

# Proposed Development Strategy for Green Diesel Product in Industrial Fuel Market

Yusup Mansyur and Atik Aprianingsih

## ABSTRACT

PTM is one of Indonesia Energy Enterprise which is carried out integrated energy business by covering exploration & production, refinery, marketing & distribution, and new & renewable energy business based on strong commercial principles. Industrial Fuel Marketing (IFM) division is part of Company's Commercial & Trading business, established to bring various of product into domestic industrial fuel market and marine sectors. Currently IFM as market leader which is hold the market more than 70% Share.

PTM is assigned by shareholder to develop Biorefinery with capacity 20,000 Barrel/Day in 2019. Biorefinery will produce Green Diesel from Crude Palm Oil (CPO) as main product with catalytic processing. Shareholder willing to implement the Biorefinery for alternative fuel sources to reduce dependence on petroleum-based fuels, as well as to reduce climate change and reduce fossil fuel import.

There are several issues regarding Biorefinery business in term of Green Diesel Market which are higher CPO price than crude oil price therefore the Green Diesel price will be higher than Petroleum Diesel. In accordance with those issues, it will need business strategic in Biorefinery implementation. In this case, Author will propose strategic marketing of Green Diesel to penetrate domestic Industrial Fuel Market. Unfortunately, In Industrial Fuel sector there is open competition among fuel suppliers which currently more than 230 suppliers.

The object of this research is developing business strategy for Green Diesel product in Industrial Fuel Market (IFM). To develop business strategy, the conceptual framework is necessary to have right alternatives strategies that are appropriate for the company. This research will carry out the external and internal analysis, for external analysis using Market Analysis, Porter Five Forces Analysis, Competitor Analysis and Consumer Analysis. Whereas the internal analysis will use 4P Marketing Mix, Existing Business Model Canvas and VRIO Framework. The first stage will be internal external factor evaluation, then the matching stage will use TOWS (Threats, Opportunities, Weakness, Strengths) Matrix to develop alternative strategies, in the end of the stage the final analysis will use QSPM (Quantitative Strategic Planning Matrix) to evaluate the feasibility of each of these alternative strategies.

Based on QSPM there are top five strategies feasible to be implemented which is Development of target market priority on SOE and government institution, cooperation strategy, development of digital marketing, development of employee capabilities on Green Diesel Business and development of flexibility term of Payment (TOP).

**Keywords:** Biorefinery, CPO, Green Diesel, IFM.

**Submitted :** June 25, 2022

**Published :** July 21, 2022

**ISSN:** 2507-1076

**DOI:** 10.24018/ejbmr.2022.7.4.1527

**Y. Mansyur\***

Bandung Institute of Technology, School of Business Management, Bandung, Indonesia.

(e-mail: yusuf.mansyur1009@gmail.com)

**A. Aprianingsih, ST, MM, DBA**

Bandung Institute of Technology, School of Business Management, Bandung, Indonesia.

(e-mail: atik.apri@sbm-itb.ac.id)

*\*Corresponding Author*

## I. INTRODUCTION

PTM is currently developing Biorefinery that will be integrated in one of existing refinery in Sumatera Island which is closed to sources of CPO producer as Biorefinery raw material. The Biorefinery primary product namely Hydro Vegetable Oil (HVO) consist of Green LPG, Green Naphtha, Green Avtur or Kerosene and Green Diesel as main product. Green Diesel is different characteristic with Biofuel (FAME) which is currently blending component for Biodiesel B30, it is better qualities.

As shown in the table 1 we can understand that the properties of Green Diesel close to fossil diesel with several advantages in term of higher cetane number and zero sulfur content Compared to Petroleum Diesel and FAME. Green Diesel is the most environmentally friendly because of very low sulfur content and low oxygenate content, therefore it will be better energy efficiency and environment friendly. Green diesel has good stability compared to FAME (Fatty Acid Methyl Ester). Total acidity number (TAN) of Green Diesel also lower than FAME, it was similar with Fossil diesel. Apart from this, Green Diesel produced from CPO

which is abundant product varieties in Indonesia and part renewable energy.

