FINAL PROJECT – TI 141501

DESIGNING PERFORMANCE MEASUREMENT SYSTEM USING BALANCED SCORECARD IN PT PG RAJAWALI I SURABAYA

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DEPARTEMENT OF INDUSTRIAL ENGINEERING

Faculty of Industrial Technology

Institut Teknologi Sepuluh Nopember

Surabaya 2018

TUGAS AKHIR – TI 141501

PERANCANGAN SISTEM PENGUKURAN KINERJA DENGAN METODE *BALANCED SCORECARD* PADA PT PG RAJAWALI I SURABAYA

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Institut Teknologi Sepuluh Nopember

Surabaya 2018

APRROVAL SHEET

DESIGNING PERFORMANCE MEASUREMENT SYSTEM USING BALANCED SCORECARD IN PT PG RAJAWALI I SURABAYA

FINAL PROJECT

Proposed as a Requisite to Graduate in Industrial Engineering Major and to Achieve a
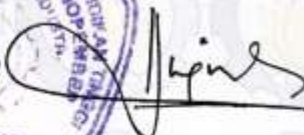Bachelor Degree in Department of Industrial Engineering
Faculty of Industrial Technology
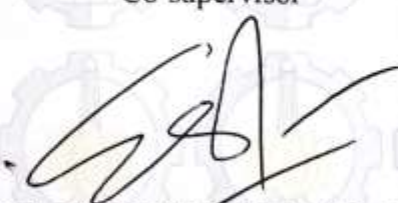Institut Teknologi Sepuluh Nopember
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SURABAYA, JANUARY 2018

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DESIGNING PERFORMANCE MEASUREMENT SYSTEM USING BALANCED SCORECARD IN PT PG RAJAWALI I SURABAYA

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ABSTRACT

Performance measurement is one of the way to improve competitive advantage of the sugar industry in Indonesia in an effort to win the competition in an complex market due to the high market opportunity and the increasing number of competitors. In practice, PT PG Rajawali I as a stated-owned enterprises and a subsidiary of PT Rajawali Nusantara Indonesia doesn't have an integrated performance measurement system. The performance of every company that is state-owned senterprises is determined in *Surat Keputusan Menteri Negara BUMN No Kep-100/MBU/2002* that only focus on financial aspect which not enough to guide and evaluate the company through a competitive environment, and will impact on the uncontrolled performance, thus PT PG Rajawali I feel the need to build their internal performance measurement system that can link all the department contribution and did not only focus on the financial aspect. Therefore, the aim of the research is to design a Balanced Scorecard model which consist of financial and non financial aspect using an appropriate multi-criteria decision making method. Since performance measured used in BSC models are interdependent, the Analytic Hierarchy Process (AHP) was used as the appropriate multi-criteria decision making method to determine the weight of perspective and objective strategies with the help of Expert Choice 11 software. From the result of the discussion held, there are 7 strategic objectives, 15 sub-strategic objectives and 29 KPI. The final result of scoring system, the company obtain value of achievement of company performance of 0,754 with a yellow indicator that indicates that the achievements are close to the target, but further improvement is needed. This performance generate from the finding that out of 29 existing KPI, 2 of them are in red indicator, 1 of them are in yellow indicator, and 26 of them are in the green indicator. In addition, this research also designed a performance measurement dashboard that can facilitates the company to controlling their internal performances and make an anual report to PT RNI by calculating the corporate's perfromances that already stated in *Surat Keputusan Menteri Negara BUMN No Kep-100/MBU/2002*.

Keywords : Analytic Hierachy Process, Balanced Scorecard, Key Performance, Indicator, Perfromance Measurement System

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PERANCANGAN SISTEM PENGUKURAN KINERJA DENGAN METODE *BALANCED SCORECARD* DI PT PG RAJAWALI I SURABAYA

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ABSTRAK

Pengukuran kinerja merupakan salah satu cara untuk meningkatkan keunggulan kompetitif pada industri gula di Indonesia dalm usaha untuk memenangkan persaingan di pasar yang semakin kompleks dan tingginya peluang pasar dengan meningkatnya jumlah competitor. Dalam pelaksanaannya, PT PG Rajawali I sebagai perusahaan BUMN dan anak perusahaan dari PT Rajawali Nusantara Indonesia saat ini tidak memiliki pengukuran kinerja yang terintegrasi. Pengukuran kinerja bagi perusahaan BUMN telah ditetapkan berdasarkan ketentuan pemerintah dalam Surat Keputusan Menteri Negara BUMN No Kep-100/MBU/2002 dimana ketentuan tersebut hanya berfokus pada aspek keuangan yang tidak cukup untuk menuntun dan mengevaluasi perjalanan perusahaan untuk melalui lingkungan yang kompetitif dan akan berdampak pada tidak terkontrolnya performansi dari perusahaan. Oleh karena itu, pada penelitian ini dilakukan perancangan sistem pengukuran kinerja berbasis *Balanced Scorecard* (BSC) yang meliputi aspek keuangan dan nonkeuangan dari perusahaan. Dalam penelitian ini, proses pembobotan dilakukan metode *Analytic Hierarchy Process* (AHP) sebagai salah satu alat pengambilan multi kriteria untuk menentukan bobot dari perspektif, strategi objektif, sub-strategi objektif dan KPI dengan bantuan *software Expert Choice*. Dari hasil diskusi didapatkan 7 strategi objektif, 15 sub-strategi objektif dan 29 KPI. Hasil akhir dari *scoring system* yang dirancang, didapatkan nilai performansi perusahaan total sebesar 0,754 dengan indicator hijau, indikator ini menandakan bahwa kinerja perusahaan dalam kondisi yang baik namun tetap memerlukan pengawasan. Kinerja yang baik ini dihasilkan dari temuan bahwa dari 29 KPI yang ada, terdapat 2 KPI dengan indikator merah, 1 KPI dengan indicator kuning dan 26 KPI dengan indicator hijau. Selain itu pada penelitian ini juga dirancang suatu *dashboard* pengukuran kinerja yang memiliki dua output yaitu menghitung kinerja perusahaan secara *internal* dan juga menghitung kinerja sesuai dengan Surat Keputusan Menteri Negara BUMN No Kep-100/MBU/2002 yang dapat memudahkan pihak perusahaan dalam pengisian nilai dan pengontrolan kinerja perusahaan.

Kata kunci : *Analytic Hierachy Process, Balanced Scorecard, Key Performance Indicator, Perfromance Measurement System*

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9. Everyone else whom author cannot mention one by one. The most sincere and deepest gratitude is expressed towards you all.

Lastly, author realizes that this research requires further development. Therefore, the positive suggestions and constructive critics is required to enhance this research. May this research contributes to the academics scope, practical world, and improvement to get better future.

Surabaya, January 2018

Sabilla Uzlifat Riandini

TABLE OF CONTENTS

LIST OF FIGURES

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LIST OF TABLES

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CHAPTER 1
INTRODUCTION

This chapter contains the background of the research, problem formulation, research objectives, research benefits, and research scope. Besides that, this chapter also contain the outline of the report to give a big picture of the report mechanism.

1.1 Research Background

In Indonesia, sugar industry made from raw sugar cane has existed since the Dutch colonial era. The sugar industry is classified as an industry which is already quite old. This can be seen from the history of the sugar industry in Thailand that has been established since the 13th century, in Brazil since the 15th century, and in Indonesia is estimated to have existed since the 16th century. Indonesia has experienced the glory era of the sugar industry in the 1930s with the number of sugar factories operating 179 factories, productivity of about 14.80%. Peak production reaches up to 3 million tons and sugar exports of 2.40 million tons. The success is supported by the ease of obtaining fertile land, cheap labor, priority irrigation, and discipline in the application of technology (Susila, et al., 2005)
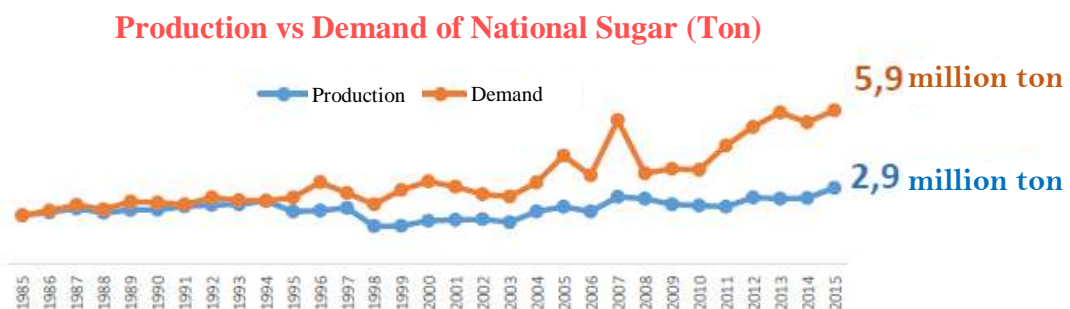
Figure 1. 1 National Sugar Demand VS Production (Tons).
Source: (PT Rajawali Nusantara Indonesia)

If seen in Figure 1.1, sugar demand from 2010 to 2015 continues to grow to 5.9 million tons but sugar production until 2015 tends to decline and only enough to meet 2.9 million tons. It can be seen that there are 3 million tons gap between the demand and the production. Afterwards, if quoting from Syukur Iwantoro, Advisor of the Minister of Agriculture for Investments that as many as 25 private sugar

company is committed to build a factory in Indonesia. In fact, until 2019, there are 11 plants that have been operated, in 2016 the number of sugar factories in Indonesia is 58 and continues to increase in 2017 to 62. This indicates that the development of sugar mills in Indonesia is increasing.

By looking at opportunities in the sugar factory industry to increase as well as the increasing number of sugar mill industries, it is natural for all sugar mill industries to improve themselves in order to increase competitive advantage to win the competition in increasingly complex market. Competitive advantage can be created through effective human resource management by taking into account the internal and external factors that the company will face (Mujiati, 2013). One of the competitive advantages that can be improved by the company is to implement performance measurement, which with the performance measurement of the company, the level of performance will be known. The results of subsequent performance measurement can be used as a foundation for the company to achieve company goals and make improvements to improve performance, so that ultimately the company can improve competitiveness and competitive advantage.

In an effort to make the company more competitive in the business environment, the company must start to implement a performance measurement system that not only look from the financial aspect, but also non-financial aspect. This is because many important non-financial references are not listed in the financial statements, such as customer satisfaction and employee turnover rate. Without an integrated performance measurement, PT PG Rajawali I Surabaya does not have a strong enough basic reference in determining the strategy and policy to be taken in the future, which is certainly related to the improvement of company performance. This is because performance measurement systems allow for decision-making and action (Neely, Gregory, & Platts, 1995). In addition, with the performance measurement, the company can determine whether the position has exceeded the target or are yet to reach the target, or is very far from the target.

One of the sugar factory in Indonesia is PT PG Rajawali I which is subsidiary of PT Rajawali Nusantara Indonesia which is a state-owned enterpises. The performance of every company that is state-owned senterprises is determined in *Surat Keputusan Menteri Negara BUMN No Kep-100/MBU/2002* and only have

three aspects that need to be considered that is financial, operational and administration and the main focus is on the financial aspect with weight of 70 out of 100, operational and administration aspect with weight of each aspect is 15 out of 100. Based on the government rule, it can be seen that the government only focus on the financial aspect which is still very conventional. The financial aspect are not sufficient enough to guide and evaluate the company's journey through a competitive environment and will have an impact on the uncontrolled performance of the company. PT PG Rajawali I still need to report the annual statement with the indicators that already stated by the government through *Rencana Kerja dan Anggaran Perusahaan (RKAP)* and *Rencana Jangka Panjang Perusahaan (RJPP)* also *Laporan Evaluasi Kinerja* to the PT RNI, but the company feel that they need to have their own KPI in order to maintain their performances and keep all the department feel the contribution of their performance is giving important role through the sustainability of the company. PT PG Rajawali I feel the need to build their performance measurement system that can link all the department contribution and did not only focus on the financial aspect.

With the formation of their own performance measurement, the shareholder can easily understand the current company condition and easily assess whether the company target that has been set at the beginning of preparing the *Rencana Kerja dan Anggaran Perusahaan (RKAP)* has been achieved or not. Similarly, during the *Rapat Umum Pemegang Saham (RUPS),* the shareholders can assess the ability of management during a period with ease by looking the achievement based on the *Rencana Jangka Panjang Perusahaan (RJPP)*. Performance measurement also helps the company in managing their internal performances.

