

DETERMINING VENDOR KEY PERFORMANCE INDICATORS IN COMPANY A

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Abstract

To compete with other companies in the Fuel Retail Business, Company A must take some action. One of the actions is to upgrade the fuel station's image through building renovation and rejuvenation. For firm A, the Fuel Station renovation project is crucial because it is described in resilience strategy, particularly at point 5R (*Ringkas* (Concise), *Rapi* (Neat), *Resik* (Clean), *Rawat* (Maintain), *Rajin* (Diligent)). This renovation project should be monitored periodically to keep the project performance on the track, in terms of delivery time, quality, and cost. So that the vendor Key Performance Indicator should be defined and measured on every project. The Vendor Key Performance Indicator will be based on a literature review of the Performance Management System (PMS), combining the Knowledge-based Performance Management System (KBPMS) and Performance Prism. Besides, the indicator will be chosen based on case studies in Company A and will be analyzed using a Causal Loop Diagram to determine key performance indicators. The findings in this research provide and define some key indicators for vendor performance that should be measured in every project. The indicator that has been defined, will be useful for Company A to keep the project on track. and will help the company accomplish several corporate Key Performance Indicator points, particularly the investment budget performance point that depends on the completion of renovation projects. The Vendor Key Performance Indicator, which was analyzed using a Causal Loop Diagram, in terms of delivery time, quality, and cost has not yet been implemented in Company A. This paper proposed to define the indicator of Vendor KPI to measure the vendor's performance.

Keywords: Vendor KPI, KBPMS, Performance Indicator & Causal Loop Diagram.

1. Introduction

Nowadays, the oil and gas industry in Indonesia still struggling to supply fuel demand to the society while they should prepare the renewable energy business to adapt the transition energy. In Indonesia, the state-owned oil and gas company dominated the oil and gas business. But, since 2005 the state-owned oil and gas company no longer monopolizes market.

Based on the Fortune 500 list of most significant firms in the world, oil and gas companies are state-owned oil and gas company is in position 122nd, whereas its competitors have a position as follows: BP in 6th position, Exxon Mobil in 3rd position, Royal Dutch Shell is in 1st position (Fig. 1). Fuel retail business in Indonesia is becoming more competitive. In August 2022, Shell had 79 Fuel stations in Indonesia, BP had 78 Fuel stations in Indonesia, Vivo had 18 Fuel stations in Indonesia and state-owned oil and gas company had 999 Fuel Station in Indonesia.

Since the competitors entered the market in Indonesia, the state-owned oil and gas company should increase their quality of products and services. In September 2022, the oil price increases made customers switch to other products, and this phenomenon will cause a sales decline in state-owned oil and gas companies. Other strategies must be devised by the company to attract back customers. One of the strategies is to upgrade the facility of Fuel Stations through the renovation and rejuvenation program.

In the renovation project implementation process, there were many obstacles often occurred. Kozien 2021 stated that the basic parameters in project implementation are Time, Cost, and

Quality, also called the Project Triangle. Each of the parameters of the project triangle is interrelated and interdependent.

This paper discusses the factors that affect vendor performance through the identification of key indicators through the study of literature and case studies. This key indicator will ensure the project's success so the project will be on track and completed on time with the expected cost. These key performance indicators will help the company achieve the Key Performance Indicator, particularly at the point of financial performance in terms of cost and capital expenditure. Furthermore, the performance indicator will aid in the outlet transformation to compete with other Fuel Retail Competitors.

2. Literature Review

2.1 Framework

Performance Management System has a framework, such as The Balanced Scorecard (Kaplan & Norton, 1992), The Performance Prism (Neely et al., 1999, Cambridge), Malcolm Baldrige National Quality Award (Department of Trade-USA, 1987), the Key Performance Indicator Manual (Department of Industry – Australia), the ISO-series, the Six Sigma, and Knowledge-Based Performance Management System (Wibisono 2003). Because the project is unique, based on PMBOK 6th Edition stated that the project is a unique product, service, or result. The project is also a temporary endeavor to drive changes and enable business value creation. Based on the definition of the project, so writer assumed that the Knowledge-Based Performance Management System is suitable to measure the project or vendor performance.

Wibisono 2023 stated that the Performance Management System needs a contextual approach because Indonesia has a different culture that cannot be compared to other countries. The Knowledge-Based Performance Management System was selected based on the following routines:

- a. A large number of performance variables
- b. Top priorities for improving performance variables need
- c. Benchmarking process in figuring out a company's competitiveness.

