UNIVERSITAS INDONESIA

THE SELECTION OF BUSINESS STRATEGY FOR PHOTOVOLTAIC PANEL TECHNOLOGY (CASE STUDY IN PT WIKA INTRADE)

THESIS

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FACULTY OF ECONOMICS
MASTER OF MANAGEMENT PROGRAM
JAKARTA
JUNE 2011

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Submitted to fulfill one of the requirements to obtain degree of Magister Management – Master Business Administration

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HALAMAN PERNYATAAN ORISINALITAS

Tesis ini adalah hasil karya saya sendiri, dan semua sumber baik yang dikutip maupun dirujuk telah saya nyatakan benar.

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Tanggal	: 24 Juni, 2011

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Program Studi	: MM - MBA
Judul Tesis	: The Selection of Business Strategy for Photovoltaic Panel Technology (Case Study in PT WIKA INTRADE)

Telah berhasil dipertahankan di hadapan Dewan Penguji dan diterima sebagai bagian persyaratan yang diperlukan untuk memperoleh gelar *Master of Management - Master of Business Administration* pada Program Studi *International Business* Fakultas Ekonomi, Universitas Indonesia.

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Ditetapkan di	: Jakarta
Tanggal	: 24 Juni 2011

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PREFACE

If thousand words cannot describe a picture, then even thousand pictures will not enough to describe my feeling when this project report is finished. Nothing would be more relieving than getting one step closer to the end of the MM MBA program. What I was before, I am now and will be someday is pretty much influence by my surroundings. They all have significant impact to the course of my journey, and for that, I would like to give my warmest and sincerest thanks to these following individuals:

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7. The last but not least, MM and MBA 09 friends: who have been very good friends for the last 2 years, thanks for the support, laughter, and also friendship.

If every end is actually a new beginning by the end of this report, along with all of its imperfection, should never end at the moment when study time ends.

Constructive critic, suggestion and recommendation would cover the knowledge's constrain reflected in this report. It would also help its development in to something better, more complete, and needless to say, more useful. By this, hopefully, this report would at least, not follow the same faith as others – lost and forgotten in the silence of time.

Jakarta, June 2011

Author

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ABSTRACTS

Name : Yoga Abraham

Study Program : International Business

Title : The Selection of Business Strategy for Photovoltaic Panel Technology (Case Study in PT WIKA INTRADE)

The need for electricity continues to increase each year in line with population growth in Indonesia. The number increase brought to higher demand of electricity, especially in the remote areas in Indonesia. The burdens to use non-renewable resources as the primary energy are getting bigger every year. Government is intend to increase the electrification ratio by utilizing the renewable energy such as geothermal, hydropower, solar power. Currently, PT WIKA INTRADE a subsidiary of PT WIKA (Persero) Tbk. is developing a business strategy unit engaged in energy conversion, one of which activities are assembling and selling the photovoltaic panel. The proposed of this study is to select the most attractive and applicable strategy for the Company to apply in order to seize the photovoltaic market. The study will begins by identifying all basic information needed (the input stage) and perform weighting by using the External Factor Evaluation Matrix based (EFEM), Internal Factor Evaluation Matrix (IFEM) and Competitive Profile Matrix (CPM) to identify the biggest influence on the current strategy. Using Strength-Weaknesses-Opportunities-Threats (SWOT) Matrix and Grand Strategy Matrix to formulate the feasible strategies based on the basic input that already identified will perform in the matching stage. In order to choose the most attractive strategy among the feasible strategies, the author will use Quantitative Strategic Planning Matrix (QSPM) to evaluate alternative strategies objectively. The final result of this study is defined that the most attractive strategy for the Company to be applied is by Forward Integration. The strategy propose will benefit the Company if the Company can over control the distributors and the retailers

Key words:

SWOT Matrix, Grand Strategy, QSPM and Selecting the Strategy

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ABSTRAK

Nama : Yoga Abraham

Program Studi : International Business

Judul : Pemilihan Strategi Bisnis pada Teknologi Photovoltaic Panel (Studi Kasus pada PT WIKA INTRADE)

Kebutuhan atas listrik selalu meningkat setiap tahunnya, hal ini sejalan dengan pertumbuhan populasi di Indonesia. Peningkatan pertumbuhan penduduk yang tinggi menyebabkan peningkatan atas kebutuhan listrik, khususnya untuk wilayah yang sulit dijangkau. Beban untuk menggunakan sumber daya yang tak-terbaharukan sebagai energi utama semakin bertambah setiap tahunnya. Pemerintah bermaksud untuk meningkatkan rasio elektrifikasi dengan memanfaat kan panas bumi, tenaga air dan tenaga matahari. Saat ini PT WIKA INTRADE yang merupakan anak perusahaan dari PT WIKA (Persero) Tbk. yang sedang mengembangkan salah satu strategi bisnisnya dalam bidang konversi energi, salah satu kegiatannya adalah merakit dan menjual photovoltaic panel. Tujuan dari proposal ini adalah untuk memilih strategi yang paling menarik dan yang dapat diterapkan bagi Perusahaan untuk dapat meningkatkan peluang perusahaan pada pasar photovoltaic panel. Penelitian ini dimulai dengan mengidentifikasi semua informasi dasar yang diperlukan (*input stage*) dan melakukan pembobotan dengan menggunakan *External Factor Evaluation Matrix (EFEM), Internal Factor Evaluation Matrix (IFEM)* dan *Competitive Profile Matrix (CPM)* untuk menidentifikasi seberapa besar pengaruh faktor-faktor tersebut terhadap strategi perusahaan. Penggunaan *Strengths-Weaknesses-Opportunities-Threats Matrix* dan *Grand Strategy Matrix* akan digunakan dalam *matching stage* untuk menghasilkan strategi-strategi yang dapat digunakan sebagai pilihan bagi perusahaan. Tahap terakhir dalam penelitian ini adalah untuk memilih strategi yang paling tepat untuk digunakan Perusahaan, dalam hal ini Penulis akan menggunakan *Qualitative Strategic Planning Matrix* untuk memilih strategy secara objektif. Hasil akhir dari penelitian ini adalah menyimpulkan bahwa strategi yang paling menarik bagi perusahaan untuk diterapkan adalah dengan melakukan *Forward Integration*. Perusahaan dianggap akan lebih menguntungkan jika dapat menguasai dan mempunyai kontrol atas pelaku distributor dan pelaku retail.

Kata kunci:

SWOT Matrix, Grand Strategy, QSPM dan pemilihan strategi bisnis.

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CHAPTER 1
INTRODUCTION

1.1 Background

Indonesia has more than 200 billion population in 2010. The huge number of population brought certain problem; one of the problems is the rapidly increasing demand for energy, which currently met by using non-renewable hydrocarbons such as oil, gas, and coal. There are more than 22% hinterlands that have not reached by the nation's power grid *PT. Perusahaan Listrik Negara (PLN).* The increase of world's oil price in 2005 and 2008 has rapidly increased the production cost for electricity generator (*Rencana Usaha Penyediaan Tenaga Listrik (RUPTL)-PLN 2010-2019).*

Actual number of *PLN* subscribers during the period of 2005-2009 increased from 34.4 million to 41.0 million or 1.12 million increase annually. Addition of the largest customers still occur in the household sector, which is an average 1 million per year, followed by the business sector (67 thousand customers per year), the public sector (95 thousand customers per year) and industry sector (270 customer per year) (*RUPTL PLN*: 2005-2019).

Table 1.1 shows the main primary energy source consumption by *PLN* during the last ten years. Coal consumption continues to increase, but the use of natural gas are likely to continue to decline due to a depleting gas supply from the source, and because the infrastructure has not been available enough to meet the needs of *PLN*'s power plants.

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Table 1.1 PLN's Primary Energy Consumption by Fuel Type

Year	BBM million kl	Gas bcf	Coal million ton
1999	4.70	237	11.41
2000	5.02	229	13.14
2001	5.40	222	14.03
2002	7.00	193	14.06
2003	7.61	184	15.26
2004	8.51	176	15.41
2005	9.91	143	16.90
2006	9.98	158	19.09
2007	10.69	171	21.47
2008	11.32	182	21.00

Source: Rencana Usaha Penyediaan Tenaga Listrik PT PLN (Persero) 2010-2019

The major source of pressure to *PLN* in recent years is the fuel-mix that concentrated on too much oil consumption and very high oil prices soared in 2008 and then declined but still remained high until now. In 2008 the composition of kWh production based fuel is fuel oil 36%, coal 35%, natural gas 17%, geothermal 3%, and Hydro 9%.

There are many problem faced by *PLN* in-terms of providing the electricity to the consumer using the non-renewable sources such as oil, gas, and coal. On the other hand, Indonesia is blessed with an environment that supports the usage of Photovoltaic technology. Indonesia is a tropical country that gets much sunlight everyday. This climate condition gives Indonesia lots of opportunity to utilize the use of Photovoltaic technology to produce solar energy.

Photovoltaic (PV) is a method of generating electrical power by converting solar radiation into direct current electricity using semiconductors that exhibit the photovoltaic effect. Photovoltaic power generation employs solar panels comprising a number of cells containing a photovoltaic material. Solar Panels use arrays of solar photovoltaic cells to convert photons into usable electricity. Solar panels will provide clean, renewable energy from the sun *(www.solarpanelinfo.com).*

However, the implementation of solar energy for residential is not without problem, George O.G. Lof (1973) states two major drawbacks of solar power implementation, which is intensity and variability. Intensity related to the number of power can be absorb from the sun, while variability relates to the changes light intensity, such as season on even changes from day to night, which affect the number of power provided from the sun. Beside those two factors, the high cost of installing Photovoltaic technology also being a factor that limits the implementation in residential.

The use of Photovoltaic technology can be an alternative way to reduce Government burden in terms of electricity production. Based on the new and renewable energy development policy on the long-term plan of *"RUPLT-PLN 2010-2019"*, they support the government policy to find and to develop the new and renewable energy resources, especially for the remote area that is not yet been served by the electricity network. One of the potential resources is by using solar. Those problems are few indicators that the renewable energy resources are needed to complement, or even substitute, the existing energy. The energy is not only can be found and use easily but also environmentally friendly.

On that consideration, the study regarding the strategic management will be made as a guide for shareholders and management of PT. WIKA INTRADE in carrying out its business activities to enable competition in the industry.

1.2 Problems

Government through PLN is intended to increase the electrification ratio, especially in the remote areas such as eastern part of Indonesia. By looking at the geographical condition and the availability of fossil energy, it is highly recommended for Government to use new and renewable energy. Many companies are engaging to response the opportunity of using the new and renewable energy, one of them is PT WIKA (Persero) Tbk. In January 2000, PT WIKA (Persero) Tbk established a subsidiary named PT WIKA INTRADE that

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has business unit in energy conversion. One of PT WIKA INTRADE' energy conversion product is photovoltaic system.

Based on the information above, the author intended to analyze and to make recommendation of strategy business in order to increase the Company's competitiveness in the photovoltaic industry in Indonesia.

Selection of appropriate business strategies will become a very important decision for the Company in the achievement goals in the competition that already exists in the industry. Therefore the main problems identified are:

1. What is the basic input information needed to formulate strategies for the Company?
2. How to generate feasible alternatives strategies by using basic information that already identified?
3. How does the Company choose the most attractive strategy in order to increase the Company's competitiveness in photovoltaic industry?

1.3 Objectives

The purpose of this study is based on the formulation of the subject matter as follows:

1. To summarize the basic input information needed to formulate strategies. The basic inputs that will be used are from the External Factor Evaluation (EFE) Matrix, the Internal Factor Evaluation (IFE) Matrix, and the Competitive Profile Matrix (CPM).
2. To generate feasible alternatives strategies by aligning key external and internal factors that already identified. The method that will be used to formulate the strategy is by using Strengths-Weaknesses-Opportunities-Threats (SWOT) matrix and the Grand Strategy Matrix.

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3. To choose the most attractive strategy for the Company to be applied by using Quantitative Strategic Planning Matrix (QSPM).

To choose the most attractive strategy for the Company to be applied by using Quantitative Strategic Planning Matrix (QSPM).

As for the benefits of this study is can be addressed to several groups

1. The Company. This study can assist the company in making the new strategic moves in order to face the growing market of photovoltaic industry.
2. Academics. This study aims to update and to complement previous study on strategic management and to add university literature.
3. Subsequent Study. The result of this study can be source to other research and encourage other researchers to conduct similar research with more details and deeper.

1.4 Scope of Research

To be more focus on the study, the scopes of this study are as follow:

1. Aspects that will be analyzed in depth are the aspect of business strategy that consists of strategy formulation, strategic analysis and strategy choice.
2. The company that will be developed is PT WIKA INTRADE, the state-owned company engaged in the renewable energy located in Jakarta
3. The period that will be analyzed in this study is from 2008 to 2009

1.5 Systematic of Writing

This systematic is based on a case study format and added by others supporting theories in analyzing a problem or a strategy (academic thesis report format). This thesis report consists of several chapters, where in each chapter, it consists sub-chapter to describe a topic or a problem. The contents of sub-chapter is problem,

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supporting theory, research method (exploratory research or descriptive research), analysis, strategy discussion and strategy implementation
General description of the systematic thesis report is:

Chapter 1 - Introduction

The introduction contains the initial exposure on the writing which contains the background and problem formulation, objectives, pour the scope, methodology, and systematic of writing that will be the framework in developing writing

Chapter 2 - Literature review

This chapter discusses about the theories that will be fundamental in the writing of this thesis

Chapter 3 - Research Methodology

This chapter contains systematic of study, source and data period that will be used, research studies about photovoltaic in Indonesia and data processing method that will be used to analyzed the research

Chapter 4 - Business Strategy Formulation

This chapter contains the formulation of strategies that follow the strategic management process

Chapter 5 - Conclusions and Suggestion

This chapter contains suitable strategic management for the Company to be chosen and the suggestion.

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CHAPTER 2
LITERATURE REVIEW

2.1 Strategic Management

2.1.1 Defining Strategic Management

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. As this definition implies, strategic management focuses on integrating management, marketing, finance/accounting, production/operations research and development, and computer information systems to achieve organizational success (David, 2007).

According to Thompson and Strickland (2003), Strategic management refer to the managerial process of forming a strategic vision, setting objectives, crafting a strategy, implementing and executing the strategy, and then over time initiating what ever corrective adjustment in the vision, objectives, strategy, and execution are deemed appropriate.

Strategic management is that set of managerial decision and actions that determines the long-run performance of a corporation. It includes environmental scanning (both external and internal), strategy formulation (strategic or long-range planning), strategic implementation, and evaluation and control (Wheelen, Hunger, 2006)

The term strategic management is used synonymously with the term of strategic planning. The term strategic management is used to refer to strategy formulation, implementation, and evaluation, with strategic planning referring only to strategy formulation. The purpose of strategic management is to exploit and create new and different opportunities for long-range planning, in contrast, tries to optimize for tomorrow and trends of today (David, 2007).

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2.1.2 A Comprehensive Strategy-Formulation Framework

Important strategy-formulation techniques can be integrated into a three stage decision-making framework.

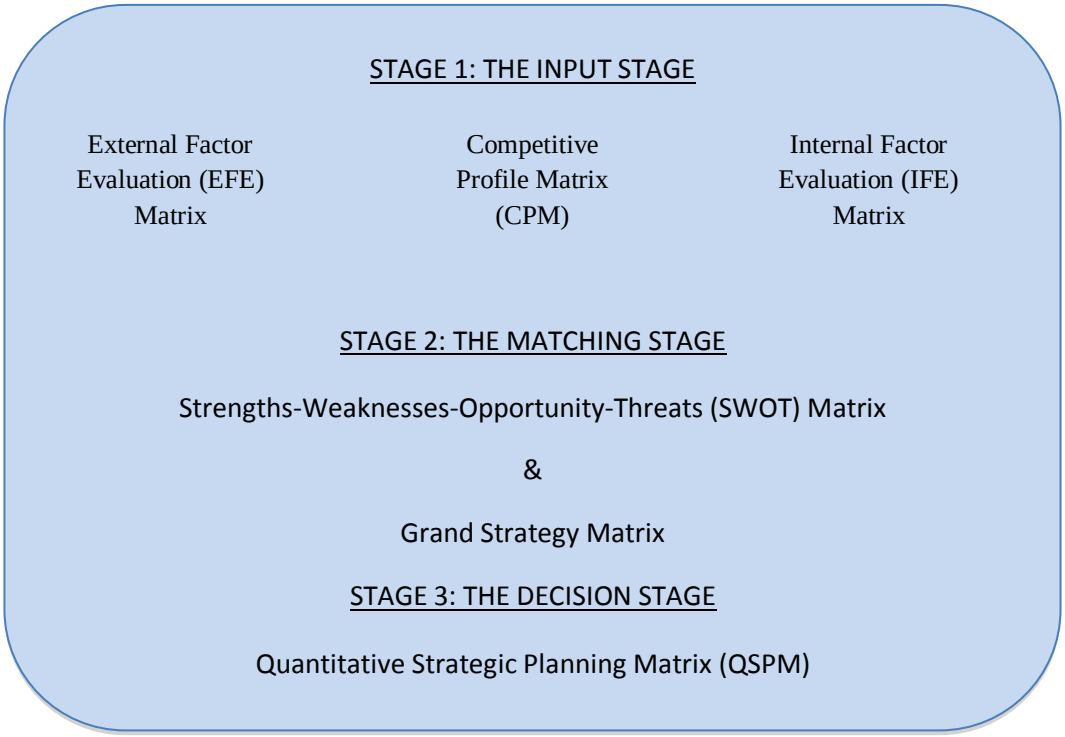

Figure 2.1 The Strategy-Formulation Analytical Framework

Source: David. (2007).