The chemical and physical properties of Green Diesel compared to FAME and Fossil Diesel as following.

TABLE I: GREEN DIESEL SPECIFICATION

No	Parameters	FAME	Green Diesel	Fossil Diesel
1	Oxygen Content (%)	11	0	0
2	Sulfur content (ppm)	0	0	10-2,500
3	Specific Gravity	0.88	0.78	0.84
4	Heating Value (MJ/Kg)	38	44	43
5	Cetane Number	50.65	65-67	40-52
6	Monoglyceride	0.8%	0	0
7	Stability	Marginal	Good	Good
8	Lubricity	Good	Marginal	Good
9	TAN (mg KOH/gr)	0.1-0.8	<0.1	<0.1

(Source: Author, 2022).

Government willing to implement the green diesel because of a promising alternative transportation fuel for reduce dependence on petroleum-based fuels, as well as to reduce climate change. The transportation sector relies heavily on fossil fuels, which contribute 96.6% of total fuel in 2018 (REN 21, 2021).

## II. BUSINESS ISSUE

In accordance with Company's vision and mission as a business entity that always explores oil and gas business potentials and opportunities that can increase revenue, the plan to diversify fuel and petrochemical products with better quality and in line with the government's program to reduce imported fuel, the development of a Green Refinery is an attractive alternative. However there is several issues regarding biorefinery business in term of Green Diesel Market which are CPO price is still higher than crude oil price and High capital expenditure for Biorefinery investment, those will impact to COGS (Cost of Goods sold) of Green Fuel product, therefore the Green Fuel price will be higher than regular diesel even the regular diesel.

In accordance with those issues, it will need business strategic in Biorefinery implementation especially in Marketing Strategic of Green diesel as Main product. In this case, Author will propose strategic marketing of Green Diesel in Industrial Fuel Marketing (IFM).

Apart from this, In Industrial Fuel sector also has other issues due to open competition between fuel suppliers which is crucial factor to sustain in the business. Growth in fuel suppliers' number has become serious threat for IFM to maintain currents profitability and market share in Industrial and Marine Fuel Business. Based on data from the Downstream Oil and Gas Regulatory Agency, there were 233 registered fuel suppliers in Indonesia or usually called the holders of General Commercial and Limited Commercial Licenses.

From problems mentioned above (Higher unit price of Green Diesel and Open Competition Supplier in IFM), There is needs extra efforts to create marketing strategies to penetrate and sale Green Diesel product as new product without ecosystem established.

## III. METHODOLOGY

This research used a qualitative and quantitative research methodology to assess and better understanding the company position with regard to Green Diesel Business, and this will follow the conceptual framework, which begin with data analysis current business and market situation both internally and externally. The primary data collection will be obtained from the first handed source, whereas the secondary data will be gathered from internal company data, articles, website, news, and other media. The author had interviewed internally related team management.

The research methodology by using AFI strategy framework, External analysis will be Market Analysis, Porter Five Forces Analysis, Competitor Analysis and Consumer Analysis. Whereas the internal analysis will be 4P Marketing Mix, Existing Business Model Canvas and VRIO Framework. The business formulation framework as following:

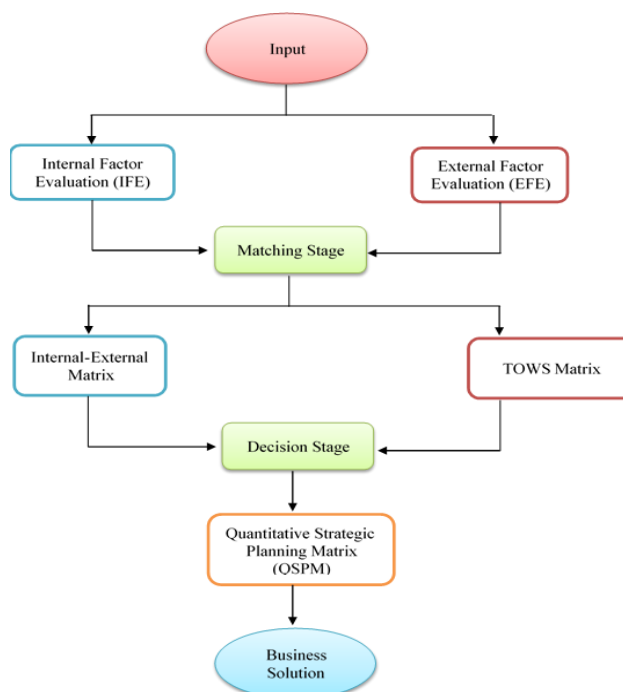


Fig. 1. Research Methodology (Source: Author, 2022).

