

DEFINING THE COLLABORATIVE KEY PERFORMANCE INDICATORS IN PERFORMANCE MANAGEMENT

Marsellinus Bachtiar

Department of Industrial Engineering, Faculty of Engineering, Atma Jaya Catholic University
Jl. Jend Sudirman Kav. 51 Jakarta Selatan, Indonesia
Phone. (021) 5708826 ext 3106
E-mail : marsellinus.bachtiar@atmajaya.ac.id

ABSTRACT

The performance is a result of a process that involves many different components of activity, not only as a result that occurs at a certain point at a certain time. The performance of educational organizations such as universities have been duly managed to produce the output as well. This paper is written in conjunction of the previous paper in an endeavour to formulate the Balance Scorecard's Based Performance Monitoring in Faculty of Engineering Unika Atma Jaya Jakarta. The aim of this paper is to describe and formulate the KPIs resulted by more than one actor as called Collaborative Key Performance Indicator (cKPI)

In the preceding research that we have engaged, the problems arises when we found that some KPI and PI (performance indicator) are products of collaborative activities and need to accomplished by more than one person. Similar to manufacturing industry, the operation and process in Academic environment is made up of tons of sub-process and activities that interact and interdependent to each other. In this system, we presume that some KPI are not stand alone since there is no justification to assign to single person. The study is ongoing and the next steps will be made to individual performance indicators that can be detailed to weighing system applied for every single cKPI.

Key words : Balance Scorecard, Collaborative KPI, Performance Management

1. INTRODUCTION

Background

This paper is written in conjunction of the previous paper in an endeavour to formulate the Balance Scorecard's Based Performance Monitoring in Faculty of Engineering Unika Atma Jaya Jakarta.

The formulation of strategy was constructed and designed using the Balance Scorecard methodology with four perspective that we adjust in order to align to academic environment i.e. Service Perspective, Customer Perspective, Business Process and Growth and Learning Perspective.

Furthermore following the strategy map was the formulation of performance indicator to measure the effectiveness of the strategy it self.

Atma Jaya Catholic University Faculty of Engineering (FT) has 3 (three) Programs within the University that stood since 1965/Currently, Dikti gives accredited recognition-A FT for Mechanical Engineering, B for Electrical Engineering and Industrial Engineering. Besides, the university has implemented ISO 9001:2008 quality assurance within the framework of the university.

The root of Performance measurement by Unika Atma Jaya can traced to Tridharma Perguruan Tinggi i.e.: Teaching, Research and Community Service. This means that in Tridharma there are also indicators that reflect the performance of educational institutions as recognized by BAN-PT through its accreditation.

Based on the formulation of a strategy map constructed by author in previous research the proposed strategy map as follows:

Service Perspectives (Outcome): The main objective is to increase the value of FT with the pillars of *Achieving High Qualifications* and *Increased Productivity*.
Customer Perspective (Outcome): Quality and Graduate Student Profiles, and User Appreciation Satisfaction Index. Perspektif
Business Process: Planning, Teaching, Research, Community Service, Student Services, cooperation, Management and Quality Assurance. **Growth and Learning Perspective:** Organizational Governance and Policy, Infrastructure, Human Resources and Information Systems.

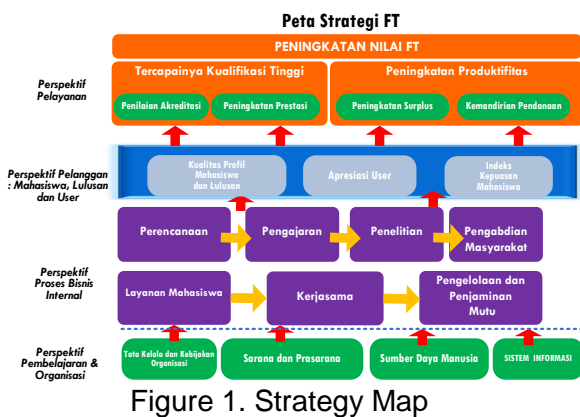


Figure 1. Strategy Map

We define the strategy map with balance score methodology and adjust the perspective in order to fit to academic environment (see Figure 1)

Each perspective includes several Strategic Objective that consists of one or more Key Performance Indicator (KPI). The faculty of engineering can be seen as a business unit of the University, that have its own authority (though limited) to manage and execute its planning under the coordination of the University administration.