Stage 1 (The input stage) of the formulation framework consists of the External Factor Evaluation (EFE) Matrix, the Internal Factor Evaluation (IFE) Matrix, and the Competitive Profile Matrix (CPM). Called the *Input Stage*, Stage 1 summarizes the basic input information needed to formulate strategies. Stage 2, called the *Matching Stage*, focuses upon generating feasible alternative strategies by aligning key external and internal factors. Stage 2 techniques including the Strengths-Weaknesses-Opportunities-Threats (SWOT) Matrix and Grand Strategy Matrix. Stage 3, called *Decision Stage*, involves uses input information from Stage 1 to objectively evaluate feasibility alternative strategies identified in Stage

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2. A QSPM reveals the relative attractiveness of alternative strategies and thus provides objectives basis for the selecting specific strategies (David, 2007).

2.1.2.1 The Input Stage

Procedures for developing The Input Stage are using an EFE Matrix, an IFE Matrix and a CPM. The information derived from these three matrices provides basic input information for the matching. The input tools require strategist to quantify subjectivity during early stages of the strategy formulation process. Making small decisions in the input matrices regarding the relative importance of external and internal factors allows strategist to more effectively generate and evaluate alternative strategies. Good intuitive judgment is always needed in determining appropriate weights and ratings (David, 2007).

The External Factor Evaluation (EFE) Matrix allows strategists to summarize and evaluate economical, social, cultural, demographic, environmental, political, governmental, legal, technological, and competitive information (David, 2007).

The EFE Matrix can be developed in five steps:

1. List key external factors as identified in the external-audit process. Include both opportunities and threats that affect the firm and its industry.
2. Assign to each factor a weight that range from 0.0 (not important) to 1.0 (very important). The weight indicates the relative importance of that factor to being successful in the firm's industry. Appropriate weights can be determines by comparing successful with unsuccessful competitors or by discussing the factor and reaching a group consensus.
3. Assign a rating between 1 and 4 to each key external factor to indicate how effectively the firm's current strategies respond to the factors, where 4 = the response is superior, 3 = the response is above average, 2 = the response is average and 1 = the response is poor. Ratings are based on effectiveness of the firm's strategies. Ratings are thus company-

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based, whereas the weights in step 2 are industry-based. It is also important to note the both threats and opportunities can receive a 1, 2, 3 or 4.

4. Multiply each factor's weight by its rating to determine a weighted score
5. Sum the weighted scores for each variable to determine the total weighted score for the organization.

The Example should be referred to the EFE Matrix below:

Table 2.1 External Factor Evaluation Matrix

	KEY EXTERNAL FACTORS	WEIGHT	RATING	WEIGHTED SCORE
Opportunities				
1	Demand for chicken increasing 8 percent annually	0.09	4	0.36
2	Demand for prepared food increasing 10 percent annually	0.08	4	0.32
3	Exporting of chicken growing 12 percent annually	0.09	3	0.27
4	Packaging technology offers 15 percent annual cost saving	0.20	2	0.40
Threats				
5	Chicken industry reputation not good due to conditions	0.14	3	0.42
6	Leading competitors increased its ad expenses 30 percent	0.15	1	0.15
7	Increasing governmental regulation in the industry	0.15	2	0.30
8	Salmonella scares crop up frequently	0.10	2	0.20
Total		**1.00**		**2.42**

Source: David. (2007).

Regardless of the number of key opportunities and threats included in an EFE Matrix, the highest possible total weighted score for an organization is 4.0 and the lowest possible total weighted score is 1.0. The average total weighted score is 2.5. A total way to existing opportunities and threats in its industry. The firm's strategies are not capitalizing on opportunities or avoiding external threats (David, 2007).

The Competitive Profile Matrix (CPM) identifies a firm's major competitors and its particular strength and weaknesses in relation to a sample firm's strategy position. The weights and total weighted scores in both a CPM and EFE have the same meaning. Critical success in a CPM include both internal and external issues; therefore, the ratings refer to strengths and weaknesses, where 4 major

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strengths, 3 = minor strengths, 2 = minor weaknesses and 1 = major weaknesses (David, 2007).

The Example should be referred to the CPM below:

Table 2.2. Competitive Profile Matrix

Critical Success Factors	Weight	WIKA IN-TRADE		AZET		LEN	
		Rating	Score	Rating	Score	Rating	Score
Advertising	0.20	1	0.20	4	0.80	3	0.60
Product Quality	0.10	4	0.40	4	0.40	3	0.30
Price Competitiveness	0.10	3	0.30	3	0.30	4	0.40
Management System	0.10	4	0.40	3	0.30	3	0.30
Financial Position	0.15	4	0.60	3	0.45	3	0.45
Customer Loyalty	0.10	4	0.40	4	0.40	2	0.20
Global Expansion	0.20	4	0.80	2	0.40	2	0.40
Market Share	0.05	1	0.05	4	0.20	3	0.15
Total	**1.00**		**3.15**		**3.25**		**2.80**

Source: David. (2007).

Competitive Analysis: Porter's Five-Forces Model is a widely used approach for developing strategies in many industries. The intensity of competition among firms varies widely across industries. According to Porter, the nature of competitiveness in a given industry can be viewed as competitive of five forces (David, 2007):

1. Rivalry among competing firms
2. Potential entry of new competitors
3. Potential development of substitute products
4. Bargaining power of suppliers
5. Bargaining power of consumers

The following three steps for using Porter's Five-Forces Model can reveal whether competition in a given industry is such that firm make an acceptable profit (David, 2007):

1. Identify key aspects or elements of each competitive forces impact the firm
2. Evaluate how strong and important each elements is for the firm
3. Decide whether the collective strength of the elements is worth the company entering or staying in the industry.

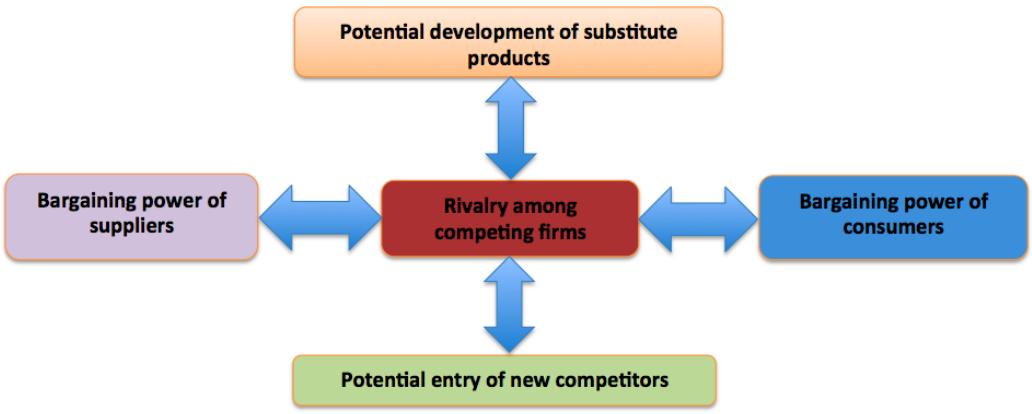

Figure 2.2. The Five-Forces Model of Competition

Source: David. (2007).

Rivals among Competing Firms, the strategies pursued by one firm can be successful only to the extent that they provide competitive advantage over the strategies pursued by rival firms. Changes in strategy by one firm may be met with retaliatory countermoves, such as lowering prices, enhancing quality, adding features, providing services, extending warranties, and increasing advertising.

The intensity of rivalry among competing firms tend to increase as the number of competitors increases, as competitors become more equal in size and capability, as demand for the industry's product declines, and as price cutting become common (David, 2007).

Potential Entry of New Competitors, whenever new firms can easily enter a particular industry, the intensity of competitiveness among firms increases. Barrier to entry, however, can include the need to gain economies of scale quickly, the need to gain technology and specialized know-how, the lack of

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experience, strong customer loyalty, strong brand preferences, large capital requirements, lack of adequate distribution channels, government regulatory policies, tariffs, lack of access to raw materials, possession of patents, undesirable locations, counterattack by entrenched firm, and potential saturation of market.

Despite numerous barriers to entry, new firms sometimes enter industries with higher-quality products, lower prices, and substantial marketing resources. The strategist's job therefore is to identify potential new firms entering the market, to monitor the new rival firms; strategies, to counter attack as needed, and to capitalize on existing strengths and opportunities (David, 2007).

Potential Development of Substitute Products, firms are in close competition with producers of substitute products in other industries. The magnitude of competitive pressure derived from development of substitute product is generally evidence by rivals' plans for expanding production capacity, as well as by their sales and profit growth numbers.

Competitive pressures arising from substitute products increase as the relative price of substitute products declines and as consumers' switching cost decrease. The competitive strength of substitute products is best measured by the inroads into the market share those products obtain, as well as those firms' plans for increased capacity and market penetration (David, 2007).

Bargaining Power of Suppliers, the bargaining power of suppliers affects the intensity of competitions in an industry, especially when there is a large number of a supplier, when there are only few good substitute raw materials, or when the cost of switching raw materials is especially costly. In more and more industries, sellers are forging strategic partnership with select suppliers in efforts to (1) reduce inventory and logistic cost (e.g., through just-in-time deliveries); (2) speed the availability of next-generation components; (3) enhance the quality of the parts and components being supplied and reduce defect rates; and (4) squeeze out important cost savings for both themselves and their suppliers (David, 2007).

Bargaining Power of Consumer, the bargaining power of consumer represent a major force affecting the intensity of competition in an industry. The bargaining power of consumers can be the most important force impacting competitive advantage. Consumers gain increasing bargaining power under the following circumstances (David, 2007):

- If they can inexpensively switch to competing brands or substitutes.
- If they are particularly important to the seller.
- If sellers are struggling in the face of falling consumer demand.
- If they are informed about sellers' products, prices, and costs.
- If they have discretion in whether and when they purchase the product.

The Internal Factor Evaluation (IFE) Matrix summarizes and evaluates the major strengths and weakness in the functional areas of a business, and it also provides a basis for identifying and evaluating relationship among those areas. A thorough understanding of the interpreted to mean is more important than the actual numbers. An IFE can be developed in five steps:

1. List key internal factors as identified in the internal-audit process. Use a total of 10 to 20 internal factors, including both strengths and weaknesses. List strengths first and then weaknesses. Be as specific as possible, using percentage, ratio, and comparative numbers
2. Assign a weight that ranges from 0.0 (not important) to 1.0 (all-important) to each factor. The weight assigned to a given factor indicates the relative importance of the factor is an internal strength or weakness, factors considered to have the greatest effect on organizational performance should be assigned the highest weights. The sum of all weight equal 1.0
3. Assign a 1 - to - 4 rating to each factor to indicate whether that factor represent a major weakness (rating = 1), a minor weakness (rating = 2), a minor strength (rating = 3), or a major strength (rating = 4). Note that strengths must receive 3 or 4 rating and weaknesses must receive a 1 or 2

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rating. Ratings are thus company-based, whereas the weights in step 2 are industry-based.

4. Multiply each factor's weight by this rating to determine a weighted-score for each variable
5. Sum the weighted scores for each variable to determine the total weight score for the organization.

The Example should be referred to the IFE Matrix below:

Table 2.3. Internal Factor Evaluation Matrix

	KEY INTERNAL FACTORS	WEIGHT	RATING	WEIGHTED SCORE
Opportunities				
1	E*Trade provides 24-hour, 7-day services	0.09	4	0.36
2	E*Trade has a customer base in 119 countries	0.08	4	0.32
3	E*Trade has more than 20,000 ATMs, making it the second largest ATM network in United States	0.09	3	0.27
4	E*trade's "Power E" offers a flat commision of $9.99 per trade for investors who trade 27 or more times per quarter.	0.20	2	0.40
Threats				
5	E*Trade's total debt-to-equity ratio is 0.36 compared to the industry average of 0.9	0.14	3	0.42
6	Active retail brokerage accounts decreased from 3,690,917 in 2002 to 2,848,625 in 2003	0.15	1	0.15
7	E* Trade currently has a limited number of brances for customers to go to for assistance.	0.15	2	0.30
8	E*Trade has experienced computer system failures.	0.10	2	0.20
Total		**1.00**		**2.42**

Source: David. (2007).

Regardless of how many factors are included in an IFE Matrix, the total weighted score can range from a low of 1.0 to a high of 4.0, with the average score weak internally, whereas scores significantly above 2.5 indicate a strong internal position. The number of factors has no effect upon the range of total weighted scores because the weights always sum to 1.0 (David, 2007).

2.1.2.2 The Matching Stage

The Matching Stage of the strategy-formulation framework that will be used in this study is the SWOT Matrix. This tool relies upon information derived from the

input stage to match external opportunities and threats with internal strengths and weaknesses. Matching external and internal critical success factors is the key to effectively generating feasible alternative strategies (David, 2007).

In the most situation, external and internal relationships are complex, and the matching requires multiple alignments for each strategy generated. The basic concept of matching can be seen in table 2.4

Table 2.4. Matching Key External and Internal Factors to Formulate Alternative Strategies

KEY INTERNAL FACTOR		KEY EXTERNAL FACTOR		RESULTANT STRATEGY
Insufficient capacity (An internal weakness)	+	Exit of two major foreign competitors from the industry (an external opportunity)	=	Pursue horizontal integration by buying competitors' facilities
Strong R&D expertise (an internal strength)	+	Decreasing number of younger adults (an external threats)	=	Develop new products for older adults
Poor employee morale (an internal weakness)	+	Strong union activity (a external threat)	=	Develop a new employee benefits package

Source: David. (2007).

The Strengths-Weakness-Opportunities-Threats (SWOT) Matrix is strategic factor for specific firm. SWOT analysis should not only result in the identification of a corporation's distinctive competencies. The particular capabilities and resources that a firm possesses and the superior way in which they are used, but also in the identification of opportunities that the firm is not currently able to take advantage of due to a lack of appropriate resources (Wheelen & Hunger, 2006).

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There are four types of strategy that help in analyzing using SWOT Matrix:

a. **SO (strengths-opportunities) Strategies**. This strategy is use internal strengths to take advantage of external opportunities.
b. **WO (weakness-opportunities) Strategies** aim at improving internal weaknesses by taking advantage of external opportunities.
c. **ST (strengths-threats) Strategies** use a firm's strengths to avoid or reduce the impact of external threats.
d. **WT (Weakness-threats) Strategies** are defensive tactics directed at reducing internal weakness and avoiding external threats.

SWOT or TOWS are the same acronym but different structure. This analysis use by firm to develop strategies or possible set of strategies. SWOT Matrix as discussed above can be shown in the matrix display below.

Table 2.5. SWOT Matrix

INTERNAL FACTORS (IFE) / EXTERNAL FACTORS (EFE)	**Strengths (S)** List 5 - 10 Internal strengths here	**Weaknesses (W)** List 5 - 10 Internal strengths here
Opportunities (O) List 5 - 10 *external* opportunities here	**SO Strategies** Generate strategies here that use **strenghts** to take **advantage** of **opportunities**	**WO Strategies** Generate strategies here that take **advantage** of **opportunities** by **overcoming weaknesses**
Threats (T) List 5 - 10 *external* threats here	**ST Strategies** Generate strategies here that use **strenghts** to **avoid threats**	**WT Strategies** Generate strategies here that **minimize weaknesses** and **avoid threats**

Source: www.mba-tutorials.com

There are eight steps involves in constructing a SWOT Matrix:

1. List the firm's key opportunities
2. List the firm's external threats
3. List the firm's key internal strengths
4. List the firm's key internal weakness

5. Match internal strengths with external opportunities, and record resultant SO Strategies in the appropriate cell
6. Match internal weaknesses with external opportunities, and record the resultant WO strategies
7. Match internal strengths with external threats, and record the resultant ST Strategies
8. Match internal weaknesses with external threats, and record the resultant WT Strategies.

Even though SWOT Matrix is common used by firms in strategic planning, the analysis does have limitations;

- SWOT does not show how to achieve a competitive advantage, so it must not be an end in itself. The matrix should be the starting point for discussion on how proposed strategies could be implemented as well as benefit considerations that ultimately could lead to competitive advantage.
- SWOT is a static assessment (or snapshot) in time. Because of the SWOT matrix display as single frame of motion Figure where it can see the lead characters and the setting but have no clue as to the plot. As circumstances, capabilities, threats, and strategies change, the dynamics of a competitive environment may not be revealed in a single matrix.
- SWOT analysis may lead the firm to overemphasize a single internal or external factor in formulating strategies.

There are interrelationships among the key internal and external factors that SWOT does not reveal that may be important in devising strategies.

The process of generating and selecting the strategies has to be done by considering many things. The strategists must consider the entire possible alternative that may be suitable to the firm. The process of selecting possible alternative must be developed carefully, by considering the most suitable and attractive alternative strategy. This development of alternatives is due to there are an infinite number of possible actions and an infinite number of ways to implement those actions.

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The final stage of the strategy formulation is the evaluation the alternative strategy that most suitable and applicable for the firm. In this study, the author will use The Qualitative Strategic Planning Matrix (QSPM) to analyze the best strategy that might be applied.

Grand Strategy Matrix is based on two evaluative dimensions: competitive position and market growth. Appropriate strategies for an organization to consider are listed in sequential order of attractiveness in each quadrant of the matrix.

Figure 2.2. The Grand Strategy Matrix

Source: David. (2007).

Firms located in Quadrant I of the Grand Strategy Matrix are in an excellent strategic position. For these firms, continued concentration on current markets (Market penetration and market development) and products (product development) is an appropriate strategy. When a Quadrant I organization has excessive resources, then backward, forward, or horizontal integration may be effective strategies. When a Quadrant I firms is too heavily committed to a single

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product, then related diversification may reduce the risk associated with a narrow product line. Quadrant I firms can afford to take advantage of external opportunities in several areas. They can take risks aggressively when necessary.

Firms positioned in Quadrant II need to evaluate their present approach to marketplace seriously. Although their industry is growing, they are unable to compete effectively, and they need to determine why the firm's current approach is ineffective and how the company can best change to improve its competitiveness. Because Quadrant II firms are in a rapid-market-growth industry, an intensive strategy (as opposed to integrative or diversification) is usually the first option that should be considered. However, if the firm is lacking a distinctive competence or competitive advantage, then horizontal integration is often a desirable organization. As a last resort, divestiture or liquidation should be considered. Divestiture can provide funds needed to acquire other business of buyback shares of stock.

