

# DESIGN OF PERFORMANCE MEASUREMENT SYSTEM IN PUSPEKNUBIKA KODIKLATAL

Tony Herdyanto<sup>1</sup>, Avando Bastari<sup>2</sup>, Eko Krisdiono<sup>3</sup>

<sup>1,2,3</sup>*Indonesian Naval Technology College, STTAL, Moro Krembangan, Surabaya 60178, Indonesia*

## ABSTRACT

The success or success of an organization is achieved because of the ability of the organization in carrying out its vision and mission as expected, as it is known that one of the objectives of the process of organizing the functions of government is the guarantee of national security and welfare conditions for all its people. The purpose of the research was to obtain measurements of organizational performance by BSC method in Puspeknubika Kodiklatal Surabaya. In the test of variable validity of customer satisfaction level in service attributes for comfort criteria as much as 67.3%, criteria of ability to meet the needs as much as 71.7%, health and safety criteria as much as 65.1%, criteria of ability to provide the required information as much as 84.4% and good communication criteria as much as 65%. Balanced Scorecard (BSC) method can be applied to government and military organizations, especially in this case Puspeknubika Kodiklatal Surabaya, because with this method all aspects can be measured and known performance.

**Keyword :** Performance measurement, Balance Scorecard, Puspeknubika

### 1. Introduction

Performance measurement is a tool to assess an organization's success. In the context of government organizations and organizations of the Indonesian National Army (TNI), the success or success of an organization is achieved because of the ability of the organization in carrying out its vision and mission as expected, as it is known that one of the objectives of the process of organizing government functions is the guarantee of national security and welfare conditions for all its people, to achieve this, the TNI organization must be able to carry out its basic duties as the main component of the country's defense to the maximum, with this, it is undeniable that a TNI organization needs to measure its performance in order to know if its strategic objectives have been achieved. Currently, many models have been implemented in performance measurement systems such as: Balanced Scorecard, Integrated Performance

Measurement System (IPMS), and Performance Prism. Balanced Scorecard is the most popular performance measurement system model today (Neely, 2003). The balanced scorecard performance measurement method was chosen in this study because it has advantages over the other two methods, in performance prism and IPMS method focuses more on identifying stakeholders from many interested parties, such as owners and investors, suppliers, customers, labor, government and surrounding communities without taking into account other activities. While the balance scorecard with the other two methods is in addition to considering the financial aspect, the balance scorecard also considers the non-financial aspect. The balance scorecard measures not only the final result, but also the activities of the final result determinant. The balance scorecard application also includes growth and learning activities, which can contribute to the

organization. Therefore, balanced scorecard is considered appropriate to be applied to public organizations and TNI. This is in line with the objectives of public organizations that place qualitative and non-financial services as a top priority. Puspekhubika Kodikdukum is an implementing element in Kodiklatal in charge of assisting Dankodikdukum in the implementation of courses, training and practices in the field of ship rescue from fire hazards, ship damage, as well as training in dealing with nuclear, biological and chemical hazards. Preparing, organizing and evaluating the results of courses, exercises and practices, as well as carrying out the construction of its entire power line, including the facilities and infrastructure supporting the organization to support the main tasks of Kodiklatal Kodikdukum. Based on these problems, the purpose of the research is to obtain measurements of organizational performance with BSC methods in accordance with the vision and mission that has been determined in Puspekhubika Kodiklatal Surabaya.

## 2. Materials and Methods

Balanced Scorecard is one of the methods of performance measurement that translates missions and strategies into various objectives and sizes, which are organized into four perspectives: finance, customer, internal business process, and learning business and growth (Kaplan and Norton, 1996). This method of measurement not only focuses on the financial aspect but also emphasizes other aspects that are the driving factors of the performance of the financial objectives.

The use of the name "Balanced Scorecard" describes the balance between short-term and long-term goals, between financial and non-financial measures, between leading indicators

and leading indicators and between external and internal perspectives (Kaplan and Norton, 1996).

