ANALYSIS OF INTEGRATED PERFORMANCE MEASUREMENT SYSTEM IN PT. X

Yuki Gradiannisa [a], Ni Made Yunita S. [b], Martua F. Purba [c], Dermawan Wibisono [d]
[abcd] Institute Technology of Bandung,Bandung, Indonesia
Corresponding email: yuki.gradiannisa@sbm-itb.ac.id

Abstract

PT. X is one of the companies in the telecommunication sector in Jakarta.As a subcontractor party, PT. X has a responsibility managed service (service management). Managed service is intended to maintain the availability of 3G network and prepared a backup device in an emergency situation (eg back-up generator), including preventing or overcoming interference. PT. X always tries to meet the needs of stakeholders of the company by doing continuous improvement. In this research, the needs of corporate stakeholders (Stakeholder Requirement) were studied to determine the key performance indicators (KPI) as a priority to be improved by the company. This study aims to determine the needs of corporate stakeholders (Stakeholder Requirement) and to improve and enhance the performance company. The method used is the method of Integrated Performance Measurement Systems (IPMS), Analytical Hierarchy Process (AHP), andImplementation of Regression for Variable Linkage. Integration of the IPMS method, AHP, and regression were used to determineKPI that become priority for company. Based on the result, the researchers obtained 3 KPIs that become main issues in the company which are net profit margin, service repair cycle time and complaint rate. The weight percentage of net profit margin, service repair cycle time and complaint rate are 28.98%, 16.26% and 14.43%. These 3 KPIs become indicators that need to be fixed. Regression analysis, the reseachers got conclusion that maintenance time and complaint rate have highest correlation which is 0.98. The second highest is correlation between level of vunerable and service repair cycle time which is 0.98

Keywords: Key Performance Indicators (KPI), Integrated Performance Measurement Systems (IPMS). Analytical Hierarchy Performance (AHP), Regression analysis

1. Introduction

Every company should conduct performance measurement to determine the level of work performance. Improved performance can be determined with the achievement of the ultimate goal of the company is generate sustainable profits for achieve common prosperity. Therefore, this company which is focused on the telecommunication area have felt the need to conduct performance measurement. The development of inter-industrial telecommunication give to a very tight competition among telecommunication companies in Indonesia. PT. X is one company in the telecommunication area. PT. X, as a subcontractor party,have a responsibility managed service (service management). Managed service is intended to maintain the availability 3G network and prepare a backup device in an emergency situation (eg back-up generator), including preventing or overcoming interference.

All this time, the performance measurement conducted by PT. X is still traditional. Based on interview, the company only measures the company's performance through the financial aspects. The company only focused on the financial statements, such as Balance Sheet, Profit / Loss, Statement of Equity Changes, and Statement of Cash Flow. PT. X never measured

the overall performance before involving stakeholders of the company which are investors, customers, suppliers, employees and society. Stakeholders are the most important asset in a company. Traditional performance measurement is actually not sufficiently representative to conclude whether the performance which is owned by a the company is good or not. This is due to the financial aspect which does not give a picture about the real state of the company because it does not pay attention to other things beyond the financial side. One of the recommended methods is the method of Integrated Performance Measurement Systems, Analytical Hierarchy Process and regression analysis.

The Method of IPMS is used to determine the needs and the desire of stakeholders. The purpose of this study was to determine stakeholder needs and to improve and enhance the performance of the company by applying method of integrated performance measurement systems (IPMS) (Mukhtarom & Partiwi, 2011). Therefore, with using the IPMS method, AHP and regression analysis, these integrations could explore more about the analysis of needs of the stakeholders of the company in order knowable key performance indicators that a priority to be improved by the company.

2. Problem Formulation

- What are thestakeholder's needs and requirements of PT X?
- How to enhance the performance of the company?