Quadrant III organizations compete in slow-growth industries and have weak competitive positions. These firms must make some drastic change quickly to avoid further decline and possible liquidation. Extensive cost and asset reduction (retrenchment) should be pursued first. An alternative strategy is to shift resources away from the current business into different areas (diversify). If all else fails, the final options for Quadrant III businesses are divestiture or liquidation.

Quadrant IV businesses have a strong competitive position but are in a slow-growth industry. These firms have the strength to launch diversified programs into more promising growth areas: Quadrant IV firms have characteristically high cash-flow levels and limited internal growth needs and often can pursue related or unrelated diversification successfully. Quadrant IV firms also may pursue joint ventures (David, 2007).

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2.1.2.3 The Decision Stage

The Quantitative Strategic Planning Matrix (QSPM) is the objectively technique that can indicate which alternative strategies are best. The QSPM uses input from Stage 1 analyses and matching results from Stage 2 analyses to decide objectively among alternative strategies. In this thesis, the make up Stage 1 will be EFE Matrix and IFE Matrix and couple with Stage 2, which is SWOT Matrix and SPACE Matrix. Those stages are provides the information needed for setting up the QSPM (stage 3). The QSPM is a tool to evaluate alternative strategies objectively based on previously identified external and internal critical success factors (David, 2007).

The Example should be referred to the QSPM below:

Table 2.6. Qualitative Strategic Planning Matrix

		STRATEGY ALTERNATIVES			
	Key External Factors	**Weight**	**Strategy 1**	**Strategy 1**	**Strategy 1**
1	Economy				
2	Political/Legal/Governmental				
3	Social/Cultural/Demographic/Environmental				
4	Technological				
5	Competitive				
	Key Internal Factors				
6	Management				
7	Marketing				
8	Finance/Accounting				
9	Production/Accounting				
10	Production/Operations				
11	Research and Develoment				
12	Management Information System				
	Sum Total Attractiveness Score				

Source: David. (2007).

The six steps required developing a QSPM:

1. Make a list of the firm's key external opportunities/threats and internal strengths/weaknesses in the left column of the QSPM. This information should be taken directly from the EFE Matrix and IFE Matrix. A minimum of 10 external success factors and 10 internal critical success factors should be included in the QSPM.

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2. Assign weight to each key external and internal factor. These weights are identical to those in the EFE Matrix and the EFE Matrix. The weights are presented in a straight column just to right of the external and internal criteria success factors.

3. Examine the stage 2 (matching), matrices, and identify alternative strategy that the organization should consider implementing. Record these strategies in the top row of the QSPM. Group strategies into mutually exclusive sets if possible.

4. Determine the attractiveness Scores (AS) defined as numerical values that indicates the relative attractiveness of each strategy in a given set of alternatives. Attractiveness Scores (AS) are determined by examining each key external or internal factor, one at a time, and asking the question "does this factor affect the choice of strategies should be compared relative to that key factors. The range for attractiveness Scores is 1 = not attractive, 2 = somewhat attractive, 3 = reasonably attractive, and 4 = highly attractive.

5. Compute the Total Attractiveness Scores. Total attractiveness Scores (TAS) are defined as the product of multiplying the weights (Step 2) by the Attractiveness Scores (Step 4) in each row. The Total Attractiveness Scores indicate the relative attractiveness of each alternative strategy, considering only the impact of adjacent external or internal critical success factor. The higher the Total Attractiveness Score, the more attractive the strategic alternative (considering only the adjacent critical success factor).

6. Compute the Sum Total Attractiveness Score. Ass Total Attractiveness Scores in each strategy column of QSPM. The Sum Total Attractiveness Scores (STAS) reveal which strategy is most attractive in each set of alternatives. Higher score indicate more attractive strategies,

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considering all the relevant external and internal factors that could affect the strategy decisions. The magnitude of the difference between the Sum Total Attractiveness Scores in a given set of strategic alternatives indicates the relative desirability of one strategy over another.

A positive feature of the QSPM is that sets of strategies can be examined sequentially or simultaneously, there is no limit to the number of strategies that can be evaluated or the number of sets of strategies that can be examined at once using the QSPM.

Another positive feature of the QSPM is that it requires to user strategists to integrate pertinent external and internal factors into decision process. Developing a QSPM makes it less likely that key factors will be overlooked or weighted inappropriately. A QSPM can be adapted by small and large non-profit organization so can be applied virtually any type of organization.

Although there are many positive features in using QSPM, this strategy also has limitations. First, it always requires intuitive judgments and educated assumptions. The rating and attractiveness scores require judgmental decisions, even though they should be based on the objective information. Constructive discussion during strategy analysis and choice may arise because of genuine differences of interpretation of information and varying opinions. Another limitation of the QSPM is that it can be only as good as the prerequisite information and matching analyses upon it is based.

2.2 The Photovoltaic Industry

2.2.1 Definition

Photovoltaic (PV) is one type of technology used in transforming solar (sun) light into electricity. People often misunderstood by saying that photovoltaic is a synonym for solar energy. In fact, photovoltaic is a technology that uses a device (usually a solar panel) to produce free electrons when exposed to light, resulting

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in the production of an electric current. While solar energy is the energy received by the earth from the sun, in the form of solar radiation, which makes the production of solar electricity possible (http://www.clean-energy-ideas.com). So photovoltaic is a technology that utilizes solar energy to become electricity.

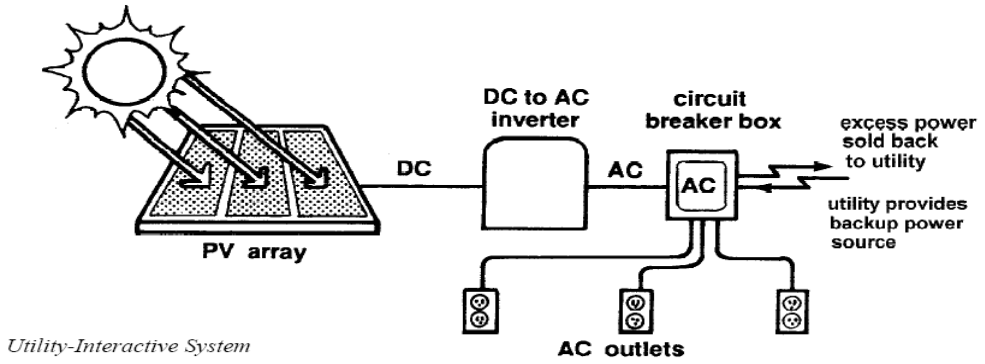

Figure 2.3. Typical Stand Alone Photovoltaic System

Source: North Carolina Solar Center

The Energy Technology Fact Sheet from United Nations Environment Programme (UNEP) states that there are around 30 different types of PV technology under development, but there are only 3 main technologies in commercial production, which are monocrystalline cells, polycrystalline cells and thin film technologies.

Monocrystalline solar cells are manufactured from a water of high quality silicon and are generally the most efficient of the three technologies at converting solar energy into electricity. Polycrystalline solar cells are cut from a block of lower quality multi-crystalline silicon and are less efficient but less expensive to produce. Thin film solar cells are produced in a very different process that is similar to tinting glass. These solar cells are made from semi conductor material deposited as a thin film on a substrate such as glass or aluminum. Thin film solar cells are generally less than half as efficient as the best cells, but much less expensive to produce. They are widely used for powering customer device.

2.2.2 Photovoltaic Application

There are three general categorization of photovoltaic technology in the United States, which are residential, commercial, and grid sited (Frantzis et al. 2001).

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Residential and commercial application can be further categorized into markets for both new construction and existing (retrofit) buildings.

Table 2.7. Key Grid Connected Application in the United States

Key Grid-Connected Applications in the US			
Application		Description	Typical Size Range
Residential	Retrofit	• PV modules installed on roofs of existing homes; average system size increasing	2-8 kW
	New Construction	• Increasingly, building integrated products are installed at time of home construction	1.5 – 5 kW
Commercial	Retrofit	• PV modules installed on roofs of existing commercial and industrial spaces; average system size increasing	20 – 1,000 kW
	New Construction	• Increasingly, building integrated products installed at time of building construction (especially in Europe)	20 – 1,000 kW
Grid-sited		• Ground-mounted PV systems installed on the wholesale side of the distribution grid	> 500 kW

Source: Frantzis, Graham, Katofsky, and Sawyer. (2008).

The application of photovoltaic in the other area of the world is more or less the same with the application of photovoltaic in the United States. The possible differences are just on the size of the power generated by the system. In some developing countries, photovoltaic is becoming the best alternative to generate electricity in the rural area that still cannot be reached by the conventional electricity system.

There are also some variations in the application of the photovoltaic technology for the residential market. Instead of using photovoltaic as an electricity generator for houses, some company offer photovoltaic as a power generator for specific home appliances such as solar water heater and solar powered submersible pump. In the commercial market, photovoltaic also being used as a power generator for base transmission unit (BTS) in the telecommunication industry. There are also applications of photovoltaic for public facilities such as street lamps.

Basically, photovoltaic is a technology that uses a device (usually a solar panel) to produce free electrons when exposed to light, resulting in the production of an

electric current. The advantages of using the photovoltaic technology are as follows:

- An energy source available through out the year and it is free. This technology appliances are applicable in tropical area that have a lot of sunlight intensity such as Indonesia
- Free from pollution, because there no combusting process which resulted in the disposal of combusting product that can result air pollution.
- Free from noise pollution. The converting process from solar energy into electricity does not need mechanical process that usually cause a loud noise
- Does not require a complicated transmission system. The system that must be used in the photovoltaic energy are panels to absorb the solar energy, the converter to convert that solar energy into AC/DC electric current, Controller to control the electricity distribution and batteries to store the electricity energy.
- Can be placed in the remote areas. Because Indonesia are tropical country that each areas irradiated by sunlight, the use of photovoltaic technology can be placed in anywhere in Indonesia, especially in off grid areas.
- Have a long life usage, more or less can be use 20 to 25 years and also safe in it is use
- Have a minimum maintenance cost and maintenance of these equipment is easy to handle

2.2.3 Supply Chain of Photovoltaic Business

Before the feasibility of the photovoltaic business for the company can be analyzed, it is necessary to determine in which part of the supply chain do the company operate.

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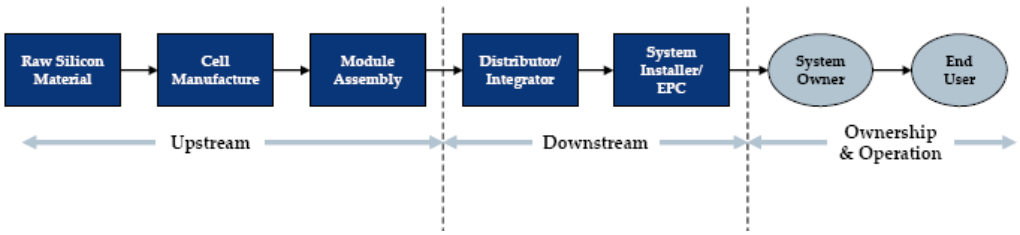

Figure 2.4. Basic Component of PV Product Supply Chain

Source: Frantzis, Graham, Katofsky, and Sawyer. (2008).

The upstream business in the PV product supply chain related to the manufacture of solar panel module, starting from the raw material until it become a ready to use solar panel module. The downstream business is the user of the solar panel module, related to the distribution and trading of the solar panel module, up until the system installation and the engineering, procurement, construction (EPC) of the solar power plant. The last stage of the supply chain is the ownership and operation. The player in this stage is the operator of the solar power plant and the end user who invest in the solar system for the houses, offices and other commercial usage.

Currently, PT WIKA INTRADE is engaged in the second stage of the supply chain. Through their energy conversion business unit, they are involved in the trading and installation of solar panel system. But for the longer term, the company planning to expand their business by entering the third stage of the supply chain, by becoming the owner of the solar power plant. This study will analyze the business feasibility if the company realizes their plan to become the owner of solar power plant.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Source and Data Period

The study of strategic business that will be analyzed is using a qualitative data in the form of secondary data derived from PT Wijaya Karya (Persero) Tbk annual report 2009 and *Rencana Jangka Panjang* PT WIKA INTRADE 2010 – 2014, a subsidiary of PT WIKA (Persero) Tbk. as main data resources.

3.2 Research Study

The study focusing on how basic information factors, such as internal factors, external factors and competitive profile can contribute to the selection of strategy business. In order to obtain the data, the authors will use library research and field research to help in identifying the method and the data.

The study research process begins by searching references from the existing literatures in the university library. The references are including journals, strategic management test books, and previous thesis. More over, the author also will use internet media to find related information regarding strategic management. That information can be obtained from Government‘s website, news paper, domestic and international studies related to strategic management and photovoltaic industry.

For the field research, the authors will directly interview with the Company’s management in order to obtain professional perspectives regarding the basic information that related to strategy and also formulating the business strategy.

3.3 Data Processing Method

The data processing method used is descriptive method that is describing the business strategy that suitable for photovoltaic industry in Indonesia. The data have been collected by using exploration research from the main source of

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Rencana Jangka Panjang PT WIKA INTRADE and the annual report of PT WIKA (Persero).

3.4 Systematic of Thinking

The systematic of thinking of this study will be described in the following

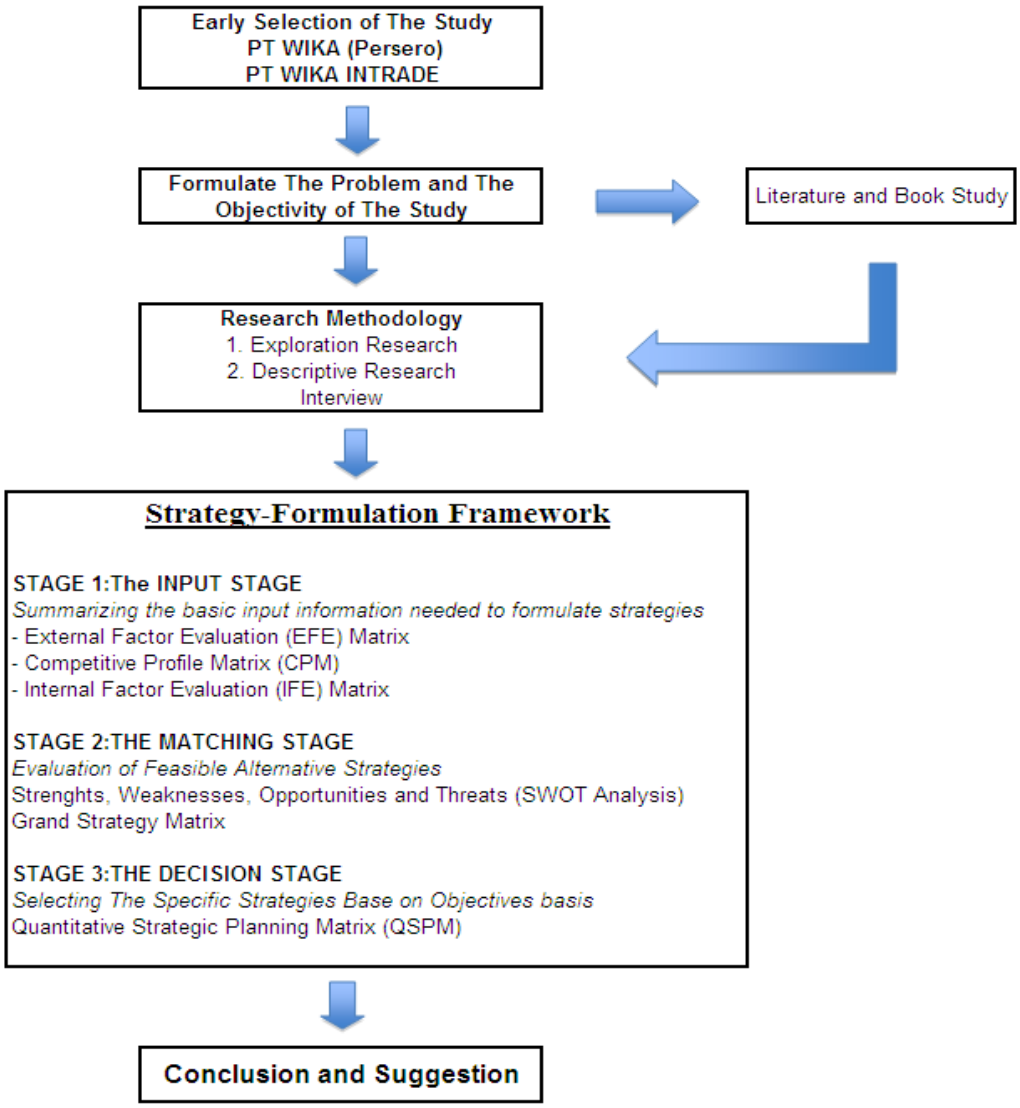

Figure 3.1. Systematic of Thinking Diagram

3.4.1 Research Methodology

The method of study is based from the actual data, which are obtained from literatures, Internet and newspaper. The purpose of the study is to get data to be calculated and analyzed, and then the results are used to answer and to solve the problems occurred. This means, to arrange a study, which consists of the

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description of customer profile, supplier, competitor and the characteristic of Photovoltaic Company in detail and comprehensive.

The methods used on collecting data are exploratory research and descriptive research, as follows:

a. Exploration Research

Exploratory research is used (1) to describe the image in arranging a good and right business study and (2) as the description in Photovoltaic Company. The data is collected from officially published data issued by PT Wijaya Karya (Persero) Tbk annual report 2009 and *Rencana Jangka Panjang PT Wijaya Karya INTRADE*. We also use other media like Internet, newspapers, and articles to support the author analysis; the data is categorized as secondary data.

b. Descriptive Research

Descriptive research is done to obtain deep and accurate information in connection to the study. The method used is interview. This data is categorized as primary data. This primary data is gained through: Interview with the Government official in order to have a comparative study in all aspects connecting to elements of business plan and characteristic of Photovoltaic Company.

3.4.2 Strategic Formulation Framework

This study is aim to find the best strategy that can be used by the Company in order to enhance company's position in the PV industry. Identification of the company's key success factors, strength, weaknesses, opportunity and threats also will be used to formulate the appropriate strategy that applicable for the company.