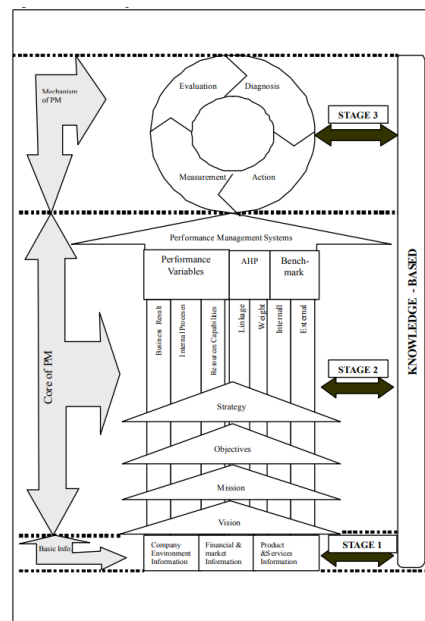


Figure 1 Knowledge-Based Performance Management System Framework (Wibisono, 2003)

Table 1 Knowledge-Based Performance Perspective

Perspective	Aspect
Business Results	Financial
	Non-Financial
Internal Process	Innovation
	Operations
	Marketing
	After Sales
Resources Capability	Human Resources
	Technological Resources
	Organizational Resources

Source : Wibisono 2023

Based on Knowledge-Based Performance has three perspectives, that is Business Result, Internal Process, and Resources Capability and has nine aspects that can be seen in the table above.

2.2 Vendor Performance

Utama, Baroto, Ibrahim, and Widodo, 2020 found that there are seven criteria for supplier performance evaluation: Quality, Cost, Delivery, Flexibility, Responsiveness, Warranty, Claim Policies, and Environmental management system. And they weighed the criterion by using AHP.

Usman and Hamid 2020 define the parameter of 10 criteria of vendor performance indicators in PT Krafthaus, that is: Quality of Vendor, Timely Delivery, Price, Communication, Documents

and Administration, Flexibility of Payment and Delivery Time, Responsibility, Vendor Location, Vendor Reputation, Honest & Maintenance of Confidentiality of Business.

Gang Qu, Lishan Shen, and Xiaona Bao 2014 define the variables they use for TMS are: Specialization, Credibility, Coordination, Knowledge transfer performance, and Project Success.

3. Methodology

The case study was based on company A's investment budget performance gap that depends on the completion of renovation projects. The conceptual framework will be used Knowledge-Based Performance Management to define and cascade the objective from the company strategies, which will also affect the indicators that will be used to measure performance, particularly in renovation projects. A Literature review was conducted to find the theories that can support to identify the vendor performance indicators. Furthermore, the Causal Loop Diagram (CLD) was analyzed to get the relationship between indicators.

3.1 Case Study

In this research, a case study was conducted to define the main problem of the performance gap in Company A. Secondary data were gathered through the renovation project history data, vendor performance, and annual report of Company A to define the problem.

KBPMS framework was used to describe cascading performance to the end of the chain. The framework was focused on one perspective, which is internal process, particularly on the operational aspects. The potential indicator were selected based on a literature review of Performance Prism Theories and previous journals.

3.2 Data Analysis

The Data of vision, mission, strategies, and corporate key performance indicators used existing data and were analyzed with the KBPMS Framework to cascade the performance indicator to Technical Department. This Technical Department indicator is depending on the vendor's performance. So, external analysis was conducted in this research.

Based on the KBPMS Framework, implementing the performance management system should start from step 0 which is define the foundation for principal guidance, then step 1 which define the background information, then step 2 which create design process from the vision, mission, strategy and framework to define the Performance Management System, then finally step 3 implementation, and step 4 refreshment. This research is focused on step 2 to design the performance management system, especially cascading the Technical Function Key Performance Indicator to Vendor.

3.3 Validation

The problem definition will be filtered to the top five main issues by the respondents. The indicator was chosen based on the literature review that correlates with the problem definition in Company A. Respondents will choose the top 10 indicators to be the Key Performance Indicators for Vendor. The top 10 indicators will be analyzed by using the Causal Loop Diagram (CLD) to see whether or not the indicators have a strong influence.

4. Analysis

4.1 Company Overview

Company A is a subsidiary of the State-Owned Oil and Gas in Indonesia and responsible for running the Fuel products retail business. Company A is a retailer of oil and gas products. Practically, Company A is not only developed a fuel business but also non-fuel retail to expand

its business and strengthen its company. Company A has operated 224 regular fuel stations that the parent company owns.