The word "balanced" in Balanced Scorecard means that:

- a. A measure of performance, representing every perspective available.
- b. Performance measures represent the results of past actions (financial) and measures that are the driving factors of future performance (customer, internal business process, learning & growth).
- c. Performance measures that represent objective and subjective measures.

According to Kaplan and Norton balanced scorecard measures include four new management processes. This approach combines long-term strategy goals and short-term events. The four processes are:

- a. Translating the vision, mission and strategy of the company.

To determine the size of performance, the vision of the organization is outlined in goals and objectives. Vision is a picture of the conditions that will be realized by the company in the future. The goal is also one of the foundations for the formulation of strategies to make it happen.

- b. Communicate and associate various strategic objectives and sizes.

Balanced scorecard shows each personnel what the company does to achieve what shareholders and consumers want, because therefore it takes good employee performance.

c. Plan, set goals, align various strategic initiatives.

Business plans allow organizations to integrate between their business plans and financial plans. Balanced scorecard as the basis for allocating resources and managing which is more important to prioritize, will move towards the long-term goals of the company as a whole.

d. Improve strategic feedback and learning.

This fourth process will provide strategic learning to the organization. With Balanced scorecard as the center of the company's system, the company conducts monitoring of what the organization in short term.

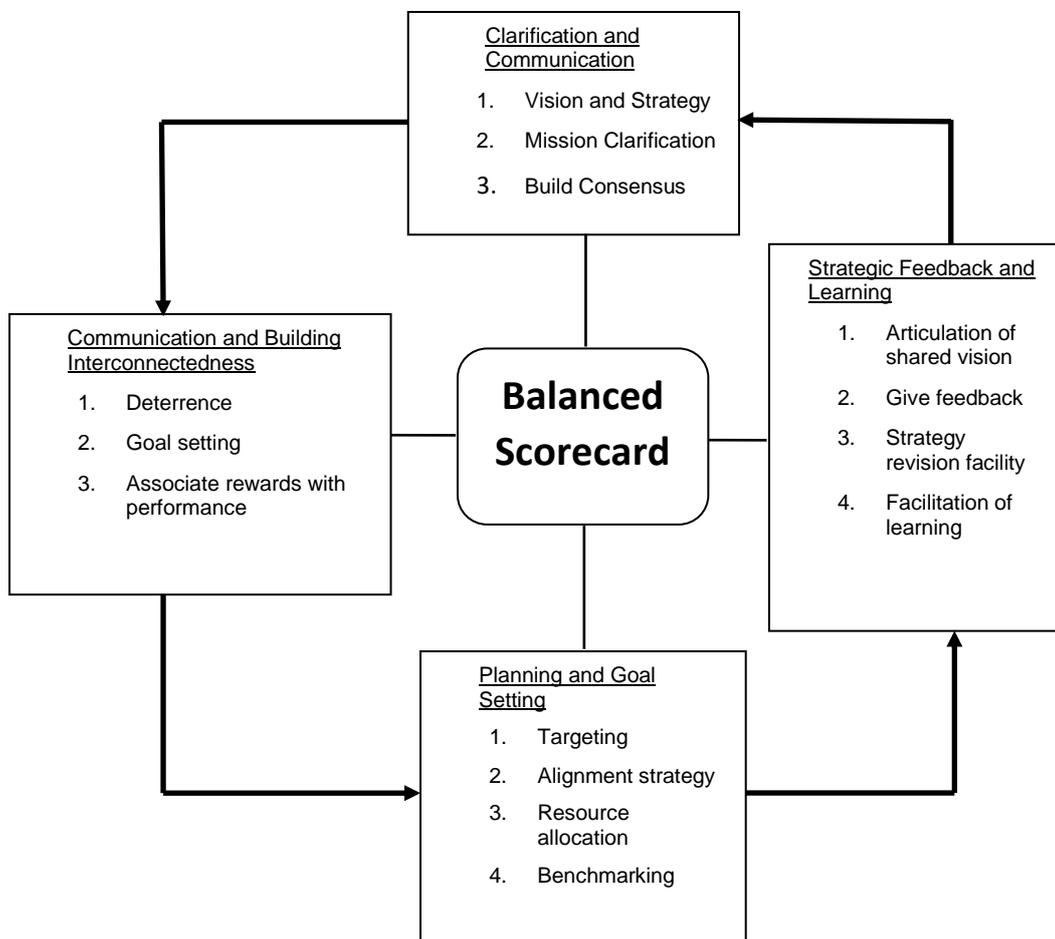


Figure 2.1 Balanced Scorecard as a framework of strategy management actions. (Source : Kaplan &Norton,1996)

There are 3 models that can be used to determine performance measures, namely:

