

## **PROPOSED PERFORMANCE MANAGEMENT SYSTEM USING BALANCE SCORECARD (BSC) TO DEVELOP COMPETENCY DICTIONARY FOR PROJECT FIELD TEAM IN PRIVATE CONSTRUCTION CONSULTANT COMPANY: A CASE STUDY**

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### **Abstract**

The success of a construction project is very dependent on the process and expertise of the human resources involved. In construction projects stakeholders, especially consultants, human resources with special expertise certifications needs technical competence. In its implementation, indicators that determine the success of the project are not only based on technical competence but also functional or soft competence at every level of position, including field engineers. The success of the project will provide added value for the company in the form of increasing profit and reduce risks that have a negative impact on the company's internal processes and its company performance. The objective of this research is to propose a performance management system (PMS) using Balance Scorecard (BSC) for PT ABC, a growth construction consultant company in Indonesia. The results in this study also show the need for improvement in the human resource capabilities of the field team called monitoring and instrumentation division in order to support of the company goals and targets. The research framework used in the form of internal analysis. The research was conducted using a qualitative methods by interview and internal discussion. From the strategic map, a highly capable human resources and engineers with broad knowledge supported by soft skills and technical skills will have a positive impact on the efficient management process that will also increase the growth of positive company value from clients, it will also have an impact on the improvement of company's finances performance.

**Keywords:** Balance Scorecard, Construction Consultant Company, Key-Performance Indicator, Performance Management System.

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### **1. Introduction and Purpose**

In a construction project, there are three parties involved, the owner, the contractor and the consultant. There are at least five phases in a construction project where each of these parties has the opportunity for irregularities sequences that cause construction work delay, from the planning phase to the finishing phase (Latif & Rahman, 2019). One of the problems that affects the company's performance in the construction sector is the lack of a performance measurement system (Formoso & Lantelme, 2000). Performance measurement is an essential element in the management of construction companies. It provides the information required for process control and allows for the establishment of both challenging and achievable goals. It is also necessary to aid in the execution of business strategies (Costa & Formoso, 2003). However, the effective implementation of performance measurement systems is not simply a matter of selecting the right measures. The phenomenon of lack of reliability or the absence of a performance management system also occurs in several private companies that have growth opportunities, such as PT ABC.

Performance management is one systematic process which is aimed at improving the performance of an organization by connecting the system with individual's team performance within the organization (Amstrong, 2009). Neely (2005) convinces that performance management system or performance measurement is a process of calculating the efficiency and

effectiveness of actions. Performance management is a continuity process in identifying, measuring, and developing the performance of and individual and teams within an organization and align it to the goals of the organization (Aguinis, 2014).

There are at least three main purpose of performance management (Amstrong, 2009), including:

1. Aligning individual objectives with the organization's objectives and core values
2. Clarify individual responsibilities and accountabilities (expected to do), skills (expected to have), and behaviors (expected to be).
3. As a guidance for every individual within the organization to identify their own goals and develop their skills and competencies.

The performance management system cannot only focus on financial aspects as a measure of company performance (Basheka & Tumutegyreuze, 2013). Wibisono (2006) explains the disadvantages of conventional performance management systems (PMS), they are less relevant, tend to report past performance, are short-term oriented, lack flexibility, conventional measurement performance variables depend on standard and fixed variables, do not trigger the improvement process, and is often confused with the cost aspect. Traditional performance measurement systems produce information that is too late, too aggregate, and too distorted to be relevant for managers planning and control decisions (Kaplan & Norton, 1996). Therefore, it is necessary to have a PMS system that covers aspects other than financial aspects, and one of the PMS to choose from is the Balance Scorecard (BSC) performance measurement framework (Kaplan & Norton, 1996).

Balance Scorecard (BSC) performance measurement framework was developed by Professor Robert Kaplan and David Norton in 1996. This framework introduces a clarity of cause and effect relationship between four perspectives (financial, customer, internal operation (internal business process) and learning and growth perspectives. This framework is widely used in both profit and non-profit oriented company. PT ABC is one of the private sector company running in construction sector as a consultant. PT ABC is a company that was established in 2004 with more than 80 employees and has handled more than 1000 construction projects in Indonesia. There are 5 divisions including engineering division, research and development division, field investigation division, instrumentation and monitoring division, and finance and administration division. Each division has KPIs that have been formulated. In this paper, research is focused on developing a performance measurement system in the monitoring and field divisions.