To face the competitive fuel retail business environment in Indonesia, Company A tried to increase the reliability of its Fuel Stations and upgrade the Fuel Stations's facilities to attract more customers. To keep the reliability of Company A, Company A does periodic routine maintenance and continually renews the facilities' appearance to maintain the Fuel Station reliable, safe, aesthetic, and convenient.

These reliability issues were also captured in the Company strategies, which include the transformation outlet that contains 5R Strategies (*Ringkas, Rapi, Resik, Rawat, Rajin*). To ensure the program is running well, the program is usually cascaded into the financial performance, especially on the point of Capital Budget Planning that is listed in corporate plan and cascaded from President Director to Marketing & Operation Director, VP Marketing & Operation and then Technical Manager's Key Performance Indicators. The Key Performance Indicator was quantitative and measured by the percentage of capital budget absorption every quarter according to the investment and reinvestment planning for the current year.

In 2022, more than 55 Fuel Stations in areas 2&3 (West Java, Jakarta, and Banten) have been renovated. In the renovation project implementation process, there were many obstacles often occurred. Koziem 2021 stated that the basic parameters in project implementation are Time, Cost, and Quality, also called the Project Triangle. Each of the parameters of the project triangle is interrelated and interdependent.

The Project Triangle also cascaded in the Key Performance Indicator of Company A, particularly in the Technical Manager's Key Performance Indicator. The vendor's performance on the project to which they contributed determines the project performance indicators. There was no review of the vendor once the project was done as long as the project implementation process was ongoing. Therefore, the Key Performance Indicator of the Project should be measured and monitored by Technical Manager in Company A.

4.2 Company Performance Review

Company A has already implemented a Performance Management System (PMS) which has an indicator that integrated with the Parent Company. The performance Management System (PMS) in Company A uses the Balance Score Card method, which has four perspectives, such as Financial, Customer, Internal Process, and Learning & Growth. This paper focus on the financial perspective, particularly at the point of investment budget that measures quarterly. In 2020 and 2021, the investment budget was underbudgeted and achieved 87.74% in 2020 and 84.24% in 2021 whereas the target is 90%-95% in 2020 and 85% in 2021. The trend can be seen in table 2 and Fig.2 below :

Table 2 Investment Budget Performance in Company

Year	Investment Performance	Target	Deviation / Gap
2020	87.74%	90%	2.26%
2021	84.24%	85%	0.76%
2022	68%	85%	17%

Source : writer documentation

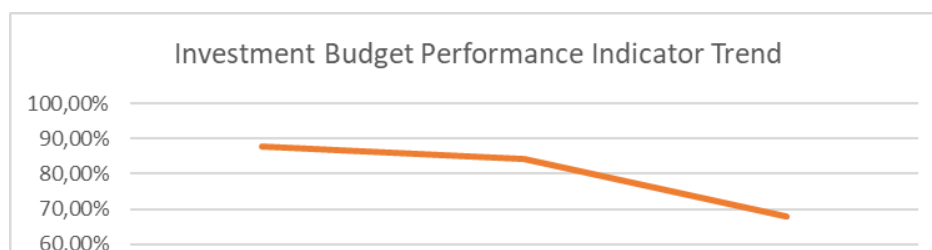


Figure 2 Investment Budget Performance Indicator Trend

The indicator of investment budget performance cascaded into Business Development Department and Technical Department. This investment budget indicator measures the achievement of the renovation project and the new fuel station outlet's capital budget. But in 2022, most of the projects contain renovation projects and upgrading the Fuel Station appearance. This indicator is related to a corporate strategy, particularly at point 5R (*Ringkas* (Concise), *Rapi* (Neat), *Resik* (Clean), *Rawat* (Maintain), *Rajin* (Diligent)).