1) Program *logic* model.

The *logic* model program shows the relationship between 4 types of performance measures i.e. inputs (what is used to

generate *value*), processes (how input transformations into products or services), outputs (what is produced) and *outcomes* (what is achieved). For public organizations, one size is added that is *intermediate outcome* to bridge between output and *outcome*. This model can be seen in the image below.

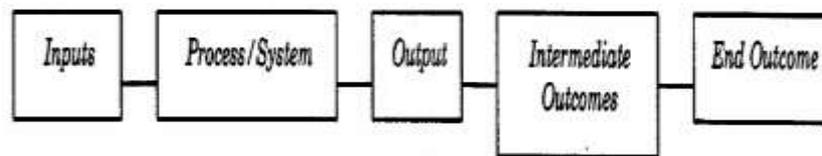
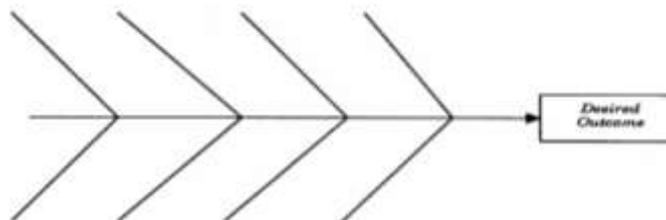


Figure 2.2 *Logic Model Program*.  
(Source : Rohm,2003)

2) Causal analysis.

This model describes the causal relationship of a



performance. It starts by determining the effect and then identifying the cause that resulted in the achievement of the result. This model can be seen in the image below.

Figure 2.3 Causal Analysis.

(Source : Rohm,2003)

3) Process flow

Process flow identifies the activity or size that produces the desired outcome by describing the flow of actions performed. This model can

be seen in the picture below. Outcome by describing the flow of actions to be taken. This model can be seen in the picture below.

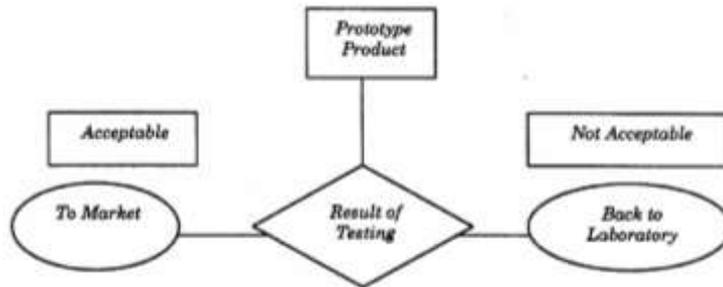


Figure 2.4 Process Flow. (Source : Rohm,2003)

### Scoring System and Traffic Light System

Scoring System is required to know the achievement score against a predetermined target. Some of the methods that will be used are:

- a. Higher is better indicates the higher the achievement, the better the indication and the higher the score,
- b. Lower is better indicates the lower the achievement, the better the indication and the higher the score
- c. Must be zero indicates the higher the achievement must be zero and if not zero then the worse or worse so that the score is lower.
- d. Must be one indicates the lower the achievement must be one (100%) and if not then the indications are getting worse or worse so that the score is lower.

