTK 007 Rev 04)

In the study case regarding local content and price preferences, we can refer to the work procedure manual document or "PTK 007 Rev 04", regarding the obligation to use domestic products and price preferences in chapter IV on National Capacity Building. In terms of the use of domestic products, it is stated as follows:

- "The obligation to use Domestic Products refers to the provisions and stages of Tender for goods in this guideline and the Tender Implementation Guidelines." (PTK 007 Rev 04, 2017).
- "The procedure for calculating the TKDN of goods follows the provisions of laws and regulations issued by government agencies in charge of the oil and gas industry." (PTK 007 Rev 04, 2017).

Price preference based on company status will be given to Tender Participants with Domestic Company status. In the Tender process the goods are given Price Preferences based on the TKDN value and based on the status of the company as follows:

- “Price preference based on the TKDN of the goods is given if the TKDN value is more or equal to 25% (twenty-five percent) and is proven by a TKDN certificate. Preference is given as high as 15% (fifteen percent), calculated proportionally based on the percentage of TKDN certificates of goods from Tender Participant's offerings compared to the TKDN Achievement Target of related goods.” (PTK 007 Rev 04, 2017).

3. Methods

The method used in this research is based on primary and secondary data from PT Stainless Steel Primavalve, including secondary data from journals, research results, and books. We collected data on the certificate items such as product, type, specifications, and local content, which are from the PT Stainless Steel Primavalve Certificate on the website of the P3DN Ministry of Industry. To get the TKDN value, we can use the final value of Local Content stated in the certificate, then this value is used as a benchmark for the minimum achievement of local content required by government regulations. This study aims to identify and evaluate the business strategies implemented by PT Stainless Steel Primavalve using a Generic Porter's Strategies approached.

4. Data Collection

In this study, we collected data on the TKDN certificate items such as product, type, specifications, and local content, listed on the website of the Ministry of Industry. We can see the TKDN certificate that we used as data in retrieving the Local Content value to be identified. Referring to the TKDN Certificate of PT Stainless Steel Primavalve, there are 5 types of valves and 12 specifications that have been certified by the Ministry of Industry. Also with the local content values listed, there are 5 types of valves and 12 local content values. The certificate shows that PT. Stainless Steel Primavalve has several product variations with different specifications. From the 5 certificates, we will enter the product data, type, and specifications for information only. However, the value that will be used as evaluation material is the final value of the local content listed on the certificate listed on each product and its specifications. Then, from each component that has been taken according to what is known in the TKDN certificate, we summarize it in a table. In table 1, we have summarized the data on the certificate into a column in the table.

Table 1. Local Content.

Product	Type	Specifications	Local Content
Valve	Ball Valve	1/2 – 2 inch, Class #150 - #1500, Forging	25.56%
Valve	Ball Valve	2 – 12 inch, Class #150 - #900, Forging	26.06%
Valve	Ball Valve	2 – 12 inch, Class #150 - #900, Casting	40.79
Valve	Swing Check Valve	1/2 – 2 inch, Class #150 - #1500, Forging	26.92%
Valve	Swing Check Valve	2 – 6 inch, Class #150 - #900, Casting	41.15%
Valve	Swing Check Valve	8 – 12 inch, Class #150 - #900, Casting	46.23%
Valve	Wafer Check Valve	2 – 20 inch, Class #150 - #900, Casting	35.11%
Valve	Gate Valve	1/2 – 2 inch, Class #150 - #1500, Forging	25.23%
Valve	Gate Valve	2 – 6 inch, Class #150 - #900, Casting	41.35%
Valve	Gate Valve	8 – 12 inch, Class #150 - #900, Casting	45.50%
Valve	Globe Valve	1/2 – 2 inch, Class #150 - #1500, Forging	26.83%
Valve	Globe Valve	2 – 12 inch, Class #150 - #900, Casting	41.08%

5. Results

In this paper, we will be analyzing and discussing how to obtain a competitive advantage through applying different business strategies. From Table 1, there are 5 types of valves and 12 Local Content values in the certificate. In the next step, we will make each Local Content value of each specification and product type listed on the certificate, then this value is used as a benchmark for achieving the minimum local content required by government regulations. According to the data in table 1, the value of Local Content in each product category has a value > 25%. Therefore, according to Presidential Decree No. 16 of 2018, given to goods/services that have a TKDN of at least 25%, from table 1 we can know that with a value > 25%, a company will get a price preference. After the assessment of the Local Content results obtained, this study also identifies with several strategic approaches, which are Cost Leadership, Differentiation, and Focus.