The strategy formulation framework will start by analyzing the internal and external factors of the Company. In the stage 1, the external factors will be elaborated by using indicator of opportunities and threats factors that surrounding the company. Strengths and weaknesses will be used to identify the Company's

internal factors, thus these indicators will provides objectives basis to evaluate the feasible alternatives strategies that will be analyzed using SWOT Matrix and Grand Strategy Matrix in the stage 2.

The last stage of strategic formulation framework is the analysis using the QSPM matrix; this matrix will reveal the relative attractiveness of alternative strategies and provide objective basis for selecting specific strategies.

CHAPTER 4

ANALYSIS AND DISCUSSION

4.1. Strategic Management PT WIKA INTRADE

4.1.1. Vision and Mission PT WIKA INTRADE

The name of PT Wijaya Karya (Holding company) has already known since 1960 as the leading of manufacture and construction company in Indonesia. To enhance the market demand, PT WIKA merge its two division, metal and trading division into PT WIKA INTRADE which is focuses on the trading, metal, energy conversion and furniture. To become a leader in the trading, metal, energy conversion and furniture, PT WIKA INTRADE (the Company) has implemented total quality management in every activity; the underlying principle is base on the vision, values and mission that company applied.

"Vision: To be an excellent company in each strategic business unit to fulfill stakeholder satisfaction"

"Mission: Creating value added products and services by implementing modern management system to achieve business excellent. Utilization technology and engineering in business process.

To become adaptive with the changes, Company must always be vigilant against any challenges to be faced. These challenges will formulate a new set of the vision and mission for the Company will be applied.

Vision to become an excellent Company considering that the company has just established in January 20, 2000 is not an easy thing to achieve. The Company should continue to develop and enhance products and services in order to be a

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Market leader. Those aims cannot just depends on the as-is strategies and condition, but also need to innovate and continuous assessment in every sector of products in able to deliver the high quality product and services to the customer and to maximize the value to the shareholders.

Mission of PT WIKA INTRADE is started from how the Company can contribute to the development of the country in terms of the energy conversion, construction, metal and trading, but also how Company can increase the market penetration to domestic and international market and in the same time develop a sustainable value for both shareholder and stakeholder.

4.1.2. Organization Structure PT WIKA INTRADE

The PT Wijaya Karya INTRADE subsidiary (WIKA INTRADE) was officially established on January 20, 2000, and the Company currently holds 78.40% share of its ownership. The Company is the development of two WIKA divisions, namely the Metal product Division and General Trading Division. Currently the Company has five business units, they are:

- Automotive Parts & Industry Business Unit
- Energy Conversion Business Unit
- Gas Cylinder and Stove Business Unit
- General Trading Business Unit
- Coal Business Unit

The figure 4.1 describes the organizational chart for PT WIKA INTRADE in connection with the holding company, PT WIKA (Persero) Tbk.

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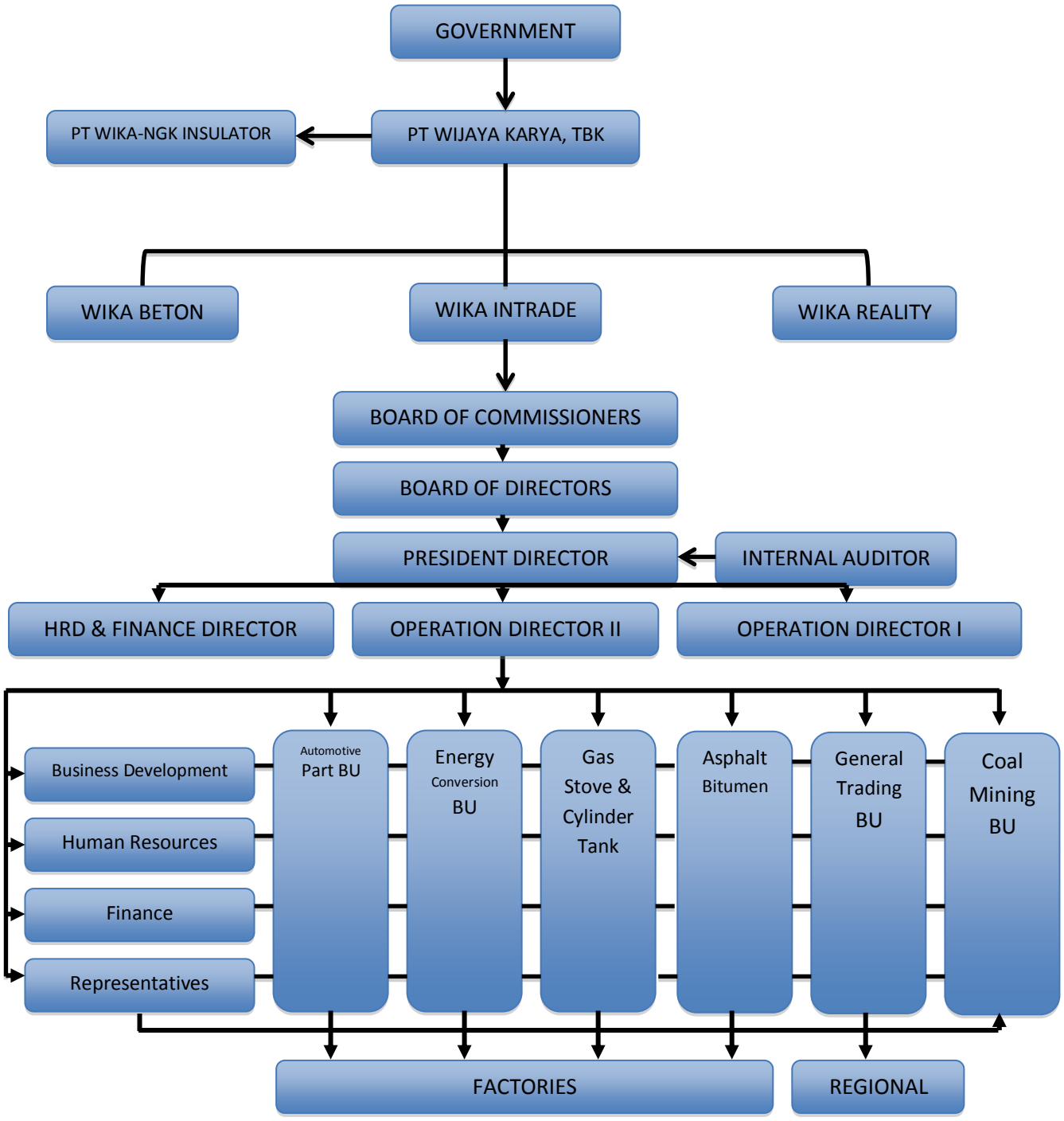

Figure 4.1. Organization Structure and Government Structure

Source: Rencana Jangka Panjang PT WIKA INTRADE 2010 - 2014

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One of the potential strategy business units in the Company is energy conversion. The Energy Conversion Business Unit is focused on its premier products, namely Solar Water Heater (SWH) and Air Conditioning Water Heater (ACWH), a water heater that uses the heat generated by ACs meant for households and industries such as hotel, apartments, and textile factories.

This business unit also assembles and sells photovoltaic products household lighting and other purposes. In order to best benefit from existing opportunities in 2009, the Energy Conversion Business Unit took the following strategic measures:

1. Sales promotion that are appropriate for the market characteristics and demand
2. Guiding distributors, including the sales force, to improve their skill, motivation, and acquire relevant market information
3. Enhancing collaboration with the companies in areas with potential market for non-SWH products
4. Developing SWH product and ACWH industry for hotels and apartments
5. Establish collaborations with institutions with links to government projects (WIKA Annual Report 2009, 55)

The Company activities that include in energy conversion is expected to contribute in the Government program that explained earlier in the RUPTL PT PLN (Persero) to convert the conventional energy to renewable energy and also to contribute to the national development in general.

Producing the competitive return will reflect in the development of sustainability value for shareholder, and this goals should be achieved continuously to maintain the existing shareholder and to attract the potential investors.

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4.2. The Input Stages

The input stages are form by external factors, internal factors and competitive profile market. The identification factors prior to formulation strategies are made to analyze how many these factors in influencing the strategy formulation. The input stages are including identification of Strengths, Weaknesses, Opportunities and Threats that exist and have to be faced by the company.

4.2.1. External Factors Evaluation

The external factors are including identification of Opportunities and Threats that surrounding the external environment of the company. These factors are as follows:

Opportunities for the Company

- Indonesia is one of the developing countries that have economic growth rates continue to increase every year. Central Statistical Agency (BPS) reported that Indonesia's gross domestic product was increasing to 4.5% in 2009 from year 2008. One of the factors that influencing electricity demand is the growth rate factor that must also followed by the electricity supply. Whether using the existing power generator or development of new power generators.

  In the last 5 years, the state budgetary revenues and expenditures showed increasing ratio for solar power projects.

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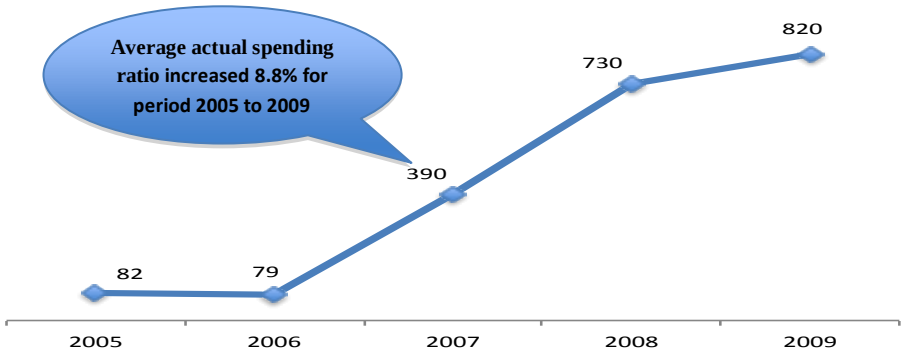

Figure 4.2. Actual Spending for Solar Power Plants (2005 – 2009)

Source: Ministry of Energy and Mineral Resources, 2011.

The average ratio of actual spending 8.8% for solar energy showed positive amount for the last 5 years. This indicator showed Government of Indonesia is committed to increase the electricity ratio by using new and renewable energy, in this portion is by using solar energy. This condition represents the Government's action to reduce the portion in energy mix from non-renewable energy to new and renewable energy. Because of the Company's activities mostly to support the Government's project, and it is aligned with the current strategies, the Company considered that the response to this factor is superior and give the rate by 4 (four) with level of importance is 0.1.

- The supporting factors why photovoltaic is applicable in Indonesia is because solar energy can easily obtained by every people even in the remote area because it is free and unlimited resources. Indonesia is considered as a tropical country, which has given large potential solar resources. According to the solar radiation data for 18 areas in Indonesia that summarized by Ministry of Energy and Mineral Resources Republic Indonesia (May 2010) the solar radiation can be classified are as follows:

1. Western Region of Indonesia (KBI) has solar radiation approximately 4.5 kWh/M^2 /day with 10% monthly variation.

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2. Eastern Region of Indonesia (KTI) has solar radiation approximately 5.1 kWh/M^2 /day with 9% monthly variation.

So it can be average that solar radiation potential will be 4.8 kWh/M^2 /day with 9% monthly variation. The total potential radiation can produce the energy approximately 1.200 Giga Watt (GW) (RUPTL-PLN 2009).

Before the economic crisis in 1998, PLN recorded the electricity sales average in 13% per year, but after the economic crisis, the electricity sales declined to average 7.3% and the lowest level of electricity sales happened after the global crisis in between 2008 to 2009, which is average 3.31% (RUPTL PLN, 2010). Those rates affected the PLN's revenue and budget to build power generators, transmission network, transformer, etc. The lack number of power generator versus the number of demand is not comparable to the number of island in Indonesia that has approximately 17.000 islands that spread all over from Sabang and Marauke. From that number, the electrification ratio only reached 65% and there are still approximately 34% of households (in 2009) that have not been electrify because of the power generator limitation (RUPTL PLN, 2010).

One of important factor that support the photovoltaic panel is the intensity and the areas that the panels are being set up. The Photovoltaic panel requires absorbing high intensity and continuously of sun lighting in able to produce the energy. The Indonesia's climate are support the needed, and due to efficiency to use in remote areas that have not been supported with the national electricity grid, the Company's strategy to develop photovoltaic panel is inline with this external factor. By that reason, the Company considered that the response to this factor is superior and give the rate by 4 (four) with the level of importance is reached 0.07.

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- PT Wijaya Karya (Persero) awarded around 30% of the Government's 10.000 MW power plan development projects in 2010. As backward integration, The Company's conversion business strategy has major contribution to support the PT Wijaya Karya (Persero) to accomplish the project. Even though 95% the project will be focusing on the using of conventional energy such as fossil energy, but there is opportunity for 5% to use new and renewable energy, such as solar power, hydropower, biomass.

  Even though the Holding company has awarded many of the Government's project, especially for the power generator, but it is not automatically open the opportunity for the Company to be involved. The Company must go through the tender process in order to get the project. As backward integration, the Company supported the project 10.000MW power generator comprehensively and finds this as an opportunity in the future, but the importance to the Company is still not significant to the current industry. The current strategies are consider responded above the average by give the rate 3 (three) with the level of importance that still consider low (0.02)

- The energy mixes that elaborate in figure 4.3 are dedicated to fulfill the electricity consumption in Indonesia. The greatest demands of the energy are dedicated to the industry sector followed by the household and the transportation sectors.

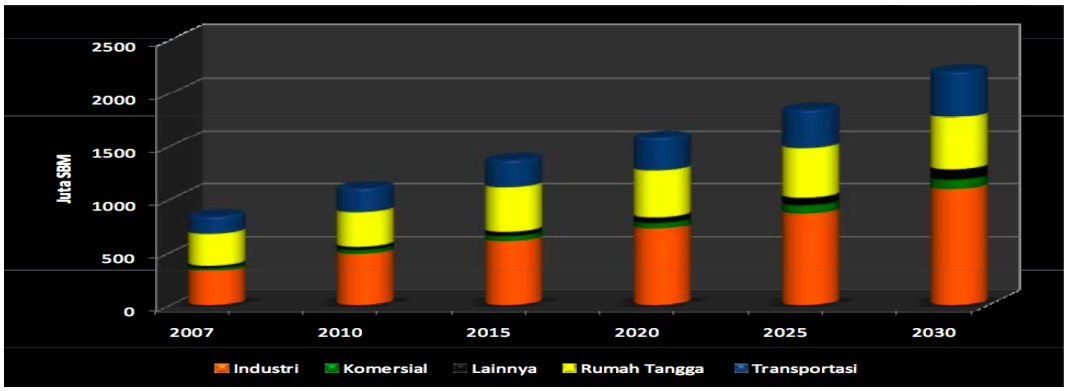

Figure 4.3. The total energy supply based on the sector of consumption

Source: Energy Outlook Indonesia, 2010.

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Most part of the energy used in Indonesia came from the non-renewable energy. The energy source such as oil, gas and coal are prime energy that used by PLN as source for electricity generator. The composition of the energy can be shown in the Figure below:

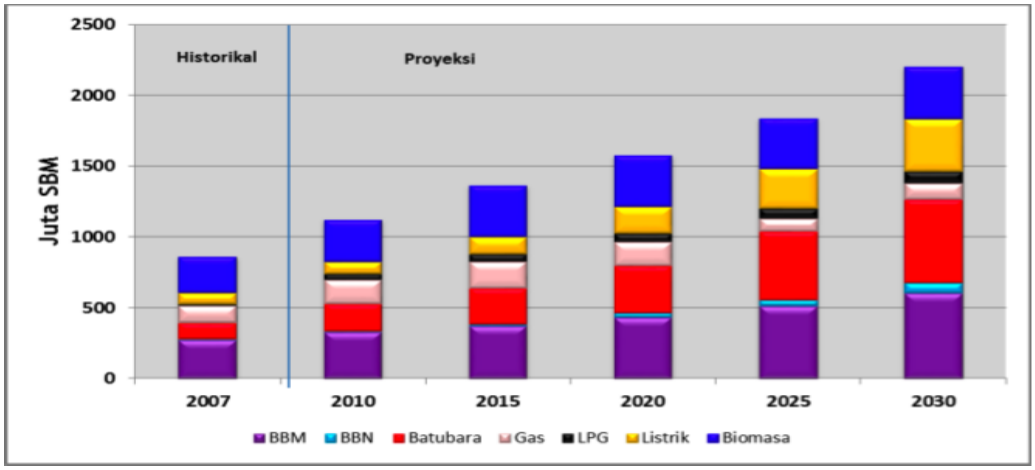

Figure 4.4. Estimation of energy supply based on the type of fuels

Source: Energy Outlook Indonesia, 2010.

Those parameters were built based on the assumption of population growth average 1.36% per year (approximately 307 million people in 2030). The used of oil and gas in producing the electricity will decrease gradually along with the declining of the oil and gas production.

As it shown in the Figure 4.3 above, the biggest consumption is in industrial sector. The industry sectors mostly have their own power generator to produce their electricity. Aspects that underlie to build their own power generator facilities is because considering the cost of infrastructures and long term benefit in the future will be more valuable rather than using the nation's electricity. The power generator basically using fossil energy as the main power, but when seeing the Indonesia's oil and gas production in 10 to 30 year in the future, the industry must consider other resources for their power generator due to decreasing the reserve and the production.

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The Company is considered that the usages of new and renewable energy in the industries sector are still low. Currently they still depend of the electricity supplied by PLN and if they have their own power generator, the energy sources are still using non-renewable energy such as oil, and coal. By that reason, the current strategies are considered has average responded to the factor and rated as 2 (two) and this factor is not taking an important place for the Company, by that reason the level of importance is 0.01.

- Another opportunity in developing the photovoltaic energy is that these activities are fully supported by the Government. Based on the President Decree No.70, 2009 (PP No.70, 2009) stated that Central Government and Local Government are giving incentives and compensations for both user and producer conversion energy to obtain:
  1. Information access regarding energy saving technology, specification and how-to do energy saving,
  2. Consultation services regarding the energy saving.