Theories

Integrated Performance Measurement System (IPMS)

Performance indicators IPMS consists of three perspectives, ie. the output of the organization, internal processes, and resource capabilities(Hendrastuti, 2001).Each of these perspectives can be broken down into aspects. From each of these aspects then desiredperformance indicators are selected. Selection of performance indicators suitable with the vision, mission, corporate strategies, the desire and the needs of each stakeholder(Wibisono, 2011)

IPMS framework is very complete and easy to understand; explanation of the design process is given from the foundation of the performance management system, methods of analysis conditions the business environment, how to connect to the strategy management system performance, performance measurement frameworks, step-by-stepimplementation of performance management systems and updating the performance management system; IPMS performance framework can be applied to any industry, which produces products and services and explain the procedure benchmarking very clearly(Artley & Stroh, 2001).

Performance Management System

Performance management system is the methodical and organised system for monitoring the results of work activities, collecting information and evaluating performance, and determining the achievement of goals. The key purpose of organisational performance management is to introduce systematic controls in the management process to guide and regulate the activities of an organisation or any of its parts, by means of management judgement, decision, and action for the purposes of attaining agreed objectives (www.ukessays.com, 2014).

Medium Sized Firms

Mid-sized firms, which in the difficult past few years have performed impressively, creating lots of new jobs. For example, America has around 197,000 medium-sized firms, defined as

those with annual revenues between $10m and $1 billion, according to data from the National Centre for the Middle Market at Ohio State University (www.economist.com, 2012). In Indonesia itself, there was alow number of middle-sized firms. Eventhough, the number of middle-sized firms have a huge of contribution to Indonesia's economic growth.

According to the Organization for Economic Cooperation and Development, most countries define a small business consist of less than 100. Some countries are set mid-sized firms at more than 100 employees. In the European Union, for example, mid-size companies are those with 50 to 250 workers and annual revenue of less than 50 million euros, which -- as of mid-2013 -- equaled about $66 million.

Based on The Act Num. 20/ 2008 about Micro, Small and Medium Enterprises; Medium Enterprises is medium-scale productive economic activities that stand alone, conducted by an individual or business entity that is not a subsidiary or branch companies not owned, controlled, or become part either directly or indirectly from Small or large enterprises which total net worth or annual sales revenue meet the criteria of the act, namely:

a. Nett Assets more than Rp500.000.000,00 (five hundred million rupiahs) maximum up to Rp10.000.000.000,00 (ten billion rupiahs), excluding land and building.
b. Annual sales more than Rp2,5 two billion five hundred million rupiahs) maximum up to Rp 50 billion.

Performance Indicators

Resource Capability

- Number of Professional Certification
  The percentage of employees who have professional certification, through the trainings.
- Number of Accident in Workplace
  The percentage of accidents that occur on the employee during working time
- Number of Ideas Generation
  Percentage of the ideas generated by employees during the execution of a project.
- Level of Vunerable
  Percentage of time broken / life time.
- Maintenance Time
  Percentage of time spent to repair the BTS during the project

Business Result

- Service Repair Cycle Time
  Percentage of time to do repair BTS during the project
- Complaint Rate
  Percentage of customer complaints during the execution of a project

Internal Process

- Net Profit Margin
  Net profit represents the number of sales dollars remaining after all operating expenses, interest,taxes and preferred stock dividends (but not common stock dividends) have been deducted from a company's total revenue.
- Market Share

Market share (Market Share) can be interpreted as part of the market controlled by PT X, or a sale of a PT X's percentage of total sales the biggest competitor at the particular time and place.