5.1 Cost Leadership

As mentioned above, the fundamental objective of a cost leadership strategy is to reduce costs as much as possible on the grounds of ensuring product quality, so that it can occupy a dominant position in the industry. From the data analysis above, PT. Stainless Steel Primavalve implemented a cost leadership strategy with an approach in taking the opportunity to get price preferences in a procurement process. Therefore, the price offered by the company during the procurement process will be lower because it gets a price preference by having a TKDN value > 25%. In further research, this can be done in more detail regarding the application of data leadership strategies by taking primary data from the product manufacturing process.

5.2 Differentiation

One of the main advantages of using a differentiation strategy is the company's ability to differentiate itself from others in competitive markets. Furthermore, the differentiation strategy can be split into different sub-strategies in response to the continuous development and complexity of the business environment. Such as differentiation based on product innovation, customer responsiveness, or marketing. From the data analysis above, PT. Stainless Steel Primavalve implemented the differentiation strategy used are based on product innovation that has more value, such as the TKDN / Local Content Certificate.

5.3 Focus

The last strategy is a focus. This strategy means targeting and attracting niche markets of customers with specific tastes or needs that differ from the larger population. It is known that not all procurement of goods and services are required to use local content, several non-governmental companies do not refer to government policies in using local content as the basis for procurement. From the identification results, that the company PT Stainless Steel Primavalve used a focus strategy to enter the market which requires a TKDN certificate. Thus, the Company's market will niche because of the demand for the use of local content according to government policies.

6. Discussion

Organizations can choose a combination strategy by mixing one of the common cost leadership or differentiation strategies with a focused strategy. As such, these strategies that support gaining competitive advantage apply to all industries in most countries. Such a perspective on the use of strategy has provided a necessary alternative to other views of strategy in doing a better job of taking strategic action. It can be said that strategy is an essential part of an effective business plan. By using an effective competitive strategy, companies can provide quality services. This also shows that the company has a competitive advantage through the implementation of different business strategies.

7. Conclusion

This paper describes Porter's Generic Strategic approach chosen as a theoretical method to analyze the benefits of implementing this strategy at PT. Stainless Steel Primavalve. As previously mentioned, the main objectives in this research paper are to identify Cost Leadership strategies, Differentiation strategies, and Focus strategies. Through the analysis of the above cases, it can be seen that with the coverage of Local Content values we can identify the strategy used of PT Stainless steel Primavalve. Value of local content PT. Primavalve Stainless Steel has a value above 25%, which by "PTK 007 Rev 04" will be given a maximum price preference of 15%. This means, a company will get a price reduction from the price offered during the procurement process, which will provide the opportunity to be the lowest bidder. From the identification results, we can conclude that the Company implements the Porter Strategy in

the Business Strategy which involves the mechanism for procuring goods and services in utilizing Local Content as price preferences during the tender process in increasing competitiveness as a form of a strategy used.

The strategy of the organization should reflect the competitive advantage that distinguishes it from others. In the case of PT Stainless Steel Primavalve, applying Porter's strategy can generate benefits to the organization as well. However, this paper only focused on the case study of PT Stainless Steel Primavalve, which is representative of many manufactures pursuing Porter's strategy. In further research, this can be carried out for the type of manufacturer to perform data analysis and explore broader general rules.