All the KPIs were assigned specifically to the certain people in his or position-as traditional KPI assignment- and ingored the collaborative works that occurs in the operation.

In the Supply Chain Management area, Whhelwright and Bowen defined the performace of SCM as cost, quality, delivery and flexibility. The research of Shin et.eal proposed that the measure of provider performance consists of delivery, quality and cost-in accordance to buyer

performance indicators i.e. delivery, cost and delivery.

Problem Definition

The problem arise when the author define the set of KPI, it is obvious that most of the KPI are results of interrelated and interdependent process and activites done by more than one person.

Therefore there will be unclear terms of KPI and the ambiguity will affect the achievement.

Objective

The objectives of this paper are :

- To define the Collaborative KPI
- The formulation to measure the contribution of certain doer to the KPI

Methodology

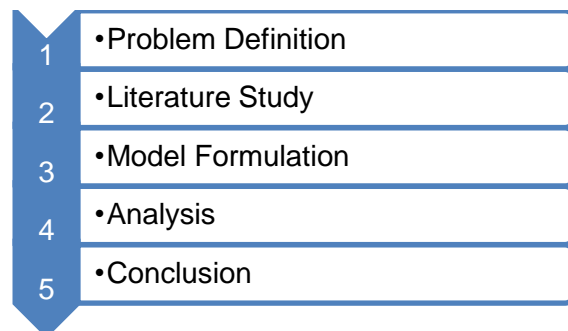


Figure 2. Methodology

The methodology of this paper is initiated by problem definition. The problems of collaborative KPI in defining the performance of the faculty of engineering refers to previous research with the same object.

The theoretical research was accomplished by reviewing the works of authors that have tried to formulate the collaborative KPI model. The SCOR Model (Supply Chain Operation Reference) was used as a basis of conceptual model .

2. THEORETICAL BACKGROUND

Many of The research and paper of collaborative KPI (cKPI) are in Supply Chain Area such as the works of Lee et.al that use SCOR Model (Supply Chain

Operation Reference) as basis to develop and measure collaboration performance of multiple manufacturing partners.

In their paper, Lee et al develop the cKPI that were leveraged by collaborative process and they developd a modified sigmoid function to reflect and check the characteristic of Service Level Agreement.