  The incentives awarded by Central Government and Local Government to these following parties:

  1. Energy user that used energy more than or equal to 6.000 (equivalent to) tons of oil per year,
  2. The domestic producer of energy saver.

  Both Central and Local Government award those parties incentives are as follows:

  1. Tax incentives for energy saving equipment,
  2. Provision of the reduction, remission, and exemption in local taxation for energy saving equipment, components/ spare parts, and raw material that used to produce energy saving equipment,
  3. Custom facilities for energy saving equipment, components/ spare parts, and raw material that used to produce energy saving equipment,

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4. Low interest for funding the energy conservation investment and to produce energy saving equipment according the applicable laws,
5. And for the energy saving user, there are energy audit in terms of partnership that will be fund by the Government.

The facilities given by Central and Local Government are made to encourage people to convert the energy usage from non-renewable to renewable energy and to motivate producers to innovate continuously in the energy saving equipment.

The regulation given by Government currently is not well socialized to the society, thus the effect of the regulation is low. The incentives are still cannot attract both producer and user to increase the portion of their energy usage, despite of the infrastructures are still minimum, Government cannot encourage people to used the new and renewable energy because the dependency of the existing energy is still high. The Company considered the current strategies are adequate to response the factor especially in the future by giving the rate by 2 (two) but the level of importance to the Company currently is still low, the weight given is 0.02.

- Government through PLN in 2011 will build 124 solar powers that expected to able to increase the electrification ratio in the eastern part of Indonesia that still below 60%. Through this program PLN is targeting the additional of 370.000 subscribers. Overall, the addition of target customers in eastern of Indonesia will be 1.1 million subscribers.

  This opportunity is well responded by the Company. The current strategies are meant to seize the Government's project related to energy conversion, especially for photovoltaic panel. The Company is considered that the response to this factor is superior by giving the rate 4 (four) and important to on going Company's business, the weight is given 0.06.

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- The opportunity for product of Green & Smart Building with the increasing demand for conversion renewable energy, especially for photovoltaic panel. As part of Government program to reduce pollution level that caused by emission, the green living program was introduced as one of alternative way to support the program. The Green Living concept is using friendly energy as one of the example. As already stated in previous point, the highest users of energy are come from Industry and household sectors. Thus the Green and Smart Building are meant to replace the usage of fossil energy into new and renewable energy such as solar energy.

  Currently many of Government's building start to use photovoltaic panel as one of their energy sources other than PLN, but it still hard to seize the private building to use the photovoltaic panel. The Company considered that in the future, the encouragement to build Green and Smart Building would be high, especially by using the environmental friendly energy such as solar power. Meanwhile, it considered that the Company has average response to this factor by giving rating 2 (two) and 0.02 for the level of importance.

- The opening of business cooperation in trade to build a trading house in areas Brazil, Russia, India, China, Indonesia, Singapore and North African. The trading house is forum where members can inquiry any kind of products from all over the world. The trading house ease Company in terms of distribution network and marketing its product internationally.

  The Company used the trading house to enhance the market internationally. By joining with the trading house, the Company will gain many information related to the business and product, enlarge the market distribution and easiness to obtain material that supported the photovoltaic panel. Therefor in terms of the level of important to the business operation, the factor is considered important with weight range 0.06. The current strategy also has responded above the average to utilize the trading house, with the rating 3 (three).

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- The utilization of Government funds from *Government to Government*-international aids programs. Indonesia Government is cooperating with International organization/ Association/ other countries to solve many problems, whether internal or external. One of the forms of cooperation is a G-to-G aids program. The aids program it self are meant to support areas in Indonesia that still have not developed yet. The electricity issues also to be the main concern. Thus, many aids programs are created to support the electricity in the remote are that have not reach yet by the electricity grid. This is the opportunity to for the Company that have energy conversion business unit to involve in such Government program.

  Currently, the Company's major projects are come from the Government's project. The G-To-G aids program is intended to help Government in order to increase the welfare of its society. One of the programs is to support the areas that have not been electrified. The Company considered that the factor is important and can support the Company's objectives, the weight that considered appropriate for this factor is 0.05. In the other hand, Company felt that the current strategy has responded above the average, that is way the Company gives the rate 3 (three) for this factor.

Threats to the company

- In 2008, the United State suffered a financial crisis that impacted to most of countries in the world. The sub prime mortgage has become the major cause for the crisis. Hence the crisis becomes global crisis.

  Because of the major operation of the Company are still in the domestic area, the impact of the financial crisis in United State is not high as other who do international trading. One thing that the Company must interact with overseas company is to import the crystal material from China. Thus, even though the Company considered the current strategies are responded in average by giving the rate 2 (two), but it is important for the company to

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stay aware for the impact of the financial crisis, that is why this factor are weighted as 0.06.

- There are still no Government policies to protect the product with the use of photovoltaic technologies that has been developed by a number of producers in the country.

  The solar power is the alternative energy that is being developed in these recent years. There are no significant policies from the Government to protect or to encourage both producer and user to use this product. But based on the Government planning for energy mix 2025 that stated 17% portion for the new and renewable energy, the Company's current strategies are considered has average response to this factor, thus the amount given is 2 (two). Currently the level of importance of the policies is low, producer are still developing the photovoltaic system in order to increase the competitiveness from the overseas product, that is way the Company giving the weight for this factor by 0.03.

- The Government still perceives the self-promotion of electricity as competing to the state owned company (PLN). The Indonesia electricity currently provided and monopoly by PLN, the regulation to use or even to gain benefit from the excess of electricity is not provided by Government, they considers that compliance with the demand for electricity should come from Government rather than private sector. This causes lack promotion for solar energy as alternative energy other than renewable energy.

  The Company does not see that there are impediments to the Company or other private company to sell the photovoltaic product or any new and renewable energy product. Although the promotion is still low, the Government encourages producer to increase the production in order to increase the electrification ratio. Currently, the Company assumes this is not an important factor to be considered, thus the weighted given is 0.03. The

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current strategies have response in average for this factor thus the Company give the rate by 2 (two).

- There are still foreign exchange fluctuation that makes the photovoltaic panel and spare parts price unpredictable. Many of the spare parts are still purchase from the suppliers, domestic and international. Most of the PT WIKA INTRADE suppliers are came from China, and the value of Yen continues to strengthen against Dollar. This condition affected the price of the spare parts and other thing that impact from the currency rate.

  As per current production, the Company still depends on from China as the country of the supplies to send the specific material such as the crystals. The current strategies did not fully capture the impact of this factor; the Company receives as is all the rates changes because there is no other option except to import those materials. The Company considered that this factor is one of the important factors to reduce any dependency and cost related to the import material, thus the rate given is 0.07. But yet, the current strategies have poor response in this factor, which is the rate given is 1 (one).

- The China-ASEAN Free Trade Agreement (CAPTA) considered being threats to domestic companies. Currently there are many China's photovoltaic products that sold in Indonesia with lower price but in lower quality than domestic product. Penetration of imported product with the cheap prices threatening the local product.

  By joining CAFTA (China ASEAN Free Trade Agreement), The Company considered its open the international network for product distribution. As currently the Company's main projects are related to the Government's project that requires a high level of local content, the CAFTA did not have significant impact to the Company's operation. Thus, the rate given for this factor is 2 (two) and the level of importance is 0.06.

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- Non-Tariff Barriers regulation limiting the amount of goods to be shipped to export destination. The restrictive trades include quotas, embargoes, levies, sanction and other restriction. The Company will suffer economic loss if they cannot fulfill the criteria of the barrier. Even though nowadays there are many countries reducing the non-tariff barrier, but the numbers are not significant. The ASEAN Summit 18th has reached agreement to reduce the non-tariff barrier because of the free-trade agreement previously in the ASEAN territory. This condition resulted many competitor products will enter the Indonesia's market with low prizes, and as already stated in the previous point that this conditions are going to threaten local product.

  The Company is considered that the non-tariff barrier is important to reduce all of the cost to import and export. By the newest agreement will benefit the Company, the current strategies are considered has average response to the factor, the rate given is 2 (two) by considering the level of importance is 0.05 to the Company.

Competitive Analysis: Porter's Five-Forces Model

In terms of competitor analysis, the author will use the Porter's Five Forces method as follows:

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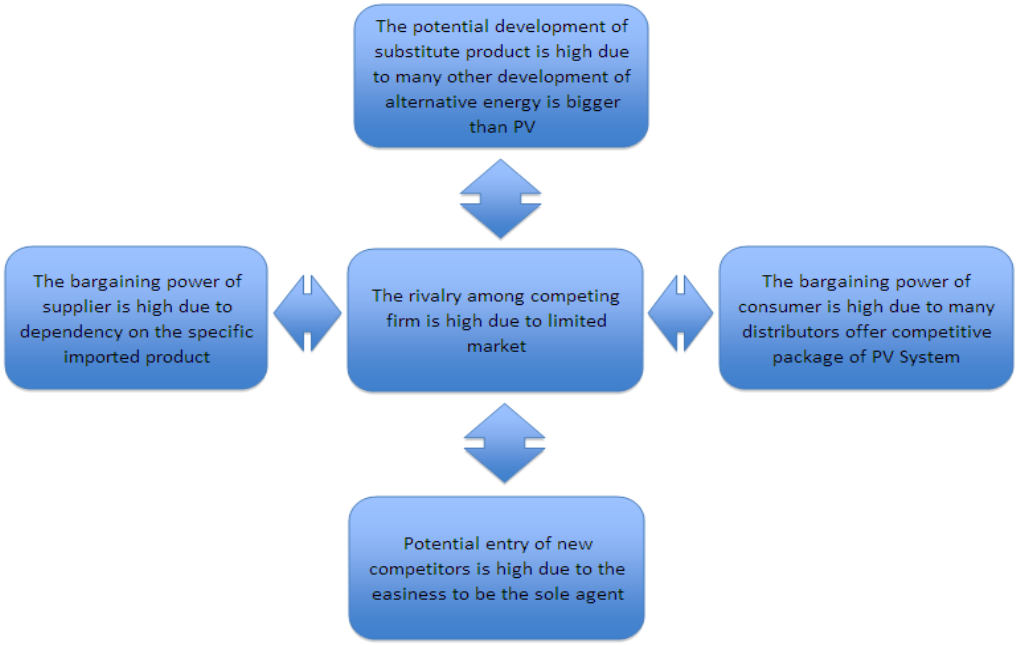

Figure 4.5. The Five-Forces Model of Competition

a. Rivalry among competing firms

- Rivalry among competing firms is usually the most powerful of the five competitive forces. Change is strategy by one firm may be met with retaliatory countermoves, such as lowering prices, enhancing quality, adding features, providing service, extending warranties, and increasing advertising.

- The competition in the photovoltaic panel industry is high. Even though there are still a small number of players in the domestic industry such as PT Azet Surya Lestari, PT Len Industry (Persero) that owned numbers of market shares, but the market itself is still limited. Thus players are fighting to get their share portion in the small markets.

- Another situation occurs due to high fixed cost for manufacturing sector to be able to compete in the market, only for those who supported by complete facilities that can compete in the manufacturing sector. There are many new companies enter the photovoltaic market as sole agents. The

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distributor company is considered as one of factor that makes the rivals among competing firms high.

b. Potential entry of new competitors

- The intensity of competitiveness among firms will be increased whenever new firms can easily enter a particular industry. The barriers to entry for photovoltaic panel industry can be classified into two categories, as a distributor and as a manufacturer. The barrier to entry for photovoltaic panel manufacturer is quite low, since it requires an advance technology and a huge amount of investment.

- A distributor can simply develop a networking with the manufacturer and they can start their business. Currently many China's product entry and penetrating the Indonesia's market. Many photovoltaic products imported and distributed from China to Indonesia, these products own their market share due to lower price. Thus, many domestic products have to compete harder to anticipate of losing the market place by China's product. Thus, in average, looking back the potential by sectors, the barrier to entry can be quite high.

c. Potential development of substitute products

- The presence of substitute product puts a ceiling on the price that can be charged before consumers will switch to substitute product. Price ceiling equal to profit ceilings and more intense competition among rivals. People have many alternatives for electricity. Others from photovoltaic panel, they also can have electricity from coal, oil, hydro, gas and geothermal which is provided by PLN. The challenges to develop photovoltaic panel implementation is to convince people about the advantage of solar energy, how people can gain benefits by using photovoltaic panel, how they can

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participate in decreasing the pollution caused by fossil fuel, and how easy photovoltaic panel can be adopted.

- The competitive strength of substitute products is the best measured by the inroads into the market shares those products obtain, as well as those firms' plans for increasing capacity and market penetration. There are many substitute products other than conventional product that being develop in order to create alternative by using new and renewable energy, such as bio solar, geothermal, hydro, windmill, etc. Thus the potential development of substitute product is considered high.

d. Bargaining power of suppliers

Currently, PT WIKA INTRADE assembles most all parts of the photovoltaic system before it distribute to the consumer. The photovoltaic system are consist of many things, such as: inverter, controllers, batteries, cabling and also photovoltaic it self. However, there is part that the Company can not produce due to limitation of technology, the part is monocrystalline, polycrystalline and thin film technologies. The Company currently has several suppliers from China for this material. These days, China can produce crystals with the same quality and in the competitive prices with other suppliers from US or Europe; Many of the producers of photovoltaic ordered to the China's suppliers, this condition makes the bargaining power of suppliers is high. The Company often has to queue up to order the product, this condition makes the bargaining power of suppliers is high.

e. Bargaining power of consumers

- Currently many photovoltaic products sold in Indonesia with different brand and international made, many overseas manufacturers who market their products in Indonesia. The manufacturers include:

  - Japan: SHARP, KYOCENA Corp, Mitsubishi, and Sanyo

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- China: Sun Tech, Ying Li, and Trina Solar
- German: Solar World AG
- America: First Solar and Sun Power
- Canada: Canadian Solar

Domestic company such as PT LEN Industry (8%), PT WIKA INTRADE (10%), and PT Azet Surya Lestari (56%) are competing with those overseas manufactures with different quality and different price. Hence, there are conveniences for consumer to determine product choice.

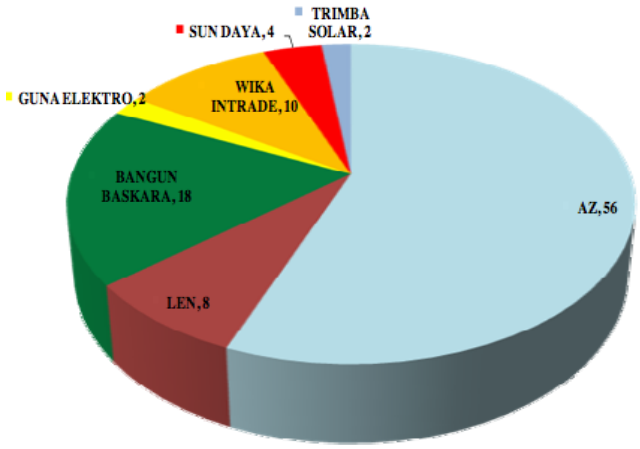

Figure 4.6. PT WIKA INTRADE Competitor's Portion 2009-2010

Source: Rencana Jangka Panjang PT WIKA INTRADE, 2010 – 2014.

- The use of solar panel in Indonesia is still concentrated in rural areas that have not been fed by electricity. Many manufacturers sold their product to the rural areas because of the Government funded it through the State Budget Financing and Expenditure (APBN). The solar power in urban areas used for: PLN's customer household group above 6.600VA, industrial and commercial building, Government offices and for public street lighting. The Sales in the urban areas are not as significant as the in rural areas, many urban people that already depend on the PLN's electricity distribution, the low rate of public awareness of the use of Solar power and many solar power company are more interested in the

development of solar power in rural areas because their funds sources are from Central Government and Local Government.

- The use of Internet as the information technology facilitate consumer to gain information regarding product details such as: prices, costs, qualities and manufactures. This allows consumers in determining what products are suitable to be installed.

- From the two points of bargaining power of consumers' explanation, it can be concluded that the bargaining power of consumers in photovoltaic panel is still high.

From the analysis above, it can be concluded that the competitive analysis for photovoltaic market in Indonesia based on the 5's forces analysis is high. Although the Company already has 10% of the market share, the author will consider this as threats from the external factors that must be score in the EFE Matrix in able to identify the level of the threats and the impact to the company. The summary of Porter Five Forces is displayed in the following table 4.1.