3. Research Method

Data processing is done by using IPMS. This method can process results and analysis, conclusion and give suggestions that can improve the company's performance.The following is an explanation of the stages of performed in this study:

a.   Field Study

The first step that needs to be doneis direct observation in companies to get an overview of the actual condition of the object to be examined.

b.   Literature

Study literature need to do to get information and theories to support such theories about Integrated Performance Measurement System.

c.   Problem Identifcation

Problem identification is done for identify problems occurred at the company.

d.   Problem Formulation

After identifying the problems,the next step is to formulate problems. Problem formulation is the details of the problems and indicate the purpose of the issue stated.

e.   Determination of Objective

The aim of this research is determined by formulation of the problem that has been described before.This is intended to define the limits required in the processing and analysis of the data.

f.   Identify the corporate level

At this stage, identifying the level of the company include business level, business units, processes, and activities of company.

g.   Identification of stakeholder requirements

Before   identifying   stakeholders   requirement,   the   researchesneed   to   have discussionsregardingwhat stakeholders of PT. X need and desire.

h.   Establish objectives of the company

After stakeholder requirements determined, then set the objectives. The objectives of the company is based on stakeholder demands and competitive. Determine the purposes of this company conducted through the method of questionnaire. For questionnaire, samples were taken with using stratified random sampling due respondents were heterogeneous. Sampling of each stratum is done using purposive sampling because the sample taken is certain people as a source of information. Besides using a questionnaire, the researchers also collected data by observation, interview, documentation, as well as the technical literature for obtain the necessary data in the study. Both primary data and secondary data is needed in research.

i.   Determine key performance indicators (KPI)

After the resulting strategic objectives on each stakeholder requirement, it is then determined, for each KPI,whichrepresents the performance indicators based on company

system. Determining KPI is donethrough discussions with the partiescompetentsthat truly understand objectives of company.

j.   Determine the validation of Key Performance Indicators (KPI)

Determination of KPI validation is doneto get the KPI that reallyrepresents the performance of company accordance with the requirements of eachstakeholder and objectives of company. This testing is can be done through discussions with the companycompetent that understand the requirementon the part of stakeholders and objectivesthe company to obtain the final KPI.

k.   Weighting ofKey performance indicators (KPI)

This weighting is done based on the Analytical Hierarchy Process (AHP) for each KPI.

l.   Implementation of Regression for Variable Linkage

At this stage, the scoring system conductedusing linkage scheme. The calculation based on 5 years data of the company. The linkage scheme can show correlation between each variable.

m.   Discussion

At this stage, the researchers will be discussed about the results of measurement and give recommendation improvements that have been granted in the company. At this stage, the researchers will give explanation about short-term priority which could be done by the company's.The analysis of the design and results of measurement system performance using IPMS.

n.   Conclusions and suggestions

Conclusions and suggestions are part of research. The conclusions derived from collecting, processing, and analysis data to answer the research objectives assigned

Table 1:Research Methodology
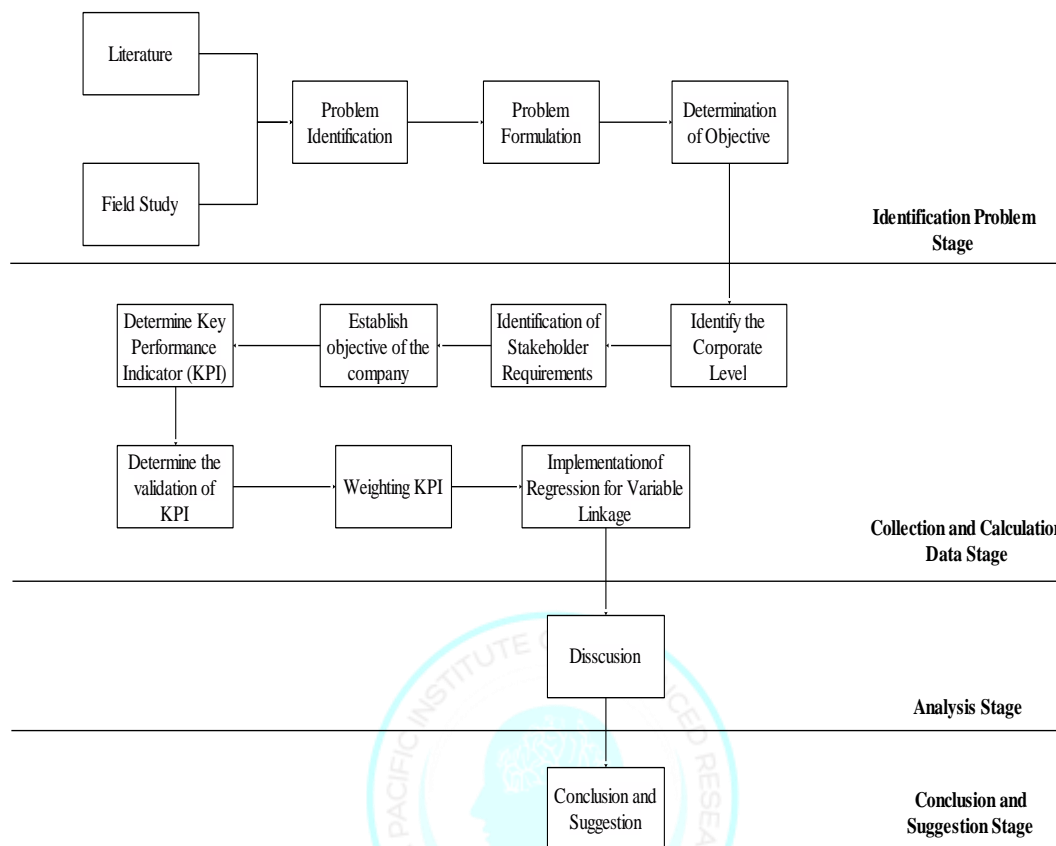
4. Research Results