The approach used is to calculate the performance score of a KPI is to compare the actual value with the target. By applying the principle of *higher is better*.

$$Score = \frac{Actual}{Target}$$

If using the principle of *lower is better* then on the contrary that the target is divided into actual.

$$Score = 2 - \left(\frac{Target}{Actual}\right)$$

Traffic light system is closely related to scoring system. Traffic light system serves as a sign whether kpi score' requires an improvement or not. The indicator of this traffic light system is represented by the following colors:

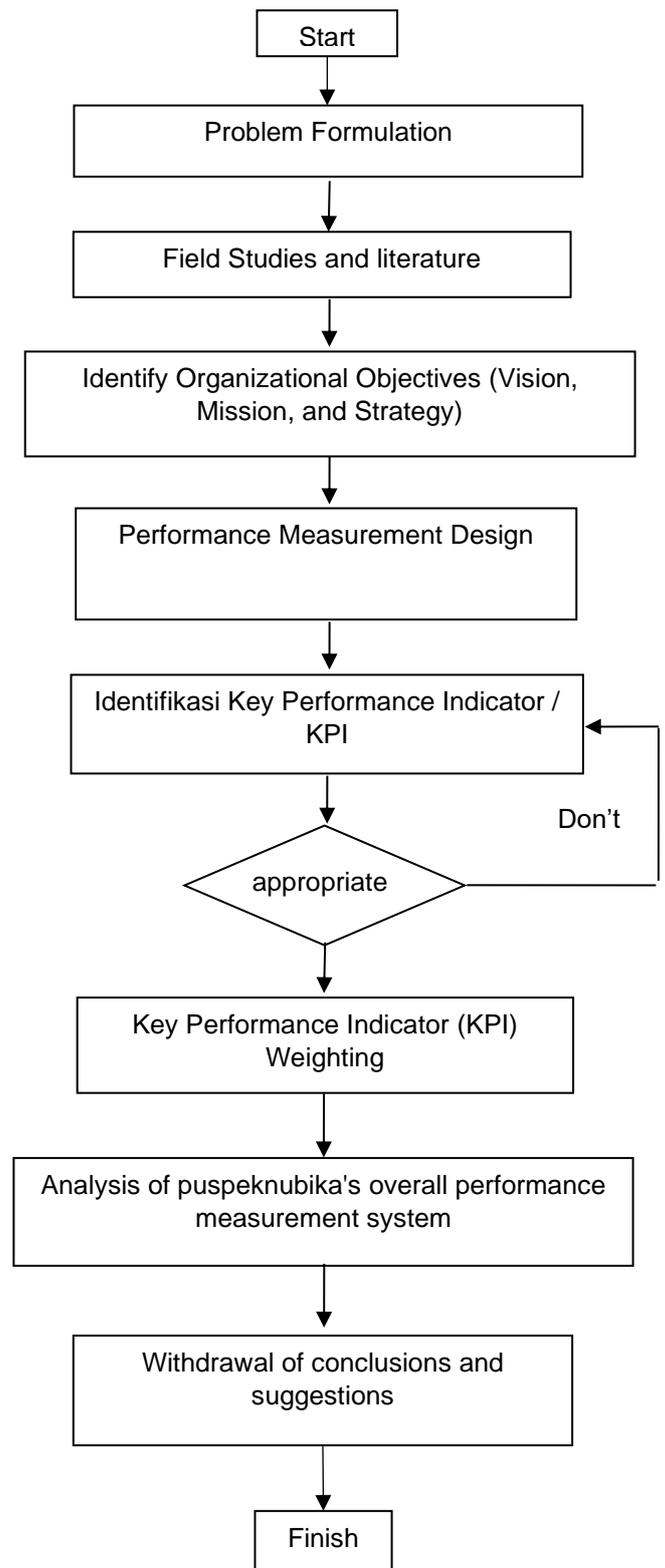
- A. Green color, given to key performance indicators that reach a value between the levels of 80% - 100%, means that the achievement of a performance indicator has been achieved, equal, or even exceeded the target.
- B. Yellow color, given to key performance indicators that reach a value between the levels of 40% - 70%, means that the achievement of a performance indicator is quite achieved even though the value is close to the target. So the

management must be careful with the existence of various possibilities.