In general, the monitoring and instrumentation division is responsible for collecting field data as input for the design team as well as output which will be given to clients as pictures indicating problems in the field. From the results of internal interviews and observations, it is the M&I division that has issues and problems that can affect the management of the company's overall performance. Therefore, in this paper, the limitations of the discussion are focused on the M&I division. The organizational structure of PT ABC is shown in Figure 1, the project completion path for the monitoring and instrumentation division is shown in Figure 2.

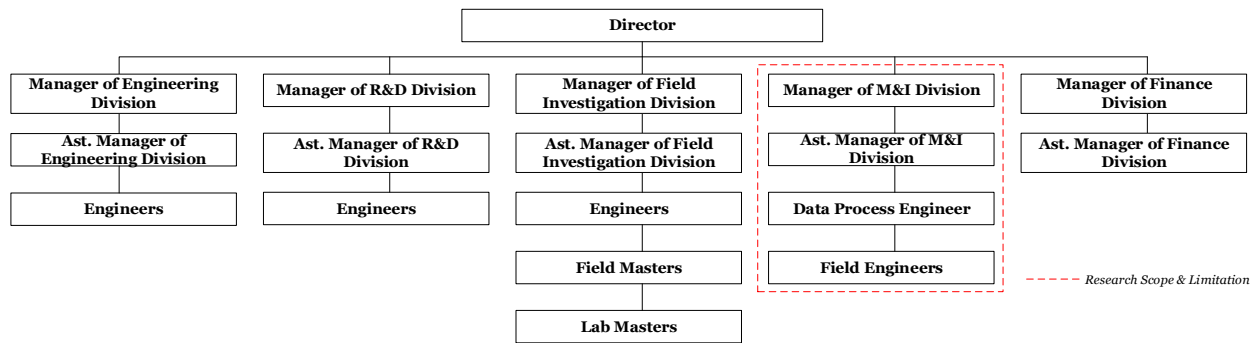


Figure 1: PT ABC Organizational Structure

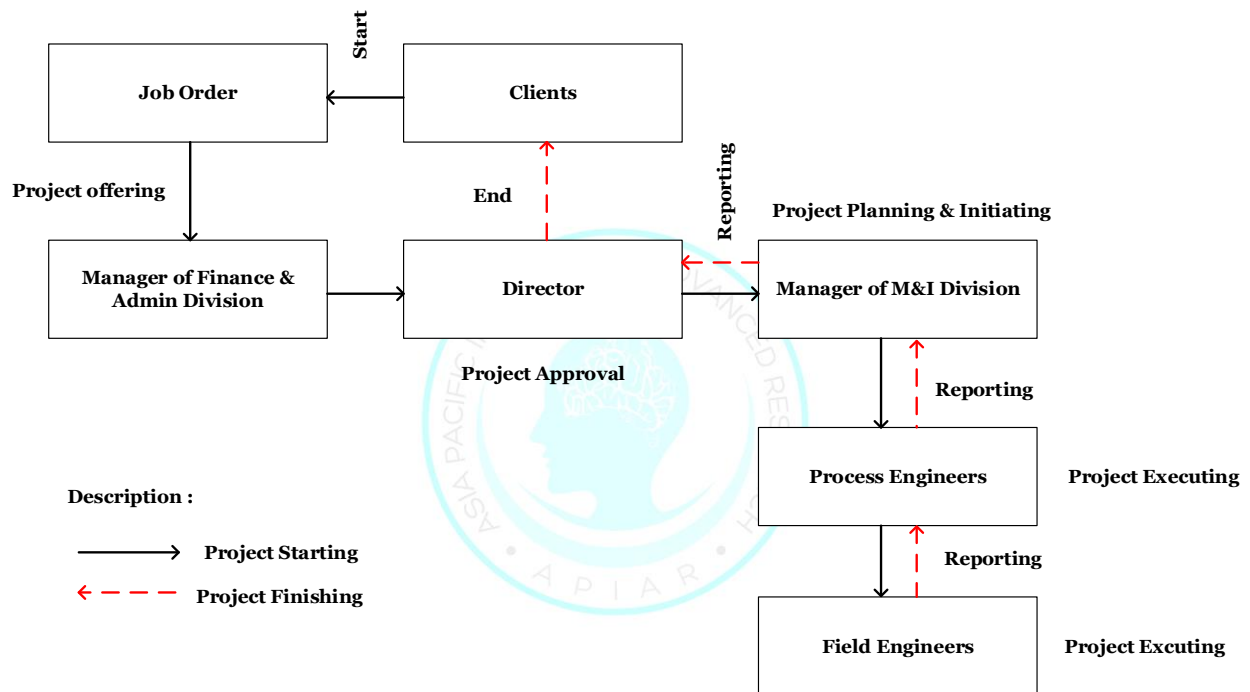


Figure 2: Project Completion Path (Monitoring & Instrumentation Division)