Identifications of Key Performance Indicators

Identification of Key Performance Indicators (KPI) based on requirement which has beenidentified. The identification is done throughpreliminary questionnaires to companies.The researhersalso conducted few interviews and focused on group discussions with employees in PT X.

Table 2: Identified Objective Strategies

Business Result	Indicators
1. Financial	
Profitability	Net Profit Margin
Business Growth	Market Share
Internal Process	
3. After Sales Service	
Process Services	Service repair cycle time
Quality of Services	Complaint rate
Resources Capability	
1. Human	
Competency	Number of Professional Sertification
Security At Work	Number of Accident in Workplace
Employee Creativity	Number of Ideas Generation
2. Technology	
Quality of Technology	Level of Vunerable
Maintenance Process	Maintenance Time

After obtained the needs of stakeholders, the researchers can get the information about company's position. After that, the determination of objectives company and establish key performance indicators.*Key Performance Indicators* (KPI) that had been identified in Table 2.

Table 3: Key Performance Indicators of PT.X

No	Alternative Key Performance Indicators
1	Net Profit Margin
2	Market Share
3	Service repair cycle time
4	Complaint Rate
5	Number of Professional Certification
6	Number of Accident in Workplace
7	Number of Ideas Generation
8	Level of Vulnerable
9	Maintenance time