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Table 4.1. Summary of Porter's Five Forces Analysis

5's Porter forces	Position	The Company weighted and rating
The potential development of substitute product is high due to many other development of alternative energy is bigger than PV	High	The Company's rating: 1 (the response is poor) The Company's weighted: 0.05 (average important)
The rival among competitive firm is high due to limited market	High	The Company's rating: 2 (the response is average) The Company's weighted: 0.03 (not important)
Potential entry of new competitors is high due to the easiness to be the sole agent of PV system	High	The Company's rating: 2 (the response is average) The Company's weighted: 0.03 (not very important)
The bargaining power of suppliers is high due to dependency on specific imported product	High	The Company's rating: 1 (the response is poor) The Company's weighted: 0.08 (important)
The bargaining power of consumers is due to many distributors offer competitive package of PV System	High	The Company's rating: 2 (the response is average) The Company's weighted: 0.03 (not important)

Competitive analysis is considered as the external factors that can contribute to the formulation of strategies. In the table 4.2 below, the external factors of the Company will be weighted and scored based on the interview with management to identify how much these factors will be influencing the Company to formulate strategies

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Table 4.2. EFE Matrix for PT WIKA INTRADE

	KEY EXTERNAL FACTORS	WEIGHT	RATING	WEIGHTED SCORE
Opportunities				
1	Average ratio of Government actual spending for Solar power is 8.8% for 5 years consecutives	0.10	4	0.40
2	Indonesia's geographical condition with 17,000 islands and with high intensity of solar ener gy 4.8 kWh/M2/day	0.07	4	0.28
3	The lack number of electricity power generator. The electricity ratio is still under expectation, which is 65%	0.07	4	0.28
4	Opportunity to support Government's 10.000MW project due to PT WIKA awarded 30% share	0.02	3	0.06
5	Tendency to use its own power plant due to ef ficiency in long run and the existing resources condition	0.01	2	0.02
6	Incentives and compensation by Government for user and producer of ener gy conversion	0.02	2	0.04
7	Government project to build 124 solar powers	0.06	4	0.24
8	The opportunity for product of Green & Smart Building	0.02	2	0.04
9	The opening of trading house with other countries	0.06	3	0.18
10	The utilization of G to G international aids programs	0.05	3	0.15
Threats				
11	The global financial crisis in 2008 impacted the Photovoltaic revenue	0.06	2	0.12
12	No Government policies to protect the product with the use of PV technologies	0.03	2	0.06
13	The Government still perceives the self-promotion for electricity as competing to the PLN	0.03	2	0.06
14	Foreign exchange fluctuation af fect the price of imported raw materials	0.07	1	0.07
15	CAFTA considered being threats to domestic companies. Penetration of imported product with the cheap prices threatening the local product	0.06	2	0.12
16	Non-Tariff Barriers regulation limiting the amount of goods to be shipped to export destination	0.05	2	0.10
17	Rivalry among competing firm	0.03	2	0.06
18	Potential entry of new competitors	0.03	2	0.06
19	Potential development of substitute products	0.05	1	0.05
20	Bargaining power of suppliers	0.08	1	0.08
21	Bargaining power of consumers	0.03	2	0.06
Total		**1.00**		**2.53**

The total weighted score of 2.53 is meet the minimum average (mid-point) of 2.5; this is indicating that the Company had sufficient response in taking advantage of external opportunities and avoiding the threats that facing the Company. As indicated by Ratings of 1, the Company especially needs to perform better regarding three external factors (point 14, 19 and 20). The Company especially needs to pursue strategies that will take advantage of opportunities in point 9 (the opening of trading house with other countries) and point 10 (the utilization of G to G international aids program,) and by mitigate the impact of point 14 (foreign exchange fluctuation affect the price of imported raw material), point 19 (potential development of substitute product) and point 20 (bargaining power of suppliers).

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4.2.2. Internal Factors Evaluation

The internal factors are including identification of Company's strength and weaknesses that occurred from the internal environment of the company. These factors are as follows:

The Company's Strength

- The Company is the subsidiary of PT Wijaya Karya (Persero) that already established since 1960. The Company has well known for its works and project not only domestic but also international. As the subsidiary, the Company strategy is to support the business core of PT Wijaya Karya, thus the company heritage a good name and a good reputation from the previous successes.

  Currently most of the Company's project based on the Government's project. The good reputation and experience made the Holding trusted to run many projects in Indonesia, mostly related to the construction. These conditions bring advantages for the Company in terms of competing with competitors. Although in order to win the tender, all the company must go through the tender process without exception, the reputation is still one of the factors that being consider to achieve the tender. Thus the Company considered that a good name and a good reputation are included the major strengths for the Company, even though its not directly the major factor of the success factor. The rating given for this factor is 4 (four) with the weight of importance is 0.07.

- Has a strong distribution network for Solar Water Heater (SWH) in domestic market. PT Wijaya Karya (Persero) was well known with its Solar Water Heater (SWH). The SWH has been developed since 1987 and it started from design, manufacturing, and distribution for residential, manufacturing and industrial using. By using the existing distribution

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networks, The Company gains the opportunity to distribute photovoltaic panel to sectors that already used by the previous product.

Currently there are more than 50 distributors all over the in Indonesia that supported the energy conversion business unit; the portion can be seen as chart below:

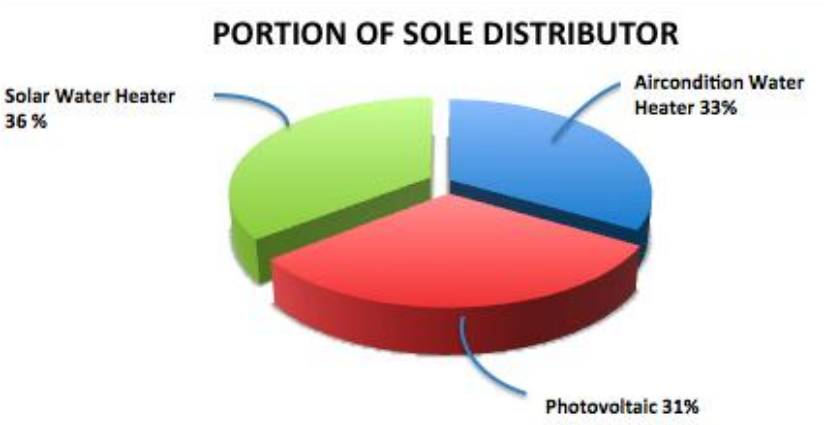

Figure 4.7. The Portion of Sole Distributor for Energy Conversion BU of PT WIKA INTRADE

Source: Official site of PT WIKA INTRADE Conversion Energy www.coenergy-wi.com

In fact, Andi Nugraha, Director of PT WIKA INTRADE said that: at the first time, we currently use the existing Solar Water Heater product market to introduce to the public that we penetrate the industrial of Photovoltaic system. Other than that, we promoted the product through Government's projects and initiatives (personal conversation, 26 May 2011).

One of the critical success factors for the Company is to have many distributors in most of the areas in Indonesia. Solar Water Heater (SWH) product has already distributed nationally since 1980s, and until now the product is well known and has many buyers. The Company considered this as strength to be used for distributing the photovoltaic panel. Even though it is not guarantee that using the existing distribution will increase the sales, but it is become an important things for the Company to

introduce the photovoltaic product by using this channel. By this reason, the rate given by the Company is 3 (three) with the level of importance is 0.07.

- Partnering with foreign contractor and investors. PT Wijaya Karya engaged with foreign partnership on big project in Indonesia. One of the project that involving the Company especially in conversion energy is power plan project and natural disaster management which are generally financed by foreign donor aids or loan. Currently, the Company has more than 50's partner distribution and suppliers both in domestic and international.

  In order to enhance the quality product by creating the newest system that applicable in Indonesia, the Company must have the best contractors and investors to support the operation. Currently the Company has more independent to run the operation in order to seize the photovoltaic market. The existing partners and investors are helping the Company to strengthen especially in the internal factors in order to grow as a big Company that have a big portion in energy conversion market. By having the existing potential partners and investors, the Company owned the major strengths, and it is considered very important to have this factor. By this reason, the rate given by the Company is 4 (four) with the level of importance is 0.1.

- Has complete production facilities covering an area of 0.5 hectare located in Cileungsi Bogor, West Java. This location supports the Company's activities or the manufacturing process such as Welding, Metal Cutting & Forming, Assembling & Packing. As part of WIKA group companies, the Company followed by PT Wijaya Karya's system that already established. The experience and professional people escalade the Company's performance. The facilities are one of the major factors that supported the Company's competitive advantages, these facilities also supporting almost 85% of local production (*Total Kandungan Dalam Negeri),* as it is required by Government.

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In fact, Satrio Adji, General Manager of PT WIKA INTRADE said that: in dealing with Government's tenders, the Company has the competitive advantage in the local content which has a total 0f 85% local content (personal conversation, 29 May 2011).

The facilities are become the a strength for the Company in order to fulfill the market demand and also it is very important for the Company to have supporting facilities to produce photovoltaic system with the 85% of local content. By this reason, the rate given by the Company is 3 (three) with the level of importance is 0.09.

- Have experience and capable human resources. PT Wijaya Karya (Persero) assigned many of their experience employees to the subsidiary companies, this is mainly due to the Holding company has many expertise and experienced workers. Hence the transfer knowledge among the employees in the Company becomes the advantages for the Company.

  The high qualify of human resources is very important for the Company to product the latest and high quality product. Currently, many of expertise from Holding company are assigned to the Company in order to develop a sophisticated system in order to compete in the photovoltaic system. Although currently the Company focusing in assembly the panel, but in the outlook planned is to produce the panel with 100% of the local content. The existing of the human resources is considered to be a major strength for the Company, even though the demand of expertise is still in high demand. By this reason, the rating given by the Company is 4 (four) with the level of importance is 0.06.

- The Company adopted 5's process in the operational activities. The 5's process is a structured program to systematically achieve total organization, cleanliness, and standardization in the workplace. A well-organized workplace in the Company will results in a safer, more efficient, and more productive operation that will increase the morale of workers,

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promoting a sense of pride in their work and ownership of their responsibilities.

The 5S was invented in Japan, and stands for five (5) Japanese words that started with letter 'S': Seiri, Seiton, Seiso, Seiketsu and Shitsuke.

Table 4.3. 5S Definition

Japanese term	English Equivalent	Meaning in Japanese Context
Seiri	Tidiness	Throw away all rubbish and unrelated material in workplace
Seiton	Orderliness	Set everything in proper place for quick retrieval and storage
Seiso	Cleanliness	Clean for workplace; everyone should be a janitor
Seiketsu	Standardization	Standardize the way of maintaining cleanliness
Shitsuke	Discipline	Practice 'Five S' daily – make it as commitment

Source: www.siliconfareast.com

The management system that the Company has currently is above the expectation. The 5's process system that applied in the Company brought to the organize management system. The employees starting with the low until upper class has obligation and responsibility in order to operate the production. High number of safety no incident, efficiency and cleanness embedded to each employee. The result for this process is the increasing in the quality and quantity product that rat the end brings to the higher revenue for the Company. The Company considered this as a major strength that can leads to the competitiveness. Thus, the rating given is 4 (four) with the level of importance is 0.09.

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- In terms of management system, the Company used Total Quality Management (TQM) to provide comprehensive structure management system. TQM is a structure system for managing the quality of product, processes, and resources of an organization in order to satisfy its internal and external customers, as well as its suppliers. Its main objective is sustained (if not progressive) customer satisfaction through continuous improvement, which is accomplished by systematic methods for problem solving, breakthrough achievement, and sustenance of good results /Standardization (www.siliconfareast.com).

- The energy conversion business unit has been certified in International Organization for Standardization (ISO) 9001. The standard is for the qualification in management system. This competitive advantage brings to effective and efficient in managing the expectation of customer with high quality product and increasing satisfaction of the stakeholder itself.

  The standardization also applied for the national standard, which has been determined by National Standardization Agency (*Standar Nasional Indonesia*).

  In fact, Andi Nugraha, Director of PT WIKA INTRADE said that: the Company always updated the standardization in order to increase the quality for the products, system and also the management. In terms of national standard, the Company currently has exceeded the minimum requirement that has been set up by Government in order to meet the requirements of domestic tender (personal conversation, 26 May 2011).

  In order to be awarded by the Government product, the standardization is the important factor to be included. By achieving ISO 9001, the company has been proved internationally to compete in the global competition. And in term of local standardization, the Company also has requirements in fulfilling the *SNI (Standar Nasional Indonesia)*. The existing standard

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considered as one of the major strength for the Company in order to compete in the photovoltaic market. Thus, the rate given by the Company is 4 (four) with the level of importance is 0.09.

The Company's Weaknesses

- Ability in Information Technology is still limited. System that currently applied in the Company is still not integrating to all division. There are things that indicates the minimum usage of information technology:

  - The system integrated between divisions is mostly done manually and use minimum information technology
  - Data based management system are still limited
  - The usages of Internet technology are still have not maximal. The Company webpage only shows the general information, not specifically to the details of products, price, and minimum information for customer to gain
  - The Company is still not using electronic commerce as trading tools. The e-commerce concept is using the information technology to promote market and sell products with online transaction, with more efficient, details and on time. Company can reach customers from all over the world by using e-commerce, thus it will direct increase the Company profit and reduce costs.

The Company currently focusing on the developing new system for photovoltaic. As newborn company, all systems are being updated with the latest one to support the main production. The Company realized that one of the weaknesses in the Company is the limitation in the IT system, even though currently it is being develop a comprehensive system to support the internal operation. Looking the current condition that the level of importance is still low, the company considered this as a minor weakness that have to be improved. By that reason, the rating given is 2 (two) with the level of importance is 0.04.

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- The Company is currently operates to fulfill the domestic market. The Company's client are from state-owned enterprises and private companies, such as:

  - PT PERTAMINA,
  - Public Works Department
  - The Agency for the Assessment and Application Technology (BPPT)
  - PT. Mitsubishi Krama Yudha Motors and Manufacturing,
  - PT Daimler Chrysler Indonesia
  - Toyota Indonesia.

  Most of the Company's projects are based on the Government's project whether it used the international or domestic fund. The project it self mostly are dedicated to increase the electrification ratio, especially in the remote areas. As per 2010, the position for the Company placed 10% for the domestic market.

  The domestic market share is impacting to the Company's revenue and income. The dependency to the Government's project makes the Company's less concentrating to enhance in the global market and it becomes a major weakness for the Company. Based on the situation, the Company rated this factor as 1 (one) with the level of importance 0.06.

- Still have minimum product knowledge and new technology. Although the Holding is already known for Solar Water Heater product, but in terms of photovoltaic technology, the company is still new. The product knowledge details are in the development stage; the Company still absorbs the necessary information from all sources. While in the new technology, the Company is on the move to build facilities in order to create advance technology that supports energy conversion BU. These actions will bring better knowledge for employees regarding the products.

  The limitation on the product knowledge in the Company is still high. Even though the Company has experienced in the Solar Water Heater and

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Air Conditioning Water Heater, there are less expertise in the photovoltaic product. Currently the Company is still on the process of assembly the panel in order to develop a suitable system in Indonesia. The condition supported the lack of expertise in this product. By this reason, the Company rated 1 (one) for the factor as a major weakness with the level of importance is high, 0.07.

- One of the Company's strategy businesses is the conversion energy that sells Solar Water Heater (SWH) and Photovoltaic. Although the sales for the SWH already have their own market share in Indonesia, the development of photovoltaic for the power generator is considered as new business for the Company. The market share for these two products are limited in the off-grid area that have to used alternative energy than the conventional energy, thus the strategic business unit in conversion energy is considered a relatively small economies of scale.

  The production currently is based from the projects or small retail demand. The Company realized that in order to seize a bigger market, an intensive promotion and strategy must be formulized. The Company considered that it is hard to increase the economic of scale by depending on the Government's project, thus this factor are being major weakness for the Company currently. By this reason, the rate given is 1 (one) with the level of importance is 0.05.

- Lack of understanding in regulation and international trade policy. Government began to create regulations that encourage both consumers and producers to use alternative energy. However, not all regulation has been socialized to users and producers because of the lack information technology that is also Company issues.

  Due to lack of knowledge on the international trade policy, the Company experienced many difficulties when entering international trade whether

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because of the non-tariff barrier, the standardization, the export destination countries regulation and international trade agreements.

In fact: Satrio Adji, General Manager of PT WIKA INTRADE said that: As the current operation is still focusing in the domestic market (as per Government project), the Company has not been to concern more about the problem of International regulations except regulation that related to imported product (personal conversation, 29 May 2011).

Referring to the statement above, the level of understanding the international trade are not very important to the current condition, except for the import regulation. But based on the outlook plan, the understanding is considered very important to have, but yet currently this considered as minor weakness for the Company. By this reason, the rate given is 2 (two) with the level of importance is 0.03.

- Dependency on specific imported product is still high. Currently, the Company assembles 90% of the photovoltaic system. The component requires for Photovoltaic system are:

  a. Photovoltaic panel, consist of crystal that transform solar power intensity to electric power. The photovoltaic panel produced power that used to charge batteries.
  b. Charge Controller, has the function in charging mode and operation mode. The charging mode is to supply electricity into the battery and for the operation mode; the controller has the function to distribute the electricity power whenever the battery needed.
  c. Battery, to store the electricity power that already distributed from controllers.
  d. Inverter has function to transform direct current electricity into alternate current electricity. The electricity that distribute from the controller has direct current type, it must be transformed into alternate current in order to align with the existing electricity type.

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e. Cabling has functioned as a conductor electrical current.

In fact: Satrio Adji, General Manager of PT WIKA INTRADE said that: The Company produced all components related to the system except photovoltaic panel. Even thought the total domestic content (*TKDN*) for the company's product is quite high, the part that still cannot be produced is the most important part for photovoltaic system. The production facilities do not have technology to produce the crystal that can absorb the solar energy due to the total investment for applying this technology is still high and not comparable with the photovoltaic market demand in Indonesia. Therefore, the dependency of the on imported products became one of the major weaknesses for the Company to be competed (personal conversation, 29 May 2011).

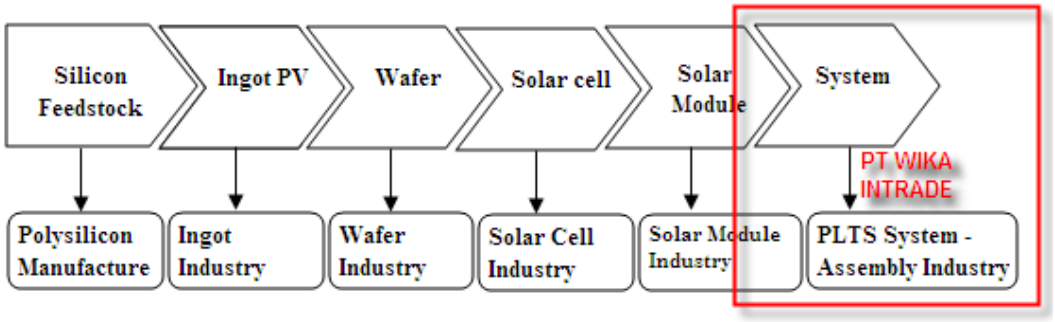

Figure 4.8. Photovoltaic Industry Value Chain

Source: Ministry of Energy and Mineral Resources Republic of Indonesia, Indo Solar-Wind, 2011

The figure 4.8, showed the current position of the Company. In Indonesia, all of the photovoltaic companies are in the position as assemblers of the photovoltaic system; most of the parts except the photovoltaic panel were imported from outside company. Because of it, the level of dependency for photovoltaic panel is still high. This factor currently is being a major weakness for the Company, until there is high demand for the panel to the Company and protection from the Government for the on going business. By that reason, the rate given is 1 (one) with the level of importance 0.09.