The strategy formulation that will be utilized to get a business arrangement referring to the book Strategic Management Concepts and Cases by Fred R. David. Fundamental system plan methods can be incorporated into a three-stage dynamic structure. The devices introduced in this structure apply to all sizes and kinds of associations and can assist tacticians with distinguishing, assess, and select strategy:

- a) Stage 1 of the methodology plan scientific structure comprises of the External Factor Evaluation (EFE) Matrix and the Internal Factor Evaluation (IFE) Matrix. Called the info stage, Stage 1 sums up the essential info data expected to plan techniques.
- b) Stage 2, called the matching stage, centers around producing alternatives strategies by adjusting key internal and external variables. Stage 2 strategies incorporate the Strengths-Weaknesses-Opportunities-Threats (TOWS) Matrix and the Internal-External (IE) Matrix.

c) Stage 3, called the decision stage, includes a solitary procedure, the Quantitative Strategic Planning Matrix (QSPM). A QSPM utilizes input data from Stage 1 to impartially assess possible alternative strategies distinguished in Stage 2. It uncovers the overall appeal of alternatives methodologies and accordingly gives an objective premise to choosing explicit systems.

IV. BUSINESS EXPLORATION AND RESULT

The company facing several issues in developing Biorefinery which is CPO price is still higher than crude oil price and also High capital expenditure for Biorefinery investment, those will impact to COGS (Cost of Goods sold) of Green Fuel product, therefore the Green Fuel price will be higher than Petroleum Diesel product. In accordance with those issue, it will need business strategic how-to sale this product since currently the Green Diesel ecosystem have not exist. In this research, author will propose the marketing strategy of Green Diesel in Industrial fuel Market. Unfortunately, In Industrial and Marine Fuel sector, the open competition between fuel suppliers is a crucial factor to sustain in the business. Growth in fuel suppliers’ number has become serious threat for company to maintain its profitability and market share in Industrial and Marine Fuel Business. Seeing this condition, company must have a strategy to sale Green Diesel in Industrial Fuel Market.

Referring internal and external analysis, the company carried out SWOT analysis as following.

TABLE II: SWOT MATRIX

Strength	Weakness
<ul style="list-style-type: none"> <li>Competent Human Resources spread throughout Indonesia</li> <li>Having integrated business lines from upstream, midstream to downstream that provide value chain advantages</li> <li>Company's brand awareness is the highest when compared to similar local companies</li> <li>Highest National Content supplier</li> <li>Company's management system is certified and internationally recognized</li> </ul>	<ul style="list-style-type: none"> <li>Limited term of payment (financial policy)</li> <li>Cost of products has not been consistently competitive</li> <li>The quality of facilities has not met the expectations of customers</li> <li>Lack of human resources competency and experiences in renewable energy business</li> </ul>
Opportunities	Treats
<ul style="list-style-type: none"> <li>Government policy regarding Biofuel was established.</li> <li>Potential demand growth aligns with NZE (Net Zero Emission) implementation in Indonesia (Energy Transition).</li> <li>Level of public awareness is getting higher toward green energy.</li> <li>Government policies regarding TKDN (local content) portion to entire industrial sector Increased</li> </ul>	<ul style="list-style-type: none"> <li>The increasing number of competitors with better offering</li> <li>Maintained Green Diesel prices stabilization in the market</li> <li>The global fuel oil consumption forecast shows negative trends due to energy transition</li> <li>Availability of substitute products for electricity generation (gas, coal, geothermal, etc.) reduces the need for the electricity sector.</li> <li>Green Diesel ecosystem has not yet establish in Indonesia</li> </ul>

(Source: Author, 2022).