In Technical Department, the investment budget performance cascades as construction accuracy which are divided into two indicators: on budget and on schedule. In the current situation in Company A, the renovation project was still behind schedule and under budget. There were 12 projects that have not been done, making the gap between the schedule and budget indicator. The renovation project performance can be seen in Fig.3 below:

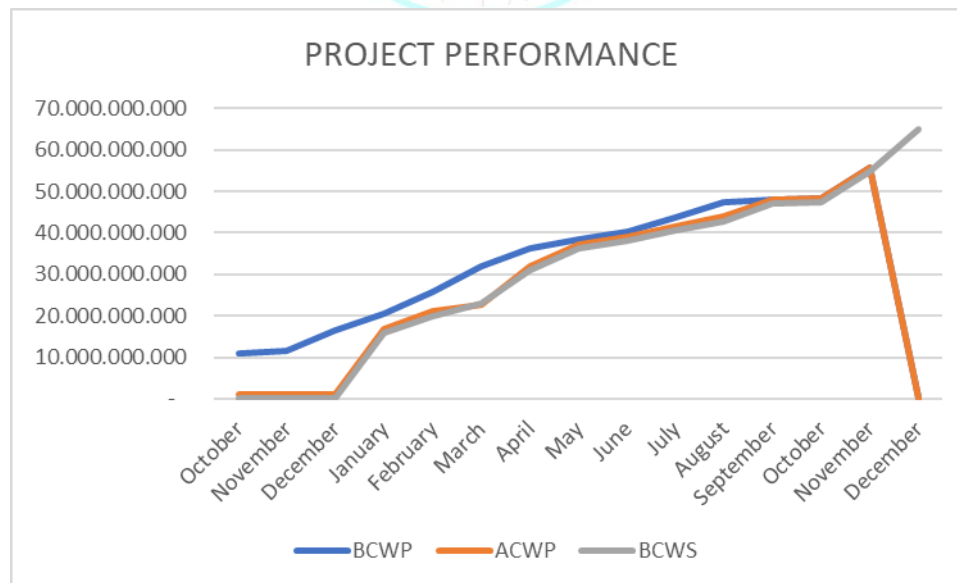


Figure 3 BCWS, BCWP, and ACWP of Renovation Projects

4.3 Problem Definition

In the last 3 years, the investment budget performance indicator trend continued to fall. The investment budget performance indicator gap in 2022 was 25% (data taken on 9th December 2022). As the writer said before, the investment budget performance depends on the completion of the renovation project. Meanwhile, the renovation projects rely on the vendor's performance which is the external party. The 12 projects used to be done in 2nd week of December by vendor because the Work Order by Technical Department had been sent to the Vendor in September. So, the project was delayed.

If we try to define the problem, there is a problem that influences the completed project, which can be seen in Table 3.

Since the work order was published to the Vendor, the risk of the project was passed to the Vendor and it makes the projects are uncontrollable. So the issues that had been defined in the table above should be solved by Vendor. Since Company A couldn't control that problem, the company should measure the Vendor's performance, considering that the vendor is should fully responsible for the project being worked on.

Table 3 Possible Root Cause

Possible Root Cause	Discussion	Controllable /Uncontrollable
Delivery Time	The delivery time of the project was delayed.	Uncontrollable
Cost Realization	If cost realization was higher than planned, it means that there was scope creep on the project.	Uncontrollable
Scope	Sometimes the quality didn't meet the requirement that causes rework which takes additional time	Uncontrollable
Resource Availability	Resource availability will determine the success of the project	Uncontrollable
Material Availability	Material availability will determine the success of the project	Uncontrollable
Safety	The safety aspect is very important in construction project	Uncontrollable
Communication	Miscommunication will delay the projects	Uncontrollable
Quality of Vendor	The Quality of the Vendor makes the project quality increase	Uncontrollable

Table 4 Respondent's Profile from Company A

Respondent Group	Age	Education Level	Experience (Years)	Job Title
Technical Department's Employee	35	Bachelor in Electrical Engineering	>10	Sr Officer Technical Maintenance
	31	Bachelor in Mechanical Engineering	>8	Sr Inspector Constrution & Quality Control
	31	Master in Urban Design	>8	Engineer Construction Planning
	28	Master in Civil Engineering	>5	Jr Engineer Maintenance Planning
	28	Bachelor in Civil Engineering	>1	Jr Officer Non FR Maintenance
	24	Bachelor in Civil Engineering	>1	Jr Officer Technical Support
Business Development's Employee	31	Bachelor in Architectural	>8	Analyst NFR Bussiness Planning
	24	Bachelor in Industrial Management	>1	Jr Analyst Store Improvement

Furthermore, after we define the problem, the writer addressed the questionnaire to the respondents from Technical Department's and Business Development Department's Employees, as seen at the Table 4.

From the respondent's feedback, the top 5 problems or root causes of the project delays are :

1. Delivery Time
2. Quality of Vendor
3. Resource Availability
4. Material Availability
5. Communication

These problems are used to choose indicators for Vendor performance.