- C. Red color, given to key performance indicators that reach a value between the levels of 0% - 30%, means that the achievement of a performance indicator is completely below the target set and requires immediate improvement. (Suwignjo and Vanany, 2004)

A study, especially scientific research requires a clear, systematic and directed frame in the thought process based on the problem that is being reviewed so that the research process and results will be obtained later in accordance with expectations. The frame of mind in this study is then called the research method. Where the research method is used to compile a study so that the direction and objectives become clear that can eventually be obtained a conclusion that answers the problems that have been formulated. In this section will be explained about the steps that will be taken in completing the research. The types of data collected in this study are qualitative and quantitative data consisting of primary data and secondary data. Primary data obtained directly during research in Puspeknubika and elements of implementing activities in the ranks of Puspeknubika.

The outline of all activities carried out during the research is described in the flow chart as described in the image below.



Picture. Observation Flow chart

From the flow chart above, it can be explained about the stages of this research method as follows:

#### a. Problem Formulation

The formulation phase of the problem is the first step in the process of working on this Final Task research. The formulation of problems in this study is analyzing performance indicators and measuring performance in Puspeknubika Kodiklatal Surabaya with balanced scorecard method so that later can improve better performance in the organization.

#### b. Field Studies And Literature

This stage is the beginning of research conducted with the aim to know the general description of Puspeknubika Kodiklatal Surabaya to be researched by data collection techniques conducted by direct to research objects by:

##### 1) Observation Method.

Namely the method of data collection by conducting observations directly in the field.

##### 2) Interview method.

It is a method of collecting data with Q&A directly to leaders and Members.

##### 3) Questionnaire Method.

It is a method of data collection by providing a list of questions to respondents to fill out. To determine whether the results of the

questionnaire is said to be valid and reliable, a 2-stage test is conducted, namely validity test and reliability test. Validity tests are intended to determine the extent to which the gauge used can measure what will be measured. The validity test in this study is intended to find out if the questionnaire prepared has been able to measure the variable that you want to measure. Validity tests are conducted by calculating the correlation of each question (item) with its total score. The correlation formula used is Pearson Correlation. Testing is done using spss program.

The types of data collected and used in this study are:

1) Primary data, i.e. data directly collected or obtained from research objects and opinions

2) Secondary data, namely data obtained indirectly from research objects, but has been compiled in the form of written documents that have been owned by Puspeknubika Kodiklatal Surabaya

#### c. Identification of Objectives.

This stage begins by collecting the necessary data so that it can be analyzed and identified puspeknubika vision, mission, and strategy that will be used into the preparation of objectives and key performance indicators, the data needed, namely the vision, mission and objectives of Puspeknubika.

#### d. Design of Performance Measurement

At this stage the data collection that has been done and then processed with the steps are as follows:

- 1) Identify performance from each of the existing perspectives
- 2) Customer identification data and stakeholders. It is also conducted by interview and questionnaire methods.
- 3) Determine the strategies and priorities needed in kpi preparation. This determination is done taking into account conducted by interview method.
- 4) Taking into account the categories required in analyzing the criteria so that the resulting ones that may be required are effective and efficient.
- 5) Develop performance measurements using balanced scorecard method.

#### e. Identification of Key Performance Indicators (KPIs)

Identification of this KPI is done by conducting discussions and questionnaires with the management of Puspekhubika Kodiklatal Surabaya., Identification of this KPI is useful to know the right measure of performance and can be used in measuring the performance of Puspekhubika so that later after the strategic objectives to be achieved by Puspekhubika Surabaya.