- Lack of specialist in the photovoltaic area. Photovoltaic product is one of the products that were new for the Company. Currently there were only 3 specialists majoring in photovoltaic technology in the Company. They design the system that applicable to adjust in the Indonesia's market. In the response to the market demand and the company's objective to increase the market share, the needs to increase more specialists in the photovoltaic industry are urgently needed.

  In order to crease a sophisticated photovoltaic system that can be applied in Indonesia, the Company must increase the number of expertise in photovoltaic product. Currently this factor is being a major weakness for the Company. This factor supported with the Company's current condition as a assembler not as a producer. In order to realize the Company's percentage in the photovoltaic market, the main resources must be increase. By this reason, the rate given is 1 (one) with the level of importance is 0.09.

In the table 4.5 below, the internal factor of the Company will be weighted and scored to identify how much these factors will be influencing the Company to formulate strategies.

Table 4.4. Internal Factor Evaluation Matrix for PT WIKA INTRADE

	KEY INTERNAL FACTORS	WEIGHT	RATING	WEIGHTED SCORE
Strenghts				
1	The Company's have well known and have a good experience and reputation for more than 50 years	0.07	4	0.28
2	Portion of sole distributor for SWH 36%, ACWH 33%, and PV 31% all over Indonesia	0.07	3	0.21
3	Partnering with potential domestic and International Company more than 50's companies	0.10	4	0.40
4	Have prod. facilities covering an area of 0.5 hectares located in Cileungsi, Bogor . Local production level reach 85% (TKDN)	0.09	3	0.27
5	High experiences and capabilities for human capital management	0.06	4	0.24
6	Adopted 5S process for operational activities and TQM for management system	0.09	4	0.36
7	The conversion energy business unit has certified with ISO 9001, meet the national standardization of *SNI*	0.09	4	0.36
Weaknesses				
8	The lack of ability in Information technology	0.04	2	0.08
9	The Company still relying on 10% domestic market share.	0.06	1	0.06
10	Limited knowledge and usage ability for new products	0.07	1	0.07
11	Has a relatively small in economic scale for conversion energy	0.05	1	0.05
12	Lack of understanding of regulation and international trade policy	0.03	2	0.06
13	Dependence on specific imported product is still high	0.09	1	0.09
14	Lack of specialist in photovoltaic areas, currently there are only 3 photovoltaic specialists in the company	0.09	1	0.09
Total		**1.00**		**2.62**

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Looking at the IFE matrix that identified by a discussion with PT WIKA INTRADE's Management, there are some points in the internal PT WIKA INTRADE that must be notes:

a. The most important factor for the Company currently is partnering with domestic and international company (weight 0.1). This factor is being a major strength as indicated by 4 ratings due to Company have more than 50 partner distributors and suppliers both in domestic and international. The Company should be able to utilize the existence of these partners in able to enhance the product technology, capacity and distribution.

b. The other major strength in the Company are the existing of the production facilities that has standardization in ISO 9000, comprehensive management system and the high standard of human capital (rating 4). These factors considered as the factors that supporting the Company in obtain projects. The standardizations are used to maintain the product's quality and also as an absolute requirement in obtaining tenders.

c. The Company has major problems with the dependency of imported product and specialists in photovoltaic industry (weight 0.9 with 1 rating). Some part in photovoltaic panel that still cannot be produced due to high technology and investment is the crystals that absorb the sunlight and convert into electrical power, yet since the market is still limited; the Company considers benefit by importing instead of producing the crystal.

d. Considered the photovoltaic business is new for the Company, demands for specialists are needed in able to increase the products quality and the product knowledge. The increase of skills and expertise in the photovoltaic industry is part of the Company's human capital management. Therefore, it is necessary for the Company to increase and to add all necessary human capital requirements.

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4.2.3. Competitive Profile Matrix (CPM)

The Competitive Profile Matrix (CPM) identifies firm's major competitors and its particular strengths and weaknesses in relation to a sample firm's strategic position. The Company has some critical success factors that underlie the operational activities in order to seize the photovoltaic market in Indonesia.

The Company identified the major competitor in Indonesia that have business unit is energy conversion, especially in photovoltaic panel system. Based on the PT WIKA INTRADE competitive portion in figure 4.6. PT *Azet Surya Lestari (AZ)* and PT *Len Industri (LEN)* are identified as the major competitors for the Company. To analyze the competitive profile matrix, the Author with Management identify the critical success factor Company that will be compare with the competitor in order to identify the market position between the competitors.

Table 4.5 Competitive Profile Matrix for PT WIKA INTRADE

		WIKA IN-TRADE		AZ		LEN	
Critical Success Factors	**Weight**	**Rating**	**Score**	**Rating**	**Score**	**Rating**	**Score**
Brand name	0.25	4	1.00	3	0.75	4	1.00
Distribution Network	0.18	2	0.36	3	0.54	4	0.72
Strategic Partner	0.22	4	0.88	3	0.66	4	0.88
Complete Production Facilities	0.09	2	0.18	3	0.27	4	0.36
Human Resources	0.08	2	0.16	2	0.16	3	0.24
Management System	0.08	3	0.24	3	0.24	3	0.24
Standardization	0.10	2	0.20	3	0.30	3	0.30
Total	**1.00**		**3.02**		**2.92**		**3.74**

The critical success factor that identified is based on the internal and external success factor that already identify in the previous EFE and IFE matrix. The weighted numbers have the same meaning with the previous matrixes.

The explanations for each critical success factors are as follows:

- **Brand name,** The Company and PT LEN have already had a long time experience and reputation. Both have the outstanding brand name since more or less 50 years ago, and for PT AZET just established since 2003. The

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condition makes that the brand name weighted for the Company and PT LEN is higher than PT AZET.

- **Distributor Network,** the Company operation currently more focus on the Government's project, not many strategic actions for the retail market. PT AZET main focus on the distributing the overseas product from United States, Korea, UK to the domestic market, while PT LEN currently already distributing not only to the domestic market but also international market. Thus the highest weighted scores for distribution network is for PT LEN, followed by PT AZET and PT WIKA INTRADE.

- **Strategic Partner,** currently PT LEN and PT WIKA INTRADE considered have the most potential partner. PT LEN have partnership in domestic and overseas partner while PT WIKA INTRADE is more in the domestic partners, the partnership also gained from the Holding company that already established 50 years ago. There is no sufficient information regarding PT AZET partners.

- **Completed Production Facilities,** PT AZET and PT LEN currently have the advance is process of lamination. As describe in the figure 4.8 above, those competitors has already placed in the solar module stage, mean while PT WIKA INTRADE still in the system stage. This condition makes the Company's position placed in the last row than its competitors.

- **Human Resources,** PT LEN is one of the pioneers to assemble and to produce the photovoltaic system in Indonesia. The experience and the knowledge for the product are higher than the other competitors such as PT AZET and PT WIKA INTRADE. PT WIKA INTRADE and PT AZET just started the production in early 2000, yet the expertise and the knowledge are less than PT LEN.

- **Management System,** PT WIKA INTRADE adopted the Total Quality Management and 5's for the management system that encourage all stakeholder to do an efficient and effective process in the Company, while PT

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LEN and PT AZET applied OHSAS for the management system. This makes the position for competitor is equal.

- **Standardization,** Currently both PT AZET and PT LEN are standardized with the ISO 9001, while PT WIKA INTRADE has ISO 9000. Reflecting to the current level, PT WIKA INTRADE has less competing with others.

The competitive profile matrix shows the clear picture to the Company about their strong points and weak points relative to their competitors. The figure 4.6 identified that the Company has strong position in the photovoltaic industry due to have the weighted score above 2.5. The Company placed in the 2nd position between AZ and LEN as indicating in the total weighted 3.02. The major critical success factors that supported the Company is due to brand name and the strategic parent that Company have. AZ that considered as newborn company has lower weighted than PT WIKA INTRADE. In the opposite, LEN that already establish and experience more than 40 years placed the highest weighted in the matrix.

Many improvements to be made in order to increase competitive advantages. The Company must initiative to enhance the distribution network in order to penetrate the domestic market, outside the Government's project. The capability of the human resources is also have to be improved in order to in maintain and to increase the product quality.

In terms of the production facilities, in order to advance the technology of photovoltaic system, the Company must able to increase the variety of the photovoltaic system and innovate the current product by utilizing the existing facilities.

4.3. The Matching Stage

The matching stage process is to combine the external factors and internal factors that already identify previously in table 4.2 for EFE matrix and table 4.5 for IFE matrix in order to form feasible strategies that can be use by the Company.

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The matching stage that will be used is SWOT Matrix. SWOT Matrix concept is to develop four types of strategies: SO (strengths-opportunities) strategies, WO (weaknesses-opportunities) strategies, ST (strengths-threats) strategies, and WT (weaknesses-threats) strategies.

The SWOT analysis in table 4.7 indicating the strategy that must be considered by company to enhance the process of matching key external and internal factors.

Even though the SWOT Matrix resulted feasible strategies based on the internal and external factors, SWOT does not show how to achieve a competitive advantage, so it must not be end in itself. The matrix should be the starting point for another analysis on how to proposed strategies could be implemented.

For that reason, the next step of the analysis it to formulate alternative strategies that can be used by the Company. The Grand Strategy Matrix will be used as a tool to ease the formulating process. The use of Grand Strategy Matrix are combining between the level of market growth and the competitive position Company in the market.

The market growth, photovoltaic market condition currently show an increasing demand due to many obstacles appears in the existing energy usage. People are getting aware and curios to find alternative energy other than the existing one, Government's starting to use photovoltaic panel to support their facilities, many Government's building set these panels in their rooftop, many lightning system in the freeway and in the main streets in Jakarta uses the photovoltaic panel. This trends also followed by the private sectors, many commercial billboard are set up with the photovoltaic panel as their main generator. The usage of photovoltaic panel are enhance from the small generator in the remote areas to the every sector that requires electricity. The market growth are considered increasing rapidly, and it also supported by the increase of sole distributor for this panel. The number of demand is increasing and along with the condition of the existing energy.

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Competitive position, in terms of the competitive position, it calculated based on the critical success factor in the table 4.6 above. The Company has placed in the 2nd position between its competitors. PT Len and PT Azet. The critical success factor the Company have basically heritage from the Holding company, PT WIKA (Persero) Tbk. A good name and experience makes the Company have the good reputation in the Indonesia. The strategic partners also determine the how is the Company's action plan in term of competing with others.Thus, it may be conclude that the Company have a strong competitive position in the photovoltaic market.

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Table 4.6. SWOT Analysis for PT WIKA INTRADE

	STRENGTHS (S)	WEAKNESSES (W)
	1 The Company's have well known and have a good experience and reputation for more than 50 years	1 The lack of ability in Information technology
	2 Portion of sole distributor for SWH 36%, ACWH 33%, and PV 31% all over Indonesia	2 The Company still relying on 10% domestic market share.
	3 Partnering with potential domestic and International Company more than 50's companies	3 Has a relatively small in economic scale for conversion energy
	4 Have prod. facilities covering an area of 0.5 hectares located in Cileungsi, Bogor. Local production level reach 85% (TKDN)	4 Limited knowledge and usage ability for new products
	5 High experiences and capabilities for HR	5 Lack of understanding of regulation and international trade policy
	6 Adopted 5S process for operational activities and TQM for management system	6 Dependence on specific imported product is still high
	7 The conversion energy business unit has certified with ISO 9001, meet the national standardization of SNI	7 Lack of specialist in photovoltaic areas, currently there are only 3 photovoltaic specialists in the company
OPPORTUNITIES (O)	**S - O STRATEGIES**	**W - O STRATEGIES**
1 Average ratio of Government actual spending for Solar power is 8.8% for 5 years consecutives	1 Enhance market segmentation and increase market share (S1,S2,S3,O1,O4,O7)	1 Joint Venture/ partnering with other company (W4,W6,W7,O3,O5,O6)
2 Indonesia's geographical condition with 17,000 islands and with high intensity of solar energy 4.8 kWh/M2/day	2 Business sinergy with parent company PT WIKA (Persero) (S1,S2,S3,S4,O4,O7,O10)	2 Accelerate in developing internal system in order to increase the efficiency and effetiveness in the operation (W1,W3,O6,O9)
3 The lack number of electricity power generator. The electricity ratio is still under expectation, which is 65%	3 Actively involve in Government's development team in order to gain knowledges, experiences and recognition in national scale (S6,S7,O3,O4,O6,O7)	3 Develope competence based on human asset management system (W1,W4,W5,W7,O4,O7,O8,O9)
4 Opportunity to support Government's 10.000MW project due to PT WIKA awarded 30% share	4 Optimizing the usage of G to G international program to support Government and to gain incentives and compensation from Government (S1,S3,S4,S6,S7,O6,O10)	4 Increase the economic of scale by developing integrated marketing and distribution system with other BU (W2,W3,O4,O9)
5 Tendency to use its own power plant due to efficiency in long run and the existing resources condition	5 Integration with other SBU in terms of distribution network, facilities production and transfer knowledges (S2,S3,S4,O9)	5 Develop employee knowledge and understanding regarding the trading policy and regulation by cooperate with other BU and company (W4,W5,W7,O8,09,O10)
6 Incentives and compensation by Government for user and producer of energy conversion	6 Increase the marketing and promoting of energy conversion products (S1,S2,O2,O5,O8,O9)	
7 Government project to build 124 solar powers		
8 The opportunity for product of Green & Smart Building		
9 The opening of trading house with other countires		
10 The utilization of *G to G* international aids programs		
THREATS (T)	**S - T STRATEGIES**	**W - T STRATEGIES**
1 The global financial crisis in 2008 impacted the sales	1 Strategic alliance to seize the market, place, production and stability in financial (W2,W3,T4,T7,T8,T9)	1 Increase the standardization of management system and production system to obtain certification from International standard (W6,W7,T4,T5,T7,T8,T9,T11)
2 No Government policies to protect the product with the use of PV technologies	2 Develop high quality product in order to avoid any economic loss in non-tariff barriers (W4,W6,W7,T5,T7,T8,T9)	2 Focus in maintaining the existing product that have value added to the company (W2,W4,T1,T2,T3,T10)
3 The Government still perceives the self-promotion for electricity as competing to the PLN	3 Increase the competitive advantage by optimizing the 5S, TQM and ISO standardization (W6,W7,T4,T5,T7,T11)	
4 Foreign exchange fluctuation affect the price of imported raw materials	4 Synergy among state owned company in order to compete with the incoming foreign products (W1,W2,W4,T4,T5,T7,T8,T9)	
5 CAPTA considered being threats to domestic companies. Penetration of imported product with the cheap prices threatening the local product		
6 Non-Tariff Barriers regulation limiting the amount of goods to be shipped to export destination		
7 Rivalry among competing firm		
8 Potential entry of new competitors		
9 Potential development of substitute products		
10 Bargaining power of suppliers		
11 Bargaining power of consumers		

In the SWOT analysis previously, the feasible strategies that generated are related to enhance the market portion in the photovoltaic market. The S-O Strategies are responded to the opportunities in the market that utilize strength. Refering to the strategies that already discuss in the chapter 2, the possible strategies that can be applied for the Company are by Forward Integration and Backward Integration. The explanation is as follows:

- **Forward Integration,** in order to response the market demand, the company must be aggresively to promoting and selling the product directly to the market. The opportunities and situations described in the previous table have already shown that the demand keep increasing with the condition that many obstacle by using the non-renewable energy in the future. People prespective are getting broader regarding the photovoltaic and finds more that solar energy is the reasonable alternative energy in the future. Forward integration involvesgaining ownership pr increased control over distributors or retailers. The selection of this strategy is by considering following guidelines:
    - The Company currently supported with the Capital, knowledge and experiences from the Holding company. This condition makes the assumption that the Company can manage the new business of distributing its own products.
    - The demand for the product can be predicted. The current condition of the Company is considered is a stable production, also by looking at the market demand, the Company can predict the increase of demand trend in the future. Thus, it will be the advantage for the Company to own integrated distributor and retailers.

- **Backward Integration,** the Company as assembler of photovoltaic is encourage to have suppliers that have the expected to have the standard that already determined by the Company. The Backward integration is a strategy of seeking ownership or increased control of a firm's suppliers. The selection of this strategy is by considering following guidelines:

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- The Company currently supported with the Capital, knowledge and experiences from the Holding company. This condition makes the assumption that the Company can manage the new business of supplying its own raw materials.
- The Company competes in an industry that is growing rapidly; this is a factor because integrative-type strategies (forward, backward, and horizontal) reduce an organization's ability to diversify in a declining industry.
- Currently, there still part of the panel that highly dependent from the raw material that imported from China. If in the future, the demand shows the significant number, the Company has to consider to own suppliers for the part, in order to reduce cost of importing the raw material and to increase the competitiveness increasing the production.

The explanation above place the Company in Quadrant I in the Grand Strategy matrix below.