The company's external problems analysis shows that Company will find it challenging to compete of Green Diesel in the industrial fuel market. The difficulties happened mostly due to growth of competitor due to open competition in this market, availability of substitute products for electricity generation (gas, coal, geothermal, petroleum diesel, etc) and maintaining Green Diesel price close to petroleum fuel. In other hand there is several opportunities related transition era from fossil to renewable energy toward ZNE in the world, this appropriate step for the company to initiate Green Diesel as part of renewable energy business. With this Green Diesel business, author believe that company can survive and growth in ZNE era. Apart from this, since 2020 government also launch TKDN (percentage of local content) policy where industrial sector must use local content as big as possible include energy usage, this is opportunity for Green Diesel penetration to Industrial sector since local content of Green Diesel much higher than petroleum diesel.

The company's internal analysis shows that company have several strengths which is beneficial for this business, which is having integrated business lines from upstream, midstream to downstream that provide value chain advantages. This is an advantage for Company to become the market leader in the green diesel business by utilizing existing facilities so as to reduce costs in production and distribution which are not owned by competitors. In addition, Company is a state-owned company with 100% government share (NOC) and has high brand awareness in the Indonesia compared to the competitor. Unfortunately there are weakness internally to penetrate this business in accordance with rigid term of payment offering, inconsistent product price and Lack of human resources competency and experiences in renewable energy business. This challenge for Company to avoid and improve the weakness for facing external treats and opportunity.

Based on current resources referring internal and external analysis including SWOT analysis, there is potential for Company to bring Green Diesel product penetrate into Industrial Fuel Market business with several concern need to be improved in the face of open competition in such ecosystem.

The following (Table III) are the results of the Internal Factor Evaluation (IFE) Matrix of PTM’s Green Diesel development strategy which has been evaluated by internal team. Whereas External Factor Evaluation (EFE) Matrix as following (Table IV).

Based on the input stage results (stage 1), the result of the Internal Factor Evaluation (IFE) Matrix is 3.53, and this score is the value for the y-axis. And the result of the External Factor Evaluation (EFE) Matrix is 3.43, and this score is the value for the x-axis. Thus, in The Internal-External (IE) Matrix for Green Diesel Business, it is entered into cell I, which is entered into region 1. Fig. 2 shows the IE matrix of the company by considering the main external and internal factors available in IFM division plan to penetrate new Green Diesel product in Industrial business. this matrix is considered helpful in grouping several alternatives that have been formulated, which will be selected using the QSPM matrix.

TABLE III: INTERNAL FACTOR EVALUATION

No.	Strengths	Weight	Rating	Weight Score
S1	Competent Human Resources spread throughout Indonesia	0.11	3	0.33
S2	Having integrated business lines from upstream, midstream to downstream that provide value chain advantages	0.17	4	0.68
S3	Company status as NOC with 100% Government share holder	0.11	4	0.44
S4	Company's brand awareness is the highest when compared to similar local companies	0.12	3	0.36
S5	Highest National Content supplier	0.08	4	0.32
S6	Company's management system is certified and internationally recognized	0.09	3	0.27

No.	Weaknesses	Weight	Rating	Weight Score
W1	Limited term of payment (financial policy)	0.10	3	0.30
W2	Cost of production has not been consistently competitive	0.10	4	0.40
W3	The quality of facilities has not met the expectations of customers	0.05	3	0.15
W4	Lack of human resources competency and experiences in renewable energy business	0.07	4	0.28

(Source: Author, 2022).

TABLE IV: EXTERNAL FACTOR EVALUATION

No.	Opportunities	Weight	Rating	Weight Score
O1	Government policy regarding Biofuel was established	0.13	4	0.52
O2	Potential demand growth aligns with NZE (Net Zero Emission) implementation in the world.	0.10	3	0.30
O3	Level of public awareness is getting higher toward green energy.	0.10	2	0.20
O4	Government policies regarding TKDN (local content) portion to entire industrial sector Increased	0.12	4	0.48

No.	Treats	Weight	Rating	Weight Score
T1	The increasing number of competitors with better offering	0.14	4	0.56
T2	Maintained Green Diesel prices stabilization in the market	0.10	4	0.40
T3	The global fuel oil consumption forecast shows negative trends due to energy transition	0.09	3	0.27
T4	Availability of substitute products for electricity generation (gas, coal, geothermal, etc) reduces the need for the electricity sector.	0.13	4	0.52
T5	Green Diesel ecosystem has not yet establish in Indonesia	0.09	2	0.18
<b>Total Score</b>		<b>1.00</b>		<b>3.43</b>

(Source: Author, 2022).