The Balanced Scorecard (BSC) method is one of the company's performance measurement tools that utilizes a set of financial and non-financial indicators that are interwoven in causal relationships that can help the organization to translate its vision, mission and strategy into action (Luis & Biromo, 2007). BSC has 4 perspectives consisting of financial perspective and 3 non-financial perspective, ie customer; internal business processes; and learning and growth. Given these four perspectives it is possible for shareholders to assess companies from multiple perspectives simultaneously.

Moreover, a number of state-owned enterprises have implemented BSC as their performance measurement, such as PT Jamsostek, PT Pelindo 2, PT Telekomunikasi, PT Adhi Karya, PT Garuda Indonesia and PT BRI; when referring to a journal article entitled Balanced Scorecard Effectiveness In Public Ownership Corporation Managerial's Performance (BUMN) written by R. Weddie Adriyanto and Mega Metalia, of 15 state-owned enterprises, 6 of which have implemented balance scorecard performance measurement system and it shows better result in terms of improving managerial effectiveness in state-owned enterprise environment. Measurement concept solely relying on financial measurement is only able to provide information towards management and owners regarding profitability of the company; whereas, the level of profitability allows any manipulation in terms of financial statement in order to provide better result. By using BSC, the company's performance can be better reflected and the company's going concern can be better estimated. Therefore, it makes sense if the implementation of BSC will improve the company's performance in terms of both financial and managerial.

Motivated by these issues, this research aims to design a performance measurement system for PT PG Rajawali I Surabaya using the BSC framework to redefined the sub business unit level KPIs. Then carried out the stage of weighting perspective and strategic objective with AHP method, then performed weighting of KPI through questionnaire AHP. Afterwards, a scoring system is designed to test performance measurement and to know the company performance score based on achievement, target, and also weight of each KPI. Finally, a performance measurement dashboard is designed to grant the dream of PT PG Rajawali I to have their own performance measurement to measure their internal performances and the dashboard also provides company performance reporting data in accordance with government regulations that must be reported to the PT RNI because it is an obligation that must be fulfilled by the company.

1.2   Problem Formulation

Based on the research background that has been stated previously, the problems can be formulated in this study is how to construct a performance measurement system using the BSC framework at PT PG Rajawali I Surabaya.

1.3   Research Objectives

Based on research background and problem formulation from two previous section, the objectives of this final project are:

1. Redefined an Strategic Objectives and Strategic Map on PT PG Rajawali I Surabaya.
2. Redefined Sub Business Unit-level KPIs at PT. PG Rajawali I Surabaya.
3. Conduct a trial of performance measurement test at PT PG Rajawali I Surabaya and measuring the KPI.
4. Designing performance measurement system dashboard at PT PG Rajawali I Surabaya.

1.4   Research Benefits

Based on research background and problem formulation from two previous section, the benefits of this final project are:

1. The company obtains the design of BSC based performance measurement system to measure their internal performance.
2. The company obtains a reference on how to perform KPI weighting based on the AHP.
3. The company obtains a reference on dashboard performance measurement system that showing both internal peformance measurement and government performance measurement.

1.5   Research Scope

The limitations and assumption used in this report will be shown in sub-chapter below.

1.5.1 Limitations

Limitations of this research are listed as follow:

1. Research conducted only to redefined a Key Performance Indicator (KPI) based on Balanced Scorecard (BSC) framework to sub business unit level.

2. The company's internal data used are:
   - *Rencana Jangka Panjang Perusahaan (RJPP)* 2016-2020.
   - *Rencana Kerja dan Anggaran Perusahaan (RKAP)* 2017.
   - *Laporan Evaluasi Kinerja* 2015-2016.

3. Dashboard has 2 main outputs:
   - Internal company performance measurement by looking at the main KPI that set by the company.
   - Performance measurement based on *Keputusan Menteri BUMN No. KEP-100/MPU/2002*.

1.5.2 Assumptions:

The assumption used in this study is that the company operates under normal conditions during the research. The normal condition is the absence of change from the strategy and business processes of the company also an absence of changes in government regulation.

1.6 Report Outline

This sub-chapter give the big picture of this research, following are the outline of the research report.

CHAPTER 1 - INTRODUCTION

This chapter elaborates the background of the research, problem formulation, research objectives, research benefits, and research scope. Besides that, this chapter also contain the outline of the report to give a big picture of the report mechanism.

CHAPTER 2 – LITERATURE REVIEW

This chapter elaborates the theoretical foundations of research derived from various literature studies that assist researchers in the determination of methods according to the problem.

CHAPTER 3 – RESEARCH METHODOLOGY

This chapter elaborates the methodology and its explanation which used in this research.

CHAPTER 4 – DATA COLLECTION AND PROCESSING

This chapter elaborates the data collection and its processing which related to the problem solving and analysis.

CHAPTER 5 – ANALYSIS AND INTERPRETATION

This chapter leaborates the results of analysis and interpretation of the results that have been obtained from data processing that has been done in the previous chapter.

CHAPTER 6 – CONCLUSION AND SUGGESTION

This chapter elaborates the conclusion of the research and the suggestion offered to the company to solve the problem identified in PT PG Rajawali I Surabaya.

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CHAPTER 2
LITERATURE REVIEW

This chapter described the theories related to this final project research. Theories presented include performance measurement, Balanced Scorecard method, Key Performance Indicator, Analytical Hierarcy Process, Scoring System, and Traffic Light System.

2.1 Performance Measurement

Performance is the success of a personnel, team, or organizational unit in realizing a predetermined strategic goal with expected behavior. The success of strategic achievement needs to be measured. That is why the strategic objectives underlying performance measurement need to be determined in advance, and strategic initiatives are established to realize those goals. Strategic objectives and their sizes are then used to define the targets that will be the basis for performance appraisal, to determine the rewards that will be given to personnel, teams, or organizational units. Afterwards, performance measurement is a periodic determinant of operational effectiveness of an organization, and employees based on predetermined targets, standards and criteria. Thus, it takes a performance measurement that can be used as the basis for designing a reward system in order for personnel to produce performance in line with the performance expected by the organization (Mulyadi, 2007).

Performance measurement is also useful for measuring problems of misconceptions of designers and practitioners in translating basic components. This misunderstanding can lead to an inability to make decisions. (Peppard & Rowland, 1995).

By measuring the performance of a company, the data will be used to help coordinate the process of decision making within the organization and can consider how to make the related business unit able to meet the overall company objectives (Kharis, 2014).

The purpose of the implementation of performance measurement is to motivate employees to keep trying to comply with established standards and regulations and achieve organizational goals in order to obtain the desired results (Mulyadi & Setiawan, 1999)

While the benefits of performance measurement when it has been implemented in the company as follows:

- Encourage all parties within the company to engage in the business of satisfying consumers.
- Identify waste so that in the reduction or elimination of waste.
- Create a consensus to change attitudes that support the achievement of all goals.
- Create strategic goals that can enhance understanding of the organization. (Supriyono, 1999)

2.1.1 Objective of Performance Measurement System

According to Anthony & Robert (2001), the purpose of the measurement system performance is to assist in setting strategy. In implementation on performance measurement system there are four basic concepts:

1. Determine the strategy;

   In this case the most important is the goals and targets of the organization expressed explicitly and clearly. The strategy should be made first for the entire organization and then developed to the functional level below it.

2. Determine the measurement strategy;

   Strategy measurement is needed to articulate strategy to all members of the organization. The organization should focus on some critical measurements only. So that management does not do too many measurements of unnecessary performance indicators.

3. Integrate measurements into the management system;

Performance measurement should be an organizational part both formally and informally, also part of corporate culture and human resources.

4. Evaluate the measurement of results on an ongoing basis;
   Management should always evaluate the performance measurement of the organization whether it is still valid to establish from time to time.

Performance measurement helps managers monitor the implementation of business strategy by comparing actual results with strategic goals and objectives. Performance measurement systems typically consist of systematic methods of placing goals and objectives, as well as periodic reporting that identifies realization of the achievement of goals and objectives.

2.1.2   Benefits of Performance Measurement

In general, people who are involved in human resource management agree that this assessment is an important part of the entire employee work process. It is also important for the company where the employee works. For employees, the assessment serves as feedback on such things as abilities, strengths, weaknesses and potentials that in turn are useful for determining career goals, pathways, plans and development. For the organization or company, the results of the assessment are very meaningful and their role in decision-making on various matters, such as the identification of the need for education and training programs, recruitment, selection, recognition program, placement, promotion, reward system and various other aspects of the process from source management human power effectively.

2.1.3   Weakness of Performance Measurement

Robert S. Kaplan and David P. Norton (1996) states that the weaknesses of performance measurement that focuses on financial performance are:

1. Inability to measure the performance of intangible assets and intellectual property (human resources) company.
2. Financial performance can only tell a little about the company's past and is not able to fully guide the company in a better direction.

2.2   Balanced Scorecard (BSC)

Balanced Scorecard (BSC) was introduced by Robert S. Kaplan who is an accounting professor from Harvard Business School with his partner David Norton who is a consultant. Kaplan and Norton conducted research with the idea of answering the need for performance measurement of financial perspective that is not effective to apply to modern companies.

BSC is a management and measurement system that shows business performance in four perspectives namely finance; customer; internal business processes; and learning & growth, with the aim of creating value for the company in the present and future. (Kaplan & Norton, 1996).

Measuring performance using BSC will result in a more objective and comprehensive assessment because the BSC translates the vision, mission, goals, and business unit strategy into a goal and measurement. The objectives and measures of the BSC strategy are divided into four perspectives based on the Critical Success Factor (CSF) from each perspective. (Kaplan & Norton, 1996) If CSF is done correctly it will give success to the company, therefore CSF for each company is not the same.

Here is an overview of the BSC framework based on the four perspectives: financial, customer, internal business process and learning & growth. (Kaplan & Norton, 1996)
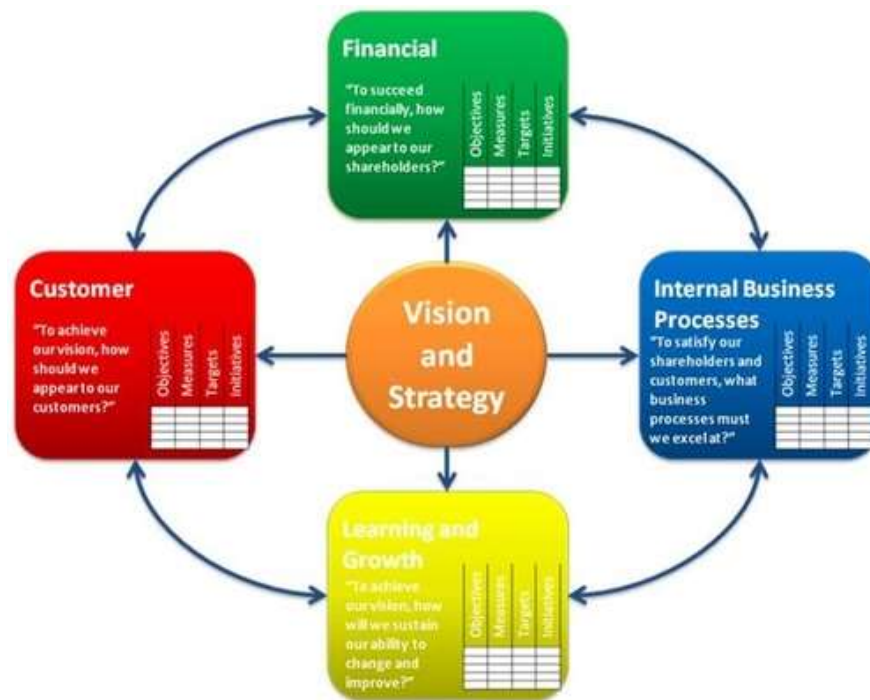
Figure 2. 1 *Framework* BSC.
Source: (Kaplan & Norton, 1996)

After the BSC framework is formed as in Figure 2.1 then the next step is to group the strategies based on each perspective to become a chart. The chart is a strategic map containing the strategic objective of the organization. The following Figure 2.2 is an example of a BSC strategic map.
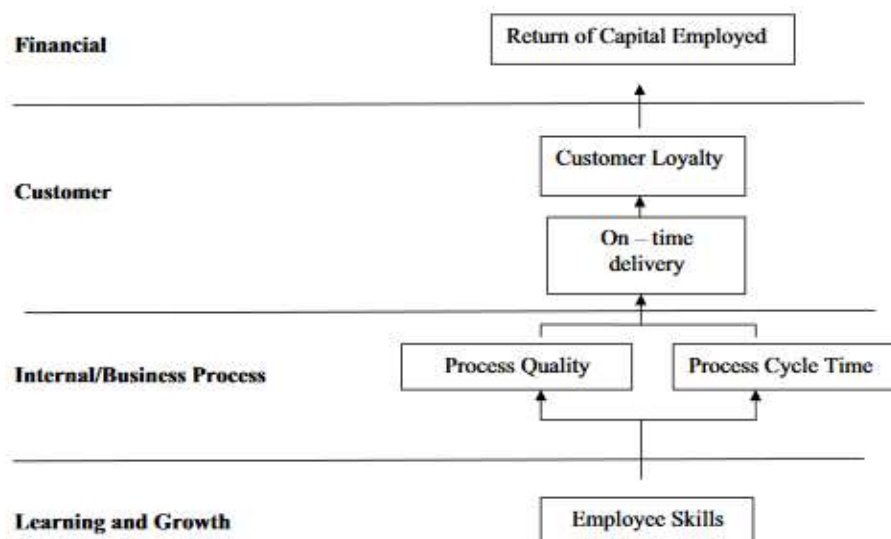
Figure 2. 2 Strategic Map of BSC
Source: (Kaplan & Norton, 1996)

2.2.1 Four BSC Perspective

There are four perspectives in the BSC which is the elaboration of the company's vision, mission, and strategy. The four perspectives are:

1.   Financial Perspective

There are two important roles of financial measurement: (1) all perspectives that depend on financial measurements are able to demonstrate the implementation of the planned strategy, and (2) that with financial measurement, it will encourage the other three perspectives to achieve organizational targets (Kaplan & Norton, 1996).