## 2. Problem Background and Problem Formulation

The problem faced by PT ABC is about the scope of work, especially in the internal process of how to control and monitor work and ensure the quality of work meets the standards needs. The problem mapping method is carried out using the root cause analysis method by interviewing the manager of the relevant division. Mapping the problem using rootcase analysis is summarized in Table 1.

Table 1: Matrix Summary of Root Causes and Corrective Action

Problem	Main Cause	Root cause	Corrective Action
Useless data obtained, low quality data impact bad company performance	Learning and growth Perspective - Inconsistency & improper data.	Engineers missreading and miss-estimating field conditions	Conduct kick-off meeting for every new project started, creating a standard "manual book" guidance for field engineer, conduct a weekly meeting to monitor the progress, develop competency dictionary for field engineer especially for M&I Division.
	Learning and growth Perspective - Lack quality of data obtained	The inaccuracy in collecting data by field engineers	
	Learning and growth Perspective - Wrong reporting	Field data readings are not refer to TOR	
	Internal Process Perspective - Delay of instrument reading	Weather condition	Planning more than 1 alternatives, forecast weather check
		Engineers' schedules are busy and overlapping	Discuss with the engineers and make sure the schedule is not overlapping with other project
	Customer Perspective - The report requested by the client is late to be submitted	The work on the report by the engineer is delayed	Always follow up the after projects report, daily reports and direct discussion with involved engineers
	Financial Perspective - Travel expenses are doubled as a result of bad data (need to be repeated)	Engineers don't have enough time to peruse all the data, many points in one day. There is no proper schedule plan	Make a proper scheduling.

The problem in this case study are directly defined by the strategic policy makers in the company. The problem could be eliminated by proposing a reliable and a proper performance management system for the company mentioned in this paper, PT ABC. As a follow-up to the development of this PMS, the company leaders feel that there is a relationship between employee competence and company performance, so company leaders decide that it is necessary to develop a competency dictionary for field engineers.

#### 4. Literature Review

##### 4.1 Strategic Management – Concept and Theories

Strategic planning is a system that involve formulating, implementing, and controlling important decision across functions and level the firm (Bryson et al, 1987). The process of strategic planning helps organization make systematic approach in decision making to achieve desired goals.

##### 4.2 Performance Management and Balance Scorecard– Concept and Theories

Performance management is one systematic process which is aimed at improving the performance of an organization by connecting the system with individual's team performance within the organization (Amstrong, 2009). Noe et al (2014) define performance management as a process that make sure activities and output from company, individual and organization contributr to organization's goals.

The Balance Scorecard is a powerful framework of strategically driven performance management system. BSC set a clear path in design a PMS by using strategy map. Learning and growth in BSC framework Is a strong related to continuous improvement of the company.

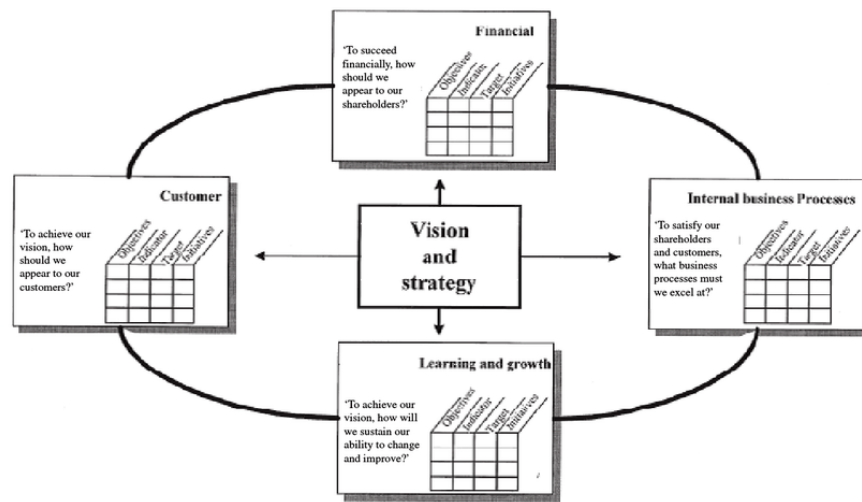


Figure 4: The Balance Scorecard (BSC)

## 5. Research Methodology

The method used in this paper is a qualitative method by means of direct interviews with respondents who are strategic policy makers in the company. The data used in this paper are categorized as primary data and secondary data. Primary data is data collected by researchers where the information needed is determined by the researchers and gathered directly from the respondents. Data used to support business issues for analysis obtained from interviews are classified as primary data. Then data such as organizational structure, business plans, vision and mission are classified as secondary data.