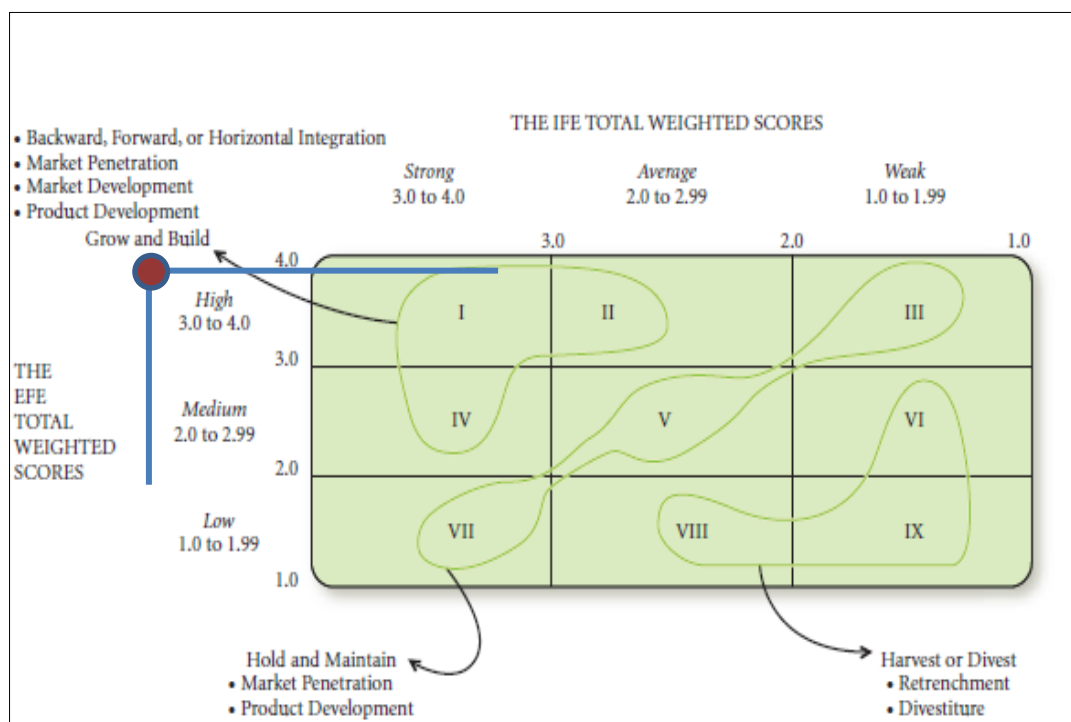


Fig. 2. Internal External Matrix (Source: Author, 2022).

The right strategy is to be implemented by Company (IFM Division) on Green Diesel business is an intensive strategy (market penetration, market development, and product development) or integrative strategy (backward integration,

forward integration, and horizontal integration). According to Rangkuti (2014), the position of cell I obtained by the company was also developed, and the growth strategy would be through horizontal integration. This growth strategy



through horizontal integration is an activity for company expansion by developing markets and increasing products and services. With this strategy, if the company is in a desirable industry, the company will have the potential to increase sales and profits by utilizing economies of scale in both production and marketing. Companies in cell I can expand their market, facilities, and technology through internal and external developments through acquisitions or joint ventures with other companies in the same industry.

The final calculation of the QSPM matrix as decision stage provides a ranking for each alternative strategy. The rankings are ordered from highest to lowest of Total Attractiveness Score (TAS), while the TAS is multiplication between AS and weight for each factor AS (Attractiveness Score). The strategic position that gets the highest score will be a priority for the company to implement its implementation strategy, while the strategy that gets the lowest score will not be implemented because it is deemed irrelevant to be implemented. Table 5 shows the alternative strategy ranking based on QSPM analysis result.