5. Results

5.1 Performance Indicators

As stated by Wibisono 2003, KBPMS has three perspectives: Business results, Internal Processes, and Resources Capability. Because this paper discussed determining Vendor KPI, we will focus on Internal Processes, especially the Operations aspect. The operations aspect has indicators, such as: Work in Process, Cycle Time for Important Processes, Teams Time Usage, and Completed Schedule. Besides that, based on Performance Prism, the relevance indicators for this paper are Supplier Contribution that has indicators: Service Level Agreement, Idea Conversion Rate, Level of Supplier Developer, and Idea Generation Rate.

Table 5 Vendor Performance Indicators

	Indicators	Source
1	Work in Process	KBPMS
2	Cycle Time for Important Process	KBPMS
3	Teams Time Usage	KBPMS
4	Completed Schedule	KBPMS
5	Quality of Vendor	Usman & Hamid, 2020
6	Timely Delivery	Usman & Hamid, 2020
7	Price	Usman & Hamid, 2020
8	Communication	Usman & Hamid, 2020
9	Documents & Administrations	Usman & Hamid, 2020
10	The flexibility of Payment & Delivery Time	Usman & Hamid, 2020
11	Responsibility	Usman & Hamid, 2020
12	Vendor Location	Usman & Hamid, 2020
13	Vendor Reputation	Usman & Hamid, 2020
14	Honest & Maintenance of Confidentiality Of Business	Usman & Hamid, 2020
15	Specialization	Gang Qu, Lishan Shen, Xiaona

		Bao, 2014
16	Credibility	Gang Qu, Lishan Shen, Xiaona Bao, 2014
17	Coordination	Gang Qu, Lishan Shen, Xiaona Bao, 2014
18	Knowledge Transfer Performance	Gang Qu, Lishan Shen, Xiaona Bao, 2014
19	Project Success	Gang Qu, Lishan Shen, Xiaona Bao, 2014
20	Material availability	Case Study
21	Resource availability	Case Study
22	Clear Scope	Case Study
23	Safety	Case Study
24	Service Level Agreement Achievement	Performance Prism
25	Idea Conversion Rate	Performance Prism
	Level of Supplier Development support	Performance Prism
26	Idea Generation Rate	Performance Prism

From the respondent's feedback, the top 10 indicators that has been chosen are can be seen in Table 6.

Table 6: The Chosen Indicators based On Respondent's Feedback

	Indicators	Source	Respondent's Feedback Result	Key Indicators (Yes / No)
1	Work in Process	KBPMS	71.4%	Y
2	Cycle Time for Important Process	KBPMS	28.6%	N
3	Teams Time Usage	KBPMS	14.3%	N
4	Completed Schedule	KBPMS	57.1%	Y
5	Quality of Vendor	Usman & Hamid, 2020	85.7%	Y
6	Delivery Time	Usman & Hamid, 2020	71.4%	Y
7	Price	Usman & Hamid, 2020	42.9%	N
8	Communication	Usman & Hamid, 2020	57.1%	Y



9	Documents & Administrations	Usman & Hamid, 2020	42.9%	N
10	The flexibility of Payment & Delivery Time	Usman & Hamid, 2020	28.6%	N
11	Responsibility	Usman & Hamid, 2020	85.7%	Y
12	Vendor Location	Usman & Hamid, 2020	28.6%	N
13	Vendor Reputation	Usman & Hamid, 2020	71.4%	Y
14	Honest & Maintenance of Confidentiality Of Business	Usman & Hamid, 2020	42.9%	N
15	Specialization	Gang Qu, Lishan Shen, Xiaona Bao, 2014	28.6%	N
16	Credibility	Gang Qu, Lishan Shen, Xiaona Bao, 2014	28.6%	N
17	Coordination	Gang Qu, Lishan Shen, Xiaona Bao, 2014	57.1%	Y
18	Knowledge Transfer Performance	Gang Qu, Lishan Shen, Xiaona Bao, 2014	28.6%	N
19	Project Success	Gang Qu, Lishan Shen, Xiaona Bao, 2014	28.6%	N
20	Material availability	Case Study	71.4%	Y
21	Resource availability	Case Study	57.1%	Y
22	Clear Scope	Case Study	42.9%	N
23	Safety	Case Study	28.6%	N
24	Service Level Agreement Achievement	Performance Prism	71.4%	Y
25	Idea Conversion Rate	Performance Prism	0%	N
26	Level of Supplier Development support	Performance Prism	28.6%	N
27	Idea Generation Rate	Performance Prism	0%	N