### 5.1 Methodology Design Framework

Business solution framework is creates to give a direction to writer or observer in solving a problem so the objectives will be obtained. Following figure is show business solution framework of this paper.



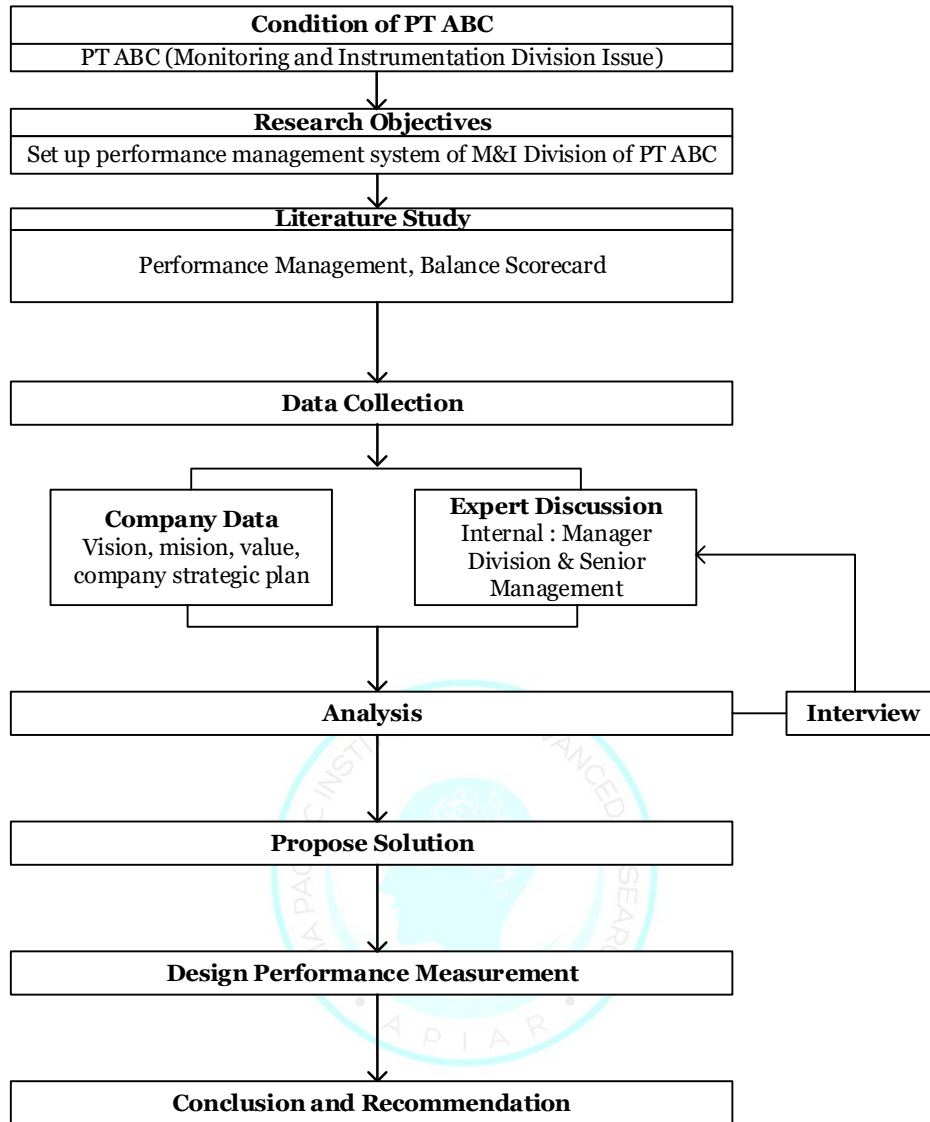


Figure 4: Research Design Framework

## 6. Analysis and Discussion: Proposing Company PMS

The mission, values, and vision statement with the company leaders get us to understanding the company goals and objectives. PT ABC with is expected to deliver at least three main mission, to practice civil engineering with high professional standards and quality, to advance engineering knowledge and methods that are appropriate For Indonesia, Asia, and worldwide, and to expand local knowledge in civil engineering to a global scale. More specific in the mission, values and vision statement, PT ABC targeted local to global segment at least in south east asia market.