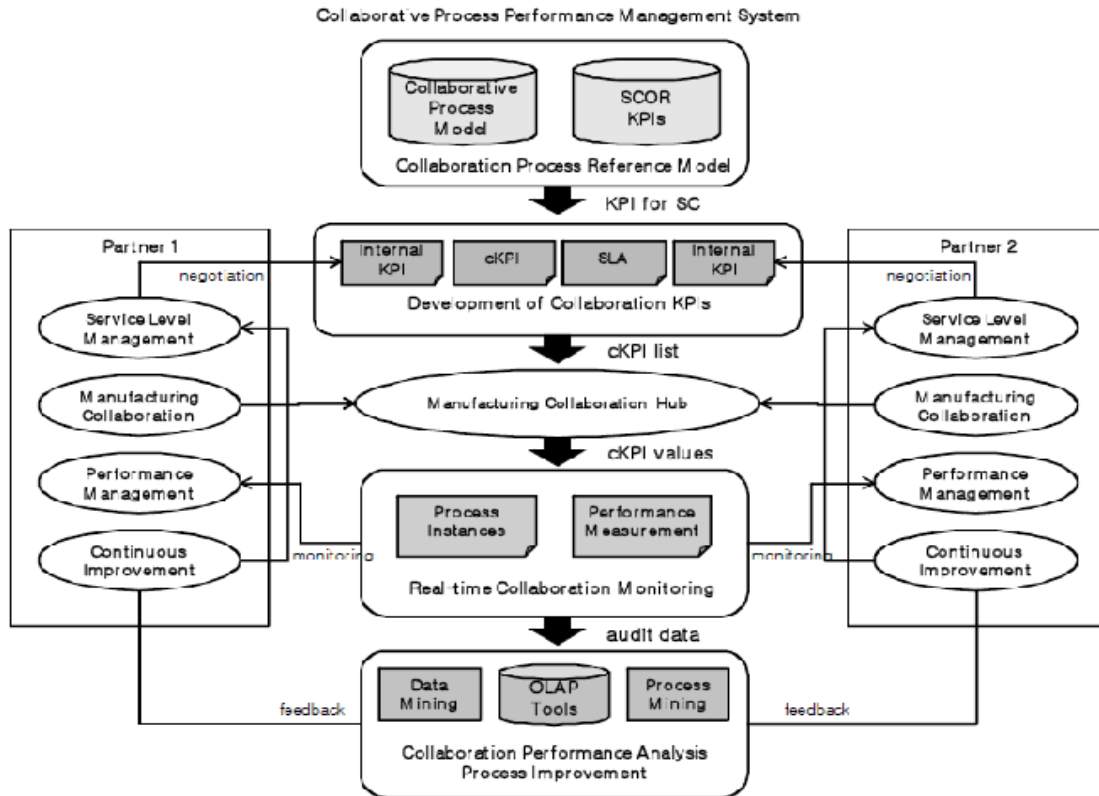


Figure 3. Collaborative performance model (Source: Lee.et.al, 2011)

Table 1. example of cKPI (Lee.et.al, 2011)

cKPI	Definition	Equation
Part design change cycle time	Total lead time by part design change in collaboration.	(design change cycle time of leading company) + (design change cycle time of part company) + (design change cycle time of mold company)
Numbers of design change requests	Total number of requests for design changes by design errors or omissions at design requests	(# of design change requests by additional requests) + (# of design change requests by part design errors) + (# of design change requests by mold design errors)
Rate of change request approval	Rate of approval for design change requests	(# of design change approvals) / (# of design change requests of part company) + (# of design change requests of mold company)
Loss cost by design change	Part company's fulfillment rate for period date by leading company's order	(loss cost by design change of leading company) + (loss cost by design change of part company) + (loss cost by design change of mold company)

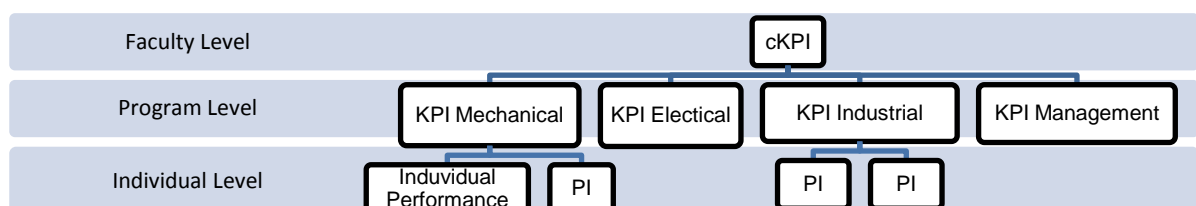


Figure 4. cKPI conceptual model

Figure 3, the above model of collaborative performance stands on the principle that the cKPI is resulted from particular performance of individual supplier.

For instance the cKPI of Part Design Change cycle (defineds as total lead time by part design change incollaboration) is the sum of

- design change cycle time of leading company (CT1)
- design change cycle timeof part company (CT2)
- design change cycle time of mold company (CT3)

The example of cKPI is shown as table 1.

3. RESULT

In this paper, the author choose the Strategic Objective(SO) of Teaching (C2) as reference. The SO of teaching , together with Research and Community Service are pillars of the academic institution, called as Tridharma Perguruan Tinggi.

The equation of the above model is

$$cKPI \text{ (faculty level)} = cKPI = KPI_{mech} + KPI_{elect} + KPI_{ind} + KPI_{management}$$

The cKPI in faculty level is the product of collaborative KPI in program level. Unika Atmajaya has three programs i.e. Mechanical Engineering (ME) ,Electrical Engineering (EE) and Industrial Engineering (IE).

The cKPI in Faculty level is not simply the sum of permormance in program level but there is management and administrative involvement to daily operation through the academic policy, regulation, proscedure and resource allocation.

From the KPIs as shown in table 2 it goes without saying that each KPIs can broken down to program's KPI with addition of management and administrative KPI from the Dean office.