Table 7: Vendor Key Performance Indicators

	Indicators	Source
1	Work in Process	KBPMS
2	Quality of Vendor	Usman & Hamid, 2020
3	Delivery Time	Usman & Hamid, 2020
4	Communication	Usman & Hamid, 2020
5	Responsibility	Usman & Hamid, 2020
6	Vendor Reputation	Usman & Hamid, 2020
7	Coordination	Gang Qu, Lishan Shen, Xiaona Bao, 2014
8	Material availability	Case Study
9	Resource availability	Case Study
10	Service Level Agreement Achievement	Performance Prism

5.2 Variables Interrelation Model

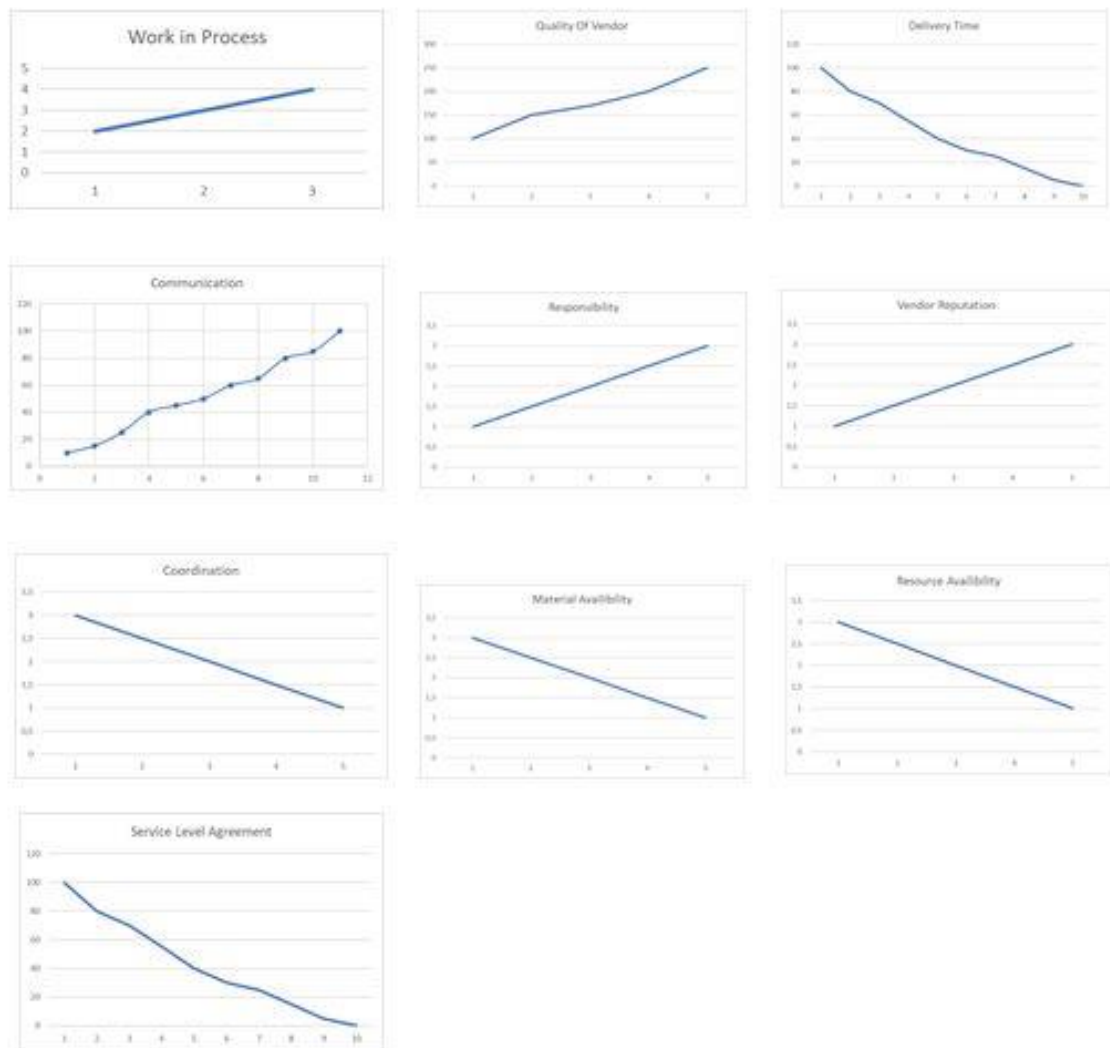
After the Key Performance Indicators were defined, to validate the interrelation of each Key Performance Indicator with the goal, the Causal Loop Diagram (CLD) was analyzed. Lannon, 2012 stated that “System thinking has been described as a language for talking about the complex, interdependent issues that are faced daily. By representing a problem or issue from a causal perspective, you can become more aware of the structural forces that produce puzzling behavior”.