## 6. 1 Clarify Mission, Values, and Vision

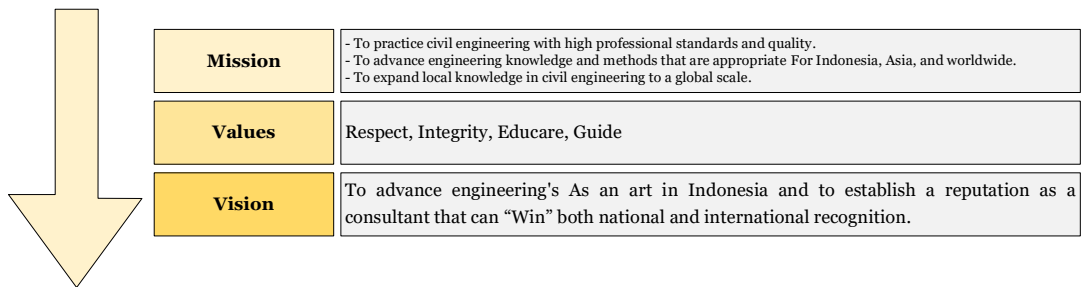


Figure 5: Summary dari Mission, Value, and Vision of PT ABC

## 6. 2 Translating Vision Into Strategic Themes

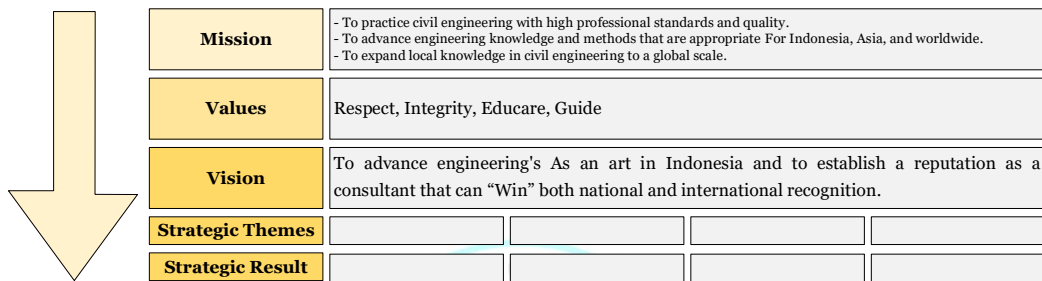


Figure 6: Translating Vision to Strategic Themes and Result

According to BS Institute (2018), strategic themes defines the main strategic thrust that need to be persued by the organization to realize their vision.

The result must then be defined when the vision has been translated into strategic themes. The desired outcome generated by each strategic theme is defined by the strategic result in a different way. Every strategic theme has ideal circumstances that should be met. This consequence serves as a foundation for defining the strategic target in the following stage and is described as a strategic result.



Figure 7: Strategic Themes as a Pillar to Support Vision and Mission (Source : Balace Scorecard Institute, 2018)

## 6.3 Understanding the key succes factors and corporate strategy to achieve critical success factors

For PT ABC, the most key success factor to achieve the vision of the company is building the trust. The company values are driven by the director since the company was founded. The motto of kinship and mutual trust is instilled with the experience of directors who always have the principle that trust is number one. In carrying this out, several strategies are carried out by the

company, including always maintaining the quality and quantity of work, mutual respect between employees by assigning tasks according to each other's abilities and workload of each engineer, equal distribution of rights and obligations, as well as full support of knowledge development of the engineers.