The common way to calculate the final performance achievement is to assign some weight to the KPI of below level. Therefore the formula in measuring the performance achieved is

$$\begin{aligned} \text{Result } cKPI &= [W1]KPI_{mech} \\ &+ [W2]KPI_{elect} \\ &+ [W3]KPI_{ind} \\ &+ [W4]KPI_{management} \end{aligned}$$

The difficulty of computing the above result especially comes from the weight allocation that arbitrarily assigned in condition that $W1=W2=W3$ as the three programs share the same contribution to the Faculty level.

For instance, if we take the performance metric no C.2.2.2.2 (The number of average students per lecturer), the result or ratio is made up of dividing the total student body y the total number of home lecturers. However the final result was simply the accumulative performance (or ratio) of each program (ME, EE and IE) with the performance of the Dean planning, execution and policy making to achieve the common target.

We understand that the head of ME, EE and IE can not execute their planning without support from the Dean office. This condition tends to be the collaborative action that all parties should act together to achieve the target.

The dean office consists of the Dean's assistant (Academic, Finance and Student Affair) and Administration Head. The author arbitrarily put 20-30% weight for contribution of this Dean Office collaborative works. Furthermore this weight is beared by related position.

The KPIs of Stragic Objective C2 (Teaching) is now redefined by classifying the performance indicator to contributors and non contributors. From the above table it is very logic that the collaborative and interdependent activities should be done.

4. ANALYSIS

The collaborative action should perform the resultant i.e the cKPI for organization. In defining the contributing doer, we should first refer to the job description of each position. The scope of particular job will affect the total performance of cKPI. Ideally the cKPIs include the Dean Office contribution. Refer to the condition, the action or operation activities of Dean office practically are formulating policy, leading and allocating of resource. This can be done with regular meeting as proved by minutes of meeting.

In addition mathematical/artitmetic modeling should be included to measure the overall performance. The KPIs of Stragic Objective C2 (Teaching) is now redefined by classifying the performance indicator to contributors and non contributors. From the table 3, it is very logic that the collaborative and interdependent activities should be done.

5. CONCLUSION

Based on the above explanation, the author can conclude :

1. The weight allocation should be defined in terms of effort, time and energy needed to accomplish the KPI.
2. The collaborative KPI should be distributed to below level. Some cKPI is easy to compute and some other are difficult. It is suggested to do the discussion among the related person in weight assingment
3. Further research should be made in order to solve the inconsistency and ambiguity of the measurement problems.
4. To achive the common goals, the organization silos should be removed. Therefore we can achieve the organization efficieny.

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Table 2. KPIs of Teaching Strategic Objective

C.2.0	Teaching		
C.2.1		Improving the performance of Lecturer's teaching	
	C.2.1	Optimizing the faculty teaching load	
		C.2.1.1	The ratio of students to faculty expertise and equipment in accordance with Prodi
		C.2.1.2	Rata-rata beban dosen per semester, atau rata-rata <i>FTE (Fulltime Teaching Equivalent)</i> .
	C.2.2	Improving the performance of Lecturer's teaching	
		C.2.2.1	Attendance rate of lecturer in teaching.
		C.2.2.2	Attendance rate of part time lecturer in teaching.
		C.2.2.3	On time score submission
C.2.2		Improving the quality of Learning Process	
	C.2.2.1	Improving the quality of Learning Process Mechanism	
		C.2.2.1.1	Implementation of mechanism to monitor, assess, and improve periodically
		C.2.2.1.2	Mechanism of lecture material development
		C.2.2.1.3	Quality of exam
		C.2.2.1.4	Learning system improvement efforts that have been made over the last three years.
	C.2.2.2	Improving the quality of Coaching Final Project	
		C.2.2.2.1	Availability of guidance , dissemination, and user guide.
		C.2.2.2.2	Average student per Lecturer
		C.2.2.2.3	The average number of meetings / supervision during the completion of TA.
		C.2.2.2.4	Academic qualification of thesis supervisor.
		C.2.2.2.5	The average time to complete this thesis.
	C.2.2.3	Improving Academic Atmosphere	
		C.2.2.3.1	Academic programs and activities to create an atmosphere of academic (seminars, symposia, workshops, book review)
		C.2.2.3.2	Academic interaction between faculty-student.
		C.2.2.3.3	Development of scholar behaviour
C.2.3		Improving the quality of Learning Outcomes	
	1	Improving the quality of selection of new students	
		The ratio of new regular students registered to incoming passed the selection.	
		The ratio of new transferred student to regular students	
		The percentage of Drop Out and Resign Students	
	2	Improving the conformity of learning load	
		The availability of proven document of SKS and MKU	
		Number of students registered to Academic Calender recite compared to registered students	
		Enrollment of non-regular students	
	3	Improving the conformity of learning result	
		Percentage of the accuracy of Credit Taken based on GPA	
		Percentage of graduates that has TOEFL/Atma Jaya English Language Test above minimal requirement	