Table 4:Analytical Hierarchy Diagram for choosing KPI of PT X

Asia Pacific Institute of Advanced Research (APIAR)
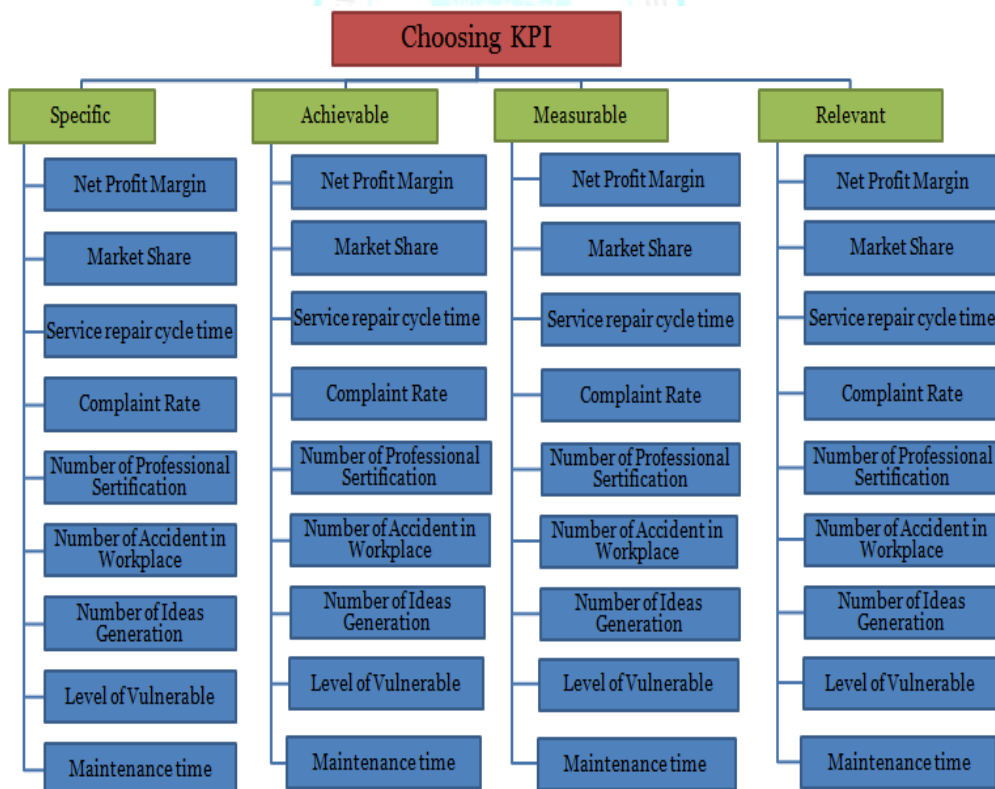
After the reserachers got KPIs of the company, the researchers conducted interviews with company competents to make validation of KPIs.

Weight of Key Performance Indicators

Weighting of KPI with using Analytic Hierarchy Process based on restructuring the hierarchy of performance measurement system. Weighting is needed to know about preferences of the parties management about their level of importance of criteria (Perspective, Strategies, and KPI). After the researchers conducted questionnaire, they gave it to the management. Results from questionnaires are then processed.

Table 5: Weight of Key Performance Indicators

Criteria / Alternative KPI	Specific 0.095	Achievable 0.160	Measurable 0.467	Relevant 0.277	Result	Ranking
Net Profit Margin	0.297	0.261	0.303	0.281	28.98%	1
Market Share	0.214	0.196	0.027	0.107	9.41%	4
Service repair cycle time	0.070	0.076	0.219	0.149	16.26%	2
Complaint Rate	0.088	0.037	0.156	0.207	14.43%	3
Number of Professional Certification	0.152	0.054	0.110	0.052	8.88%	5
Number of Accident in Workplace	0.033	0.106	0.077	0.075	7.70%	6
Number of Ideas Generation	0.020	0.028	0.041	0.016	3.02%	9
Level of Vulnerable	0.020	0.096	0.039	0.041	4.69%	8
Maintenance time	0.106	0.145	0.028	0.072	6.63%	7
Total	1	1	1	1	100.00%	

Basically,analytic hierarchy process is a simplification of a complex problem unstructured, strategic and dynamic into its component parts, as well as arranging parts or variables in a hierarchical arrangement (Saaty,1993). Levels ofthe importance of each variable was given a numerical value subjectively about the importances. Of some consideration is then performed to define variables that has highest priority and act to influence the outcome on the system performance (Saaty, 1988). The working principle of analytic hierarchy process begins with identifying the system, followed by preparation of the hierarchy, and the preparation of the opinion matrix. Identification of the stage is necessary to understand the problems, set goals, and alternative criteria.

Based on the calculation above. the highest of among variables consists of 3 KPIs. The first rank is profitability ratio (28,98%), the second rank is service repair cycle time (16,26%), and the third rank is complaint rate (14,43%). The lowest rank among of all variables is number of ideas generation (3,02%).