A summary of vision translation into strategic themes can be seen in Figure below :

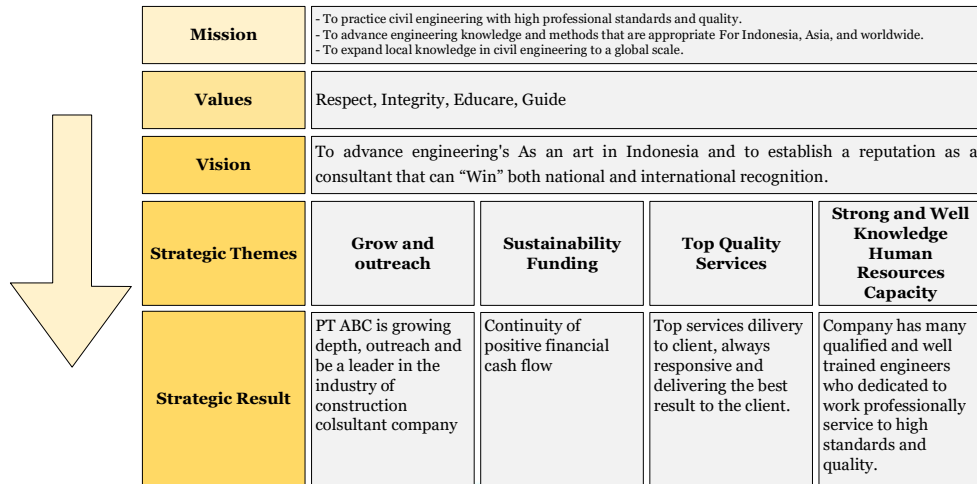


Figure 8: Vision Translation Into Strategic Themes

#### 6. 4 Translating Strategic Themes Into Strategic Maps

As a private sector-profit company consultant PT ABC needs profit to maintain financial ratio that can support the running of the company. Figure below show the strategic maps for profit organization



Figure 9: Strategy Maps for Profit Organizations (Source: Kaplan R. S. & Norton D. P. 2004, Strategy Maps: Converting intangible assets into tangible outcomes, Harvard Business School Press, Boston)

Using the framework above, defined strategic themes in previous section (6.3) is aligned as follow,



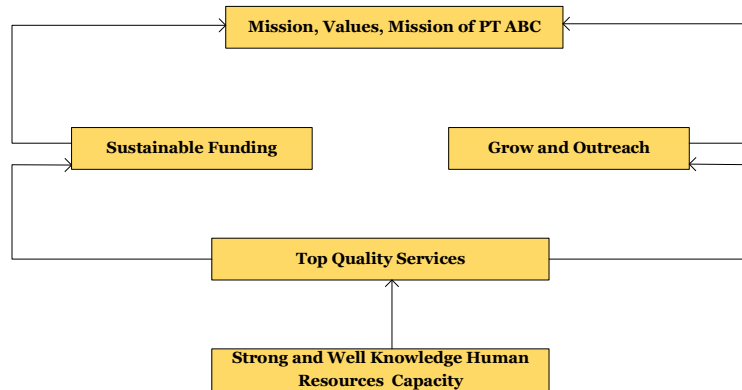


Figure 7: PT ABC Strategic Focus Model

## 6. 5 Strategic Objectives for Each Strategic Themes

### Perspectives : Customer Perspective

Strategic Theme : Grow & Outreach

Desired Strategic Result : PT ABC is growing depth, outreach and be a leader in the industry of construction colsaltant company

Strategic Objectives :

1. Number of project growth
2. Number of client growth
3. Number of client satisfied

### Perspectives : Financial Perspective

Strategic Theme : Sustainability Funding

Desired Strategic Result : Continuity of positive financial cash flow

Strategic objectives :

1. Liquidity Cash Flow
2. Positive Financial Performance

### Perspectives : Internal Process

Strategic Theme : Top Quality Services

Desired Strategic Result : Top services delivery to client, always responsive and delivering the best result to the client.

Strategic objectives :

1. Operational efficiency

### Perspectives : Learning and Growth

Strategic Theme : Strong and well knowledge HR Capability

Desired Strategic Result : Company has many qualified and well trained engineers who dedicated to work professionally service to high standards and quality.

Strategic Objectives :