#### f. KPI Weighting Stage

In this study weighting was done by the most ideal method, namely by involving the management group. The method used in this weighting is to use the AHP method. The ways or processes are as follows:

- 1) Dissemination of questionnaires containing questions about the priorities of all the criteria that have been set, to management groups that are considered to be completely aware of the intricacies of the organization.
- 2) Each group member individually gives priority to the criteria.
- 3) Processing is done using Expert Choice 2000 software.
- 4) The processing result has inconsistency ratio provisions that should not be more than 0.1.
- 5) The resulting value is the weight of the criteria.

#### g. Calculation of KPI Achievement With Traffic Light System

The data required in this weighting stage is the value of importance weights, the actual values that have been achieved and the targets that must be achieved, of each KPI. The calculation of performance achievement score of each performance indicator is generated by comparing the achievement result against the target by using scoring system. The importance weight value of the previous step, multiplied by the performance achievement score to get the weighted score. Furthermore, weighted scores are classified into red, yellow and green colors with traffic light system methods to facilitate in determining the priority of improvement for KPIs

#### h. Performance Measurement System Analysis

This stage provides an overall analysis and review of the results of data processing. This stage consists of several parts:

- 1) Analyze objectives and key performance indicators

Analysis of objectives and key performance indicators that have been identified and analysis of the relationship between objectives that have been identified.

## 2) Performance measurement system

Provide advice in the form of an identified system based on previously obtained data, namely data on performance measurement results in Puspekhubika Kodiklatal Surabaya

### i. Withdrawal of conclusions and suggestions

The conclusion and suggestion stage contains the withdrawal of conclusions on the results obtained earlier and provide suggestions based on the results of performance measurements that have been done to the Puspekhubika Kodiklatal Surabaya.

## 3. Discussion and Results of Research

At this stage the calculation and analysis of data is based on historical data puspekhubika in the form of work program evaluation report and Government Agency Accountability Report (LAKIP) Puspekhubika Kodiklatal. The data used is the 2010 and 2011 data. The KPI achievement indicator of this traffic light system is represented by the following colors:

A.. Green color, given to key performance indicators that reach a value between the levels of 80% - 100%, means that the achievement of a performance indicator has been achieved, equal, or even exceeded the target.

b. Yellow color, given to key performance indicators that reach a value between the levels of 40% - 79%, means that the achievement of a

b. Improving infrastructure facilities

performance indicator is quite achieved even though the value is close to the target. So the management must be careful with the existence of various possibilities.

c. Red color, given to key performance indicators that reach a value between the levels of 0% - 39%, means the achievement of a performance indicator is completely below the target set and requires immediate improvement.

Traffic Light	percentage	Reach
	80%-100%	Reached
	40%-79%	Simply Achieved
	39% down	Not Reached

Data required in calculating kpi achievement score in customer and stakeholders perspective, namely training participant support data, training facilities maintenance and improvement data and BBM support usage data in 2010 and 2011.

### a. Percentage of the number of support participants served

No.	year	Training participant support requests	Training participant support	percentage	Reach	Traffic Light
1	2010	59	59	100%	Reached	
2	2011	40	40	100%	Reached	

No.	year	Number of Halkan Alins	Maintenance and Repair of Alins	percentage	Reach	Traffic Light
1	2010	8	7	87%	Reached	
2	2011	8	6	75%	Simply Achieved	

c. Use of Lattek Fuel

No.	year	Fuel emitted (liters)		Fuel Demand (liters)		percentage		Reach	Traffic Light
		MT-88	HSD	MT-88	HSD	MT-88	HSD		
1	2010	285	785	285	220	100%	92%	Reached	
2	2011	475	475	475	475	100%	100%	Reached	

To know the feasibility and reliability of the survey results, it is conducted with validity test and reliability test. Validity test using product moment correlation, resulting in r-count value which is the value of Corrected Item Total Correlation greater than r-table (rhitung > rtabel), so that each item of question 18 in the

questionnaire is declared valid. Reliability test using SPSS program version 17.0, generated Cronbach's Alpha value is 0.802 for job satisfaction rate and 0.824 so cronbach's Alpha value > 0.60 and questionnaire is declared reliable.