Implementation of Regression for Variable Linkage

The researchers using 5 years data of the company, including Net of Profit Margin, Market Share, Service repair cycle time, complaint rate, Number of Professional Certification, Number of Accident in the Workplace, Number of Ideas Generation, Level of Vulnerable, and Maintenance Time.

The linkage scheme below can show correlation between each variable. After did some calculations, the researchers got aconclusion that maintenance time and complaint rate have the highest relationship compared to others correlation (0,98). The second is correlation between level of vunerable and service repair cycle time (0,98). The third is correlation between level of vulnerable and complaint rate (0,97).

Table 6:The Linkage Scheme
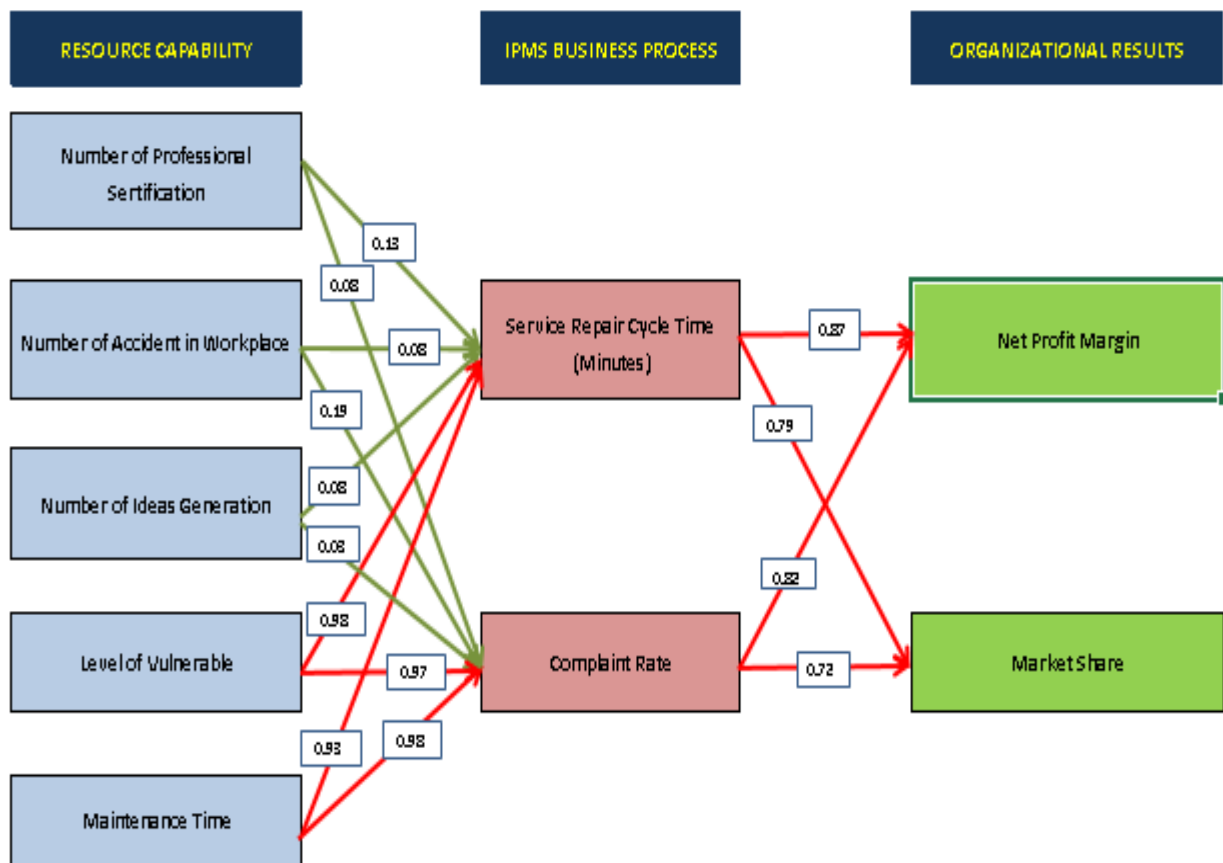
5. Discussion