1. Engineers Competencies Development
2. Embraced xompany's mission, value, and vision of company in the working culture

## 6. 6 Strategic Map

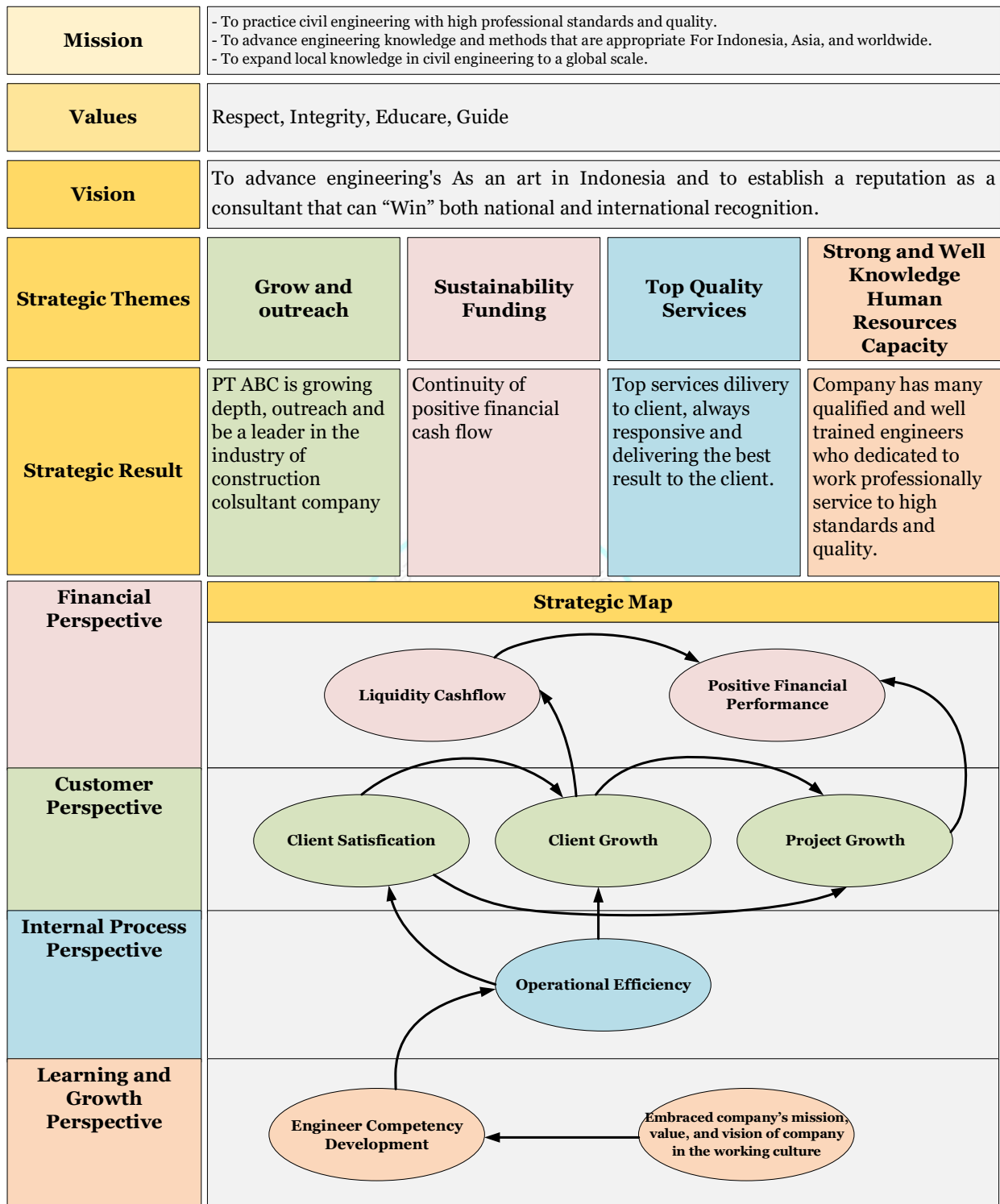


Figure 8: PT ABC (M&I Division) Strategic Map

## 7. Conclusion and Recommendation

### 7. 1 Conclusion

From the research in this paper, it can conclude at least some important things of performance measurement system in PT ABC

First, in other to align with PT ABC strategy, the PMS's of PT ABC as a construction consultant company (especially M&I Division) should focus on four strategic themes :

1. Grow and outreach
2. Sustainability Funding
3. Top Quality Services
4. Strong and Well Knowledge Human Resources Capability

Relation between vision, mission, and BSC perspective generating strategic initiatives for each perspectives. For each of perspective there are several objectives that need to be obtained,

1. Financial Perspective
  - a. Positive Financial Performance
  - b. Liquidity of Clash Flow
2. Customer Perspective
  - a. Grow in Client
  - b. Grow in Project Number
  - c. Client Satisfaction
3. Internal Process Perspective
  - a. Operational Efficiency
4. Learning and Growth Perspective
  - a. Engineer Competencies Development
  - b. Embraced company's mission, value, and vision of company in the working culture

From the several objectives above, there are at least 20 measurement formulations. From this study it can be concluded that the balanced scorecard can be used as a performance management system in PT ABC as a construction consulting firms. From internal discussions it is known that the learning and growth perspective is an important factor affecting the performance of PT ABC. For this reason, it is necessary to develop a competency dictionary for engineers, especially field engineers, so that company performance can improve. Since highly capable human resources and engineers with broad knowledge supported by soft skills and technical skills will have a positive impact on the efficient management process that will also increase the growth of positive company value from clients, it will also have an impact on the improvement of company's finances performance.