There are three stages of the business cycle of the company namely growth, sustain, and harvest. Here is a Table of strategic themes from a financial perspective in accordance with the three stages of the business cycle (Kaplan & Norton, 1996).

Table 2. 1 Measures of Financial Perspective

Strategic Themes			
		Mix / Income Growth	Cost Savings / Increased Productivity	Utilization of Assets
Cycle	Growth	Sales growth rate	Revenue / worker	Investation
		Percentage of new product, service, and customer revenue		Research and development
	Sustain	Market Share and cross-selling objectives	Own company costs VS. Competitors	Working capital ratio (cash-to-cash cycle)
		Percentage of revenue from new apps	Rate of cost savings	ROCE by category of key assets
		Customer profitability of the product line	Indirect costs (percentage of sales)	Level of asset utilization
	Harvest	Percentage of unprofiTable customers	Unit cost (per unit of output, per transaction)	Payback

Source: (Kaplan & Norton, 1996)

From Table 2.1 it can be explained that according to Kaplan & Norton (1996), the growth stage is the beginning of a business where the company is

expected to have a product / service potential for the development of its business. At this stage also consider the resources to develop products and improve services, build and develop production support facilities, invest in the system; infrastructure; and distribution of networks that support the establishment of good relationships with consumers. The reference of financial perspective at this stage of the cycle is the measured average of income level, income growth rate, customer loyalty, and marketing coverage area. On a sustained cycle, At this stage most companies invest and reinvest by taking into account the rate of return of what will be invested. At this stage the company tries to maintain the market share that has been held and try to further expand its business in the future. The reference of financial perspective at this stage of the cycle is Return On Investment (ROI), Return-On-Capital Employed (ROCE), and Economic Value Added (EVA). In the harvest cycle, the company will seek to maintain its business by means of working capital efficiency. There are several financial ratios that can be applied in the design of strategic performance measurement, namely:

    a. Liquidity ratio, which is usually a current ratio;

    b.   Profitability ratio, which is usually a ratio of the rate of return on assets;

    c. Activity ratio;

    d. Turnover accounts receivable rate;

    e. Average billing period;

    f. Inventory turnover rate;

    g. Total asset turnover;

    h. Solvability ratio, which is usually a debt ratio.

2.   Customer Perspective

There are two measurement groups in the customer perspective, core measurement group and the measurement of the proportion of customer value. (Kaplan & Norton, 1996)

The main customer measurement group consists of 5 main aspects, namely:

    a. Market share which measures how much the proportion of certain market segments controlled by the company.

    b. Customer retention, the rate at which the company is able to attract new customers.

c. Customer acquisition , the level at which a company can maintain relationships with its old customers.

d. Customer satisfaction, customer satisfaction level against certain performance criteria, such as service level.

e. Customer profitability, a level of net profit earned by a company from a target or market segment served.
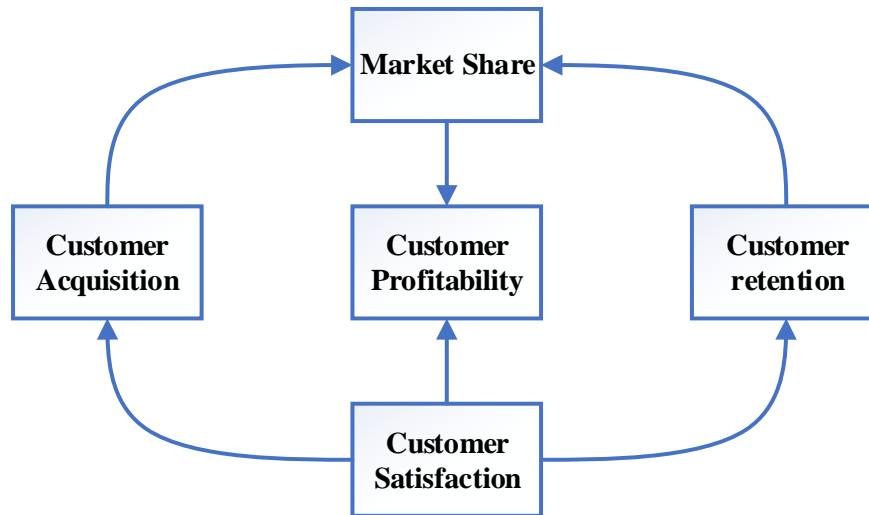
Figure 2. 3 Core Measurement Group.
Source: (Kaplan & Norton, 1996)

While the measurement group of customer value proposition expresses the attribute of the company for the product / service in order to increase customer loyalty. The attributes of this group are divided into 3 categories, namely:

a. Product or service attributes, includes the function of the product or service, its price and quality. In this case the priority of consumers can vary, there are consumers who prioritize the function of the product, timely delivery and low prices.

b. Customer relationship, including the delivery of products and services to customers, including the time dimension and customer response and what customers perceive when purchasing products from the company.

c. Image and reputation, describes the intangible factors that attract a consumer to connect with the company.

The three categories that cover the Customer Value Proposition can be seen clearly in the following models:
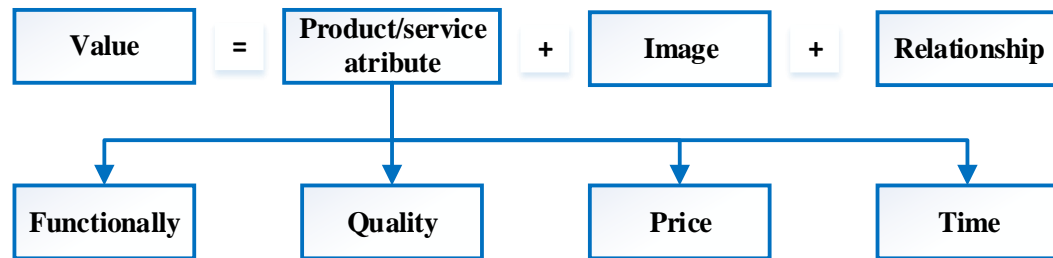
Figure 2. 4 Customer Value Proposition.
Source: (Kaplan & Norton, 1996)

3.   Internal Process Business Perspective

According to Kaplan & Norton (1996), a manager must be able to identify critical business processes within the company in order to be able to meet the objectives of the shareholder and customer segments that are the goals of the company. With the BSC, in addition to monitoring and performing cost improvements, quality improvement, it must also take into account the expectations of external parties such as desire and customer satisfaction.

In addition to seeing from the influence of external parties, managers are also required to determine the internal values that are indirectly related to external parties, including: process innovation, operating process, and after-sales service process (Kharis, 2014). The following is a description of the company's internal value:

1. Innovation Process;

   In the process of innovation, the needs of developing customers will be examined for then created a product or service that can meet those needs. In the innovation process will be conducted basic research and applied research. Basic research is done first to develop products that really meet the needs of consumers. While applied research is done to exploit existing technology to create new generation of product or service.

2. Operation Process;

In the process of operation will be produced products or services that will then be delivered to customers. This process is the main focus of most corporate performance measurement systems. In the performance measurement of the new model there are three components that are reviewed are cost, quality, and time.

3. After Sales Service Process;

After-sales service process, can only be done after the company made a sale, with components of performance measurement ie cost, quality, and time.

4.   Learning and Growth Perspective

The fourth perspective measurement in the BSC is a learning and growth perspective. According to Kaplan & Norton (1996), the goal to be achieved in this perspective is to obtain good infrastructure and to achieve the goals set out in the previous three perspectives. Here is an overview of the framework from a learning and growth perspective:

From Figure it can be seen that there are three categories in this perspective that is (1) ability / competence of employees, (2) ability of information system / technology, and (3) Motivation, empowerment, and alignment. Here is an explanation of each of these categories:

1. Ability / competence of employees;

The ability of employees is closely related to the measurement of worker satisfaction, worker retention, and worker productivity. Worker satisfaction is done to improve the quality and customer service. Performance measurement method used in the form of survey, interview, and field observation. Furthermore, the retention of workers is the loyalty of workers to the company. With reference to employee retention measurement is the percentage of worker turnover (turnover rate). And finally, worker productivity is a measure of results in an effort to improve the skills of workers. With reference measurement of worker productivity that is income per employee.

2. The ability of information systems / technology;

The increasingly high business competition in this global era requires companies to provide an adequate information system which can provide the information needed for the running of business processes at the company. If the information system in the company meet it will be easier in achieving corporate goals.

3. Motivation, empowerment, and alignment of individuals within the company;

Because each individual employee has their own goals, then the task of the company is how to align the goals of each individual with the goals of the company.

2.2.2   Benefits, Advantages, and Weaknesses of BSC

The benefits of using the BSC according to Kharis (2014), that BSC is able to change the focus of planning perspective rather than on the financial focus of a short-term annual budget, into a comprehensive planning perspective covering all four BSC perspectives.

According to Kharis (2014), the benefits of BSC as a performance measurement tool compared to performance measurement are:

1. Able to motivate employees to think and act strategic.

2. Able to produce a comprehensive and coherent long-term business plan. Comprehensive in this case is able to broaden the perspective of the originally only a financial perspective, then widespread with the existence of the other three perspectives. Coherence in this case BSC is able to generate cause-and-effect relationships among the various objectives of the resulting strategy.

3. Able to provide a picture and how to achieve goals in a balanced way. This is because each has a basic goal to be achieved. As for example from a financial perspective it has the goal of multiple financial returns, from the perspective of a customer having a goal to provide value from the best product or service to the consumer, as well as from a learning and growth perspective that has a goal to be cost effective.

4. Able to produce measurable strategic objectives. Because in the BSC is able to provide measures for the three non-financial perspectives (consumer perspective, internal business processes, and learning and growth) are not easily measured. The existence of this measurement will result in financial performance that is multiplied and long term.

BSC itself also has a drawback compared to other performance measurements. According to Kharis (2014), the shortcomings of BSC include:

1. The absence of the establishment of compensation system (payroll), which is a follow-up after the performance measurement.
2. The form of corporate organization that is not necessarily in accordance with the development process within the organization.
3. There is no standard measurement standard in BSC which is used to measure company performance.
4. The uncertainty that future profits will follow the achievement of targets in the non-financial perspective of the BSC, although it is claimed that future profits are not related to the achievement of non-financial perspective goals.
5. The absence of performance improvement methods for the purpose of corporate strategy can be further developed.
6. The absence of a mechanism for updating performance measures to be aligned with strategy changes.
7. The absence of a standard number of performance measurements. If too little can result in neglect of important size, but if too much can result in loss of focus in measuring performance.
8. Not showing clear weights on each size making it difficult to combine a financial perspective with a non-financial perspective.

2.3   Key Performance Indicator (KPI)

According to Kaplan & Norton (1996), KPI is divided into two types namely indicators of results (lag indicator) and indicators of the trigger (lead indicator). Lag indicator is the result or end goal of the company's strategy that leads to the

development of the past. While the lead indicator is an indicator that encourages the achievement of the lag indicator that leads to future development.