The researchers using Integrated Performance Measurement System (IPMS) to identify issues in the company. After givingquestionnaires to 30 employees in PT X, the researchers got the conclusion about stakeholder's requirements. Based on stakeholder's requirement, they can determine Key Performance Indicators (KPI) of PT X. After that, the reseachers did weighting of Key Performance Indicators (KPI). The researchers determined weight of KPI with Analytical Hierarchy Process (AHP). The result of using AHP is profitability ratio has highest rank compared to other Key Performance Indicators (KPI). Based on the result, profitability ratio is the main issue in this company. The researchers think that the company has not gottenthe proper profitability ratio.

Based on the analysis of linkage scheme, the researchers can conclude that the highest correlation is betweenmaintenance time and complaint rate. To reduce maintenance time, the company can reduce complaint rate of customer. If in the future, the company

successfully can reduce maintenance time drastically, it could significant reducecomplaint rate of the company. The second is correlation between level of vunerable and service repair cycle time. It means that if the company can reduce service repair cycle time, the company should reduce level of vunerable.

Conclusions and Suggestion

The researchers think PT. X should maintain their performance as the middle-class company, they can focused on profitability ratio. The company can increase the profitability through improving their performance, reduce repair service repair cycle time, and reduce complaint rate of customers. If the company can maintain its performance, the company probably could increase its market share.

Based on the analysis of linkage schemehighest correlation is betweenmaintenance time and complaint rate. We can conclude that if the company can reduce the complaint rate, the company shouldreduce maintenance. The company should be more efficient in using maintenance time, to significantly reduce complaint rate of customers. The second is correlation between level of vunerable and service repair cycle time. It means that if the company can reduce service repair cycle time, the most important thing is the company should reduce level of vunerable.

References

i.   Artley, W.& Stroh, S., 2001. Establishing an Integrated Performance Measurement System: Oak Ridge Institute For Science And Education.

ii.   Hendrastuti. 2011. Sistem Pengukuran Kinerja Dengan Metode Integrated Performance Measurement Systems (Studi Kasus: Usahatani dan Industri Kecil Penyulingan dalam Klaster Agroindustri Minyak Nilam di Kabupaten Kuningan): Institut Pertanian Bogor.

iii.   Jeffery, N., 2009. Stakeholder Engagement: A Road Map to Meaningful Engagement: Cranfield School of Management.

iv.   Mukhtarom, S. & Partiwi, S. G., 2011. Pengukuran Kinerja di PT. Citra Bunga Persada Dengan Menggunakan Metode Integrated performance Measurement Systems (IPMS): Institut Teknologi Sepuluh November.

v.   Chang, E., 2012.Medium-Sized FirmsAre The Unsung Heroes of America's Economy. Available at: http://www.economist.com/news/business/21564893-medium-sized-firms-are-unsung-heroes-america%E2%80%99s-economy

vi.   Merritt, C. & Media, D. (nd). What Size Company Is Considered A Mid-Size Company? Available at: http://smallbusiness.chron.com/size-company-considered-midsize-company-71776.html

vii.   Performance Management In Fedex Corp Commerce Essay. Available at: http://www.ukessays.com/essays/commerce/performance-management-in-fedex-corp-commerce-essay.php

viii.   Riggs, J. L. & Glen, H. F., 1983. Productivity By Objectives. UK: Prentice Hall.

ix.   Saaty, T. L., 1988. Multicriteria Decision Making, The Analytic Hierarchy Process Planning, Priority, Setting, Resource Allocation. University of Pittsburgh.

x.   Saaty, T. L., 1993. The Analytic HierarchyProsess. New York: McGraw-Hill.

xi.   Wibisono, D., 2010. Perancangan Sistem Kinerja Perusahaan Studi Kasus Perusahaan Dago Engineering. Indonesian Journal For The Science Management, 9.