TABLE V: ALTERNATIVE STRATEGY RANK BASED ON QSPM

No	Alternative Strategy	TAS
1	Development of target market priorities with the background of government and SOE	7.16
2	Development of Coepetition strategy with the competitor to sell Green Diesel	6.63
3	Digital Marketing & Campaign regarding Beneficial of Green Diesel	5.97
4	Development of employee capabilities focused on Green Diesel business	5.96
5	Development of flexible competitive & financial scheme with bank or financial institutions for Green Diesel Product	5.79
6	Offensive strategy by approaching existing costumer to convince new product was better than fuel fossil	5.42
7	Prepare qualified after sales personnel	5.32
8	Development of Purchased price contract with CPO producer directly	4.53
9	Implementation of Increasing local content policies in Industrial sector	4.47
10	Improvement of fuel distribution service facilities and qualities	4.53

(Source: Author, 2022).

In view of the QSPM examination, an evaluation rating of every option is gotten and positioned in light of the greatest worth. The higher the rating got by a procedure, the better it is to execute it. In other hand, assuming that the alternative strategy that gets a lower esteem isn't great and isn't possible to execute to the organization, for this situation author will restrict to TAS esteem in the event that lower than 5.5 will be viewed as lower, exclude from the alternative's strategy proposal.

## V. CONCLUSION AND SOLUTION

PTM is currently facing several issues in developing such Biorefinery which is CPO price is still higher than crude oil price and also High capital expenditure for Biorefinery investment, those will impact to COGS (Cost of Goods sold) of Green Fuel product, therefore the Green Fuel price will be higher than Petroleum Diesel product. In accordance with those issues, it will need business strategic how to sell this product since currently the Green Diesel ecosystem have not exist. In this research, author is propose the marketing

strategy of Green Diesel in Industrial Fuel Market. Unfortunately, In Industrial and Marine Fuel sector, the open competition between fuel suppliers is a crucial factor to sustain in the business. Growth in fuel suppliers' number has become serious threat for PTM IFM to maintain its profitability and market share. Seeing this condition, PTM must have a strategy to sale Green Diesel in Industrial Fuel Market.

The company's external problems analysis shows that PTM will find it challenging to compete of green diesel in the industrial fuel market. The difficulties happened mostly due to growth of competitor due to open competition in this market, availability of substitute products for electricity generation (gas, coal, geothermal, petroleum diesel, etc) and maintaining Green Diesel price close to petroleum fuel. In other hand there is several opportunities related transition era from fossil to renewable energy toward ZNE in the world, this appropriate step for PTM to initiate Green Diesel as part of renewable energy business. With this Green Diesel business, author believe that PTM can survive and growth in ZNE era. Apart from this, since 2020 government also launch TKDN (percentage of local content) policy where industrial sector must use local content as big as possible include energy usage, this is opportunity for Green Diesel penetration to Industrial sector since local content of Green Diesel much higher than petroleum diesel.

Whereas the company's internal analysis shows that PTM have several strengths which is beneficial for this business, which is Having integrated business lines from upstream, midstream to downstream that provide value chain advantages. This is an advantage for PTM to become the market leader in the green diesel business by utilizing existing facilities so as to reduce costs in production and distribution which are not owned by competitors. In addition, PTM is a state-owned company with 100% government share (NOC) and has high brand awareness in the Indonesia compared to the competitor. Unfortunately there are weakness internally to penetrate this business in accordance with rigid term of payment offering, inconsistent product price and Lack of human resources competency and experiences in renewable energy business. This challenge for PTM to avoid and improve the weakness for facing external treats and opportunity.

Based on current resources referring internal external analysis and SWOT analysis, there is potential for PTM to bring Green Diesel product penetrate the Industrial Fuel Market business with several concern need to be improved in the face of free competition in such ecosystem.