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## Appendixes

Table A: Summary of PT ABC Working Variable

Perspective	Measurement Objective	Types of Measurement	Formulation	Data Sources	Period
Financial Perspective	Liquidity Cash Flow	Liquidity Ratio	$\frac{\text{Cash} + \text{Trade Investments}}{(\text{Demand deposits} + \text{short term time deposits} + \text{short term borrowings} + \text{interest payable on funding liabilities} + \text{account payable and other short term liabilities})}$	Finance Division	Annually
		Operating Cash Flow	$\text{Ebit} \times (1 - \text{tax}) + \text{Depreciation} + \text{Provision Loan Loss}$	Finance Division	Annually
		Free Cash Flow	$\text{Operating Cash Flow} - (\text{Net Fix Asset Investment} + \text{Net Current Asset Investment} + \text{Provision of loan Loss})$	Finance Division	Annually
	Positive Financial Performance	Return on Equity (RoE)	$\frac{\text{Net Operating Income}}{\text{Average Equity}}$	Finance Division	Annually
		Return on Asset (RoA)	$\frac{\text{Net Operating Income} - \text{Taxes}}{\text{Average Asset}}$	Finance Division	Annually
		Debt to Equity Ratio	$\frac{\text{Liabilities}}{\text{Equities}}$	Finance Division	Annually
Customer Perspective	Grow & Client Satisfaction	Number of Project Growth	$\frac{\text{Number of Active projects (end of period)} - \text{Number of Active projects (beginning period)}}{\text{Number of Active projects (Beginning Period)}} \times 100$	RnD Division & Finance Division	Annually
		Number of Client Growth	$\frac{\text{Number of Active clients (end of period)} - \text{Number of Active clients (beginning period)}}{\text{Number of Active clients (Beginning Period)}} \times 100\%$	RnD Division & Finance Division	Annually
		Number of Client Satisfied	N/A	RnD Division & Finance Division	Per Project
Internal Process	Operational Efficiency	Ratio Effectiveness of Budget	$\frac{\text{Budget Realization}}{\text{Budget Plan}}$	RnD Division & Engineering Division	Annually
		Operating Expenses	$\frac{\text{Operating Expense}}{\text{Gross Loan Portfolio}}$	RnD Division & Engineering Division	Annually
		Internal Assesment Rating	N/A	RnD Division & Engineering Division	Annually
Learning and Growth	Employee Turnover	Employee Turnover	$\frac{\text{Total Staff Resign wihitin period}}{\text{Average number off staff within the period}}$	Finance Division	Annually
		Employee Productivity	$\frac{\text{Number of top performers (engineers that collect data with obeying guidlines)}}{\text{Number of engineers}} \times \frac{\text{Number of report conducted by engineers wihitin period}}{\text{Number of engineer'sproject wihitin period}} \times \frac{\text{Number of report submitted on time}}{\text{Number of report submitted late}}$	Engineering Division	Monthly
	Engineers Competencies Development	Employee Skills Development	$\frac{\text{Number of new software mastered by engineers within period}}{\text{Number of engineers wihitin period}}$	RnD Division & Engineering Division	Monthly
		Employee Transfer Knowledge	$\frac{\text{Time of new engineers able to run software programs since they joined}}{\text{Average time for engineers to run software programs}}$	RnD Division & Engineering Division	Monthly
		Employee Coordination	$\frac{\text{Number of kick - off meeting and coordination meeting}}{\text{Number of Project}}$	RnD Division, M&I Division, Engineering Division	Weekly
		Employee Contribution to Understanding Project	$\frac{\text{Number of engineers attended the meeting}}{\text{Number of Engineers}}$	RnD Division, M&I Division, Engineering Division	Monthly
	Embrace the Company's Mission, Values, and Vision in the Working Culture	Survey Staff' Comprehension of a Company's Mission, Values, and Vision	N/A	RnD Division & Engineering Division	Quarterly
		Within-period Examination of the Company's Core Values	N/A	RnD Division & Engineering Division	Monthly