While according to Luis (2007) KPI are indicators used to measure the performance of Strategic Objectives (SO) that have been compiled in the strategic map that needs to be monitored and measured the level of achievement. According to Parmenter (2010) many companies or organizations are using incorrect performance measures and many of them are interpreting KPIs with inaccurate interpretations. Since few of these companies really understand the meaning of KPIs, these are three types of performance measures:

1. Key Result Indicators, describes how successful performance is in the form of perspective;
2. Performance indicators, explaining what to do in more detail;
3. Key Performance Indicators explains what to do to dramatically improve performance.

KPI determination is done for each strategic target of the company. The maximum limit of KPIs on the strategic map is 30 KPIs, this is because too many KPIs will make the performance measurement system ineffective (Ariesta & Yadrifil, 2013).

In determining the KPI, it should consider the characteristics of the KPI. According to Parmenter (2010), there are seven effective KPI characteristics:

1. Nonfinancial parameters (not expressed in currency);
2. Parameter of occurrence;
3. Can be acted upon;
4. Understood by all members;
5. Responsible by individual or team;
6. Has a significant influence;
7. Have a positive influence.

On the other hand, there are opinions on five effective characteristics for KPI according to Aaron (2010), namely:

1. Specific, KPI must be clear and able to provide the right information;
2. Measurable, the KPI should be measurable to determine when the target can be achieved;

3. Attainable, KPI must be challenging, but not impossible to achieve;

4. Relevant, the KPI should be able to measure as closely as possible with the results to be measured;

5. Time bound, the KPI should be clear in terms of time and frequency of measurement;

KPI can be made by referring to the strategic objective set by the company. After that will be weighted to know the weight of each KPI and also weight of each perspective, weighting can be done by using AHP method. Then the next step, specify how many targets to be achieved by the company in each KPI. Then to know the performance of each strategic objective, the score can be calculated. Score formula as follows. The following is the formula of score:

$$Score = \frac{Achievement}{Target} \; x \; Weight \text{...} \quad (2.1)$$

KPI is considered achieved if the achievement results of the company's performance exceed the set target.

2.4 Analytical Hierarcy Process (AHP)

One of the difficulties in the early implementation of performance management system is to determine the weight of each KPI. AHP (Analytical Hierarchy Process) is a modeling concept that serves to support decision-making, developed by Thomas L. Saaty in the 1970s. AHP can be used to describe problems with multiple factors as well as multi-criteria from a complex problem into a hierarchy. According to (Saaty, 1980), the hierarchy is defined as a representation of a complex problem in a multi-level structure where the first level is the goal, followed by the factor level, criteria, sub criteria and so on, down to the last level of the alternative. AHP is a decision-making system using a mathematical model. AHP assists in determining the priority of several criteria by performing pairwise comparison analysis of each criterion. In the performance management system, the criteria are KPI.

As Sholihah (2013) explained, in performing AHP analysis, Software Expert Choice is usually used to help weight each of the criteria. The use of AHP method is chosen because it can parse the multi factor problem as well as the criteria

because in this performance measurement will do weighting for each perspective, strategic target and also KPI where later weight of each element will be combined to get global KPI weight so that method of AHP considered suiTable to help unravel the problem.

While the use of Software Expert Choice is used as a tool to process the AHP method because with this Software the assumptions used are those who do the comparison of one factor with other factors as well as one criteria with other criteria is only one person representing the management of the company considered to understand the company's condition, and with this software will facilitate the data processing because it will get the calculation of weights automatically.

Table 2. 2 Pairwise Comparison Scale

Level of Interest	Definition
1	Both elements are equally important
3	One element is slightly more important than the other.
5	One element is actually more important than other elements.
7	One element is clearly more important than the other.
9	An absolute element is more important than any other element.
2,4,6,8	The middle value is between 2 adjoining assessments

Souce: (Saaty, 1980)

2.5 Scoring System

Scoring system is a step after the target of each KPI has been established and agreed by the company (Putri & Handayani, 2015). According to Wessiani (t.t), scoring system is done because KPI is a multi-dimensional measure so it has different measurement dimensions, such as day size and weight size. Therefore, the KPI should be measured in the same dimensions by using percentage dimensions.

In scoring system applied higher is better, lower is better, and zero-one. The enactment of the method in order to know the value of achievement of the target of each KPI. Here is an explanation of the three methods in scoring system:

1. **Higher is Better**, hows that the higher the achievement score of the KPI, the better the indication.

$$\text{Score} = \frac{\text{Actual}}{\text{Target}} \times 100\%$$ .... (2.2)

2. **Lower is Better**, shows that the lower the achievement score of the KPI, the better the indication.

$$\text{Score} = \left(2 - \frac{\text{Actual}}{\text{Target}}\right) \times 100\%$$ .... (2.3)

3. **Zero-One**, indicates if the score is 100 if the actual value is 0/1. Or a score of 0 if actual $\neq$ 0/1.

2.6   Traffic Light System (TLS)

After the achievement score of KPI performance is obtained, then on each score will be categorized into Traffic Light System (TLS) with limit set by the company. TLS is a system that is closely related to scoring system (Alda, et al., 2013). The existence of such categorization will facilitate the company in identifying the need for improvement in KPI that has not reached the target (Putri & Handayani, 2015). TLS is useful as a sign of whether the value of a performance indicator that has been calculated previously requires any improvement or not. Here is a table of ratings categories from TLS.

Table 2. 3 TLS Rating Category

Color Category	Description	Score
Green 🟢	Performance indicators indicate that the target has been reached, so it does not require remedial action but regular supervision is necessary.	6,6 – 1,0
Yellow 🟡	Performance indicators indicate that the target is almost achieved, requiring more intensive supervision.	3,1 – 6,5
Red 🔴	Performance indicators indicate that targets are still far to be reached, requiring corrective action.	0,0 - 3,0

Source: (*Keputusan Kementrian BUMN KEP-100/MPU/2002)*

From Table 2.3 above it can be seen that the category of assessment in the TLS is divided into 3 groups of colors with each show different indicators with different scoring limitations. The source is from *Keputusan Kementrian BUMN,* because PT PG Rajawali is state-owned enterprises company. The scope limits for each company can be different because it adjusts to the needs of the company.

CHAPTER 3
RESEARCH METHODOLOGY

This chapter described the research methodology which includes the steps or sequence of steps from the research. The stages contained in the methodology serve as a guide in order to conduct research in a systematic and directed in accordance with the research framework. Here is a flowchart of research methodology.
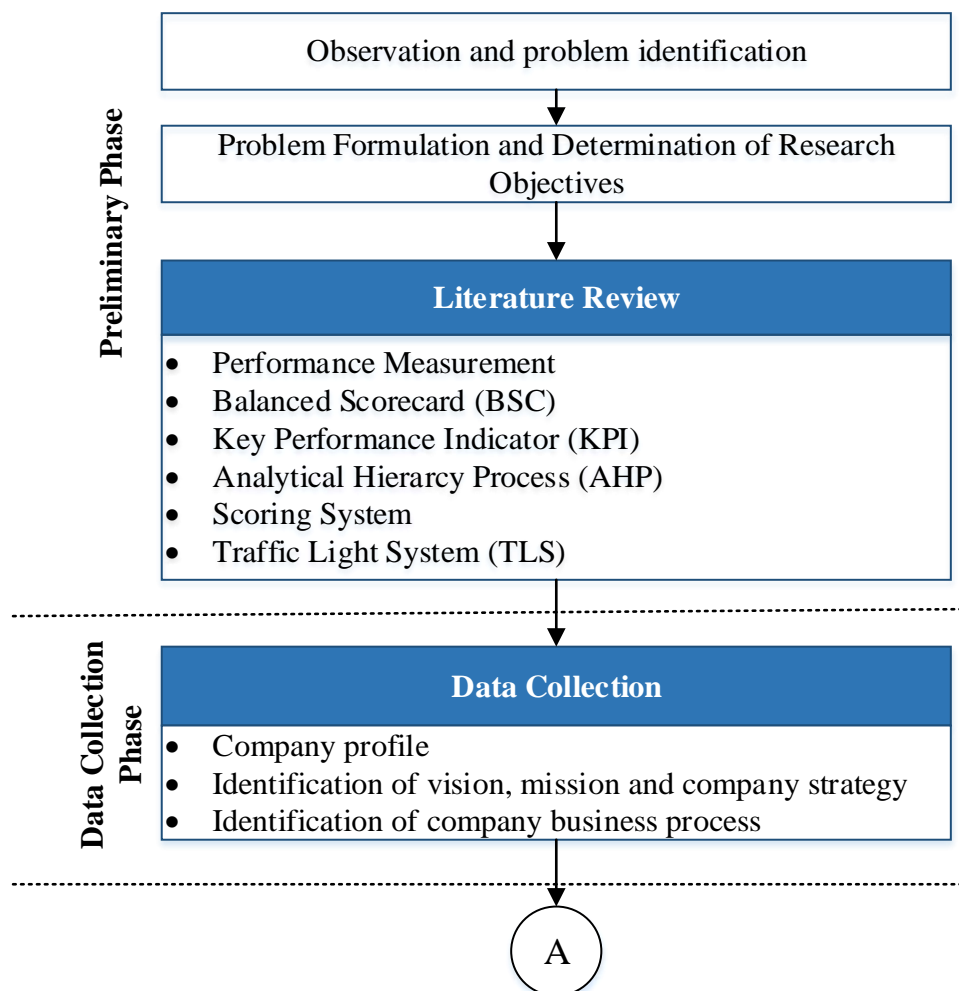
Figure 3.1 Research Methodology Flowchart
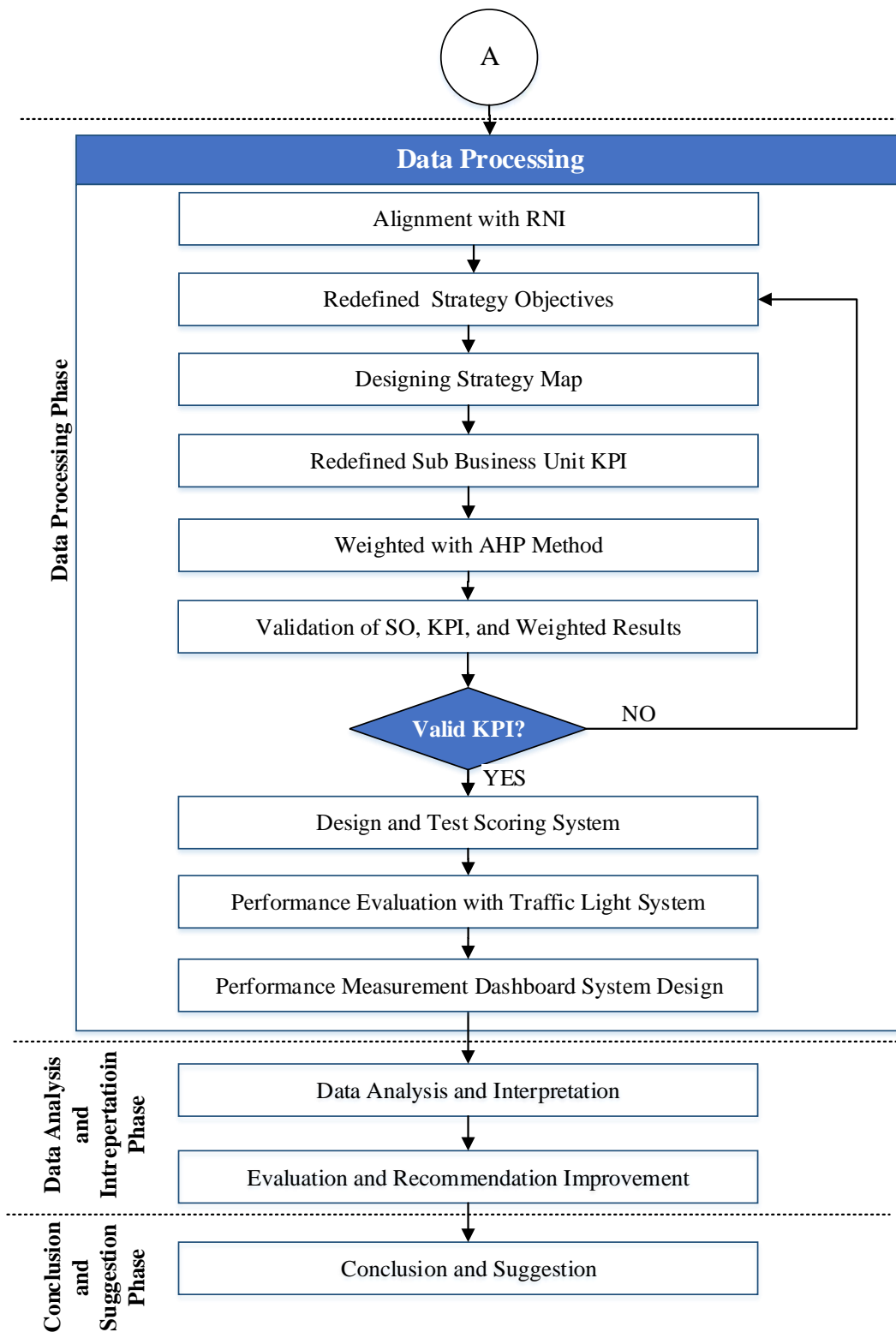
Figure 3.1 Research Methodology Flowchart (con't)

From Figure 3.1 it is known that there are five main stages done in this research, namely preliminary pahse, data collection, data processing, analysis and interpretation of data, and last is the conclusion phase. Here is an explanation of each stage of the research methodology.