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References

- Aji, P. Manajemen Strategi, Keunggulan Bersaing Berkelanjutan. *Yogyakarta: Ekuilibria*. 2015.
- Barney, J. B., Firm resources and sustained competitive advantage. *Journal of Management*, 17, 99-120. 1991.
- Bradley, S. W., McMullen, J. S., Artz, K., & Simiyu, E. M., Capital is not enough: Innovation in developing economies. *Journal of Management Studies*, 49(4), 684-717, 2012.
- David, F. R., David, F. R., & David, M. E., *Strategic management: Concepts and cases: A competitive advantage approach*. Upper Saddle River: Pearson. 2013.
- Eisenhardt, K. M., Dynamic capabilities: what are they? *Strategic Management Journal*, 21, 1105-1121. 2000.
- Frohwein, T., & Hansjürgens, B., Chemicals Regulation and the Porter Hypothesis-A Critical Review of the New European Chemical Regulation. *Journal of Business Chemistry*, 2(1). 2005.
- Grant, R. M., Porter's 'competitive advantage of nations': an assessment. *Strategic management journal*, 12(7), 535-548. 1991.
- Hakim, M. L., Achmad, B., & Sutikno, J. P., Anti Surge Control of Centrifugal Compressor at PT. Pertamina EP Asset 2 Field Pendopo. In *E3S Web of Conferences* (Vol. 42, p. 01010). EDP Sciences. 2018.
- Higgins, J. M., & Vincze, J. W., *Strategic management: Text and cases*. Harcourt School. 1993.
- Hilman, H., Relationship of competitive, strategic flexibility and sourcing strategy on organizational performance. *Universiti Putra Malaysia*. 2009.
- Miller, D., Relating Porter's business strategies to environment and structure: Analysis and performance implications. *Academy of management Journal*, 31(2), 280-308, 1988.
- Nadira, R., Nurcahyo, R., & Sihono, D. G. Analytic Network Process (ANP) for Certification Body Selection in Indonesia. In *2019 IEEE 6th International Conference on Engineering Technologies and Applied Sciences (ICETAS)* (pp. 1-5). IEEE. 2019.
- Nurcahyo, R., Darmawan, D., Jannis, Y., Kurniati, A., & Habiburrahman, M. Maintenance Planning Key Process Area: Case Study at Oil Gas Industry in Indonesia. In *2018 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM)* (pp. 1704-1708). IEEE. 2018.
- Nurcahyo, R., Hutasoit, E. L., Muslim, E., & Wibowo, A. D. A Strategy of Local Content Enhancement in Petroleum and Natural Gas Industry. In *Proceedings of the International Conference on Industrial Engineering and Operations Management* (Vol. 2019, No. MAR, pp. 1017-1023). 2019.
- Nurcahyo, R., Wibowo, S. A., Rachman, A., & Wibowo, A. D. Optimization in Personnel Scheduling for Local Content Verification. In *Proceedings of the International Conference on Industrial Engineering and Operations Management* (Vol. 2019, No. MAR, pp. 1011-1016). 2019.
- Peng, D., Dong, S., Wang, Z., Wang, D., Chen, Y., & Zhang, L., Characterization of the Solid Particle Erosion of the Sealing Surface Materials of a Ball Valve. *Metals*, 11(2), 263. 2021.
- Porter, M. E., *Competitive advantage*. New York: The Free Press. 1980.
- Porter, M. E., *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Free Press. 1985.
- Porter, M. E., *The competitive advantage of nations: with a new introduction*. New York USA: Free Press. 1990.
- Sitompul, R. F. Strategic Analysis of Turbine Manufacturing Development in Achieving Required Local Content. 2019.
- Štefan, S., & Branislav, Z., Relationship between business strategy and business model studied in a sample of service companies. *Journal of Competitiveness*, 8(4), 72. 2016.
- Wibowo, N., & Nurcahyo, R. Competitiveness In Global Transformation: A Systematic Review. In *10th Annual International IEOM Conference, IEOM 2020* (pp. 718-727). IEOM Society. 2020.

Badan Pengawasan Keuangan dan Pembangunan, Available:
<http://www.bpkp.go.id/uu/filedownload/2/113/2610.bpkp>.
Jaringan Dokumentasi dan Informasi Hukum Lembaga Kebijakan Pengadaan Barang/Jasa Pemerintah, Available:
<https://jdih.lkpp.go.id/>
Kementerian Perindustrian, Available: <https://kemenperin.go.id/>
Pedoman Tata Kerja SKK Migas, Available:
<https://www.skkmigas.go.id/assets/PTK/e0158c5577417bfcc550185a20032f20.pdf>
Peningkatan Penggunaan Produk dalam Negeri, Available:
http://tkdn.kemenperin.go.id/sertifikat_perush.php?id=8nITavDuFBOza2u5fxb9UU5i84D7NXXqFFo5FD8rpPk,

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