In the end, it can be concluded that the objective of this research has been achieved to identify and analyze critical uncertainties and creating strategy that will impact PTM business when it is bringing Green Diesel to industrial fuel sector. The strategy formulation for each alternative business solution has also been determined as the company's consideration in implementing the strategy. There are ten strategies prepared as alternatives for the company to be considered as an implementation strategy. Based on the grouping of strategies, the strategies are grouped into two parts which is the market penetration strategy which consists of eight alternative strategies and two strategies for the related product development strategy. Then, the only alternative

strategies of market penetration part have been carried out in the QSPM analysis to evaluate the feasibility of each of these alternative strategies. Based on the QSPM analysis, an assessment rating of each alternative is obtained and ranked based on the highest value. The higher the rating obtained by a strategy, the better it is to implement it. In other hand, if the alternative strategy that gets a lower value is not good and is not feasible to implement to the company, in this case author will limit to TAS value if lower than 5.5 will be considered lower then exclude from the strategy proposal. The results of the QSPM assessment shows that five strategies (Top Five) tend to get highest scores above than 5.5 which are Development of target market priorities into Government and SOEs institution, Development of Coopetition strategy, Digital Marketing, Development of employee capabilities on Green Diesel business, Development of flexible Term of Payment. Those PTM should implement those five strategies as part of market penetration strategy success Green Diesel marketing penetration in the Indonesian industrial fuel market. The five strategies will be described in more detail to understand each alternative strategy's action plan and follow-up. The company's relevant strategy is an alternative strategy included in the market penetration strategy grouping. This market penetration strategy is in line with the condition of the company and the company's portfolio. While other strategies that has lowest score due to it was considered in other strategies and the company's condition, which is currently impossible to carry out.

#### REFERENCES

- Adam, M.B and Barry, J.N. (1997). *Co-opetition*. Currency Doubleday.
- BP. (2019). *BP Statistical Review of World Energy*. United Kingdom: BP Energy Economies.
- David, F.R. (2011). *Strategic Management Concept and Cases 13rd*. Edition. Prentice Hall.
- Jacobs, F. R. (2013). *Operation and Supply Chain Management Fourteenth Edition*. New York: McGraw - Hill Irwin.
- Jay Heizer, B. R. (2001). *Operations Management Sustainability and supply chain Management*. 12th Edition. NJ Prentice-Hall: Upper Saddle River.
- Ministry of Energy and Mineral Resources Republic of Indonesia. (2019). *Handbook of Energy and Economic Statistic Indonesia 2018*. Jakarta: ESDM Ministry
- Kotler, P., dan Armstrong, G. (2012) *Principles of marketing*. (10th ed). 10 ed. New Jersey: Prentice Hall, Inc.
- Lasserre, P. (2012). *Global Strategic Management Third Edition*. Palgrave Macmillan.
- Ministry of Energy and Mineral Resources Republic of Indonesia. (2016). *Indonesian Economy and Renewable Energy Development*.
- Rahmanulloh, A. (2019). *Indonesia Biofuels Annual Report 2019*. Jakarta: USDA Foreign Agricultural Service.
- Rothaermel, F.T. (2018). *Strategic Management*. 3rd. Edition (International Ed). USA: McGraw-Hill.
- Sulaiman, A. A. *et al.* (2019). *Biofuel B100 Energi Masa Depan Dunia*. Jakarta: IAARD Press, Badan Penelitian dan Pengembangan Pertanian.
- Caineng, Z and Bo, X. (2016). *Energy Revolution: From a Fossil Energy Era to a New Energy Era*.



**Yusup Mansyur** was born in Surade, 7 April 1980. He holds a Bachelor of Chemical Engineering Degree (ST) from Bandung Institute of Technology (ITB) in 2004. He is currently completing his Master of Business Administration (MBA) at School Business Management (SBM) of Bandung Institute of Technology. The author is currently serving as an employee in one of the state-owned enterprises (SOEs) Energy Company.

In addition, the author is also active in the Professional Engineer Organization as a member and active in doing book editorial.

After graduated from university in 2004, Author grew up around Refinery, Petrochemical and LNG Company Business both operational and project management. During this time, Author was involved in many aspects of Engineering Function and Operations Function, including Project Development, Plant Revitalization, Plant Performance Monitoring & Reporting and Maximizing the asset utilization.