3.1   Preliminary Phase

In the preliminary phase of this research, several sub-phases consisted of gathering information and problem identification, problem formulation and determination of research objectives, and literature study and field study.

3.1.1   Observation and Problem Identification

At this stage brainstorming or gathering information with the head of HR Department of PT PG Rajawali I Surabaya as the parties who understand and design performance measurement system in the company. Furthermore, from the results of the collection of information can be identified problems that exist

3.1.2   Problem Formulation and Determination of Research Objectives

In this phase, a problem formulation was formulated from the result of problem identification in the previous stage. The problems are then searched for completion by doing research of this final project. Next is to set research objectives to set a clear direction of research.

3.1.3   Literature Review

At this stage, learning activities are conducted related to supporting literature review of research objectives. The study of the literature of books, journals, and previous research is a series of literature studies conducted. The purpose of this stage is to explore the problems and objectives of scientific research and detailed. In this research studied literature review include: Performance Measurement, Balanced Scorecard, Key Performance Indicators, Analytical Hierarcy Process, Scoring System and Traffic Light System.

3.2   Data Collection Phase

In this phase, data collection is needed for data processing research. The data collected include company profile, vision and mission, organizational structure, and policy strategy also looking for their long term planning statement projected from 2016-2020, the *Laporan Evaluasi Kinerja* 2016-2017 and the *Rencana Kerjadan Anggaran Perusahaan* 2017. The data is then used as a reference to redefined the strategic objective to create the strategic map and redefined the KPIs.

3.3   Data Processing Phase

In this phase, the data obtained is processed in accordance with the predefined method. Sub phase at this stage is to redefined the strategic objective based on vision and mission and alignment with corporate company (RNI), redefined the strategic map and redefined the KPI based on BSC framework, after that weighted each perspective in BSC using AHP, scoring system the KPI that have been redefined, performance evaluation by using Traffic Light System, and the last is the design of performance measurement dashboard. Here is an explanation of each stage of data processing.

3.3.1   Preparation of Strategic Objectives, Strategic map and KPI

The strategic objective describes how the company must run its operations in order to achieve the company's goals. The strategic map shows the cause and effect relationship of the strategic objective that has been established with reference to the BSC framework. While KPI is a measure of performance that can be measured and able to represent the strategic objective to be achieved.

The preparation of KPI and strategic map is done by aligning from corporate company and deriving from the vision, mission, and strategic objective of the company and conducting interviews with the head of HR Department and the company officials of PT. PG Rajawali I who is a Figure that understand about the four perspectives in BSC.

3.3.2 Weighting using AHP Method

Afterward is weighted using AHP method. To perform the weighting, the first questionnaire is given to the management related to the importance of elements and clusters that are related to each other. In this study, the weighting by AHP method is done using Expert Choice software. After the weight is known for all elements, then the data validation is done related to strategic objective, KPI, and the result of weighting to the management regarding its accuracy.

3.3.3 Scoring System Design and Testing

After setting the target of each KPI through the interview process with the management, next is to design the scoring system. At this stage scoring system is done in order to know the score value of each KPI with based on higher is better method, lower is better, and zero-one. Higher is better indicates that the higher the achievement score of the KPI, the better the indication. While lower is better, indicating that the lower the achievement score of the KPI, the indication is the better. And last zero-one, indicates if the score is 100 if the actual value is 0/1. Or a score of 0 if actual $\neq$ 0/1.

3.3.4 Evaluation of Performance Scores with Traffic Light System

At the stage of performance evaluation, to determine which parts need to be repaired then it needs to refer to the Traffic Light System (TLS) applied from the scoring system in the previous stage. In TLS there are three color categories: green, yellow, and red with score limits for each category. The result of the score evaluation with TLS is to determine the priority of improvement which then can be done by the company, where it is subject to each KPI included in the red color category.

3.3.5 Performance Measurement Dashboard System Design

Once the company's performance measurement system is well designed, the next is to design a performance measurement dashboard. The existence of Microsoft Excel-based dashboard software is able to provide convenience to the

company in performing performance measurements and to find out the latest performance scores.

The performance measurement dashboard contains information on strategic objective, strategic maps, all KPIs in the four BSC perspectives, and the results of the performance measurement scoring system ie rank rankings of weighted values of the overall KPI. The existence of a dashboard can facilitate the company to know the achievement of its performance.

3.4   Data Analysis and Interpretation Phase

In this phase conducted analysis and interpretation of data based on the results of data processing and test performance measurement system performed. Analysis and interpretation of data performed on all activities that are subject to data processing. Analysis and interpretation of data including analysis of strategic objective, strategic map analysis, KPI analysis, analysis of the results of the weighting, Properties KPI analysis, and analysis of performance measurement dashboard.

3.5   Conclusion and Suggestion Phase

In this phase a conclusion is drawn which is the final phase of final project research. From these conclusions it will show the achievement of the pre-determined research objectives. In addition, this phase also provides useful improvement suggestions for further research.

CHAPTER 4
DATA COLLECTION AND PROCESSING

This chapter described the he data collected and the steps taken at the stage of data processing.

4.1 Data Collection

This subchapter consists of data which required as the input to designing performance measurement system.

4.1.1 *Company Overview*

PT Rajawali Nusantara Indonesia (RNI) is engaged in many business fields, namely agro industry, pharmaceutical and health field, and trade and distribution field. PT PG Rajawali I is one of the subsidiaries in the field of agro industry specialized in the field of sugar, this company started in 1961 when Indonesia government nationalized Oei Tiong Ham Concern, then established PT Rajawali Nusantara Indonesia I as Stated Owned Enterprises. And on the 1995 PG Krebet Baru and PG Rejo Agung collaborated to be one roof of commercial entity into PT PG Rajawali I. PT PG Rajawali I is a B2B enterprises and in 2012 achieved the highest rank of sugar mill in Java Island by getting the value of rendemant is 8,55%..

4.1.2 *Company Production Process*

PT PG Rajawali I has two processes, which are on farm process and production process or off farm process. The on farm process has a role that responsible for everything that relate to the on farm production including plantation and field corps. The raw material of PT PG Rajawali I is sugarcane, the sugarcane came from both field corps owned by PT PG Rajawali I and sugarcane owned by the farmer (*tebu rakyat)*. The on farm production responsible for cultivating by plowing I-II and furrowing. Then planting by mule eye of cane 2 method and fertilizing by using ZA and Phonska fertilizer also maintaining the field and harvesting. For the sugarcane owned by the third party, PT PG Rajawali I need to

maintain the relationship between the company and the farmer. The off farm process or the production process is the process in order to process the sugarcane into sugar. The explanation of the off farm process will be explained in Table.

4.1.3 Company Organization Sructure

Here is the organizational structure of PT PG Rajawali I in 2012-2017.
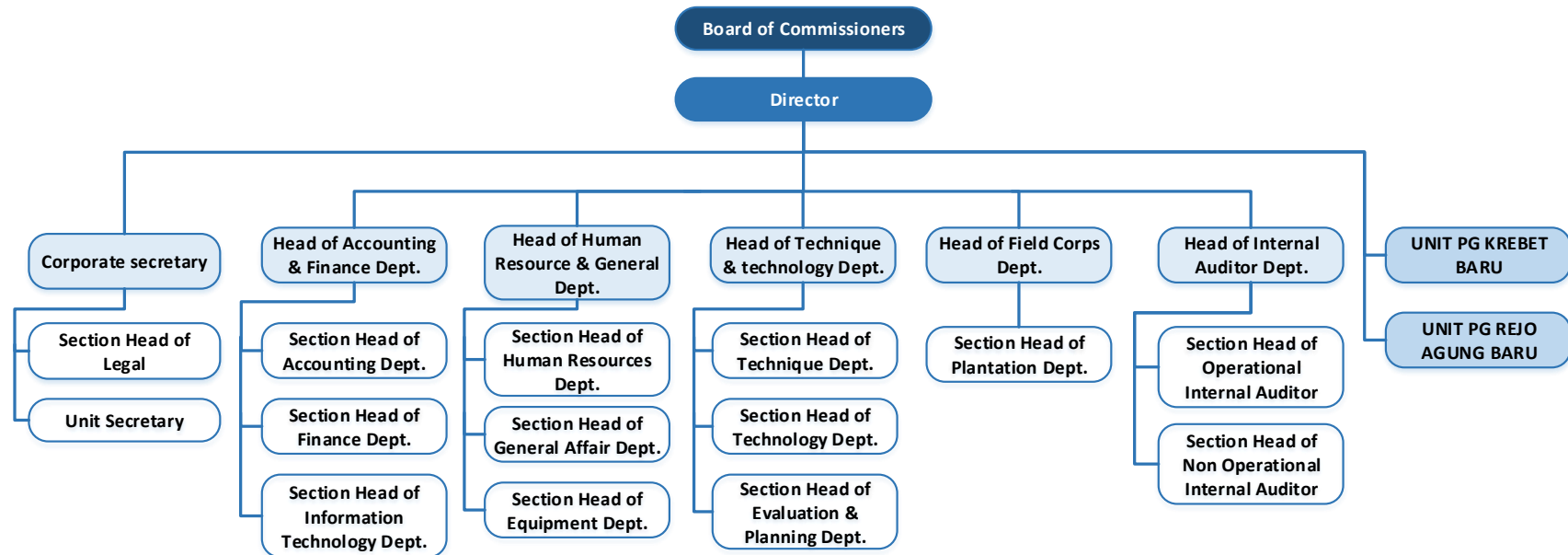
Figure 4.1 PT PG Rajawali I Organizational Structure
Source: (PT PG Rajawali I)

4.1.4   Company Vision and Mission

The clear vision and mission of a company will lead the company toward clear and objective goals. This can happen because the vision is able to direct, centralize, motivate, and inspire from all components within the company to achieve better performance. Vision is a long-term goal for the development of the company, while the mission is the values of work done in order to achieve the goals (vision) of the company itself.

Below is the vision and mission of PT PG Rajawali I.

Vision:

"*Menjadi industri berbasis tebu yang unggul dalam persaingan global dan berwawasan lingkungan berlandaskan tata kelola perusahaan yang baik*"

Mission:

1. *Meningkatkan kinerja terbaik melalui pencapaian produktivitas dan efektivitas, berorientasi kualitas produk, pelayanan pelanggan prima serta menjadi perusahaan yang memiliki komitmen tinggi terhadap kelestarian lingkungan.*

2. *Melakukan langkah-langkah inovasi, diversifikasi dan ekspansi untuk tumbuh berkembang berkelanjutan*

In addition to having a vision and mission of the company, PT. PG Rajawali I also has company values that is:

1. Professionalism

   Trying to meet and develop the competence and committed to apply a high standard of professionalism.

2. Integrity

   Conducting business in a healthy and competitive sugar cane-based industry, and undertaking innovation, diversification and expansion measures for sustainable growth.

3. Teamwork

   Partisifpatif spirit, synergy and cooperative balanced and proportional.

4. Excellence;

    The spirit of giving the best and the continuous improvement in carrying out duties and obligations.

5. Respect;

    Have a commitment to treat others with respect and mutual respect based on sincere communication.

4.1.5 *Company's Products*

Products produced by PT PG Rajawali I are as follows:

- 50kg packed sugar;
- 1kg packed sugar;
- *Tetes* bulk packaging (ton);
- *Ampas* bulk packaging (ton).