Table 3 : Redefining the KPIs

KPI / PI	ID	Definition	Contributors							
			Program			Dean Office				
			ME	EE	IE	Dean	As1 (Aca)	As2 (Fin)	As3 (Student)	Admin
C.2.0		Teaching								
C.2.1		Improving the performance of Lecturer's teaching								
	C.2.1	Optimizing the faculty teaching load								
	C.2.1.1	The ratio of students to faculty expertise and equipment in accordance with Prodi	1	1	1	1	1			
	C.2.1.2	Rata-rata beban dosen per semester, atau rata-rata <i>FTE (Fulltime Teaching Equivalent)</i> .	1	1	1	1	1			1
	C.2.2	Improving the performance of Lecturer's teaching								
	C.2.2.1	Attendance rate of lecturer in teaching.	1	1	1	1	1	1		
	C.2.2.2	Attendance rate of part time lecturer in teaching.	1	1	1	1	1	1		1
	C.2.2.3	On time score submission	1	1	1		1			1
C.2.2		Improving the quality of Learning Process								
	C.2.2.1	Improving the quality of Learning Process Mechanism								
	C.2.2.1.1	Implementation of mechanism to monitor, assess, and improve periodically	1	1	1	1	1			1
	C.2.2.1.2	Mechanism of lecture material development	1	1	1	1	1			
	C.2.2.1.3	Quality of exam	1	1	1	1	1			
	C.2.2.1.4	Learning system improvement efforts that have been made over the last three years.	1	1	1	1	1	1		
	C.2.2.2	Improving the quality of Coaching Final Project								
	C.2.2.2.1	Availability of guidance , dissemination, and user guide.	1	1	1	1	1			
	C.2.2.2.2	Average student per Lecturer	1	1	1	1	1	1		
	C.2.2.2.3	The average number of meetings / supervision during the completion of TA.	1	1	1	1	1			
	C.2.2.2.4	Academic qualification of thesis supervisor.	1	1	1	1	1			
	C.2.2.2.5	The average time to complete this thesis.	1	1	1	1	1			1
	C.2.2.3	Improving Academic Atmosphere	1	1	1	1	1			
	C.2.2.3.1	Academic programs and activities to create an atmosphere of academic (seminars, symposia, workshops, book review)	1	1	1	1	1	1	1	
	C.2.2.3.2	Academic interaction between faculty-student.	1	1	1	1	1	1	1	
	C.2.2.3.3	Development of scholar behaviour	1	1	1	1	1	1	1	1
C.2.3.		Improving the quality of Learning Outcomes								
	1	Improving the quality of selection of new students	1	1	1	1	1			1
		The ratio of new regular students registered to incoming passed the selection.	1	1	1	1	1			
		The ratio of new transferred student to regular students	1	1	1	1	1			
		The percentage of Drop Out and Resign Students	1	1	1	1	1			1
	2	Improving the conformity of learning load	1	1	1	1	1			1
		The availability of proven document of Credit (SKS) and MKU	1	1	1	1	1			1
		Number of students registered to Academic Calender recite compared to registered students	1	1	1	1				
		Enrollment of non-regular students								
	3	Improving the conformity of learning result	1	1	1	1	1			
		Percentage of the accuracy of Credit Taken based on GPA	1	1	1	1	1			1
		Percentage of graduates that has TOEFL/Atma Jaya English Language Test above minimal requirement	1	1	1	1		1		