Santi, 2022 states that the steps to identify the system/structure as follows:

1. Selection of issues
2. Identification of key variables
3. Developing BOT
4. Developing Causal Loop Diagram (CLD)

The selection of issues and identification of key variables can be seen in table 3 and table 7. Furthermore, before developing the Causal Loop Diagram (CLD), Author should develop BOT (Behavioral Over Time). Lannon, 2012 stated that Behavioral Over Time (BOT) use to determine type of loop in the Causal Loop Diagram (CLD).

The Behavioral Over Time (BOT) of ten Key Performances Indicators above can be seen in Fig. 4



Kozien 2021 stated that the basic parameters in project implementation are Time, Cost, and Quality, also called the Project Triangle. The Key Performance Indicators of the Technical Department should be achieved are successful projects in terms of Project Triangle which are Time, Cost, and Quality. To know the interrelation and interdependence of each Vendor's Key Performance Indicator with the goal, Causal Loop Diagram (CLD) was created and can be seen in Fig.5.

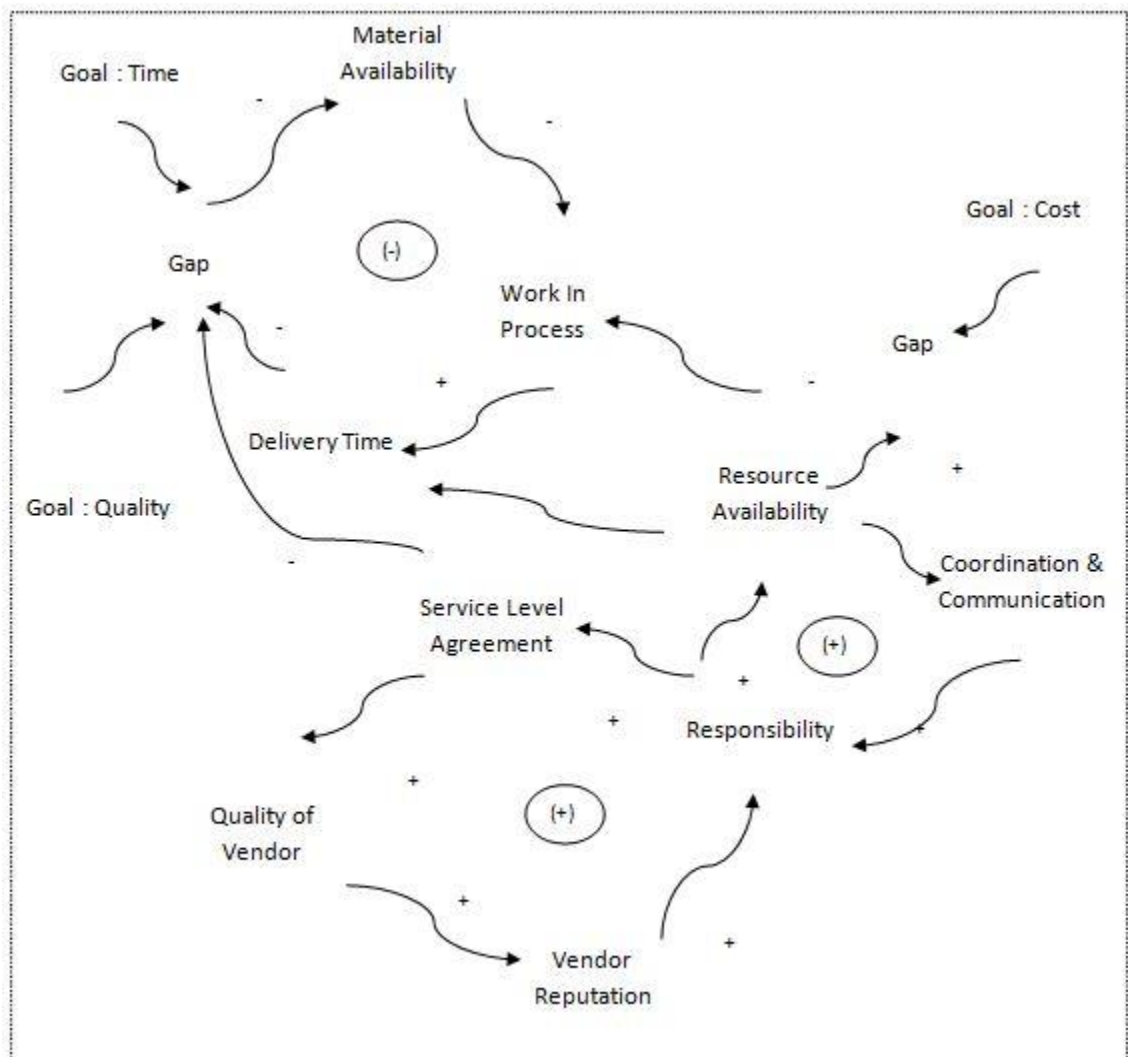


Figure 4 Causal Loop Diagram

From the Causal Loop Diagram (CLD) in fig. 5, each indicator has interdependencies and interrelation each other, and influences the goal. The goal set based on the project triangle; Time, Cost, and Quality.

In terms of Time, actual delivery time creates a gap with the schedule goal. Delivery time is affected by work in process, the longer time of work in process, the longer the delivery time will be. Work in process will be balanced with material availability that will make the work in process faster and delivery time faster.