The distribution of packed sugar is given to a third party who is also the subsidiary of PT RNI, PT Rajawali Nusindo, this is in accordance with the policy of PT RNI.

4.1.6 *Corporate and Company Strategies*

Corporate strategies of PT RNI are integration strategy and diversification by:

- Strengthening core business through increasing competitiveness;

    One of which is by implementing synergy among subsidiaries of PT RNI, other state-owned enterprises or business partners.

- Sustainable growth through business diversification, business unit optimization;

    Business diversification takes more concern in developing core competence business, such as establishing liquid sugar factory. Business unit optimization is defined as the optimization of business based on its core competence, including optimizing the company's assets. Innovation is an upgrade in terms of system, tools, and technology.

The business strategies of PT PG Rajawali are as follows:

- Increasing the raw material sources;
- Improving the efficiency and optimization of factory capacity;
- Optimizing the company's assets;
- Developing product and production system;
- Developing market and marketing system; and
- Conducting investment development.

4.2   Data Processing

In this section, data processing is done from previously collected data. In this sub-section, data processing includes redefined the strategic objective, strategic map design, redefined sub-business level KPI, weighting (perspective, strategic objective, and KPI), design of KPI properties, scoring system design, traffic light system implementation, and finally is a dashboard design of performance measurement of the company.

4.2.1   Redefined Company's Strategic Objective

PT PG Rajawali I is a subsidiary company from Rajawali Nusanatara Indonesia (RNI), the strategic objective is the corporate strategy that need to be fulfilled by PT PG Rajawali I in order to complete the RNI's need by grouping on the four perspectives in the BSC method. The strategic objectives applied should be relevant with the company's mission. The initial strategic objective is shown in Table.

The process of redefining the strategic objective of PT PG Rajawali I is by going through a process of discussion with the company and looking at the RKAP and RJPP reports. Table 4.4 is showing the redefined strategic objective. From Table it is known that there are a total of 7 strategic objective generated from four perspectives in BSC and elaboration from the initial objectives strategy. All the strategic objectives are obtained from the brainstorming with the Corporate Secretary of PT PG Rajawali I as a person who is very understanding the company's current condition and also by looking from the data based on *RJPP* 2016 – 2020.

4.2.2   Design of Sub-Strategic Objectives

In order to redefined the sub-business unit level KPI, the strategic objective need to be defining again into sub-strategic objective or the sub-business level strategy. The determination of the sub-strategic objective is by cascading the strategic objective and discussing with the Company Secretary also by looking in the RJPP and RKAP reports. The result of the cascading the strategic objective need to be align with the company's vision and mission. The sub-strategic objective for the company is recapitulated in the table.

4.2.3   Design of Company's Strategic Map

The strategic map is an instrument panel that maps the strategic objective of the company within a causal relationship framework that describes the overall journey of the company's strategy. The existence of a strategic map will facilitate the company in delivering its overall strategy to all stakeholders of the company.

Preparation of strategic maps is done through a systematic process from the highest level to the lowest level. In accordance with the BSC principle that is the order of highest to lowest level of perspective ie, financial perspective, customer perspective, internal business process perspective, and the last is learning and growth perspective.

4.2.4 Redefined Sub Business Unit Level KPI

The determination of KPI is a very important part in the design of performance measurement system. KPIs can be obtained from the process of discussion with the company's employee that have the . To design an appropriate KPI, it is necessary to have a thorough understanding of the whole system or business processes within the company. The design of KPI as a performance measure of the strategic objective requires the outcome measure for each KPI whether it has been achieved or not, therefore it is necessary to achieve the achievement targets derived from the company as a comparison of the outcome measure. Because of PT PG Rajawali I is stated-owned enterprises, the KPI already determined by the government through *Surat Keputusan Menteri Negara BUMN No Kep-100/MBU/2002*.

Based on Table it shown the KPI that already determined by the government did not answer all the BSC perspective and mainly focus on financial with the weight of financial aspect is 70. This initial KPI still use because it is already a statement from government, but PT PG Rajawali I need to redefined the KPI for the internal use and as the warning for the company through their own system and make all the department of the company feel that all of them give important contribution through the sustainability of the company.

From Table, it is known that there are some KPIs added; regarding KPI of sub-business level of the company, it is known that there are 29 KPIs identified out of 15 sub-strategic objective owned by PT PG Rajawali I which has been explained in subchapter 4.2.1 on the design of strategic objective. After the strategic objective and the KPI are completed, the next stage is the weighting process.

4.2.5 Validation of Key Performance Indicator

After the KPI is compiled, the next step is to validate by discussing with the company to know the conformity of the KPI that has been compiled before. Based on the validation process conducted with the Company Secretary of PT PG Rajawali I, the KPI which has been compiled is valid and has been in accordance with the conditions of the company.

4.2.6 Weighting Key Performance Indicator

Required weighting to make the process of determining the importance or priority of each strategic goal by pairwise comparison AHP using help from Software Expert Choice 11 and the comparison process is done by discussing with the management of PT PG Rajawali I with the form of questionnaires distributed to 4 respondents has an important role in the company, which consists of Corporate Secretary, Head of Accounting and Finance Department, Head of HR Department and Head Section of GCG and Risk Management, with weight of 0.3 for Corporate Secretary, 0.25 for Head of Accounting and Finance Department, Head of HR Department and 0.2 for Head Section of GCG and Risk Management. Determination of the comparison score according to the guidance described in the literature review chapter. Where the higher the priority of a strategic goal or KPI then the weight will be greater.

The process of comparing the comparison between the strategic objective and the inter-KPI also consider the level of inconsistenscy, which is below 0.1 which means the lower level of inconsistenscy then the result of comparison between elements will be more consistent and appropriate.

4.2.6.1   Designing Questionnaire

The questionnaire that need to be filled by the company is following the AHP questionnaire. The contents of the questionnaire are the pairwise comparison between each perspective, then the comparison between each strategic objective, sub-strategic objective and between each KPI that already determined and validate before. Figure 4.8 showing the sample of the questionnaire in the section of pairwise comparison between each BSC perspective.

The next step after designing the questionnaire is distributed the questionnaire to the company and after that the calculation of the questionnaire result can be done.

4.2.6.2   Calculation with Expert Choice Software

The first step of calculation with Expert Choice Software is determining the hierarchy of the calculation. Figure 4.5 showing the hierarchy of the objectives strategy based on BSC perspective with goals of the company.

After determining the strategic objective hierarchy, the next step is determining the sub-strategic objective hierarchy that will be shown on Figure 4.6 Figure 4.7 showing the hierarchy view of each perspective with the strategic objective, sub-strategic objective and down into KPI. After determining the hierarchy, then the next step is adding the participant number and their weight in the software and record every result of each participant based on the questionnaire. Figure 4.8 showing the participant name and their weight in the software.

The next step is fill the questionnaire result on each participant. Figure 4.9 is the sample of the questionnaire result of Pak Sudewo in the pairwise comparison of BSC perspective. The result of the judgment can be seen in Figure 4.9 that Pak Sudewo have inconsistency 0,26 in the calculation of the comparison of BSC perspective and based on his judgement the highest weight in the BSC perspective is in the Internal Business Process in order to answer the goal of the company with value of 0,576 and the lowest value is in customer perspective with value 0,52.

This weighting is not only applicable for comparison between BSC perspective, but also applies for comparison between strategy objective and weighting is also applicable for KPI company. Especially in KPIs that are in a sub-strategic objective that has more than one KPI. The larger weights are determined by KPIs that have greater influence and more impact on the company. For KPI weighted samples can be seen in Figure 4.11 for pairwise comparison filling process between elements and in Figure 4.12 for the result of the weighting done.

Then the next step is to record each participant judgments in each pairwise comparison. After all the participant judgements already record in the software, then the next step is combined all the data based on their weight. Figure 4.11 showing the step of the combined data. Based on the Figure 4.13, after all the participant give their judgement, then click combine individuals and click both in order to view overall result of calculation in Expert Choice Software. Figure 4.14 is shown the combined result of the pairwise comparison in the field of BSC

perspective and KPI in financial perspective. Based on the Figure 4.14 that the inconsistency of total calculation is below 0,1 then it can be concluded that the data is consistent. All the data that already obtain from the software will be use in the scoring system design.

4.2.7 *Design of Key Performance Indicator Properties*

After obtaining various KPIs from each sub-strategic objective that exists, the next step is to design KPI Properties which aims to more detail about each existing KPI with some information, consisting of:

a. Persepective Name;   h. KPI Target;

b. Code of Strategic Objective;   i. KPI Description;

c. Code of Sub-Strategic objective;   j. KPI Measurement Frequency;

d. KPI Name and Code;   k. KPI Review Frequency;

e. KPI Units;   l. KPI PIC;

f. KPI Characteristic;   m. KPI Data Source; and

g. KPI Formulation;   n. Owner of KPI.

Hereby is the sample of KPI properties Table of PT PG Rajawali I in learning and growth perspective.

4.2.8   Scoring System Design

After designed a performance measurement system that consists of the weight of each perspective, strategic objective, sub-strategic objective and KPI, and after the target is determined from each KPI then the next stage is scoring system design. Scoring system is an experiment to conduct performance appraisal in company by using actual performance achievement value from each KPI. The actual value of this achievement will then be compared with the target value of each KPI to know the score of the KPI. Determination of scoring system calculation is based on higher is better, lower is better, and zero-one method.

In the scoring system in this study there is a global weighting column. The global weight is the multiplication of the perspective weight, the objective strategic weight, the sub-strategic objective weight and the weight of each KPI. The global weight is used to determine the weighted score of each KPI, by multiplying the global weight with the KPI score. After that, the weighted score for each perspective will be summed to know the value of achievement from each perspective. And the average of achievement value of the four perspectives will be the value of the company's overall achievement.

4.2.8 Traffic Light System Application

The next stage after the scoring system has been designed is the application of the Traffic Light System (TLS). The TLS method is used to facilitate the scoring system, whether a KPI has reached a predetermined target or not. If KPI has not reached the target then it will be marked with red indicator, red color will be given to KPI with KPI score 0,00 up to 0,30. While KPI that almost reach the target will be marked with yellow color indicator and given at KPI with score between 0,31 up to 0,65. And the last KPI that has reached the target will be marked with green color indicator, green color is given to KPI with score between 0,65 to 1,00. TLS color indicator also apply to do the calculation of overall score of company performance.

4.2.9 Dashboard Design Performance Measurement System

Furthermore, in the design of performance measurement system PT PG Rajawali I will be equipped with a dashboard. Dashboard performance measurement designed is useful for storing and processing information about the design performance, in addition to the dashboard will facilitate the management in knowing the achievement of the company's performances.

In the design, this dashboard uses the help of Microsoft Excel software with the help of Main Tabs Developer. How to show the Developer tab in Microsoft Excel 2013 is to click on the option tab file, then will open excel options. In excel options click customize ribbon on the side menu, then add ribbon Developer then click OK.

This performance measurement dashboard contains information ranging from a list of strategic objective, sub-objectives strategies and list of the KPIs, then a company strategic map, KPI Properties company, and scoring system results that have been prepared in the previous chapter.

Below is an interface on the performance measurement dashboard of PT PG Rajawali I.

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CHAPTER 5
ANALYSIS AND DATA INTERPRETATION

This chapter described the analysis of stages during the process of designing the performance measurement system of PT PG Rajawali I.

5.1   Analysis of Strategic Objektive

Redefined the strategic objective is done by reviewing the reports owned company that is *Rencana Jangka Panjang Perusahaan* (RJPP) 2016-2020, *Rencana Kerja dan Anggaran Perusahaan* (RKAP) 2017 and *Laporan Evaluasi Kinerja* 2015-2016 as well as discussions with the Corporate Secretary of PT PG Rajawali I, this is because the Secretary of the Company is a party who really understand the real condition of the company.

5.1.1   Analysis of Strategic Objective in Financial Perspective

In the financial perspective there is one objective strategy that is improves the company's financial performance. This is in accordance with the literature review of performance indicators on the financial perspective of Kaplan & Norton's BSC model. The objective strategy in this perspective fits the company's first mission of improving the best performance.

5.1.2   Analysis of Strategic Objective in Customer Perspective

From the customer perspective there is an objective strategy of increasing customer satisfaction. The intended customer here is the vendor because PT PG Rajawali I is a company with B2B type or Business to Business. The strategic objective in this perspective is consistent with the company's mission number 1, which contains the words "excellent customer service".