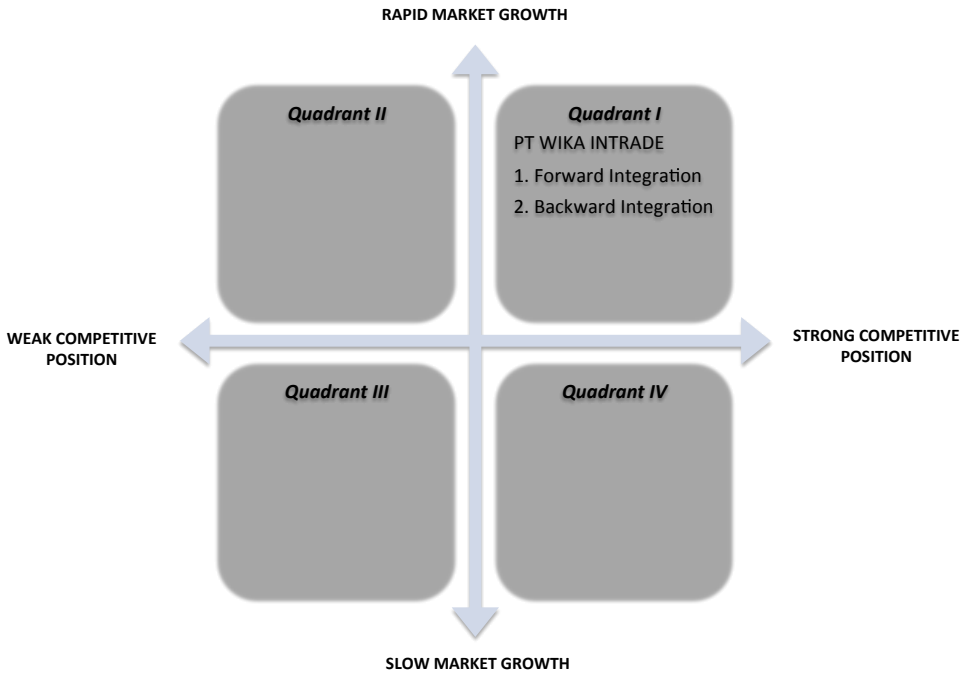

Figure 4.9. Grand Strategy Matrix

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4.4. Decision Stage

Based on the alternative strategies that already identified by using the Grand Strategy above, the decision stage will asses which one of the strategies are the most attractive strategy for the Company to choose.

The alternative strategies will be assessed using Quantitative Strategic Planning Matrix (QSPM). QSPM will use input from the Stage 1 and matching result from the Stage 2.

In the table 4.7, the Company will consider two alternatives strategies – Forward Integration and Backward Integration. The sum total attractiveness score 4.11 indicated that Forward Integration is a more attractive strategy when compared to the Backward Integration. The attractiveness score of 4 was indicated in the Forward Integration that supports the alternatives business synergy by gaining ownership over distributor or retailers. The main factors that contribute to the selection of the strategy came from the opportunities of there are many areas that possible to use photovoltaic panel and the opportunities from the Government for the power generator project that awarded to the Holding company for 30%. The strength that Company has is considered can respond to those opportunities by having a big portion or distributor and partnering with strategic partners.

To response the opportunities, Company must aggressively to promote the product in the market by increasing the advertising, promotion and direct selling to the customer. To support the strategy, The Company must have a reliable distributor and retailer that reach many customer segment, thus the most attractive strategy to be chosen by the Company is by doing Forward Integration.

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Table 4.7. QSPM for PT WIKA INTRADE

			STRATEGIC ALTERNATIVES			
			BACKWARD INTEGRATION		FORWARD INTEGRATION	
	Key Factors	WEIGHT	AS	TAS	AS	TAS
	Key External Factors					
	Opportunities					
1	Indonesia has growth rates and and Government spending continue to increase every year	0.10	-		-	
2	Indonesia's geographical condition with 17,000 island and with high intensity of solar ener gy 4.8 kWh/M2/day	0.07	-		-	
3	The lack number of electricity power generator. The electricity ratio is still under expectation, which is 65%	0.07	3	0.21	4	0.28
4	Opportunity to support Government's 10.000MW project due to PT WIKA awarded 30% share	0.02	2	0.04	4	0.08
5	Tendency to use its own power plant due to ef ficiency in long run and the existing resources condition	0.01	-		-	
6	Incentives and compensation by Government for user and producer of ener gy conversion	0.02	3	0.06	2	0.04
7	Government project to build 124 solar powers	0.06	4	0.24	3	0.18
8	The opportunity for product of Green & Smart Building	0.02	2	0.04	3	0.06
9	The opening of trading house with other countries	0.06	4	0.24	2	0.12
10	The utilization of G to G international aids programs	0.05	3	0.15	2	0.10
	Threats					
1	The global financial crisis in 2008 impacted the Photovoltaic revenue	0.06	4	0.24	2	0.12
2	No Government policies to protect the product with the use of PV technologies	0.03	-		-	
3	The Government still perceives the self-promotion for electricity as competing to the PLN	0.03	-		-	
4	Foreign exchange fluctuation af fect the price of imported raw materials	0.07	4	0.28	3	0.21
5	CAPTA considered being threats to domestic companies. Penetration of imported product with the cheap prices threatening the local product	0.06	1	0.06	3	0.18
6	Non-Tariff Barriers regulation limiting the amount of goods to be shipped to export destination	0.05	1	0.05	2	0.10
7	Rivalry among competing firm	0.03	2	0.06	1	0.03
8	Potential entry of new competitors	0.03	2	0.06	3	0.09
9	Potential development of substitute products	0.05	3	0.15	2	0.10
10	Bargaining power of suppliers	0.08	3	0.24	2	0.16
11	Bargaining power of consumers	0.03	2	0.06	3	0.09
		1.00				
	Key Internal Factors					
	Strengths					
1	The Company's have well known and have a good experience and reputation for more than 50 years	0.07	-		-	
2	Portion of sole distributor for SWH 36%, ACWH 33%, and PV 31%	0.07	1	0.07	4	0.28
3	Partnering with potential domestic and International Company more than 100 companies	0.10	3	0.30	4	0.40
4	Have prod. facilities covering an area of 0.5 hectares located in Cileungsi, Bogor . Local production level reach 85% (TKDN)	0.09	3	0.27	4	0.36
5	High experiences and capabilities for human capital management	0.06	-		-	
6	Adopted 5S process for operational activities and TQM for management system	0.09	2	0.18	1	0.09
7	The conversion energy business unit has certified with ISO 900 0, meet the national standardization	0.09	1	0.09	2	0.18
	Weaknesses					
1	The lack of ability in Information technology	0.04	-		-	
2	The Company still relyin on domestic market	0.06	3	0.18	4	0.24
3	Limited knowledge and usage ability for new products	0.07	3	0.21	4	0.28
4	Has a relatively small in economic scale for conversion ener gy	0.05	3	0.15	2	0.10
5	Lack of understanding of regulation and international trade policy	0.03	1	0.03	2	0.06
6	Dependence on specific imported product is still high	0.09	4	0.36	2	0.18
7	Lack of specialist in photovoltaic areas, currently there are only 3 photovoltaic specialists in the company	0.09	-		-	
		1.00		**4.02**		**4.11**

The Forward Integration is one of the processes to enhance the photovoltaic market by integrating with the supporting factors, which are distributors and retailers. The alternative strategy proposes align with the vision and mission of the Company. By integrating with the distributor and retailers, the services and the value added both to the customers and also to the Company would increase. The Company can have better understanding with the Customer demands and

requirement while in the same time increasing the services regarding the product and system. All of this process will increase the value added Company as a whole with all the stakeholders.

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CHAPTER 5
CONCLUSION AND SUGGESTION

5.1. Conclusion

After analyzing alternative strategies based on the basic information needed, the author concludes several points that also can answer the problems in the beginning of chapter 1:

a. The basic information needed to formulate strategies for the Company is by using the External Factor Evaluation (EFE) Matrix, Internal Factor Evaluation (IFE) Matrix and the Competitive Profile Matrix. Each of factors are already weighted and scored based on management point of view. The Company's score above 2.53 is consider has sufficient response in taking advantages from the opportunities in order to mitigate the all the threats.

   The internal factor evaluation matrix score of 2.62 is indicating that the Company has a strong internal position in the market, thus many improvement should be made in order to increase the competitiveness level.

   Basic information to analyze the competitive position of the Company is by using the Competitive Profile Matrix (CPM). The competitive position for the Company currently is on the 2nd position of two different competitors in the same industry, WIN (3.02), Azet (2.92), and LEN (3.74).

b. The strategic management tool that can be used to identify feasible strategies for the Company to be chosen is by using Strength-Weaknesses-Opportunities-Threats matrix and then to formulate those feasible strategies by using Grand Strategy Matrix. The Grand Strategy Matrix

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summarized 2 (two) alternatives strategies that can be use by the Company in order to increase competitiveness in the photovoltaic industry, they are:

- Backward Integration
- Forward Integration

c. In order to choose the most attractiveness strategy, the Author used Quantitative Strategic Planning Matrix to quantify the attractiveness score of each strategy against the internal and external factors. The strategy that has the highest attractiveness score of 4.11 is by doing Forward Integration to gain ownership or increased control over distributors or retailers.

5.2. Suggestion

From the analysis in the Analysis and Discussion chapters, the study brings benefits and suggestions for the following party:

a. The Company. This study gives another perspective to the Company about how to formulate and to choose business strategy by analyzing each factor that surrounding the Company.

   The strategy that will be suggested for the Company is by choosing Forward Integration with the potential distributors and retailers to enhance photovoltaic market in Indonesia and to response to the opportunity of the increasing demand photovoltaic system.

   In terms of business going concern, the Company together with Holding company, is suggested to encourage stakeholders or Government to issue regulation in solar power industry. The regulation is very important in order to attract and to protect both producer and consumer to use photovoltaic system as a favorable alternative energy in the future.

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To improve the revenue and the market share in the photovoltaic industry, the Company is suggested to penetrate the retail market by focusing in selling the product to the companies that has business purposes, such as transmission network on Telecommunication Company, Corporate Service Responsible purposes and public service facilities. This suggestions are also related to the strategy that suggested by the Author.

b. Academics. This study adds university literature regarding the strategic management. It is useful as reference in able to construct and to choose the feasible strategic business for the Company in the photovoltaic industry.

Regarding the availability in literature, it would be better for the university to provide more literatures about the strategic management for photovoltaic industry and for the new and renewable energy, because this topic will be very important in the future.

c. Subsequent Study. This study can be as basis in analyzing feasible strategies for the Company in order to increase the competitiveness level in the photovoltaic industry.

This study explains how to choose the most attractive strategy got the Company to be applied by using the analytical formulation framework. For the subsequent study the authors suggested to use more varied strategic management tools such as SPACE Matrix, BCG Matrix, IE Matrix in order to deliver more comprehensive analysis.

The use of QSPM as a tool to evaluate the feasibility of alternative strategies has some limitation that must be noticed.

- Even though QSPM assessment is based on the intuitive judgment and educated assumption, the ratings and attractiveness scores requires judgmental decision from strategist, managers and employees through

out the strategy formulation process. Thus, the result may be subjective based on the management's interest.

- QSPM is that can be only as good as the prerequisite information and matching analysis upon which it is based, thus to analyses deeper, next subsequent study is suggested to include more financial data with longer period of study in order to get more accurate result.

5.3. Limitation

The Author realized that in the process of identifying the basic information needed to formulate the strategy, there are many factors that was not included in the analysis, such as:

- The analysis is not including the financial calculation that supports the internal factor evaluation.

- The study is less of details in each factor that analyzed in the matrixes. Supporting data is needed more to support all of the arguments.

- The study needs more to consider updating the factors to gain better comprehensive analysis and strategy.

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Appendix 1: Interview with Management PT WIKA INTRADE

Name : Andi Nugraha (AN)
Position : Director
Place & Date : Jakarta, 26 May 2011

The authors: How initially PT WIKA INTRADE decided to develop photovoltaic product in the energy conversion business unit?

AN: Basically our Holding company, PT WIKA (Persero) Tbk. has already used the solar power for solar water heater product. The usage of the solar energy is than developed into an independent energy that can be used as power generator for the household needs, industries and also public facilities. We realized that the current energy resources condition encourages Government to seek and to use alternative energy other than fossil energy and there are still areas in eastern Indonesia that have not being electrified due to the geographical condition. These conditions become a business opportunity for the Company to be able to offer the photovoltaic system as their alternative energy.

The authors: What is your current strategy to penetrate the photovoltaic industry in Indonesia?

AN: Currently, the Company has benefit from the Holding company regarding the brand name of solar water heater and the brand name of the Holding company it self. At the first time, we currently use the existing Solar Water Heater product market to introduce to the public that we penetrate the industrial of Photovoltaic system. Other than that, we promoted the product through Government's projects and initiatives. We are still developing the best system of photovoltaic that generally can be used in accordance with the condition in Indonesia.

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Appendix 2: Interview with Management PT WIKA INTRADE

Name : Satrio Adji (SA)
Position : General Manager
Place & Date : Jakarta, 26 May 2011

The authors: What do you think about the opportunity for the company in the photovoltaic industry?

SA: I personally have a strong belief that the business unit of the energy conversion can grow rapidly and can compete in the photovoltaic industry. Considering that the Company supported with complete production facilities, a good reputation, and high capability of human resources and also partnering with many of domestic and international company.

The authors: How can the Company compete with the other competitor in the photovoltaic industry?

SA: Currently, the Company assembles almost 90% of the entire component for the photovoltaic system. The local content that produce in that facilities brings the advantages when dealing with the Government's tender. The standardization of also applied in the company by using both local and international standardization institution. I think these points bring the Company into the competitiveness level.

The authors: What is the most important thing for the Company in order to increase the competitiveness level in the photovoltaic industry?

SA: I think that the Company is on the right track to increase the competitiveness level. Even though there still have limitations, the company's position is listed as one of the biggest photovoltaic industry in Indonesia. Currently, the dependency of imported product for the crystal part becomes one of the points that can contribute to the competitiveness level. However, the Company is still developing the technology for the photovoltaic panel in order to reduce the dependency on imported product.

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Appendix 3: Interview with Employee of PT WIKA (Persero) Tbk

Name : Rachmadi Kurniawan (RK)
Position : Business Development Analyst
Place & Date : Jakarta, 28 June 2011

The authors: What is your involvement in the PT WIKA INTRADE?

RK: Basically, the forming of the short and long term plans is made in the Holding Company. At that time, as a Business Development Analyst, I involved in a team to structuring the *Rencana Jangka Panjang* PT WIKA INTRADE. We analyze based on the factual data and projecting for the 5 years ahead.

The authors: How does the placement of Human Resources in the PT WIKA INTRADE?

RK: The human resources allocated from the Holding company. HR department responsible to the allocation. The placement based on the need of the subsidiary and based on the Management's perspective. In terms of the specific request, PT WIKA INTRADE request separately to the HR department with the specification. Other than that, PT WIKA INTRADE's management is recruiting based on the on request basis form each division beneath the Company.

The authors: what is the main reason of PT WIKA INTRADE wants to focus in the Photovoltaic?

RK: Looking at the progress report for all PT WIKA INTRADE's product, photovoltaic panel is the one that have significant progress. For that particular reason, Management wants to involve in the future renewable energy competition by focusing on the development of the product, the Company also eager to penetrate more on the photovoltaic industries.

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Appendix 4: Picture of Solar Home System

Appendix 5: Picture of Controller, Batteries Tools 1

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Appendix 6: Picture of Controller Tools 2

Appendix 7: Picture of Inverter Tools

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Appendix 8: Distributor List – PT WIKA In - Trade

NO	COMPANY	LOCATION	SOLE DISTRIBUTOR
1	CV. ADHIDARMA TEKNIK	SURABAYA	AWH
2	CV. BINTANG ANUGERAH	LAMPUNG	AWH
3	CV. BONA	MEDAN	AWH
4	CV. GDE MAKMUR SENTOSA	SEMARANG	AWH
5	CV. GUNA JAYA TEKNIK	CIREBON	AWH
6	CV. HARDIE PRATAMA SARI	JAMBI	AWH
7	CV. LIMA PUTRA	MEDAN	AWH
8	CV. LINTAS DAYA	DENPASAR	AWH
9	CV. SLAMET	SURABAYA	AWH
10	CV.SUBUR SENTOSA	DKI JAKARTA	AWH
11	PT. BENING LIMBAH REKAYASA	YOGYAKARTA	AWH
12	PT. INTISUKSES MITRA SEJATI	DKI JAKARTA	AWH
13	PT. MICROCHEM	MANADO	AWH
14	PT. RAJAWALI METAL PERKASA	BEKASI	AWH
15	PT. SURYA PUZALINDO	MAKASAR	AWH
16	CV. ANUGERAH DWI PERKASA	SURABAYA	SWH
17	CV. ARIO SAKTI	PALEMBANG	SWH
18	CV. HENDRI WIJAYA PHERI	PADANG	SWH
19	CV. JAYA TEKNIK	BALI	SWH
20	CV. LINGGOJATI UTAMA	DKI JAKARTA	SWH
21	CV. LUMBUNG MUSTIKA SENTOSA	SAMARINDA	SWH
22	CV. MATAHARI	SOLO	SWH
23	CV. NATERINDO	MEDAN	SWH
24	CV. PUSAKA JAYA	SEMARANG	SWH
25	CV. SLAMET	MALANG	SWH
26	CV. SUMBER AGUNG PERDANA	TEMANGGUNG	SWH
27	CV. SUMBER AGUNG PERDANA	YOGYAKARTA	SWH
28	CV. WATER QUALITA	LAMPUNG	SWH
29	PT. 16 JALA PERSADA INDONESIA	BANJARMASIN	SWH
30	PT. ATMA YUDHA	DKI JAKARTA	SWH
31	PT. BERKAT MEGAH PERKASA	BALIKPAPAN	SWH
32	CV ANUGERAH DWI PERKASA	JAWA TIMUR	PV
33	CV HENDRI WIJAYA PHERI	SUMATERA BARAT	PV
34	CV KARYA GIHON	RIAU	PV
35	CV LUMBUNG MUSTIKA SENTOSA	SAMARINDA	PV
36	CV LUMBUNG MUSTIKA SENTOSA	KALIMANTAN TIMUR	PV
37	CV MITRA JAYA	SULAWESI UTARA	PV
38	CV NATERINDO	SUMATERA UTARA	PV
39	CV SLAMET	YOGYAKARTA	PV
40	CV WATER QUALITA	JAWA BARAT	PV
41	PT MATAHARI LESTARI	JAWA TENGAH-SOLO	PV
42	PT. 16 JALA PERSADA INDONESIA	KALIMANTAN SELATAN	PV
43	PT. ATMA YUDHA	DKI JAKARTA	PV
44	PT. BERKAT MEGAH PERKASA	KALIMANTAN TIMUR	PV
45	PT. BERKAT MEGAH PERKASA	KALIMANTAN BARAT	PV
46	PT. PINO MODULE PERKASA	JAWA BARAT	PV
47	PT. PURNA WIJAYA MANDIRI	DKI JAKARTA	PV