Perspektif	KPI	Realisation		Score		Weight	Weighted Score	
		2010	2011	2010	2011		2010	2011
Customer and Stakeholders	Percentage of sea freight support served	100%	100%	10	10	0,061	0,61	0,61
Financial	Number of Harkap implementations	87%	75%	8	7	0,028	0,224	0,196
	Number of BBM support usages	92%	100%	9	10	0,034	0,306	0,34

Perspective	Weighted Perspective	Weighted Score	
		2010	2011

Customer & Stakeholder	0,292	8	2,336	8	2,336
Financial	0,164	10	1,640	10	1,640
End Value		3,376		3.376	
Criterion		Reached		Reached	

From the results of data processing design performance measurement with balanced scorecard method in Puspeknubika Kodiklatal Surabaya, it can be drawn some conclusions, namely

Balanced Scorecard Method (BSC) can be applied to government and military organizations, especially in this case Puspeknubika Kodiklatal Surabaya. Puspeknubika Kodiklatal Surabaya makes it possible to implement a performance measurement system with a balanced scorecard method, because with that method all aspects can be measured and known performance and balanced scorecard has formulated its vision, mission and strategy into the strategic objectives that have been expected.

#### REFERENCE

Gaspersz, Vincent, (2003), Sistem Manajemen Kinerja Terintegrasi Balanced Scorecard Dengan Six Sigma Untuk Organisasi Bisnis Dan Pemerintah, Penerbit PT Gramedia Pustaka Utama, Jakarta.

Kaplan, Robert S. dan Norton, David B, (1996), Balance Scorecard : Menerapkan Strategy Menjadi Aksi, Penerbit Erlangga, Jakarta.

Mulyadi, dan J. Setiawan, (2000) Sistem Perencanaan dan Pengendalian, Aditya Media, Yogyakarta.

Mulyadi, (2001), Balance Scorecard: Alat Manajemen kontemporer untuk Pelipatganda Kinerja Keuangan Perusahaan, Penerbit Salemba Empat, Jakarta.

Neely, A.D., Adams, C.A, and M. Kennerly. (2003), The Performance Prism : The Scorecard for Measuring and Managing Business Success, Centre for Business Performance, Cranfield School of Management, UK .

Puspeknubika Kodiklatal Surabaya (2010), Evaluasi Pelaksanaan Program Kerja dan Anggaran Puspeknubika Kodiklatal Surabaya Tahun Anggaran 2010, Surabaya.

Puspeknubika Kodiklatal Surabaya (2011), Evaluasi Pelaksanaan Program Kerja dan Anggaran Puspeknubika Kodiklatal Surabaya Tahun Anggaran 2011, Surabaya.

Rohm, Howard (2003), "A Balancing Act : Developing and Using Balanced Scorecard", <http://www.performance-measurement.net>.

Saaty, Tomas L. (2003), Pengambilan Keputusan Bagi Para Pemimpin, PT Pustaka Binaman Pressindo, Jakarta

Suwignjo, P., I. Vanany (2000), "Studi Implementasi Sistem Pengukuran Kinerja Balanced Scorecard di BUMN", Penelitian Lemlit ITS, Surabaya.

Vanany, Iwan dan Dian Tanukhidah. (2004), Perancangan Dan Implementasi Sistem Pengukuran Kinerja Dengan Metode Performance Prism, jurnal teknik industri vol. 6, ITS

Yuwono, Sony, Sukarno, Edy, dan Ichsan, M. (2003), Petunjuk Praktis Penyusunan Balanced Scorecard Menuju Organisasi yang Berfokus Pada Strategi, PT. Gramedia PustakaTama, Jakarta.