5.1.3   Analysis of Strategic Objective in Internal Business Process Perspective

In the internal business process perspective there are three strategic objectives, namely overall cost leadership, strengthening core business, and

investment development. The strategic objectives in this perspective is consistent with all the missions the company has.

5.1.4 *Analysis of Strategic Objective in Learning & Growth Perspective*

In the learning and growth perspective there are two straetgic objectives, namely development of information technology in all areas and improve quality of company employees. Development of information technology in all areas is a strategy that has long wanted to be achieved by the company in which the strategy aims to improve the quality of communication in all the stakeholders of the company and as a form of transparency for all stakeholders and measurability of the performance of the company's performance.

5.2 Analysis of Sub-Strategic Objective

In accordance with the explanation contained in sub-chapter 4.2.2 that sub-strategic objectives are needed to determine the KPI of a company by deriving from the pre-defined strategic objectives in sub-chapter 5.1 and also this sub-strategic objective is a sub-business level strategy level units capable of supporting the ongoing strategic objectives of the company. There are a total of 15 sub-strategic objectives of a total of 7 startegic objectives in which each perspective has a different strategy.

5.2.1 *Analyisis of Sub-Strategic Objectives in Financial Perspective*

In the strategic objective of finance with code F1, there are 3 sub-strategic objectives, namely increased financial finance company, improved cost management, and increased liquidity, profitability and solvability, respectively marked by A, D and G.

5.2.2 *Analyisis of Sub-Strategic Objectives in Financial Perspective*

Then in strategic objective marked by C1, that is increase customer service there is only 1 sub-strategic objective that is increased customer satisfaction level marked by H. Due to PT PG Rajawali I is a company with B2B type and is a subsidiary of PT RNI, hence customer owned by PT PG Rajawali I is not a direct customer and some customers have been determined by the policy of PT RNI, one

way to maintain quality in terms of perspective customer in BSC is to maintain the satisfaction of business parties who have been cooperating with PT PG Rajawali I

5.2.3 *Analyisis of Sub-Strategic Objectives in Internal Business Peocess Perspective*

In strategic objectives marked by B1 that is the overall cost management, there are 2 sub-strategic objectives which are improves the control of the sources of raw material and the quality improvement of raw material product respectively marked by I and K. This is due to the increase control of sources of raw materials, the cost of production can be lowered, but not merely improve the control of sources of raw materials alone, the need to improve the quality of raw materials is also important as the quality of the final product.

5.2.4 *Analyisis of Sub-Strategic Objectives in Learning and Growth Perspective*

In perspective learning and growth there are two strategic objectives marked by L1 and L2. Strategic objectives marked by L1, namely increased information and technology, there is only 1 sub-strategic objectives that is realization of sustainable performance measurement system marked by S, this is in accordance with the request of PT Rajawali I itself, because so far, the performance measurement has been set by the government can not cover all aspects of the company and is less able to measure things that can not be measured in the measurement of the company's performance during this time such as customer satisfaction and employee satisfaction. With the realization of sustainable performance measurement system strategic objectives information and technology can be achieved.

5.3   Analysis of Strategy Map

The corporate strategy map that has been designed reflects the linkage between the company's strategic objectives to the main objectives of the company. This linkage shows that the achievement of an strategic objectives can be influenced / influenced by other strategic objective. In the corporate strategy map, the objective strategy is mapped into four BSC perspectives. The process of preparing a strategy

map follows the principle in the BSC that a lower level of position will support a higher level of position

5.3.1 Analysis of Strategy Map in Learning and Growth Perspective

The corporate strategy map begins from a learning and growth perspective as the lowest level, which means that most of the output generated by the company comes from inputs in this perspective.

5.3.2 Analysis of Strategy Map in Internal Business Process Perspective

Subsequently, the strategic objective in learning and growth perspective will affect the internal business process perspective. At this level, the strategic objective of strengthening core business is influenced by a number of other aspects besides the improvement of employee quality; overall cost leadership, namely, in which the achievement of the strategy gains the core business strength. Strengthening core business is also influenced by the

5.3.3 Analysis of Strategy Map in Customer Perspective

The analysis proceeds from internal business process perspective to customer perspective.

5.3.4 Analysis of Strategy Map in Financial Perspective

The analysis ends up on the highest level of the strategic map which is in terms of financial perspective. In this perspective, the improvement of financial performance of the company is influenced by a number of aspects: customer service improvement, overall cost leadership, investment development, strengthening core business and employee quality improvement.

5.4 Analysis of Key Performance Indicator

Key Performance Indicator (KPI) is used to measure the achievement of the company's each strategic objective. In this study, KPI is used as an indicator to assess company performance in accordance with sub-strategic objectives

previously conducted and in accordance with the demand of the company on internal performance measurement.

5.3.1 *Analysis of KPI in Financial Perspective*

In financial perspective, there are 10 KPIs from 3 sub-strategic objectives. In order to answer the sub-strategic objective marked by code A that is increased company financial health, the indicator to measure is ROE marked by code A1, cash ratio marked by A2, total asset turnover ratio marked by A3, capital on asset ratio marked by A4, and debt to equity ratio marked by A5. In which ROE indicates the power to generate profit based on the investment given; the higher the ratio the better because it means that the company owner is in stronger position, and vice versa.

5.3.2 *Analysis of KPI in Customer Perspective*

In customer perspective, there is 1 KPI from 1 sub-strategic objective that is level of customer satisfaction marked by code H1, in which the calculation of this satisfaction level is conducted through questionnaire vendor and 5 becomes the highest score.

5.3.3 *Analysis of KPI in Internal Business Process Perspective*

In internal business process perspective, there are 12 KPIs from 8 sub-strategic objectives. In order to answer sub-strategic objective marked by code I that is improve the control of sources of raw material, the indicator to measure is expansion of sugarcane area marked by I1 and area of sugarcane supplier cooperating with the company marked by I2.

5.3.4 *Analysis of KPI in Learning and Growth Perspective*

In learning and growth perspective, there are 6 KPIs from 3 sub-strategic objectives. In order to answer sub-strategic objective marked by code S that realization of sustainable performance measurement system, the indicator to measure is performance measurement system implementation level marked by S1 in which this KPI aims to see the use of BSC system as internal company

performance measurement system for the achievement of more conducive and measureable work environment. In sub-strategic objective marked by code T, the indicator to measure is Number of employees attending the training marked by T1 and Number of trainings held marked by T2, in which T1 indicates the number of employees who participated in the training and T2 indicates the number of training held by the company to facilitate the employees. It is expected that both KPIs are able to improve the employee quality

5.5   Analysis of Weighting Key Performance Indicator

The weighting process is conducted using Analytical Hierarchy Process (AHP) method using Software Expert Choice 11, in which pairwise comparison between elements is done. From the result, the inconsistency level of 0.07 is obtained which indicates that the level of inconsistency is low and means the comparison is considered to be consistent and precise.

5.6   Analysis of Design of KPI Properties

KPI properties in PT PG Rajawali I show an explanation of each KPI with the aim that all parties who read will understand the purpose of each KPI and have the same perception for each KPI. The explanations contained in the KPI properties include the column name of the perspective along with the code, the name of the sub-strategic objective along with the code, and the name of the KPI along with the code. Then there is the unit column containing information about the measurement unit of each KPI, the KPI characteristic column containing information on whether the KPI have characteristic lower is better or higher is better. Next is the KPI formulation column which contains how to calculate or formulate the KPI for further measurable.

5.7   Analysis of Scoring System and Traffic Light System

Scoring system in PT PG Rajawali I shows the score of performance measurement which consists of score for each KPI, each perspective as well as the total score of the company. Each KPI obtains its score from the calculation of its achievement and target.

5.7.1   Analysis of Scoring System Result

Scoring system designed in PT PG Rajawali I contains score for each KPI, sub-strategic objective, strategic objective, and perspective. The score is generated from the company's achievement and is compared to the target set by the company. In accordance with the calculation result of achievement in the scoring system, Key Performance Indicator of ROE earns the achievement of 43.9% out of the targeted 48.54% meaning that the KPI has reached 90% of the target.

5.7.2   Analisis of Traffic Light System in Scoring System

From traffic light system previously designed in the previous sub-chapter, it is known that there are two KPIs within this red zone meaning that improvement regarding this aspect is imperative because it can lead to negative impact for the company and is able to influence the quality of the company both in terms of product and managerial. The indicators are liquid sugar factory establishment level and performance measurement system implementation level. As a matter of fact, both KPIs has not been applied in 2016 and the KPI is newly proposed to the company, therefore the red zone indicator is not represented the performance of the company in 2016

5.8   Analysis of Performance Measurement Dashboard

The design of performance measurement dashboard in PT PG Rajawali I aims to give the design of internal company performance measurement system planned by the company, but has not been implemented yet. Since PT PG Rajawali I is a state-owned company, the performance measurement is arranged by government policy based on Minister Regulation of State Owned Enterprises No. Kep-100/MBU/2002 which shall be reported to the head office of PT RNI periodically.

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CHAPTER 6

CONCLUSSIONS AND SUGGESTIONS

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In this chapter will be presented on the conclusions of this final report and suggestions for the perfection of further research.

6.1   Conclusions

Here are the conclusions of the final project research:

1. The objective strategy in this research is designed by using BSC framework and done by discussing with the management also by cascading from the government regulation for state-owned enterprises company that stated in Keputusan Menteri BUMN No. KEP-100/MPU/2002. There are a total of 7 strategic objectives as the corporate strategy and 15 sub-strategic objectives as the company's startegy spread across 4 perspectives within the BSC framework.

2. In the redefined KPI conducted by discussing with the management it is known that there are 29 KPIs used as an indicator in measuring company performance. In the financial perspective, there are 10 KPIs, in the customer perspective there is 1 KPI, on the internal business process perspective there are 12 KPIs, and lastly in learning and growth perspective there are 6 KPI. The initial KPI is only 15, with 10 out of 15 is focusing on financial aspect

3. Dashboard performance measurement system designed in this study is useful to assist companies in assessing its performance.

6.2   Suggestions

Suggestion given in this final project are:

1. In the next development, it is necessary to develop performance measurement system that has been cascaded up to the individual level in the company in order to realize the company's excellent

performance and need to redefined the KPI as the real key indicator of the company.

2. In further development, it is necessary to develop an integrated performance measurement dashboard so that both the company's internal and corporate shareholder are able to see the achievement of the company's performance in real-time.

REFERENCES

Aaron, H., 2010. Measure What Matters. *Information Management Vol 20 Issue 4,* p. 24.

Alda, T., Siregar, K. & Ishak, A., 2013. Analisis Sistem Pengukuran Kinerja dengan Metode Integrated Performance Measurement System pada PT. X. *e-Jurnal Teknik Industri FT USU,* pp. 37-41.

Andriyanto, R. W. & Metalia, M., 2010. Balanced Scorecard Effectiveness In Publik Ownership Corporation Managerial 's Performance (BUMN). *Akuntansi dan Investasi,* 11(2), pp. 97-114.

Anthony & Robert, 2001. *Akuntansi Manajemen.* Pertama ed. Jakarta: Salemba Empat.

Ariesta, T. & Yadrifil, 2013. Perancangan Sistem Pengukuran Kinerja pada Departemen Logistic Marine Operations (LMO) dengan Metode Balanced Scorecard dan Analytic Network Process. *Jurnal Fakultas Teknik Universitas Indonesia.*

Austin, R. D., 1996. *Measuring and Managing Performance in Organizations.* New York: Dorset House Publishing Co..

Kaplan, R. S. & Norton, D. P., 1996. *Translating Strategy into Action - Balanced Scorecard.* Boston: Harvard Business School Press.

Kharis, M., 2014. *Perancangan Sistem Pengukuran Kinerja Terintegrasi antara Metode Balanced Scorecard dan Kriteria Penilaian Kinerja Unggul (KPKU) BUMN Berbasis Malcolm Baldrige Criteria (MBC) untuk Mencapai Kinerja Ekselen di PT. Semen Indonesia.* Surabaya: Thesis Magister Manajemen Teknologi ITS.

Luis , S. & Biromo, P. A., 2007. *Step by Step in Cascading Balanced Scorecard to Functional Scorecard.* Jakarta: PT. Gramedia Pustaka Utama.

M. & S., 1999. *Sistem Perencanaan Pengendalian Manajemen.* Jakarta: Aditya Media.

Mujiati, N. W., 2013. Pengelolaan SDM Untuk Menciptakan Keunggulan Kompetitif. pp. 1-12.

Mulyadi, 2007. *Sistem Perencanaan dan Pengendalian Manajemen.* Jakarta: Salemba Empat.