In term of Cost, resource availability has the main role. The vendor should have an optimal resources from the human side and money side, resource availability is affected by the vendor's responsibility. If vendor has a good responsibility, they could manage their resources. The vendor's responsibility is affected by good communication and coordination with all of the stakeholders.

In term of Quality, it's depends on service level agreement which is affected by vendor responsibility, vendor reputation, and vendor quality.

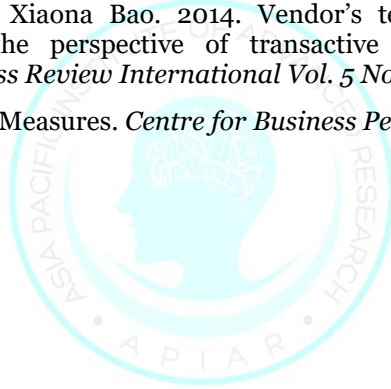
Conclusion

The gap of achievement of corporate key performance indicators sometimes depends on the third party that couldn't be fully monitored. That's why Company A should mitigate it by cascading some indicators to the third party to make them responsible, have a goodwill and have a commitment to Company A. This paper analyzes some project success indicators that cascade to Technical Department and Business Development Department, particularly in financial performance category that has indicator investment budget which measures the project success. Furthermore, to keep the project on track, the department's key performance indicator should be cascade to the vendor. This Vendor's Key Performance Indicator can be used to monitor the vendor's performance in every project. The Key Indicators was defined, also the interrelation and interdependencies was validated by System thinking, Causal Loop Diagram (CLD). Furthermore, the weight of each indicator should be determined by Company A in the next business research.



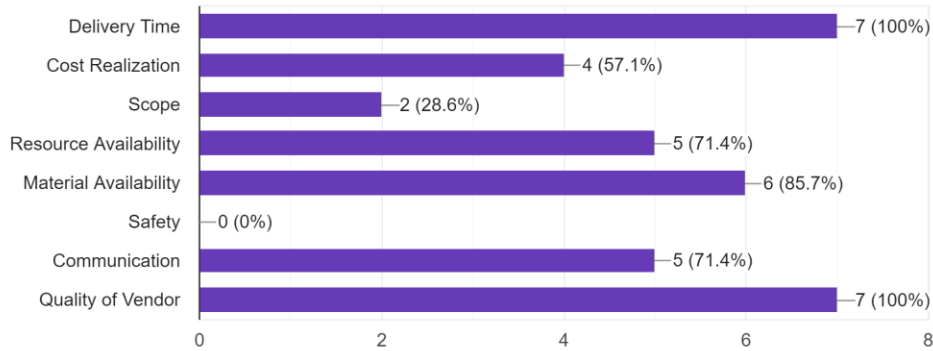
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Apa permasalahan utama di sisi vendor yang seringkali menyebabkan proyek terlambat dan biaya proyek bengkak?

7 responses



Pilihlah indikator utama untuk menjaga performance vendor sehingga mempengaruhi keberhasilan proyek.

7 responses