Neely, A., Gregory, M. & Platts, K., 1995. Performance Measurement System Design: A Literature Review and Research Agenda. *International Journal of Operations & Production Management,* pp. 80-116.

Parmenter, D., 2010. *Key Performance Indicator: Developing, Implementing, and Using Winning KPIs.* New Jersey: John Wiley & Sons, Inc.

Peppard & Rowland, 1995. *The Essence of Business Process Re-Engineering.* New York: Prentice-Hall International.

Putri, D. A. & Handayani, N. U., 2015. Pengukuran Kinerja Karyawan PT Pertamina (Persero) TBBM Semarang Group dengan Pendekatan Human Resource Card. *Jurnal Teknik Industri Vol. X, No. 3,* pp. 187-197.

ENCLOSURE LISTS

Enclosure 1. Pairwise Comparison using AHP Questionnaire

Kuisioner *Analytical Hierarchy Process* (AHP)

Identitas Responden:

Nama   : ....

Jabatan   : ....

I.   Pengantar

Perkenalkan, nama saya Sabilla Uzlifat Riandini, mahasiswi Jurusan Teknik Industri ITS Surabaya yang sedang melakukan penelitian untuk Tugas Akhir (TA) dengan judul "Perancangan Sistem Pengukuran Kinerja dengan menggunakan Balanced Scorecard pada PT PG Rajawali I Surabaya".

Kuisioner ini merupakan kuisioner dengan metode *Analytic Hierarchy Process* (AHP) yang bertujuan untuk menentukan bobot kepentingan dari setiap strategi objektif, strategi fungsional dan KPI dengan perspektif *Balanced Scorecard* (BSC). Kuisioner ini terdiri dari perbandingan berpasangan (*pairwise comparison)* antar perspektif, strategi objektif., strategi fungsional dan KPI. Kuisioner ini merupakan media yang digunakan oleh peneliti kepada pihak ahli atau *expert* dalam hal penilaian untuk pembobotan strategi objektif pada PT PG Rajawali I.

Pada penelitian TA ini diketahui terdapat total 7 strategi objektif, 15 strategi fungsional dan 29 KPI yang terbagi atas 4 perspektif dalam *Balanced Scorecard* (keuangan, pelanggan, proses bisnis internal, dan pembelajaran & pertumbuhan). Nilai bobot kepentingan yang dihasilkan akan digunakan untuk menentukan bobot strategi terbesar dan menjadi bahan masukan dalam pembuatan penilaian sistem pengukuran kinerja PT PG Rajawali I.

Sebelum memulai pengisian, diharapkan Bapak/ Ibu membaca petunjuk pengisian kuisioner yang telah tertera di bagian atas sebelum kuisioner. Kerahasiaan identitas Bapak/ Ibu akan terjaga dan hasil kuisioner hanya akan digunakan untuk kepentingan penelitian.

Atas bantuan dan partisipasi Bapak/ Ibu, peneliti mengucapkan terimakasih.

Surabaya, 11 Desember 2017

Penulis

I. Petunjuk Pengisian Kuisioner

Beri tanda lingkaran (**O**) pada nilai perbandingan yang paling sesuai menurut anda, berdasarkan kategori serta skala perbandingan yang telah diberikan. Dalam pengisian kuisioner ini, akan dibandingkan antar **perspektif** BSC) terhadap misi perusahaan, lalu membandingkan **strategy objektif** terhadap perspektif BSC, kemudian setelah itu akan dilakukan perbandingan antar **strategi fungsional** terhadap strategi objektif. Sesi terakhir pada kuisioner ini adalah membandingkan antar **KPI** terhadap strategi fungsional.

Pemberian nilai yang **semakin besar ke kanan** menandakan bahwa kriteria di bagian kanan **lebih dipentingkan** daripada kriteria di bagian kiri. Berikut adalah contoh tabel tingkat kepentingannya.

Kriteria A	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Kriteria B

Berikut merupakan keterangan dari skala perbandingan berpasangan pada AHP:

Tingkat Kepentingan	Definisi	Keterangan
1	**Sama penting** (*equal*)	Kedua elemen memiliki pengaruh yang sama
3	**Sedikit lebih penting** (*moderate*)	Pengalaman dan penilaian dari pembuat keputusan sedikit memihak satu elemen dibanding pasangannya
5	**Lebih penting** (*strong*)	Pengalaman dan penilaian dari pembuat keputusan dengan kuat memihak satu elemen dibanding pasangannya
7	**Sangat penting** (*very strong*)	Satu elemen sangat disukai dan dominasi terlihat dibanding pasangannya
9	**Mutlak sangat penting** (*extreme*)	Satu elemen terbukti mutlak ekstrim lebih disukai dibanding pasangannya
2, 4, 6, 8	**Nilai tengah**	Nilai diantara dua penilaian yang berdekatan

Diketahui bahwa tingkat kepentingan 2, 4, 6, dan 8 merupakan nilai tengah yang hanya diberikan apabila ada keraguan dalam menentukan pilihan diantara dua tingkat kepentingan.

Contoh Pengisian Kuisioner

Sebagai contoh, apabila anda beranggapan bahwa "Kriteria A **sedikit lebih penting** dari Kriteria B", maka cara pengisian dalam kuisioner ini adalah:

Kriteria A	9	8	7	6	5	4	(3)	2	1	2	3	4	5	6	7	8	9	Kriteria B

Penjelasan: karena menurut tabel skala perbandingan berpasangan, **sedikit lebih penting** memiliki tingkat kepentingan **3**. Dan tingkat kepentingan **3** yang harus dilingkari adalah yang di bagian kiri (mendekati kriteria A), karena telah disebutkan bahwa "kriteria A sedikit lebih penting **daripada** kriteria B".

I. Kuisioner Perbandingan Berpasangan

A. Kuisioner Perbandingan **Antar Perspektif**

Perbandingan antar perspective sehubungan dengan Visi Perusahaan: **"Menjadi Industri berbasis tebu yang unggul dalam persaingan global dan berwawasan lingkungan berlandaskan tata kelolah perusahaan yang baik"**																		
Keuangan	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Konsumen
Keuangan	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Proses Bisnis Internal
Keuangan	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Pembelajaran & Pertumbuhan
Konsumen	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Proses Bisnis Internal
Konsumen	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Pembelajaran & Pertumbuhan
Proses Bisnis Internal	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Pembelajaran & Pertumbuhan

B. Kuisioner Perbandingan **Antar Strategi Objektif**

Perbandingan antar strategi objektif sehubungan dengan **"Proses Bisnis Internal"**																		
Overall Cost Leadership	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Memperkokoh Bisnis Inti
Overall Cost Leadership	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Overall Cost Leadership
Memperkokoh Bisnis Inti	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Melakukan Pengembangan Investasi

Perbandingan antar strategi objektif sehubungan dengan **"Pembelajaran dan Pertumbuhan"**																		
Pengembangan Teknologi di Semua Bidang	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Melakukan Pengembangan Investasi

C. Kuisioner Perbandingan **Antar Strategi Fungsional**

Perbandingan antar strategi fungsional sehubungan dengan **"Meningkatkan Kinerja Finansial Perusahaan"**																		
Peningkatan Tingkat Kesehatan Finansial Perusahaan	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Managemen Biaya
Peningkatan Tingkat Kesehatan Finansial Perusahaan	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Peningkatan Likuiditas, Rentabilitsa dan Solvabilitas

Managemen Biaya	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Peningkatan Likuiditas, Rentabilitsa dan Solvabilitas

Perbandingan antar strategi fungsional sehubungan dengan **"Overall Cost Leadership"**																		
Meningkatkan penguasaan sumber bahan baku	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Peningkatan kualitas bahan baku produk

Perbandingan antar strategi fungsional sehubungan dengan **"Memperkokoh Bisnis Inti"**																		
Peningkatan produktivitas tebu	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Optimalisasi kapasitas pabrik
Peningkatan produktivitas tebu	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Peningkatan kualitas produk
Peningkatan produktivitas tebu	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Efisiensi proses produuksi
Peningkatan produktivitas tebu	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Optimalisasi kinerja karyawan
Optimalisasi kapasitas pabrik	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Peningkatan kualitas produk
Optimalisasi kapasitas pabrik	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Efisiensi proses produuksi
Optimalisasi kapasitas pabrik	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Optimalisasi kinerja karyawan
Peningkatan kualitas produk	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Efisiensi proses produuksi
Peningkatan kualitas produk	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Optimalisasi kinerja karyawan
Efisiensi proses produuksi	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Optimalisasi kinerja karyawan

Perbandingan antar strategi fungsional sehubungan dengan **"Peningkatan Kualitas Karyawan Perusahaan"**																			
Pengadaan pelatihan karyawan	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Peningkatan kesejahteraan pegawai

A. Kuisioner Perbandingan **KPI** (*Key Performance Indicator)*

Perbandingan antar strategi fungsional sehubungan dengan **"Peningkatan Tingkat Kesehatan Finansial Perusahan"**																			
ROE	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Cash Ratio
ROE	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Perputaran total asset
ROE	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Modal sendiri terhadap aktiva
ROE	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Debt to Equity Ratio
Cash Ratio	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Perputaran total asset
Cash Ratio	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Modal sendiri terhadap aktiva
Cash Ratio	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Debt to Equity Ratio
Perputaran total asset	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Modal sendiri terhadap aktiva
Perputaran total asset	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Debt to Equity Ratio
Modal sendiri terhadap aktiva	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Debt to Equity Ratio

Perbandingan antar strategi fungsional sehubungan dengan **"Managemen Biaya"**																			
Minimum penjualan	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Pengeluaran maksimal

Perbandingan antar strategi fungsional sehubungan dengan **"Peningkatan likuiditas, rentabilitas dan solvabilitas"**																		
Net proft margin	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Rasio Likuiditas
Net proft margin	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Increased ROA
Rasio Likuiditas	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Increased ROA

Perbandingan antar strategi fungsional sehubungan dengan **"Meningkatkan penguasaan sumber bahan baku"**																		
Perluasan area tebu	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Jumlah kerjasama dengan supplier tebu rakyat

Perbandingan antar strategi fungsional sehubungan dengan **"Peningkatan produktivitas tebu"**																		
Area tebu	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Jumlah tebu yang digiling

Perbandingan antar strategi fungsional sehubungan dengan **"Efisiensi proses produksi"**																		
Kinerja gilingan	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Kinerja Proses

Perbandingan antar strategi fungsional sehubungan dengan **"Optimalisasi kinerja karyawan"**																		
Restrukturisasi organisasi	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	SDM berbasis analisa beban kerja

Perbandingan antar strategi fungsional sehubungan dengan **"Pengadaan pelatihan karyawan"**																		
Jumlah karyawan yang mengikuti pelatihan	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Jumlah pelatihan yang diadakan

Perbandingan antar strategi fungsional sehubungan dengan **"Pengadaan pelatihan karyawan"**																				
Tingkat turnover rate pegawai	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	BPJS
Tingkat turnover rate pegawai	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Tingkat kepuasan karyawan
BPJS Ketenagakerjaan	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Tingkat kepuasan karyawan

‒   SELESAI   ‒

BIOGRAPHY

The author, Sabilla Uzlifat Riandini, is the youngest daughter in the family. She was born in Kupang on January 31, 1995. She was graduated from MIN 1 Malang in 2007, SMPN 8 Malang in 2010, and SMAN 1 Malang in 2013. After graduated from senior high school, the author started to begin the college year in Industrial Engineering Department, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia. During the college time, the author had actively engaged in student organization such as a staff in External Affair Department of Industrial Engineering Student Association (HMTI ITS) in period 2014-2015 and a member of Surabaya Youth Carnival in period 2014-2015. The author was also active in training, such as ESQ, Gerigi ITS 2013, LKMM Pra-TD, LKMM TD, Public Relation Training and Xtraordinary Public Speaking Unlocked. Moreover, she also had her own business in the field of fashion as the owner of her own clothing brand Licht.co and joining some events related to the business such as Malang Fashion Movement, Surabaya Youth Carnival, Art & Music Camp Fest, Brawijaya Fashion Week, Loca Loco. For the international experience the author is joining INCHALL 2016 also work for Active Global Caregiver Singapore as the Coordinator for Indonesia area. The author also had a part time job in Dyandra Event Organizer. Another practical experience, the author has join internship program in PT Pertamina Production Unit Gresik Lubricant focus on how to increase the machine availability in Manufacturing System field in 2016. For further discussion, the author can be reached through email sabillauzlifat@gmail.com